for associating two sessions. Additionally, as noted above, the Final Office Action asserts that the ordinary skilled person would be motivated to modify Turk on the basis of Gilfix to allow multiple converged application sessions to be associated into a single global session. However, to achieve the cited objective in the manner suggested by the examiner, the following modifications of Gilfix would somehow also have to be incorporated into Turk.

Gilfix teaches that for a first initial session request (for which no global session exists), a logical name (allegedly the common session identifier of Turk) is assigned and returned to the client device (first exchange of the 'common session identifier'). Gilfix also teaches to then create a global session token and insert this in the request to the application server (e.g. the resource node of Turk). Gilfix further teaches to keep a one-to-one relation between logical name (common session identifier) and global session token' in the edge server. Gilfix, para. [0061], [0069]. For a subsequent 'initial session request' (e.g. to set-up a second session) the client device, according to Gilfix, would have to use the same assigned logical name (e.g. constituting a second exchange of the common session identifier) and the edge server/proxy would have to insert the same global session token into the subsequent request to a further resource node (it must be 'the same' global session token as used for the first session request, for otherwise the two sessions are not associated according to Gilfix to the same global session, and the objective of Gilfix could then not be achieved).

Furthermore Gilfix teaches to remove the global session token by the edge server/proxy before a response is sent to a client device. There is however no teaching in Gilfix of replacing the global session token for a logical name. Therefore if Turk was modified according to Gilfix, no logical name (common session identifier) was placed back into the response sent back to the client device. Instead Gilfix (implicitly) teaches any existing (local) resource node session identifiers to still be present in the different responses to the client device. This logically follows from the fact (see Gilfix, Fig. 3 and para [0070]) that both the client devices and application servers (resource nodes) of Gilfix keep local session information. This further implies that Gilfix teaches that local session identifiers (e.g. resource node session identifiers) are received by the client device from different resources (e.g. associated with different sessions). **This**

1 Gilfix discloses that the global session token is not stripped if the client device is replaced with other types of equipment. Gilfix, para. [0096]. However, such teachings do not relate to communication to a "user equipment" or

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however creates the very risk that Turk wishes to mitigate (e.g. when the same session name is used in different sessions, this may create session exceptions). Thus the Gilfix teachings would lead to a modification of Turk that would render Turk unsuitable for its intended purpose.

The alleged modification would also impermissibly change the principle of operation of Turk. The basic principle of operation of Turk comprises two parts:

a) On one hand to use a common session identifier in the traffic from a client device to a load balancer, substituting this common session identifier for a resource node session identifier and using this resource session identifier in the traffic from the load balancer to the application server.

b) On the other hand to use a resource node session identifier in the traffic from a resource node to a load balancer, substituting this resource node session identifier for a common session identifier and using this common session identifier in the traffic from the load balancer to the client device.

As explained above, Gilfix does not teach to use the logical name in the traffic **from** the edge server/proxy to the client device. The logical name is only communicated once to the client device (at the creation of the global session, see para. [0066]) to set the outgoing proxy for the application. However when the client device starts actively use the logical name (in subsequent session requests), there is no teaching in Gilfix of adding the logical name to a request coming from an application server destined for the client device. The only modification that the proxy/edge server applies, is to remove the global session token, since it is not used by the client device (outside the internal network). Furthermore the Gilfix client device maintains only a local session data structure for each session (and not a global session data structure). Gilfix, para. [0070]. Gilfix may thus implicitly teaches the use of local (e.g. resource node) session identifiers by the client devices. This not only teaches away from Turk, which uses a common session identifier instead of local session identifiers in the communication from the load balancer to the client device, but if the skilled person would modify Turk on the basis of Gilfix, he would change the basic principle of operation of Turk, which, among others, teaches to substitute a resource node session identifier for a common session identifier. The Gilfix teachings would

---

a "second user equipment" as recited in claim 1.

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alter this principle of Turk, by teaching to only delete a global session token, and not to add the logical name (the alleged common session identifier) in traffic from the edge server/proxy (e.g. the load balancer of Turk into traffic destined for the client device. The client device would according to Gilfix thus maintain local session data of each session with a different application server (resource node), even if these sessions would all relate to one converged application. Gilfix, para. [0070].

For at least these additional reasons, it would not have been obvious to modify Turk in view of Gilfix as alleged in the Final Office Action.

B. Amended Independent Claim 13

Amended independent claim 13 recites, *inter alia*, "at least one of the network element or the user equipment is configured to initiate a composition session, the composition session being a signaling session for facilitating management of the two or more sessions and exchanging the composition session identifier between the user equipment and the network element, the composition session being different from the two or more associated sessions."

As explained above with respect to amended independent claim 1, Turk and Gilfix fail to disclose or suggest at least these features. Rather, Turk and Gilfix disclose systems in which the alleged composition session identifier is incorporated only in the associated sessions. Turk and Gilfix are silent as to any separate signaling session for managing the associated sessions and exchanging the alleged composition session identifier. Additionally, as explained above, it would not have been obvious to modify Turk in view of Gilfix. Accordingly, amended independent claim 13 is also patentable over Turk, Gilfix, or the combination thereof.

C. Dependent Claims 3-12 and 14-21

Claims 3-12 and 14-21 depend directly or indirectly from independent claims 1 and 13. Samdadiya, Hoffpauir, and Allen do not address the deficiencies of Turk and Gilfix. Accordingly, for at least the reasons explained above with respect to claims 1 and 13, claims 3-12 and 14-21 are also patentable over Turk, Gilfix, or the combination thereof.

Additionally, claim 3 recites, *inter alia*, "the user equipment generating the composition session identifier; and sending a request for initiating the composition session from the user

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equipment to the network element, the request comprising the composition session identifier." The Final Office Action alleges that the above-recited features of claim 3 are disclosed by Gilfix at paragraphs [0065]-[0066]. Applicant respectfully disagrees. While Gilfix uses the term "logical name" in both paragraphs, upon closer examination, it is apparent that Gilfix refers to two different logical names. In paragraph [0065], Gilfix discloses the logical name is an address for a service that the user equipment desires to access. Indeed, Gilfix discloses that this logical name is assigned to the service in a DNS directory to identify the IP address of the service. By contrast, paragraph [0065] of Gilfix discloses a different logical name is specifically assigned by the edge server for the global session and returned to the client device so that the client device can associate the same logical name with all communications that are part of the global session. Thus, Gilfix discloses that the logical name utilized for the global session is generated by the edge server as opposed to the client device. Indeed, if the client device generated the logical name for the global session as alleged in the Final Office Action, it would not make sense why Gilfix discloses that the logical name is "returned to the client device 310 which associates the same logical name with all communications that are part of the same global session." Gilfix, para. [0066]. For at least these additional reasons, claim 3 is patentable over Turk, Gilfix, or the combination thereof.

Regarding the rejection of claim 11, the Final Office Action appears to apply Gilfix as allegedly disclosing that one or more sessions can be added to a composition session. Applicant notes that claim 11 has been amended to delete the phrase "adding one or more sessions to the composition session. Accordingly, amended claim 11 now recites, *inter alia*, "modifying the composition session comprises at least one of (i) terminating or modifying one or more sessions in the composition session, or (ii) transferring one or more sessions from the composition session to a further composition session or outside the composition session." Applicant respectfully submits that Gilfix fails to disclose or suggest at least these features of amended claim 11. For at least this additional reason, claim 11 is patentable over Turk, Gilfix, or the combination thereof.

D. *New Claim 22*

New claim 22 recites, *inter alia*, a method that includes a network element that communicates with both an user equipment and a media source using both a composition session

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identifier and media session identifiers. Turk fails to disclose or suggest the recited features of new claim 22. Rather, as explained above, Turk discloses a method that uses a common session identifier only for communications with a client device and a resource node identifier only for communications with a resource node. Indeed, the Turk system requires that the common session identifier and the resource node are "replaced" depending on whether the communications are with the client device or the resource node. Turk, paras. [0025], [0035]-[0036], [0041], [0046].

Gilfix also fails to disclose or suggest these features. Rather, Gilfix discloses that the logical name is utilized for communications over the external network between the client and the edge server. Gilfix, para. [0010]. By contrast, the global token is utilized for communications within the internal network. Gilfix, paras. [0011]-[0012].

For at least these reasons, new independent claim 22 is patentable over Turk, Gilfix, or the combination thereof.

CONCLUSION

It is the Applicants' belief that the claims are in condition for allowance and action towards that effect is respectfully requested. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney at the number indicated.

The fee for the Request for Continued Examination and the fee for the two month extension are being paid upon filing of the current amendment via the deposit account listed below. It is believed that no other fees are presently due. However, should any fees be required, the Commissioner is authorized to deduct the fees from MBHB Deposit Account No. 13-2490, Order No. 11-905-WO-US.

Respectfully submitted,

Date: October 20, 2014

By: /Jason S. Kray, Reg. No. 66,926 /
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Electronic Patent Application Fee Transmittal

Application Number:	13144385
Filing Date:	13-Jul-2011
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Filer:	Jason S. Kray
Attorney Docket Number:	11-905-WO-US

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	600	600

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	20461035
Application Number:	13144385
International Application Number:	
Confirmation Number:	5301
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Customer Number:	20306
Filer:	Jason S. Kray
Filer Authorized By:	
Attorney Docket Number:	11-905-WO-US
Receipt Date:	20-OCT-2014
Filing Date:	13-JUL-2011
Time Stamp:	15:14:29
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$600
RAM confirmation Number	1606
Deposit Account	132490
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. 1.492 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	**Document Description**	**File Name**	**File Size(Bytes)/ Message Digest**	**Multi Part /.zip**	**Pages (if appl.)**
1	Request for Continued Examination (RCE)	11_905_WO_US_RCE.pdf	697830 1ddd5d65785a88d8ff6eba09416f8a0ffd8c3310	no	3
Warnings:					
Information:					
2	Extension of Time	11_905_WO_US_Petition.pdf	163358 206515dae78cdf15448e397706687732b07dedbe	no	2
Warnings:					
Information:					
3		11_905_WO_US_Response.pdf	236845 921fc401c27f311b4f17501e7e1ad4457213823e	yes	23

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response After Final Action	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	23

Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	30259 0196ab5a87ab41230265bac9d31890562e5d185a	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1128292	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Electronic Patent Application Fee Transmittal

Application Number:	13144385
Filing Date:	13-Jul-2011
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Filer:	Jason S. Kray
Attorney Docket Number:	11-905-WO-US

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for Continued Examination	1801	1	1200	1200
		Total in USD ($)		**1200**

Electronic Acknowledgement Receipt

EFS ID:	20461568
Application Number:	13144385
International Application Number:	
Confirmation Number:	5301
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Customer Number:	20306
Filer:	Jason S. Kray
Filer Authorized By:	
Attorney Docket Number:	11-905-WO-US
Receipt Date:	20-OCT-2014
Filing Date:	13-JUL-2011
Time Stamp:	15:17:21
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1200
RAM confirmation Number	1661
Deposit Account	132490
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. 1.492 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	**Document Description**	**File Name**	**File Size(Bytes)/ Message Digest**	**Multi Part /.zip**	**Pages (if appl.)**
1	Fee Worksheet (SB06)	fee-info.pdf	30168 f564d242f7be031a59f921c47bfc46bbb470dc97	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	30168		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/144,385	Filing Date 07/13/2011	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/20/2014	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 21	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DORIS KING/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/144,385	07/13/2011	Hans Maarten Stokking	11-905-WO-US	5301

20306 7590 05/19/2014

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EXAMINER	
DUONG, OANH	

ART UNIT	PAPER NUMBER
2441	

MAIL DATE	DELIVERY MODE
05/19/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/144,385	Applicant(s) STOKKING ET AL.	
	Examiner OANH DUONG	Art Unit 2441	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/20/2014*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on /.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

1. Claims 1-21 are presented for examination.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claims 1, 13 and 19 are objected to because of the following informalities:

The element “a second time” in line 9 of claim 1 should be "the second time"; the same objection is applied to claims 13 and19.

Regarding claim 19, the limitations of claim 1 should be incorporated into claim 19; otherwise, it is not clear what steps are “the method steps” as recited in claim 19. Please note that claim 19 cannot depend on claim 1 because they fall within two different statutory categories.

Appropriate correction is required.

4. Claims 1-5, 7, 10-11 and 13-20 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, US 2009/0177778 A1, in view Gilfix et al (hereafter, “Gilfix”), US 2008/0288644 A1.

Regarding claims 1 and 13, Turk teaches a method for managing associated sessions in a network, the network having a network element configured for managing associated sessions between the network and at least one user equipment (i.e., abstract and Figs 304), the method comprising:

providing a composition session identifier for associating sessions in a network (i.e., *generating a common session identifier to represent/associating multiple sessions to a client, page 1 paragraph [0017]*);

exchanging the composition session identifier between a user equipment and the network element (i.e., a *request, received at the session affinity manager (i.e., network element) from a client (i.e., a user equipment), can be in any format that indicates a common session identifier, page 3 paragraph [0035] and page 4 paragraphs [0041], [0045]-[0046]*).

Turk does not explicitly teach associating two or more sessions with the composition session identifier by exchanging the composition session identifier at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with ether the user equipment or a second user equipment different from the user equipment.

Gilfix teaches a system and method for creating global sessions across different protocols and multiple converged protocol applications (seen in abstract). Gilfix teaches associating two or more sessions with the composition session identifier by exchanging the composition session identifier at least a second time, wherein exchanging the

composition session identifier at least a second time comprises the network element exchanging the composition session identifier with ether the user equipment or a second user equipment different from the user equipment (i.e., page 2 paragraphs [0015], page 6 paragraph [0066] and and page 10 claim 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings Turk to associate two or more sessions with the composition session identifier by exchanging the composition session identifier at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with ether the user equipment or a second user equipment different from the user equipment as taught by Gilfix. One would be motivated to do so to allow multiple converged application sessions to be associated in to a single global session (i.e., Gilfix, page 1 paragraph [0007]).

Regarding claims 2 and 15, Turk-Gilfix teaches the method according to claim 1, wherein the method further comprises initiating a composition session, wherein the composition session is a session different from the two or more associated session (i.e., Gilfix, page 8 paragraph [0097).

Regarding claims 3 and 14, Turk-Gilfix teaches the method according to claim 2, wherein the method further comprises: the user equipment generating the composition session identifier (i.e., Gilfix, page 6 paragraph [0065]); and sending a request for

initiating the composition session from the user equipment to the network element, the request comprising the composition session identifier (i.e., Gilfix, page 6 paragraph [0066] and page 10 claim 10).

Regarding claim 4, Turk-Gilfix teaches the method according to claim 2, wherein the method further comprises: sending a request for initiating the composition session from the user equipment to the network element (i.e., Gilfix, page 8 paragraph [0084]); the network element generating the composition session identifier in response to the receipt of the request for initiating the composition session (i.e., page 8 paragraph [0085]); and the network element sending the composition session identifier to the user equipment (i.e., Gilfix, page 6 paragraph [0066]).

Regarding claim 5, Turk teaches the method according to claim 1, wherein the method further comprises: the user equipment initiating the two or more associated sessions by sending two or more session initiation requests for a session to the network element, each request comprising the composition session identifier (i.e., page 3 paragraph [0030] and page 4 paragraph [0041]).

Regarding claim 7, Turk teaches the method according to claim 3, wherein the request for initiating the composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session

identifiers (i.e., Fig. 4).

Regarding claim 10, Turk teaches the method according to claim 1, wherein the network further comprises storage, the method further comprising: the network element storing the composition session identifier and the two or more associated session identifiers in the storage (i.e., Fig. 4 and page 1 paragraph [0017]).

Regarding claim 11, Turk-Gilfix teaches the method according to claim 2, the method further comprising: modifying the composition session, wherein modifying the composition session comprises at least one of (i) adding one or more sessions to the composition session; (ii) terminating, or modifying one or more sessions in the composition session, (iii) transferring one or more sessions from the composition session to a further composition session or outside the composition session (i.e., i.e., Gilfix, page 2 paragraph [0015]).

Regarding claims 16-17, this claim recites limitations that are similar to claims 10 and 11, same rationale of rejection is applicable.

Regarding claim 18, Turk teaches the network element according to claim 16, the network element further comprising: an ID generator for generating a composition session identifier (i.e., page 4 paragraph [0045]).

Regarding claim 19, this claim recite a computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps according to claim 1; same rationale of rejection is applicable.

Regarding claim 20, Turk teaches the method according to claim 4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers (i.e., Fig. 4).

5. Claim 6 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, in view of Gilfix and Samdadiya et al (hereafter, “Samdadiya”), US 7,769,809 B2.

Regarding claim 6, Turk teaches the method according to claim 1.

The combination of teachings of Turk and Gilfix does not explicitly teach initiating the two or more associated sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier.

Samdadiya teaches initiating two or more sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier (i.e., col. 10 lines 53-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of teachings of Turk and Gilfix to initiate the two or more associated sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier as taught by Samdadiya. One would be motivated to do so one or more real-time sessions to be associated (i.e., Samdadiya, abstract).

6. Claim 9 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, in view of Gilfix and Hoffpauir, US 2010/0121956 A1.

Regarding claim 9, Turk teaches the method according to claim 1.

The combination of teachings of Turk and Gilfix does not teach wherein combined streams of the two or more associated sessions are presented to the user as a personalized composed multimedia stream.

Hoffpauir teaches system wherein at least one session may be created at a server (seen in abstract). Hoffpauir teaches wherein combined streams of the two or more associated sessions are presented to the user as a personalized composed multimedia stream (i.e., page 4 paragraph [0037]).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of teachings of Turk and Gilfix to present combined streams of the associated sessions to the user as a personalized composed multimedia stream as taught by Hoffpauir. One would be motivated to do so allow single

stream to be presented to the user regardless of how many physical endpoints are used in the multimedia service processing (i.e., Hoffpauir, page 4 paragraph [0038]).

7. Claims 8, 12 and 21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, in view of Gilfix and Allen et al (hereafter, "Allen"), US 2008/0268824 A1.

Regarding claim 12, Turk teaches the method according to claim 1.

The combination of teachings of Turk and Gilfix does not explicitly teach the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment.

Allen teaches the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment (i.e., page 3 paragraph [0033]).

it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the combination of teachings of Turk and Gilfix to incorporate an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment as taught

by Allen. One would be motivated to do so to integrate session(s) in an IP multimedia Subsystem (IMS) network environment (i.e., Allen, page 1 paragraph [0002]).

Regarding claims 8 and 21, Turk-Gilfix-Allen teaches the method according to claim 5, wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID), a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier, or a shared content (SC) session associated with a SC identifier (i.e., Allen, Fig. 5).

Response to Arguments

8. Applicant's arguments with respect to claims 1-21 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OANH DUONG whose telephone number is (571)272-3983. The examiner can normally be reached on Monday- Friday, 9:30PM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Oanh Duong/
Primary Examiner, Art Unit 2441

Notice of References Cited	Application/Control No. 13/144,385	Applicant(s)/Patent Under Reexamination STOKKING ET AL.	
	Examiner OANH DUONG	Art Unit 2441	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2008/0288644	11-2008	Gilfix et al.	709/227
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L4	52	3 AND ((H04L65/1016 OR H04L65/1069 OR H04L67/14 OR H04L65/1083 OR H04M15/57 OR H04M15/8228 OR H04M2215/208 OR H04M2215/7833).CPC. OR (709/227 OR 709/203,223 OR 709/228 OR 709/246).CCLS.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 16:27
L3	154	L2 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 16:17
L2	272	L1 same3 (multimedia stream)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 16:17
L1	1388	(generat$3 creat$3) near10 (compos$3 combin$3 aggregat$3 composit$3 blend$3 mix$3) near5 session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 16:17
S43	272	S42 same3 (multimedia stream)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 03:01
S42	1388	(generat$3 creat$3) near10 (compos$3 combin$3 aggregat$3 composit$3 blend$3 mix$3) near5 session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 03:01
S41	1791	composit$3 near10 session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/17 00:13
S40	2	S39 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/16 18:15
S39	5	associat$3 near20 ((multiple number	US-PGPUB;	OR	ON	2014/05/16

		plurality variety) near2 sessions) near15 (combin$3 composit$3 common) near5 (session adj (id identififer number))	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			18:15
S38	0	exchang$3 near25 (composit$3 combin$3) near5 session adj id	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/16 17:10
S37	0	exchang$3 near15 (composit$3 combin$3) near5 session adj id	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/16 17:10
S36	2	("20110276705").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/05/16 16:52

EAST Search History (Interference)

<This search history is empty>

5/17/2014 4:27:33 PM
C:\Users\oduong\Documents\EAST\Workspaces\13144385.wsp

## *Search Notes*	**Application/Control No.** 13144385	**Applicant(s)/Patent Under Reexamination** STOKKING ET AL.
	Examiner OANH DUONG	**Art Unit** 2441

CPC- SEARCHED		
Symbol	**Date**	**Examiner**
H04L65/1016 OR H04L65/1069 OR H04L67/14 OR H04L65/1083 OR H04M15/57 OR H04M15/8228 OR H04M2215/208 OR H04M2215/7833	5/17/2014	O.D

CPC COMBINATION SETS - SEARCHED		
Symbol	**Date**	**Examiner**

US CLASSIFICATION SEARCHED			
Class	**Subclass**	**Date**	**Examiner**
709	203, 223, 227-227, 246	5/17/2014	O.D

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
EAST text search of USPAT, JPO, EPO, DERWENT, IBM_TDB, US-PGPUB	5/17/2014	O.D

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13144385	STOKKING ET AL.
	Examiner	**Art Unit**
	OANH DUONG	2441

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	05/17/2014								
	1	✓								
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	19	✓								
	20	✓								
	21	✓								

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 11-905-WO-US)

In the Application of:	)	
	)	
Hans Maarten Stokking et al.	)	
	)	**Examiner: Oanh Duong**
Serial No.: 13/144,385	)	
	)	**Art Unit: 2441**
Filed: July 13, 2011	)	
	)	**Confirmation No.: 5301**
For: Managing Associated Sessions in a Network	)	

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

RESPONSE TO OFFICE ACTION MAILED SEPTEMBER 20, 2013

Dear Sir:

In response to the office action mailed September 20, 2013, Applicant submits the following amendments and remarks. Amendments to the claims begin at page 2. Remarks begin at page 7.

Along with this response, Applicant is submitting a request for a two-month extension of time, along with the requisite fee. Applicant believes that no other fees are required at this time. However, please charge any underpayment or credit any overpayment to Deposit Account No. 132490. Further, Applicant generally authorizes the Office to treat any filing in this matter that requires an extension of time as incorporating a request for such an extension.

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Amendments to the Claims

1. (Currently amended) A method for managing associated sessions in a network, the network having a network element configured for managing associated sessions between the network and at least one user equipment, the method comprising:

- providing a composition session identifier for associating sessions in [[a]] the network;
- exchanging the composition session identifier between a user equipment and the network element; and
- associating two or more sessions with the composition session identifier by exchanging the composition session identifier at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with either the user equipment or a second user equipment different from the user equipment.

2. (Currently amended) The method according to claim 1, wherein the method further comprises initiating a composition session, wherein the composition session is a session different from the two or more associated sessions.

3. (Currently amended) The method according to claim 2, wherein the method further comprises:

- the user equipment generating [[a]] the composition session identifier; and
- sending a request for initiating [[a]] the composition session from the user equipment to the network element, the request comprising the composition session identifier.

4. (Currently amended) The method according to claim 2, wherein the method further comprises:

- sending a request for initiating [[a]] the composition session from the user equipment to the network element;
- the network element generating [[a]] the composition session identifier in response to the receipt of the request for initiating the composition session; and
- the network element sending the composition session identifier to the user equipment.

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5. (Currently amended) The method according to claim 1, wherein the method further comprises:

- the user equipment initiating the two or more associated sessions by sending two or more session initiation requests for a session to the network element, each request comprising the composition session identifier.

6. (Currently amended) The method according to claim 1, wherein the method further comprises:

- the network element initiating the two or more associated sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier.

7. (Currently amended) The method according to claim 3, wherein the request for initiating [[a]] the composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

8. (Currently amended) The method according to claim 5, wherein the two or more associated sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID), a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier, or [[and]] a shared content (SC) session associated with a SC identifier.

9. (Currently amended) The method according to claim 1, wherein combined streams of the two or more associated sessions are presented to the user equipment as a personalized composed multimedia stream.

10. (Currently amended) The method according to claim 1, wherein the network further comprises storage, the method further comprising:

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- the network element storing the composition session identifier and [[the]] two or more associated session identifiers in the storage.

11. (Currently amended) The method according to claim 2, the method further comprising:

- modifying the composition session, wherein modifying the composition session comprises at least one of [[by]] (i) adding one or more sessions to the composition session, [[by]] (ii) terminating[[,]] or modifying one or more sessions in the composition session, or (iii) ~~and/or by~~ transferring one or more sessions from the composition session to a further composition session or outside the composition session.

12. (Previously presented) The method according to claim 1, wherein the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment.

13. (Currently amended) A system for managing associated sessions in a network, the system comprising:

- a network element; and
- a user equipment,
- wherein the network element is configured [[for]] to (i) ~~managing associated~~ manage sessions between the network element and [[a]] the user equipment, (ii) ~~exchanging~~ exchange a composition session identifier with [[a]] the user equipment, and (iii) ~~associating~~ associate two or more sessions with the composition session identifier by exchanging the composition session identifier at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with either the user equipment or a second user equipment different from the user equipment,[[;]] and
- wherein the [[a]] user equipment is configured [[for]] to (i) ~~providing~~ provide the [[a]] composition session identifier ~~for associating sessions in a network~~ and (ii) ~~exchanging~~ exchange the composition session identifier with the network element.

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14. (Currently amended) [[A]] The user equipment of ~~for use in a system according to~~ claim 13, wherein the user equipment comprises[[ing]]:

- an ID generator for generating [[a]] the composition session identifier; and
- a multimedia client configured [[for]] to (i) ~~receiving~~ receive the composition session identifier from the ID generator, (ii) ~~exchanging~~ exchange the composition session identifier with [[a]] the network element, (iii) ~~initiating~~ initiate one or more multimedia sessions with the network element, and (iv) ~~exchanging~~ exchange the composition session identifier with the network element during [[the]] set up of the multimedia sessions.

15. (Currently amended) The user equipment according to claim 14, wherein the user equipment is further configured ~~for initiating~~ to initiate a composition session.

16. (Currently amended) [[A]] The network element of ~~for use in a system according to~~ claim 13, wherein the network element comprises[[ing]]:

- a session manager configured ~~for exchanging~~ to exchange the [[a]] composition session identifier with [[a]] the user equipment and ~~for setting up and modifying~~ to set up and modify multimedia sessions; and
- storage configured ~~for storing~~ to store composition session information, the composition session information comprising information regarding composition session identifiers and the two or more associated sessions.

17. (Currently amended) The network element according to claim 16, further configured for at least one of initiating, terminating [[and]] or modifying a composition session.

18. (Currently amended) The network element according to claim 16, the network element further comprising:

- an ID generator ~~for generating a~~ configured to generate the composition session identifier.

19. (Currently amended) A non-transitory computer readable medium having stored thereon software instructions that, if executed by a user equipment or a network element,

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cause the user equipment or the network element to perform operations comprising ~~A computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing~~ the method steps according to claim 1.

20. (Previously presented) The method according to claim 4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

21. (Currently amended) The method according to claim 6, wherein the two or more associated sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID), a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier, or [[and]] a shared content (SC) session associated with a SC identifier.

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Remarks

1. Summary of the Office Action

In the office action mailed September 20, 2013, the Examiner: (i) rejected claim 19 under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter; (ii) rejected claims 2-12 and 14-20 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite; (iii) rejected claims 1-7, 10-11, and 13-20 under 35 U.S.C. § 102 as being allegedly anticipated by U.S. Patent Application Pub. No. 2009/0177778 (Turk); (iv) rejected claim 6 under 35 U.S.C. § 103(a) as being allegedly obvious over Turk in view of U.S. Patent No. 7,769,809 (Samdadiya)[1]; (v) rejected claim 9 under 35 U.S.C. § 103(a) as being allegedly obvious over Turk in view of U.S. Patent Application Pub. No. 2010/0121956 (Hoffpauir); and (vi) rejected claims 8, 12, and 21 under 35 U.S.C. § 103(a) as being allegedly obvious over Turk in view of U.S. Patent Application Pub. No. 2008/0268824 (Allen).

2. Status of the Claims

Pending are claims 1-21, of which claims 1 and 13 are independent and the remainder are dependent.

Applicant has amended claims 1-11, 13-19, and 21 to clarify the invention and/or for form. Support for the claim amendments is found throughout the specification. In this regard, support for the amendments to claims 1 and 13 is found throughout the specification including, for example, at paragraphs [0065]-[0089] of Applicant's published application. Further, support for the amendments to claim 2 is found throughout the specification including, for example, at paragraphs [0016]-[0018].

Applicant reserves the right to pursue in a continuation application the subject matter of any of the claims without the present amendments, and any other subject matter disclosed by this application.

3. Response to Rejections under 35 U.S.C. § 101

As noted above, the Examiner rejected claim 19 under 35 U.S.C. § 101 as being allegedly directed to non-statutory subject matter. Applicant does not acquiesce in the rejection. However, in the interest of expediting prosecution, Applicant has amended claim 19 to more clearly recite that it is directed to statutory subject matter. Therefore, Applicant respectfully requests reconsideration and withdrawal of this rejection.

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1 Applicant notes that the Office Action states that claim 1 is rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Turk in view of Samdadiya. (*See* office action, page 8.) However, the Examiner confirmed over the phone that claim 6, rather than claim 1, is rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Turk in view of Samdadiya.

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4. Response to Rejections under 35 U.S.C. § 112, second paragraph

As noted above, the Examiner rejected claims 2-12 and 14-20 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Applicant does not acquiesce in the rejection. Nonetheless, Applicant has amended these claims to clarify the invention, so as to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. As a result, Applicant respectfully submits that the rejection of claims 2-12 and 14-20 is moot. Therefore, the Applicant respectfully requests that the rejection be withdrawn.

5. Response to Rejections under 35 U.S.C. § 102 and § 103

As mentioned above, the Examiner rejected independent claims 1 and 13 as being allegedly anticipated by Turk. Applicant addresses these independent claims, as well as various example dependent claims, in the subsections below.

i. Claim 1 as Previously Presented

Claim 1 as previously presented recites a method that involves, *inter alia*, the elements of (i) "exchanging the composition session identifier between a user equipment and the network element" and (ii) "associating two or more sessions with the composition session identifier by exchanging the composition session identifier." Applicant respectfully submits that claim 1 as previously presented is not anticipated by Turk, as Turk does not disclose the combination of these elements recited by claim 1 as previously presented.

The essence of the Turk teaching is that the client (UE) is not aware of the existence of multiple sessions anymore. The problem of multiple sessions that Turk aims to solve is that different resource nodes may each use for their respective session with a client (co-incidentally) the same session identifiers (which according to Turk do not need to be unique). This may give rise to conflicts and errors. By replacing the resource node session identifiers for one and the same session identifier in the communication with the client, these conflicts may be avoided. (*See, e.g.*, Turk, paragraphs [0006] and [0025]-[0027].)

It is, however, important to realize that thus the client does not have a notion of the existence of multiple sessions. The client will use one and the same common session identifier in all its communications with a webserver. (*See, e.g.*, Turk, paragraph [0041], stating that "[t]he common session identifier 401 is used to identify all sessions in communication between the web server and the client.")

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Before précising the differences between Turk and the subject matter of claim 1 as previously presented, Applicant will provide Applicant's understanding of the Examiner's line of reasoning following claim construction. As it seems the term "associated sessions between the network and user equipment" may be reasonably construed as "a plurality of sessions that are associated, whereby each of the plurality of sessions is terminated on one side by a user equipment". The term "user equipment" may be reasonably construed to mean "equipment which may be used by an individual user to retrieve content from a network, and further being connectable via a network to a session management system".

Given such reasonable construction, Applicant recognizes that Turk seems to indeed teach the presence of a plurality of sessions, each having at least a user equipment as one of their termination points, and which sessions are associated. For example, Turk states that "[t]he session affinity manager generates a common session identifier for a set of related resource node sessions." (Turk, paragraph [0017].) Further, Turk states that "[e]ach resource node then establishes a separate session with the client 301 and web browser 303 to provide the requested elements 203A, B." (Turk, paragraph [0030].) Still further, Turk states that "[a] resource node 315A-C can start a session with a client in response to being selected to service a request. In another embodiment, a session generator 317 component interacts with the session affinity manager to establish sessions between a client 301 and resource node 315A-C." (Turk, paragraph [0033].)

Hence for any hypothetical anticipation of Turk to follow through, the related resource node sessions between the client on one side and each of the respective resource nodes in Turk on the other side, are the only sessions in Turk that would be eligible as to fall within the claim limitation of the associated (or to be associated) sessions recited in claim 1.

However for any anticipation of the entire claim 1 including its other interacting claim limitations, it is thus important to establish how exactly these related resource node sessions are associated in Turk. Under M.P.E.P. § 2131, anticipation of a patent claim is established only if all of the elements arranged as required by the claim are found in a single prior art reference. However, Turk fails to teach all of the elements of claim 1 arranged as required by the claim.

As for the claim limitation of "providing a composition session identifier for associating sessions in a network," Applicant follows the Examiner's reasoning pointing to the generation of the common session identifier, for instance taught in paragraph [0017] of Turk. The same teaching may also be found in (i) paragraph [0035], which states that "[t]he session affinity manager 311 also generates a common session identifier for each client 301 requesting data to be accessed from any number of resource nodes 315A-C" and (ii) paragraph [0040], which

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states that "[t]he common session identifier 401 is generated by the session affinity manager in response to the creation of a new entry in the session affinity cache. A new entry is created by the session affinity manager when a request is sent to a resource node and there is no common session identifier or no matching common session identifier."

As for the claim limitation of "exchanging the composition session identifier between a user equipment and the network element," the Examiner refers to paragraphs [0035], [0041], 0045], and [0046] of Turk. Indeed, Applicant agrees that these sections reveal whether implicitly or explicitly that a common session identifier is exchanged between the client (user equipment) and the session affinity manager (network element).

For the claim limitation of "and associating two or more sessions with the composition session identifier by exchanging the composition session identifier," the Examiner refers to paragraph [0041] and appears to equate this with the teaching of "The common session identifier 401 is used to identify all sessions in communication between the web server and the client." However, Applicant respectfully disagrees with the Examiner with respect to the Examiner's analysis of this claim limitation. The aforementioned claim limitation defines the manner in which sessions are associated with the composition session identifier, which is by exchanging the composition session identifier *at least a second time*, given the other claim limitation of "exchanging the composition session identifier between a user equipment and the network element; and", which clearly represents a first exchange. By associating two or more sessions with the same identifier, these sessions are also associated to each other.

Turk may contain a teaching wherein two or more sessions become associated with an identifier (the common session identifier), however not in the same manner as recited by the above claim limitation. Therefore, Turk fails to teach all of the elements of claim 1 arranged as required by the claim.

In Turk, the moment a first session becomes associated with the common session identifier, is when a first resource node is addressed through interference of the load balancer for the first time. It is only then that a resource node session identifier is generated (either by the session generator 317 or by a resource node) and is stored together with the also generated common session identifier. For instance, paragraph [0033] states that "[t]he load balancer 309 receives requests from the web server 307 and determines which of the available resource nodes 315A-C will service the request." (Turk, paragraph [0033], emphasis added.) Further, paragraph [0034] states:

> In an embodiment without a session generator, the session affinity manager 311 analyzes the response from the resource node to determine the session identifier

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and record the session identifier in the session affinity cache 313. In an embodiment, with the session generator 317, the session generator 317 determines a resource node session identifier based on the selection of the resource node by the load balancer 309. The resource node session identifier is then provided to the selected resource node with the request to be serviced. (Turk, paragraph [0034], emphasis added.)

Still further, paragraph [0035] states that "[t]he session affinity manager 311 also generates a common session identifier for each client 301 requesting data to be accessed from any number of resource nodes 315A-C." (Turk, paragraph [0035].) Yet still further, paragraph [0036] states that "[t]he session affinity cache 313 stores the relationships between the common session identifiers and the resource node specific session identifiers." (Turk, paragraph [0036].)

In Turk, the second session that becomes associated with the common session identifier, is when the session affinity manager in conjunction with the load balancer decides not to address the first resource node, but to address a second resource node for the first time. If this second node is addressed for the first time, the combination of the common session identifier and the URI is not yet present in the session affinity cache and a new session is added. This teaching becomes readily apparent to the skilled person, upon examination of paragraphs [0054]-[0056] of Turk. For example, paragraph [0054] states:

If the common session identifier and URI combination is not present in the cache, then a cache miss occurs. This case can result when a common session identifier has been established for a client, but a different resource is being requested that is provided by a different resource node. The entry for the common session identifier is modified with an additional session or a new entry with the same common session identifier is created dependent on the structure and management of the cache (block **611**)." (Turk, paragraph [0054], emphasis added.)

Further, paragraph [0055] states:

In one embodiment, the resource node can be selected by the load balancer using standard load balancing schemes. In another embodiment, the load balancer may utilize data in the session affinity cache or the session affinity manager may provide information from the session affinity cache on entries with similar URIs…" (Turk, paragraph [0055], emphasis added.)

Still further, paragraph [0056] states:

FIG. 7 is a flowchart of one embodiment of a process for handling responses from the resource nodes. The illustrated process can be initiated upon receipt of the resource node response to the request by the session affinity manager (block **701**). The response will include at least one resource node session identifier. The session affinity manager checks the resource node session identifier against the session affinity cache (block **703**). If the resource node session identifier is not present in the session affinity cache, then the session affinity manager updates

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an entry associated with the requesting client, URI and resource node and adds the resource node session identifier to that entry (block **707**)." (Turk, paragraph [0056], emphasis added.)

In light of the above, in Turk, the association of two or more sessions with the common session identifier is, at best, accomplished by having the load balancer/session affinity manager to decide to send a second (or further) request to a not previously addressed resource node (or, in a slightly different interpretation, by exchanging a second resource node identifier between the session affinity manager and a second resource node addressed for the first time). However, it is clear that either interpretation does not anticipate the aforementioned claim limitation, in view of the consistent mapping of the other teachings of Turk to the other claim limitations.

In light of the above, Turk does not disclose each and every element of claim 1. Therefore, Applicant submits that claim 1 as previously presented is allowable. Furthermore, Applicant submits that claims 2-12 and 19-21 are allowable as well for at least the reason that they each depend from allowable claim 1.

ii. Claim 1 as Currently Amended

As described above, Turk does not disclose each and every element of claim 1 as previously presented. Nonetheless, Applicant has amended claim 1 to further clarify the invention. In particular, Applicant has amended claim 1 to clarify that the method involves associating two or more sessions with the composition session identifier by exchanging the composition session identifier *at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with either the user equipment or a second user equipment different from the user equipment*.

For the reasons mentioned above, Turk does not disclose the elements of (i) "exchanging the composition session identifier between a user equipment and the network element" and (ii) "associating two or more sessions with the composition session identifier by exchanging the composition session identifier." Further, Turk clearly does not disclose associating two or more sessions with the composition session identifier by exchanging the composition session identifier *at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with either the user equipment or a second user equipment different from the user equipment*.

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In light of the above, Applicant submits that amended independent claim 1 is patentable over Turk. Further, Applicant submits that the dependent claims 2-12 and 19-21 are allowable for at least the reason that they each depend from allowable independent claim 1.

Still further, Applicant notes that Samdadiya, Hoffpauir, and Allen fail to overcome the deficiency of Turk. In the office action, the Examiner stated that "Samdadiya teaches initiating two or more sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier (i.e., col. 10 lines 53-65)." (Office action, page 8.) The Examiner also stated that "Hoffpauir teaches system wherein at least one session may be created at a server (seen in abstract). Hoffpauir teaches wherein combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream (i.e., page 4 paragraph [0037])." (*Id.* at page 9.) Further, the Examiner stated that "Allen teaches the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment (i.e., page 3 paragraph [0033])." (*Id.* at page 10.) However, such alleged teachings fail to overcome the deficiency of Turk.

iii. Dependent Claim 2

As mentioned above, the Examiner rejected claim 2 as allegedly being anticipated by Turk. Claim 2 is dependent from claim 1. Therefore, in view of the dependency on independent claim 1, claim 2 should also be allowable. Nonetheless, Applicant wishes to highlight the additional features of claim 2 at this time.

Claim 2 as previously presented recited "wherein the method further comprises initiating a composition session." According to the Examiner, this claim limitation is anticipated by paragraph [0040] of Turk. At best, this section of Turk teaches the generation of a common session identifier by the session affinity manager, if a request is sent to a resource node and no common session identifier exists. However, Turk does not disclose or suggest the claim feature of claim 2 for a number of reasons.

First, the mere generation of a common session identifier does not anticipate the step of initiating a composition session. Applicant distinguishes between the creation of a composition session identifier and the initiation of a composition session as two in principle distinct teachings. As the Examiner seems to have argued that the generation of a common session identifier in Turk anticipates the claim limitation of "providing a composition session identifier for associating sessions in a network" of claim 1, also incorporated in claim 2 by dependency, logically this

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same Turk teaching can then not also anticipate a different and distinct claim limitation at the same time.

Second, Turk teaches that the mere generation of a common session identifier does not by itself initiate a *session*, let alone a *composition session*. The sessions between the resources nodes and the client are initiated by the resource node, or by the session affinity manager (par030, par033, par052).

Third, Turk does not disclose a "composition session" as defined in the application. Paragraphs [0016]-[0018] of Applicant's specification provide the following teachings regarding the nature and advantages of such composition session:

> In further embodiments, the method may comprise the step of initiating a composition session. Although in principle it may be sufficient to just generate a composition session identifier and store this in a place in the network under control of a network element, which is in charge of managing the associated sessions, there may be advantages in initiating a separate signaling session (composition session) as well. For instance such composition session may be used to exchange the composition session identifier between the user equipment and the network element. If no such composition session is initiated, the composition session identifier may be incorporated in the signaling of the individual sessions.
>
> The composition session may be used for the management of associated sessions and various kinds of signaling between the user equipment and a network element associated with to this task. Such signaling may include agreeing on the duration of all sessions or negotiations regarding to bandwidth requirements (for all associated sessions together).
>
> In addition, initiating such a composition session may provide for more effective use of resources in the network and on the user equipment. For example using a composition session network initiated teardown of associated sessions may require less signaling to the user equipment. Further, continuous screening of all signaling messages for the presence of a composition session identifier, and subsequently probing the service logic (whether in the user equipment or in the network element) for a next course of action may be avoided. Messages only related to individual sessions (within a group of associated sessions) may not require such probing. (Applicant's published application, paragraphs [0016]-[0018].)

Hence, a "composition session" is a separate session (separate to the sessions to be associated) used for signaling (and not for transporting resources, e.g. content, from the network to the user equipment) between the user equipment and the network element in charge of session management. Applicant has amended claim 2 to clarify that the composition session is a session different from the two or more associated sessions.

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In light of the above, it is clear that none of the teachings of Turk disclose the existence of a composition session that is a session different from the two or more associated sessions, let alone *initiating such a composition session*. For at least this reason as well, Applicant submits that claim 2 is allowable.

iv. Independent Claim 13

Claim 13 recites, *inter alia*, "wherein the network element is configured to (i) manage associated sessions between the network element and a user equipment, (ii) exchange a composition session identifier with the user equipment, and (iii) associate two or more sessions with the composition session identifier by exchanging the composition session identifier at least a second time, wherein exchanging the composition session identifier at least a second time comprises the network element exchanging the composition session identifier with either the user equipment or a second user equipment different from the user equipment."

Applicant submits that, for at least the reasons discussed above with respect to claim 1, Turk fails to disclose the combination of elements in the invention of claim 13. Thus, Applicant submits that claim 13 is allowable. Furthermore, Applicant submits that claims 14-18 are allowable as well for at least the reason that they each depend from allowable claim 13.

In addition, Applicant notes that claim 13 recites the additional claim limitation of "wherein the user equipment is configured to . . . provide the composition session identifier for associating sessions in the network." This additional claim limitation is also not taught by Turk, because in Turk it is the session affinity manager 311—and not the client 301 [e.g., the user equipment, see par029 of Turk and par054 of the application as filed]—that provides (e.g., generates) the common session identifier. The client 301 in Turk does not have the capabilities of providing this common session identifier. Instead, it is able to receive it from the network and send it back to the network.

v. Dependent Claim 14

As mentioned above, the Examiner rejected claim 14 as allegedly being anticipated by Turk. Claim 14 is dependent from claim 13. Therefore, in view of the dependency on independent claim 13, claim 14 should also be allowable. Nonetheless, Applicant wishes to highlight the additional features of claim 14 at this time.

The Examiner refers to paragraphs [0045] and [0046] of Turk for the alleged anticipation of this claim. (Office action, page 5.) These paragraphs of Turk teach how a request containing a common session identifier is transformed into a request containing a resource node session identifier. The Examiner then seems to deduct from this teaching that the user equipment has

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the capabilities of generating a common session identifier and initiating a multimedia session with the network element. Applicant respectfully disagrees.

Applicant notes that the teachings of paragraphs [0045] and [0046] are not stand alone teachings, but should be viewed in the context of the other Turk teachings. Turk clearly and unambiguously teaches (for example, at paragraphs [0017] and [0035]) that it is the session affinity manager (allegedly the network element of claim 14)—and not the client (allegedly the user equipment of claim 14)—that generates the common session identifier (allegedly anticipating the composite session identifier). The common session identifier may subsequently be used by the client in further communications. (*See, e.g.*, Turk, paragraph [0050], which states that "[t]he session affinity manager can use any system or format for creating common session identifiers. The common session identifier can resemble other types session identifiers, such that clients can recognize the session identifier and utilize it for further requests…" (emphasis added); *see also* paragraph [0061].)

Second, Turk does not teach the client to have the capability of initiating a multimedia session with the network element. The term 'the network element' relates to the network element according to claim 13. This network element is allegedly anticipated by the session affinity manager of Turk. However, Turk also teaches that (HTTP) sessions are between a client and a resource node (*see* Turk paragraphs [0030] and [0033]), and not between a client and a session affinity manager. Furthermore Turk clearly teaches that it is the resource node or the session affinity manager that initiates (sets-up) the session (*see* Turk, paragraphs [0030], [0033], and [0052]), and not the client. From the perspective of Turk this makes sense, since the client is not aware upfront which resource node behind the webserver is addressed. Hence if a previously unaddressed resource node, is now addressed, which is only known inside the network by the session affinity manager/load balancer, a new session is established by either the resource node or the session affinity manager, such session being identified in the network by a resource node session identifier.

For these reasons alone the claim limitation of "initiating one or more multimedia sessions with the network element" is simply not anticipated by Turk.

vi. Dependent Claims 4-5

For similar reasons as for claim 1, these claims are also novel and inventive over Turk. Further, for at least the following additional reason, these claims are novel and inventive over Turk: Turk does not teach the user equipment (client) to initiate sessions. Rather, in Turk, initiating sessions is only performed by the resource node or the session affinity manager.

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vii. Dependent Claims 7 and 20

For similar reasons as for claim 1, these claims are also novel and inventive over Turk. Further, for at least the following additional reason, these claims are novel and inventive over Turk: Turk does not teach the user equipment (client) to generate composition session identifiers or other session identifiers.

viii. Dependent Claim 11

For similar reasons as for claim 1, this claim is also novel and inventive over Turk. Further, for at least the following additional reason, this claim is novel and inventive over Turk: Turk does not teach a composition session according to the claimed invention. Since Turk does not teach a composition session, Turk cannot—and does not—disclose or suggest modifying the composition session.

6. Conclusion

For the foregoing reasons, Applicant submits that claims are allowable. Therefore, Applicant requests favorable reconsideration and allowance of the claims.

Applicant does not acquiesce in any assertion in the office action that is not expressly addressed by these remarks.

Should the Examiner wish to discuss this case with the undersigned, the Examiner is invited to call the undersigned at (312) 913-3350.

Respectfully submitted,

MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP

Date: February 20, 2014

By: /Scott M. Miller/
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PTO/SB/22 (03-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 11-905-WO-US

Application Number: 13/144,385

Filed: July 13, 2011

For: Managing Associated Sessions In A Network

Art Unit: 2441

Examiner: Oanh Duong

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$200	$100	$50	$
☑ Two months (37 CFR 1.17(a)(2))	$600	$300	$150	$ 600
☐ Three months (37 CFR 1.17(a)(3))	$1,400	$700	$350	$
☐ Four months (37 CFR 1.17(a)(4))	$2,200	$1,100	$550	$
☐ Five months (37 CFR 1.17(a)(5))	$3,000	$1,500	$750	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☑ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 13-2490.

☐ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).

☑ attorney or agent of record. Registration number 62,967.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Scott M. Miller/ — Signature

February 20, 2014 — Date

Scott M. Miller — Typed or printed name

312-913-0001 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	13144385
Filing Date:	13-Jul-2011
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Filer:	Scott Michael Miller/Lisa Panatera
Attorney Docket Number:	11-905-WO-US

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	1252	1	600	600

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	18250066
Application Number:	13144385
International Application Number:	
Confirmation Number:	5301
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Customer Number:	20306
Filer:	Scott Michael Miller
Filer Authorized By:	
Attorney Docket Number:	11-905-WO-US
Receipt Date:	20-FEB-2014
Filing Date:	13-JUL-2011
Time Stamp:	11:48:16
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$600
RAM confirmation Number	11535
Deposit Account	132490
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment Copy Claims/Response to Suggested Claims	11-905-WO-US_response.pdf	95945 10cab39a0d81169ee40064568f6521b14121137d	no	17
Warnings:					
Information:					
2	Extension of Time	11-905-WO-US_extension.pdf	194005 e0f2c254c33661feb429192253aed0cc1f289449	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30302 e5b3aab68d5556135ef685435fa58c3ddb43ea82	no	2
Warnings:					
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<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/144,385	07/13/2011	Hans Maarten Stokking	11-905-WO-US	5301

20306 7590 09/20/2013

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EXAMINER	
DUONG, OANH	

ART UNIT	PAPER NUMBER
2441	

MAIL DATE	DELIVERY MODE
09/20/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/144,385	Applicant(s) STOKKING ET AL.	
	Examiner OANH DUONG	Art Unit 2441	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07/13/2011*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some * c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/13/2011*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

1. Claims 1-21 are presented for examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 19 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

A "computer program product comprising software code portion..." recited in claim 19 is directed to software per se. Claim to software per se held non-statutory (see MPEP 2106.01 [R-6]).

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):
> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2-12 and 14-20 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

It is not clear if “sessions” recited in line 8 of claim 1 is related to “sessions” recited in lines 3 and 5. Also, it is not clear if “user equipment" recited in line 6 of claim 1 is the same with or different from “user equipment” recited in line 3 of claim 1.

It is not clear if “a composition session identifier” recited in line 3 of claim 3 and line 5 of claim 4 is the same with or different from "composition session identifier" recited in lines 5-6 of claim 1.

It is not clear if “composition session" recited in line 4 of claim 3 and line 4 of claim 4 is the same with or different from "composition session" recited in line 2 of claim 2.

Please review claims 2-12 and 14-21 for features, for example, "two or more sessions", "composition session", " composition session identifier", "network element”, and “user equipment" that may render the claim indefinite.

Regarding claim 14, it is not clear what Applicant intended to claim, for example, a system or a user equipment. It is not clear if "user equipment", “composition session identifier”, “sessions”, and “network element” cited in claim 14 are the same with or different from "user equipment", “composition session identifier”, “sessions”, and “network element” recited in claim 13.

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-7, 10-11 and 13-20 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Turk, US 2009/0177778 A1.

Regarding claims 1 and 13, Turk teaches a method for managing associated sessions in a network, the network having a network element configured for managing associated sessions between the network and user equipment (i.e., abstract and Figs 304), the method comprising:

providing a composition session identifier for associating sessions in a network (i.e., *generating a common session identifier to represented multiple sessions to a client, page 1 paragraph [0017]*);

exchanging the composition session identifier between a user equipment and the network element (i.e., page 3 paragraph [0035] and page 4 paragraphs [0041], [0045]-[0046]); and

associating two or more sessions with the composition session identifier by exchanging the composition session identifier (i.e., "*the common session identifier is used to identify/associate all sessions in communication between the web server and the client, page 4 paragraph [0041]*)

Regarding claims 2 and 15, Turk teaches the method according to claim 1, wherein the method further comprises initiating a composition session (i.e., page 4 paragraph [0040]).

Regarding claims 3 and 14, Turk teaches the method according to claim 2, wherein the method further comprises: the user equipment generating a composition session identifier; and sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier (i.e., page 4 paragraphs [0045]-[0046]).

Regarding claim 4, Turk teaches the method according to claim 2, wherein the method further comprises: sending a request for initiating a composition session from the user equipment to the network element; the network element generating a composition session identifier in response to the receipt of the request; and sending the

composition session identifier to the user equipment (i.e., page 3 paragraph [0035]).

Regarding claim 5, Turk teaches the method according to claim 1, wherein the method further comprises: the user equipment initiating two or more sessions by sending two or more session initiation requests for a session to the network element, each request comprising the composition session identifier (i.e., page 3 paragraph [0030] and page 4 paragraph [0041]).

Regarding claim 6, Turk teaches the method according to claim 1, wherein the method further comprises: the network element initiating two or more sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier (i.e., page 3 paragraph [0035]).

Regarding claim 7, Turk teaches the method according to claim 3, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers (i.e., Fig. 4).

Regarding claim 10, Turk teaches the method according to claim 1, wherein the network further comprises storage, the method further comprising: the network element storing the composition session identifier and the two or more associated session

identifiers in the storage (i.e., Fig. 4 and page 1 paragraph [0017]).

Regarding claim 11, Turk teaches the method according to claim 2, the method further comprising: modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session (i.e., page 5 paragraph [0054]).

Regarding claims 16-17, this claim recites limitations that are similar to claims 10 and 11, same rationale of rejection is applicable.

Regarding claim 18, Turk teaches the network element according to claim 16, the network element further comprising: an ID generator for generating a composition session identifier (i.e., page 4 paragraph [0045]).

Regarding claim 19, this claim recite a computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps according to claim 1; same rationale of rejection is applicable.

Regarding claim 20, Turk teaches the method according to claim 4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers (i.e., Fig. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 1 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, in view of Samdadiya et al (hereafter, "Samdadiya"), US 7,769,809 B2.

Regarding claim 6, Turk teaches the method according to claim 1.

Turk does not explicitly teach initiating two or more sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier.

Samdadiya teaches initiating two or more sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier (i.e., col. 10 lines 53-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Turk to initiating two or more sessions by sending two or more requests for a session to the user equipment, each request comprising the composition session identifier as taught by Samdadiya. One would be motivated to do so one or more real-time sessions to be associated (i.e., Samdadiya, abstract).

6. Claim 9 is rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, in view of Hoffpauir, US 2010/0121956 A1.

Regarding claim 9, Turk teaches the method according to claim 1.

Turk does not teach wherein combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

Hoffpauir teaches system wherein at least one session may be created at a server (seen in abstract). Hoffpauir teaches wherein combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream (i.e., page 4 paragraph [0037]).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Turk to present combined streams of the associated sessions to the user as a personalized composed multimedia stream as taught by Hoffpauir. One would be motivated to do so allow single stream to be

presented to the user regardless of how many physical endpoints are used in the multimedia service processing (i.e., Hoffpauir, page 4 paragraph [0038]).

7. Claims 8, 12 and 21 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Turk, in view of Allen et al (hereafter, "Allen"), US 2008/0268824 A1.

Regarding claim 12, Turk teaches the method according to claim 1.

Turk does not explicitly teach the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment.

Allen teaches the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment (i.e., page 3 paragraph [0033]).

it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the teachings of Turk to incorporate an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment as taught by Allen. One would be motivated to do so to integrate session(s) in an IP multimedia Subsystem (IMS) network environment (i.e., Allen, page 1 paragraph [0002]).

Regarding claims 8 and 21, Turk-Allen teaches the method according to claim 5, wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID), a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and a shared content (SC) session associated with a SC identifier (i.e., Allen, Fig. 5).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OANH DUONG whose telephone number is (571)272-3983. The examiner can normally be reached on Monday- Friday, 9:30PM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Oanh Duong/
Primary Examiner, Art Unit 2441

Notice of References Cited	Application/Control No. 13/144,385	Applicant(s)/Patent Under Reexamination STOKKING ET AL.	
	Examiner OANH DUONG	Art Unit 2441	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2010/0121956 A1	05-2010	Hoffpauir, Samuel S.	709/227
*	B	US-2009/0177778 A1	07-2009	Turk, Mladen	709/227
*	C	US-2008/0144807 A1	06-2008	Zhou et al.	379/395
*	D	US-2010/0080115 A1	04-2010	Yang et al.	370/216
*	E	US-2010/0088698 A1	04-2010	Krishnamurthy, Ravishankar	718/1
*	F	US-2008/0268824	10-2008	Allen et al.	455/415
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	(combin$3 aggregat$3 compos$3 mix$3 blend$3) near15 multimedia near10 stream same (multiple more two different associated number variety plurality) near2 session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 19:01
L2	34050	709/223,227-228.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 19:33
S2	3	"20070033249"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:08
S4	16	manag$3 near10 session near20 (composit$3 combin$3) near3 (id identif$6)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:14
S5	9	S4 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:15
S6	4608	manag$3 near19 (associat$3 relat$3 correspond$3) near3 sessions	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:19
S7	130	S6 same ((Multi adj media adj subsystem) IMS)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:20
S8	72	S7 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:21
S9	0	S8 and (composit$5 combin$5 mix$3 blend$3) near15 session near20 (id	US-PGPUB; USPAT; USOCR;	OR	ON	2013/09/18 15:22

		identif$7)	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S10	2140	(composit$5 combin$5 mix$3 blend$3) near15 session near20 (id identif$7)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:22
S11	184	S6 and S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:23
S12	132	S11 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 15:23
S13	2	("20110276705").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/18 16:14
S14	2	("20110276705").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/18 19:06
S15	1	(content-on-demand CoD) adj session near20 ((CoD adj identifier) CoDID)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 23:04
S16	47	broadcast adj session near10 (id identifier identification)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 23:05
S17	39	S16 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 23:05
S18	1	(combined composed) near10 multimedia near10 stream same (multiple more two different associated number variety plurality) near2 session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 23:30
S19	5	(combin$3 aggregat$3 compos$3 mix$3 blend$3) near15 multimedia	US-PGPUB; USPAT; USOCR;	OR	ON	2013/09/18 23:31

		near10 stream same (multiple more two different associated number variety plurality) near2 session	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S20	3	S19 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/18 23:31
S21	1	WO-02059787-$.did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 02:27
S22	185	((IP adj Multimedia adj Subsystem) IMS) same ((Service adj Control adj Function)SCF) same session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 13:58
S23	125	S22 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 13:59
S26	8	((IP adj Multimedia adj Subsystem) IMS) same3 ((Service adj Control adj Function)SCF) near15 manag$3 near15 session	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 14:12
S27	5	S26 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 14:13
S28	4621	manag$3 near19 (associat$3 relat$3 correspond$3) near3 sessions	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 14:21
S29	131	S28 same ((Multi adj media adj subsystem) IMS)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 14:21
S30	1	S29 same ((Service adj Control adj Function)SCF)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 14:21
S32	8	S29 same3 ((Service adj Control adj Function) SCF)	US-PGPUB; USPAT; USOCR;	OR	ON	2013/09/19 14:22

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S33	5	S32 and @ad<"20090119"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/09/19 14:22

EAST Search History (Interference)

<This search history is empty>

9/19/2013 7:55:27 PM
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PTO/SB/08a (01-10)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	13/144,385
Filing Date	2011-07-13
First Named Inventor	Hans Maarten Stokking
Art Unit	TBA
Examiner Name	TBA
Attorney Docket Number	11-905-WO-US

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/O.D./	1	20070033249		2007-02-08	Samdadiya et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/O.D./	1	WO2002/059787	WO		2002-08-01	Telefonaktiebolaget LM Ericsson		☐
/O.D./	2	WO2007/101473	WO		2007-09-13	Telefonaktiebolaget LM Ericsson		☐

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2011-07-13
	First Named Inventor	Hans Maarten Stokking
	Art Unit	TBA
	Examiner Name	TBA
	Attorney Docket Number	11-905-WO-US

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/O.D./	1	European Search Report, European Application No. 09000661 dated May 7, 2009.	☐
/O.D./	2	PCT International Search Report and Written Opinion, PCT International Application No. PCT/EP2010/000278 dated February 15, 2010.	☐
/O.D./	3	RAUSCHENBACH, U. et al., "A Scalable Interactive TV Service Supporting Synchronized Delivery Over Broadcast and Broadband Networks", Fraunhofer White Paper of May 14, 2004, pp. 1-8.	☐

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Examiner Signature	/Oanh Duong/	Date Considered	09/19/2013

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13144385	STOKKING ET AL.
	Examiner	**Art Unit**
	OANH DUONG	2441

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/19/2013								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
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	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								
	21	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent under Reexamination	
	13/144,385	STOKKING ET AL.	
	Examiner	Art Unit	
	OANH DUONG	2441	

SEARCHED			
Class	Subclass	Date	Examiner
709	223, 227-228	9/18/2013	O.D

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
EAST text search of USPAT, JPO, EPO, DERWENT, IBM_TDB, US-PGPUB	9/18/2013	O.D

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BIB DATA SHEET

CONFIRMATION NO. 5301

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/144,385	07/13/2011	709	2441	11-905-WO-US

APPLICANTS

Hans Maarten Stokking, Wateringen, NETHERLANDS;
Fabian Arthur Walraven, Groningen, NETHERLANDS;
Mattijs Oskar van Deventer, Leidschendam, NETHERLANDS;
Omar Aziz Niamut, Vlaardingen, NETHERLANDS;

**** CONTINUING DATA ***************************

This application is a 371 of PCT/EP10/00278 01/19/2010

**** FOREIGN APPLICATIONS ***************************

EUROPEAN PATENT OFFICE (EPO) 09000661.0 01/19/2009

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

08/02/2011

Foreign Priority claimed	☑ Yes ☐ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☑ Yes ☐ No					
Verified and Acknowledged	/OANH DUONG/ Examiner's Signature	Initials	NETHERLANDS	10	21	2

ADDRESS

MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 S. WACKER DRIVE
32ND FLOOR
CHICAGO, IL 60606
UNITED STATES

TITLE

Managing Associated Sessions in a Network

FILING FEE RECEIVED		
1032	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/144,385	07/13/2011	Hans Maarten Stokking	11-905-WO-US

CONFIRMATION NO. 5301

20306
MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 S. WACKER DRIVE
32ND FLOOR
CHICAGO, IL 60606

PUBLICATION NOTICE

OC000000050907336

Title: Managing Associated Sessions in a Network

Publication No.US-2011-0276705-A1
Publication Date:11/10/2011

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 11-905-WO-US)

In the Application of:	)	
	)	
Hans Maarten Stokking et al.	)	
	)	**Examiner: TBD**
Serial No.: 13/144,385	)	
	)	**Group Art Unit: TBD**
Filing Date: July 13, 2011	)	
	)	**Confirmation No.: 5301**
For: Managing Associated Sessions in a Network	)	

REQUEST FOR CORRECTED FILING RECEIPT

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Attention: Application Processing Division
Customer Correction Branch

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Attached is a copy of the official filing receipt received from the PTO in the above-referenced application which issuance of a corrected filing receipt is respectfully requested.

There is an error with respect to the following data, which is incorrectly entered. The Assignment for Published Patent Application is missing one of the Assignees. The Assignment information should read as follows:

Assignment for Published Patent Application:

KONINKLIJKE KPN N.V., The Hague, NL
NEDERLANDSE ORGANISATIE VOOR TOEGEPAST-NATUURWETENSCHAPPELIJK ONDERZOEK TNO, Delft, NL

The Application Data Sheet submitted on July 13, 2011 correctly reflects this information.

Respectfully submitted,

Date: August 15, 2011

By: /Scott M. Miller/
Scott M. Miller
Registration No. 62,967

McDonnell Boehnen Hulbert & Berghoff LLP
300 South Wacker Drive, 32nd Floor
Chicago, IL 60606
(312)913-0001

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/144,385	07/13/2011		1032	11-905-WO-US	21	2

CONFIRMATION NO. 5301

20306
MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 S. WACKER DRIVE
32ND FLOOR
CHICAGO, IL 60606

FILING RECEIPT

Date Mailed: 08/03/2011

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Applicant(s)

Hans Maarten Stokking, Wateringen, NETHERLANDS;
Fabian Arthur Walraven, Groningen, NETHERLANDS;
Mattijs Oskar van Deventer, Leidschendam, NETHERLANDS;
Omar Aziz Niamut, Vlaardingen, NETHERLANDS;

Assignment For Published Patent Application

KONINKLIJKE KPN N.V., The Hague, NL /Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek TNO, Delft NL

Power of Attorney: The patent practitioners associated with Customer Number 20306

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/EP10/00278 01/19/2010

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
EUROPEAN PATENT OFFICE (EPO) 09000661.0 01/19/2009

If Required, Foreign Filing License Granted: 08/02/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/144,385**

Projected Publication Date: 11/10/2011

Non-Publication Request: No

Early Publication Request: No

Title

Managing Associated Sessions in a Network

Preliminary Class

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Electronic Acknowledgement Receipt

EFS ID:	10731608
Application Number:	13144385
International Application Number:	
Confirmation Number:	5301
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Customer Number:	20306
Filer:	Scott Michael Miller
Filer Authorized By:	
Attorney Docket Number:	11-905-WO-US
Receipt Date:	15-AUG-2011
Filing Date:	13-JUL-2011
Time Stamp:	01:24:58
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Corrected Filing Receipt	11_905_WO_US_Request_Correct_Filing_Receipt.pdf	20644 b25d353605de73a6b2649060ed7e22408fa59ef5	no	1

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2	Request for Corrected Filing Receipt	11_905_WO_US_Filing_Receipt.pdf	157057 e2e1cd071cc87a46d2e72874dedce4a36e459af1	no	3

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/144,385	07/13/2011		1032	11-905-WO-US	21	2

CONFIRMATION NO. 5301

CORRECTED FILING RECEIPT

20306
MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 S. WACKER DRIVE
32ND FLOOR
CHICAGO, IL 60606

Date Mailed: 08/15/2011

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Assignment For Published Patent Application

KONINKLIJKE KPN N.V., The Hague, NL
NEDERLANDSE ORGANISATIE VOOR TOEGEPAST- NATUURWETENSCHAPPELIJK ONDERZOEK TNO, DELFT, NETHERLANDS

Power of Attorney: The patent practitioners associated with Customer Number 20306

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/EP10/00278 01/19/2010

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
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If Required, Foreign Filing License Granted: 08/02/2011

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Projected Publication Date: 11/10/2011

Non-Publication Request: No

Early Publication Request: No

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INTERNATIONAL APPLICATION NO.	
PCT/EP10/00278	
I.A. FILING DATE	PRIORITY DATE
01/19/2010	01/19/2009

CONFIRMATION NO. 5301
371 ACCEPTANCE LETTER

OC000000049094361

Date Mailed: 08/03/2011

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is ACCEPTED for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

07/13/2011	07/19/2011
DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and (c)(4) REQUIREMENTS	DATE OF COMPLETION OF ALL 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** *The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363).* Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Copy of the International Application filed on 07/13/2011
- Copy of the International Search Report filed on 07/13/2011
- Preliminary Amendments filed on 07/13/2011
- Information Disclosure Statements filed on 07/13/2011
- Oath or Declaration filed on 07/13/2011
- U.S. Basic National Fees filed on 07/13/2011
- Assignee Statement for PGPUB filed on 07/13/2011
- Priority Documents filed on 07/13/2011

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

JOHN L ANDERSON

Telephone: (571) 272-0385

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number	Filing Date
13144385	

Applicant(s) Hans Stokking

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
1	1		1			
2		1		1		
3		1		1		
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5		4		1		
6		4		1		
7		2		1		
8		(1)		1		
9		(1)		1		
10		(1)		1		
11		(1)		1		
12		(1)		1		
13	1		1			
14		1		1		
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Total Indep	2		2		0	
Total Depend	25	↵	19	↵	0	↵
Total Claims	27		21		0	

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/144,385	07/13/2011		1032	11-905-WO-US	21	2

CONFIRMATION NO. 5301

20306
MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 S. WACKER DRIVE
32ND FLOOR
CHICAGO, IL 60606

FILING RECEIPT

OC000000049094360

Date Mailed: 08/03/2011

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Hans Maarten Stokking, Wateringen, NETHERLANDS;
Fabian Arthur Walraven, Groningen, NETHERLANDS;
Mattijs Oskar van Deventer, Leidschendam, NETHERLANDS;
Omar Aziz Niamut, Vlaardingen, NETHERLANDS;

Assignment For Published Patent Application

KONINKLIJKE KPN N.V., The Hague, NL

Power of Attorney: The patent practitioners associated with Customer Number 20306

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/EP10/00278 01/19/2010

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
EUROPEAN PATENT OFFICE (EPO) 09000661.0 01/19/2009

If Required, Foreign Filing License Granted: 08/02/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/144,385**

Projected Publication Date: 11/10/2011

Non-Publication Request: No

Early Publication Request: No

Title

Managing Associated Sessions in a Network

Preliminary Class

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier

license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/144,385

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	330
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	430
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	220
TOTAL CLAIMS (37 CFR 1.16(i))	21 minus 20 =	* 1			OR	x 52 =	52
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 220 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1032

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

PTO-1390 (Rev. 09-08)
Approved for use through 3/31/2010. OMB 0651-0021
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	
11-905-WO-US	
U.S. APPLICATION NO. (If known, see 37 CFR 1.5)	

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP2010/000278	January 19, 2010	January 19, 2009

TITLE OF INVENTION
Managing Associated Sessions in a Network

APPLICANT(S) FOR DO/EO/US
STOKKING, Hans Maarten; WALRAVEN, Fabian Arthur; VAN DEVENTER, Mattijs Oskar; NIAMUT Omar Aziz

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☑ This is a **FIRST** submission of items concerning a submission under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. ☑ The US has been elected (Article 31).
5. ☑ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is attached hereto (required only if not communicated by the International Bureau).
   b. ☑ has been communicated by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☐ is attached hereto.
   b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☑ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are attached hereto (required only if not communicated by the International Bureau).
   b. ☐ have been communicated by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☑ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☑ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. ☑ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☑ A preliminary amendment.
14. ☑ An Application Data Sheet under 37 CFR 1.76.
15. ☐ A substitute specification.
16. ☐ A power of attorney and/or change of address letter.
17. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13*ter*.3 and 37 CFR 1.821- 1.825.
18. ☑ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
19. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
	PCT/EP2010/000278	11-905-WO-US

20. Other items or information:

International Search Report (PCT/ISA/210)
Written Opinion (PCT/ISA/237)
Form PCT/IB/304

The following fees have been submitted	CALCULATIONS	PTO USE ONLY
21. ☑ Basic national fee (37 CFR 1.492(a))..... **$330**	$ 330.00	
22. ☑ Examination fee (37 CFR 1.492(c)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4)..... **$0** All other situations..... **$220**	$ 220.00	
23. ☑ Search fee (37 CFR 1.492(b)) If the written opinion of the ISA/US or the International preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4)..... **$0** Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority..... **$100** International Search Report prepared by an ISA other than the US and provided to the Office or previously communicated to the US by the IB..... **$430** All other situations..... **$540**	$ 430.00	
TOTAL OF 21, 22 and 23 =	980.00	

☐ Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) in an electronic medium or computer program listing in an electronic medium) (37 CFR 1.492(j)).
The fee is **$270** for each additional 50 sheets of paper or fraction thereof.

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round **up** to a whole number)	RATE	
- 100 =	/50 =		x $**270**	$

Surcharge of **$130.00** for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).	$	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	$	
Total claims	21 - 20 =	1	x $ **52**	$ 52.00	
Independent claims	- 3 =		x **$220**	$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ **$390**	$	
			TOTAL OF ABOVE CALCULATIONS =	$ 1,032.00	
☐ Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by ½.					
			SUBTOTAL =	$ 1,032.00	
Processing fee of **$130.00** for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)). +				$	
			TOTAL NATIONAL FEE =	$ 1,032.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$	
			TOTAL FEES ENCLOSED =	$ 1,032.00	
			Amount to be refunded:	$	
			Amount to be charged	$	

a. ☐ A check in the amount of $ _____ to cover the above fees is enclosed.

b. ☑ Please charge my Deposit Account No. 13-2490 in the amount of $ 1,032.00 to cover the above fees.

c. ☑ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 13-2490.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.

ADVISORY: If filing by EFS-Web, do **NOT** attach the PTO-2038 form as a PDF along with your EFS-Web submission. Please be advised that this is **not** recommended and by doing so your **credit card information may be displayed via PAIR**. To protect your information, it is recommended paying fees online by using the electronic payment method.

NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

SEND ALL CORRESPONDENCE TO:

Customer No. 20306
McDonnell Boehnen Hulbert & Berghoff LLP
300 South Wacker Drive
Chicago, Illinois 60606
(312) 913-0001 Telephone
(312) 913-0002 Facsimile
Date: July 13, 2011

/Scott M. Miller/
SIGNATURE

Scott M. Miller
NAME

62,967
REGISTRATION NUMBER

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Case No.:.....

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Managing associated sessions in a network

the specification of which is attached hereto unless the following space is checked:

☐ was filed on as United States Application Serial Number

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 (including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application).

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s):

	Number	Country	Day/Month/Year Filed
1.	09000661.0	EP	19/01/2009
2.	PCT/EP2010/000278	WO	19/01/2010

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

	Application Number	Filing Date
1.		

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

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Customer Number: **020306**
Principal attorney or agent: Bradley Hulbert
Telephone number: 312-913-0001

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

The undersigned hereby authorize and request the attorneys of record in said application to insert in this declaration and power of attorney the filing date and serial number of said application when officially known, if the specification is not attached hereto.

Full name of first inventor: Hans Maarten Stokking

Inventor's signature: _____ Date: 29-6-2011
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Full name of second inventor: Fabian Arthur Walraven

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Full name of third: Mattijs Oskar van Deventer

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Full name of fourth inventor: Omar Aziz Niamut

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Citizenship: The Netherlands
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Case No.:.....

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Managing associated sessions in a network

the specification of which is attached hereto unless the following space is checked:

☐ was filed on as United States Application Serial Number

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

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I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s):

	Number	Country	Day/Month/Year Filed
1.	09000661.0	EP	19/01/2009
2.	PCT/EP2010/000278	WO	19/01/2010

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below:

	Application Number	Filing Date
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I hereby appoint the practitioners associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and I direct that all correspondence be addressed to that Customer Number.

Customer Number: **020306**
Principal attorney or agent: Bradley Hulbert
Telephone number: 312-913-0001

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

The undersigned hereby authorize and request the attorneys of record in said application to insert in this declaration and power of attorney the filing date and serial number of said application when officially known, if the specification is not attached hereto.

Full name of first inventor: Hans Maarten Stokking

Inventor's signature: _____ Date: _____
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Full name of second inventor: Fabian Arthur Walraven

Inventor's signature: _____ Date: 30-06-2011
Residence: Langestraat 149, 9712 MD Groningen, The Netherlands
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Full name of third: Mattijs Oskar van Deventer

Inventor's signature: _____ Date: _____
Residence: Hannie Schaftstraat 62, 2264 DL Leidschendam, The Netherlands
Citizenship: The Netherlands
Post Office Address: Hannie Schaftstraat 62, 2264 DL Leidschendam, The Netherlands

Full name of fourth inventor: Omar Aziz Niamut

Inventor's signature: _____ Date: _____
Residence: Vaartweg 104b, 3131 HV Vlaardingen, The Netherlands
Citizenship: The Netherlands
Post Office Address: Vaartweg 104b, 3131 HV Vlaardingen, The Netherlands

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2011-07-13
First Named Inventor	Hans Maarten Stokking
Art Unit	TBA
Examiner Name	TBA
Attorney Docket Number	11-905-WO-US

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	Filing Date	2011-07-13
	First Named Inventor	Hans Maarten Stokking
	Art Unit	TBA
	Examiner Name	TBA
	Attorney Docket Number	11-905-WO-US

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	European Search Report, European Application No. 09000661 dated May 7, 2009.	☐
	2	PCT International Search Report and Written Opinion, PCT International Application No. PCT/EP2010/000278 dated February 15, 2010.	☐
	3	RAUSCHENBACH, U. et al., "A Scalable Interactive TV Service Supporting Synchronized Delivery Over Broadcast and Broadband Networks", Fraunhofer White Paper of May 14, 2004, pp. 1-8.	☐

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	Application Number	
	Filing Date	2011-07-13
	First Named Inventor	Hans Maarten Stokking
	Art Unit	TBA
	Examiner Name	TBA
	Attorney Docket Number	11-905-WO-US

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OR

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☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Scott M. Miller/	Date (YYYY-MM-DD)	2011-07-13
Name/Print	Scott M. Miller	Registration Number	62967

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

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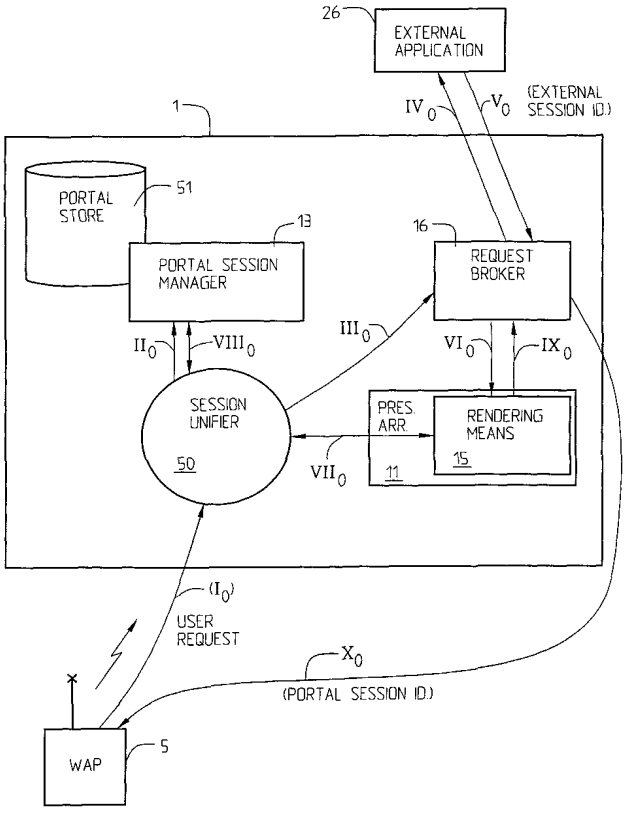
[Continued on next page]

(54) Title: AN ARRANGEMENT AND A METHOD RELATING TO SESSION MANAGEMENT IN A PORTAL STRUCTURE



(57) Abstract: The present invention relates to a portal structure providing end user stations (5) with access to services/applications (26), comprising a portal core (1) and a number of services/applications (26). The portal core comprises a presentation arrangement, portal session managing means (13) generating session related information, e.g. session identifications and portal storing means (51) for storing session related information. At least some of the services/applications (26) are external with external session identifications. Session unifying means (50) are provided for mapping between portal session identifications and external session identifications. For communication between the portal core (1) and external services/applications (26), the external identification is used, whereas, in communication between an end user station (5) and the portal core (1), only the portal session identification is used.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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Title:
AN ARRANGEMENT AND A METHOD RELATING TO SESSION MANAGEMENT IN A PORTAL STRUCTURE

TECHNICAL FIELD

The present invention relates to session management and portal structures, particularly Internet portals, providing end user stations with access to services/applications. The invention also relates to an arrangement in a portal structure used for session management. The invention further relates to a method of session management in a portal structure for end users accessing services/applications via said portal structure.

The invention particularly relates to handling of session management when different entities, such as portals, services or application are managed by different session management means.

STATE OF THE ART

When referring to a portal is generally meant an Internet portal. Internet portals interacting with end users usually provide for session management in order to be able to track and keep control of the activities of the end users, and in order to store end user specific information, like authentication status, information, such as lists and order of initiated actions and resulting events etc. Today a portal often needs to be able to integrate functionality of other software systems or even other portals. However, sometimes such other systems, such as services/applications or other portals, have their own session management. This means that in one way or another session management as provided for by different session managing means needs to be integrated or combined.

There is also an increasing need to personalize or customize the way an end user can access services irrespectively of the actual location of the services or applications, or who is the provider. Also the demand for access to mobile Internet services gains importance, i.e. that end users may want to be able to, in a rapid and uncomplicated manner, get access to services from any end user station, i.e. also from mobile devices; it may e.g. relate to sending and receiving e-mails, short messages, accessing web-based information from mobile as well as from fixed end user devices in a user-friendly, quick and simple manner. This is called the mobile Internet.

Browsing using a mobile device is however more difficult than browsing using a PC, since the mobile device, as compared to the PC, has limited input and output capabilities. Thus, this means that it gets even more difficult to provide mobile end users with a satisfactory personalization, and management of services as well as session management get even more complicated. Anyhow, there is an increasing demand on behalf of the end user to always be able to access applications and services. A portal is such a doorway to the content of services and applications which particularly should be tailored to suit the end user preferences.

Examples on portal content are information services (also including push content which relates to an Internet technique through which all information a user subscribes to automatically is provided to the user, or information that the service provider or operator means that the user should be provided with). Examples on information services are weather forecasts or weather information in general, commercial services such as shopping malls, or generally any kind of information, multimedia services such as streaming audio/video, games, instant messaging and newsgroups, web based mail, access to particular communities

through chat-rooms. It is also desirable to be able to provide appealing graphical user interfaces for representing applications and menus on PC:s, and particularly also for WAP-enabled devices, in case a portal is mobile. Much effort is also put down on personalizing the structure and the content of personal portals, and to provide a possibility to control the interaction and behaviour of individual services and applications, by setting personal preferences. It is however difficult to provide for satisfactory access possibilities irrespectively of which kind of device that is used by an end user. Particularly when different systems need to be integrated, as far as session management issues are concerned, i.e. when the different systems (portals, services/applications, other portals etc.) have their own session management, the situation may get very complicated.

Until now many applications are in principle exclusively designed for the 2G telecommunications environment and they have been implemented as monolithical blocks or with a proprietary service network to handle the specific QoS requirements for the respective applications. This has a consequence that such applications work satisfactory as isolated applications, but they are difficult to integrate with other applications developed in similar ways. Applications developed for the Internet (Internet protocol) environment have to a large extent been based on established and open de facto standards supporting extensive integration of different applications. Many such standards have been used in the 2G environment for non real-time critical applications. However, through the introduction of 3G networks (3GPP), future applications will contain a mixture of telecommunication and datacommunication services, mixing higher and lower bit rates as well as real time and non-real time traffic. The service networks of today are not designed to handle such mixtures, nor are the existing IP-based applications

designed for the specific characteristica concerning wireless networks. As can be seen there are many complicating factors concerning the provision of satisfactory access for end users to services, particularly when session management is handled by different session managers for different systems/entities.

Session management of homogeneous portal environments can be clearly specified and may for example be performed based on the servlet session API (Application Programming Interface) specification or the session EJB (Enterprise Java Beans) specification. These specifications define the basic operations for session management, namely to create/destruct a session and to get, set and remove a key-value pair in a constructed session.

Internet portals are usually provided with a session management system allowing tracking of the actions initiated by an end user. Such actions may for example include the actions end user entering the system, authentication of the end user, access by the end user to a portal service etc. As long as the end user navigates within the portal, i.e. requests access to services/ applications internal to the portal, which here means services/applications for which session management is handled centrally within the portal, session management can be handled easily, since every portal service can ask a central session manager, i.e. the portal session managing means, to retrieve information stored in the session of the end user. The sessions are particularly stored in storing means. However, the situation is different if an end user requests access to an external system or to a service or an application integrated with the portal, or an external service/application, which here means a service/application having an external, or its own specific session management. The situation can then be very complicated. A serious problem is that, if a service or an application (or

another portal), that an end user wants to access via a portal structure, has its own session management, the external session management may be incompatible to the portal session management. This is often the case when application service providers offer services to portal owners. For various reasons it may not be desirable to expose the external session management to the end user. Still further the sessions created taking into account also the external session management tend to get very long, i.e. the session identity that is used in communication with the end user has to contain not only the portal session identity, but in addition thereto also the external session identity. Often such lengthy session identifications can not be handled by the clients served by the portal. This is particularly serious if the end user station is a mobile device such as a WAP-device, which simply might not be able to handle such large amounts of data. Even for an end user station able to handle such amounts of data only for identification purposes, it involves a waste of resources and time.

SUMMARY OF THE INVENTION

What is needed is therefore a portal structure through which session management can be handled in an easy and efficient manner, also when the session management of the accessed systems/services/applications is handled by other, different session managing systems. Particularly, when a portal structure has its own portal session managing means and another system, such as a service, an application or another portal, to which an end user requests access, has its own, here denoted external, or proprietary, session managing means, an easy and efficient session management is needed. Particularly a seamless unification of session management between portals and externally session-managed (external) systems is needed. A portal structure is also needed through which the session management existing in other systems, such as services/ applications or portals that

are session-managed by third party session managing means, or external session managing means, can be combined and integrated with the portal session management.

An arrangement is also needed through which a portal (internal) session management and various session management methods of third party or external session managed systems can be unified into a unified session management. Particularly a portal structure is needed which is able to provide an end user with access to services/applications for which session management is handled by external session managing means (third party session managing means), i.e. not the same session managing means as the portal session managing means as well as to internal services/applications. An end user should thus be provided with access to services etc. irrespectively of whether the services/applications (content) are located within the portal structure itself, or whether the applications/services and the content thereof reside outside the portal, i.e. are provided by external providers and/or are session-managed by external session managing means.

Particularly a portal structure is needed which allows access by mobile end user stations (in addition to fixed end user stations) irrespectively of whether accessed services/ applications etc. are internally or externally session-managed. A portal structure is also needed through which the number of parameters that have to be used in communication with end users is reduced as compared to for hitherto known structures, and irrespectively of whether accessed services/applications reside within the portal or not, and irrespectively of whether they are separately or externally session-managed. Particularly a portal structure is needed which is capable of integrating different session management methods at the same time as it integrates Internet and WAP-based services, so that access is enabled from

any Internet connected PC, WAP-device or any other mobile device using any mobile access network.

An arrangement for handling and integrating session management in a portal structure is also needed through which one or more of the above mentioned objects can be fulfilled. Still further a method for handling session management in a portal structure is needed, as well as a method of providing an end user with access to services/applications, irrespectively of whether they are session-managed by the portal session managing means or by external session managing means, through which one or more of the above mentioned objects can be fulfilled.

By using a generic markup language in a portal, content of applications and services can be stored independently of user station or user device, and before showing the content of an application or a service, the content can be transformed into the format, i.e. the markup language, that can be understood by the end user device. One example on such a generic markup language is the XML (Extended Markup Language). As a standard for navigation in an XML-based portal is the XLink specification used, which allows elements to be inserted into XML documents in order to create and describe links between resources. XLink provides a framework for creating both basic unidirectional links and more complex linking structures. It allows XML documents to assert linking relationships among more than two resources, associate metadata with a link and to express links residing in a location separate from the linked resources. XML is described in W3C Recommendation, 6 October 2000, Extensible Markup Language (XML) 1.0 (Second Edition), which herewith is incorporated herein by reference.

In the following some concepts used in this document will be described or defined. A portal is generally a non-physical

entity in the Internet domain which can be described as an "electronic publishing space" which is owned by an individual or an organization, and which provides either direct access to information and services, or links to other entities in the Internet or private intranet domains, providing information and services to authorized end users. A portal is in its simplest form a regular home page or a list of links, whereas in more advanced forms it may offer interactive services, not only to those who consume what is published, but also to those who are granted the right by the editor to publish on the portal, as well as to the editor himself, regarding different aspects on how the portal is used.

Wireless end users are given access through a "service" portal. Such a "service" portal is different from a traditional fixed Internet portal for PCs, and end users demand personalized services delivered to, and presented on, their mobile terminal at least as an option. In the following will however not the terminology "service" portal be used, but a portal (structure) in this document means either a conventional portal or a "service" portal.

An application is one or several cooperating software entities, the functional focus being user interaction and usefulness for the end user. An application platform is a defined combination of software and hardware entities used to implement applications of a certain kind which are characterized by the functionality and quality of its constituent parts.

By portal infrastructure is, in general terms, meant the software and hardware entities needed to either host or produce or generate a specific portal. Specifically it contains a portal core, an IP infrastructure and service enablers.

A service enabling means, also called a service enabler is a support functionality accessed via APIs (Application Programming Interface) raising the abstraction level and simplifying the application developer's task. A portal core is the core of a portal infrastructure, i.e. a portal core is the central part of a portal structure that is needed to develop a portal framework within which content and applications can be disclosed and accessed by end users in a controlled and unified manner. By a service network is generally meant an IP-based network, which consists of nodes hosting application servers, service capability servers, application support servers, IP infrastructure servers etc. Application support servers interface with service network resources or other external resources than core networks, whereas service capability servers interface with resources and functionality in core networks.

In the present application a portal structure is intended to mean a portal core, a plurality of services and applications with their content and service enabling means (service enablers). Generally may also the connectivity and data bearer functionality be included. However, important for the functioning of the present invention are the components of the portal core. The problems to be solved are particularly present when accessed services/applications are session-managed by other means than the session managing means of the portal structure itself.

Therefore the invention provides a portal structure, providing end user stations with access to services/applications which comprises a portal core (and service enabling means, connectivity means via which end user access is provided). The portal core comprises a presentation arrangement, a portal session managing means generating and handling session related information, e.g. session identifications, and storing means for

storing session related information. The portal core also includes subscriber managing means, not further described. At least some of the services/applications comprise external services/applications which are session-managed by external session managing means generating and handling external application/service session related information, e.g. external session identifications.

The portal session managing means comprises a session unifying arrangement for mapping or transforming between portal session identifications and external service/application session identification information. For communication between the portal core and external services/applications, the external service/application external (proprietary) session identifications are used, whereas for communication between an end user station and the portal core, only the portal session identifications are used. Particularly the services/applications generate a generic markup language which, even more particularly, may be the XML language.

In advantageous implementation external session identification information for all external services/applications active in a session is stored in the portal storing means, at least throughout the duration of the respective session, or throughout a predefined time period. A time period may e.g. be defined such that when there has been no activity in the session for the given time period, the information need not be stored any longer.

In a particular implementation the portal structure is mobile, which here means that it supports access by mobile end user stations, such as for example WAP-devices, in addition to fixed end user stations. The portal structure includes rendering means for translating service/application data in a generic markup

language into a different markup language as used by, or understandable to, an end user station. If a generic markup language is used, particularly XML, data of services/ applications is defined in a Document Type Definition (DTD) language with an URL attribute (Uniform Resource Locator). DTD is (here) an XML-document describing all the elements and their attributes which are allowed in all the documents that can be seen as belonging to the particular DTD. In one implementation an external system (service/application) with its own, or external, session managing means, comprises another portal. In a particular implementation the portal session management operates according to the servlet session API or the session EJBs specifications for defining basic session management operations. This means that the specifications can be used to get a session from an externally session-managed system. In this specification it is also referred to as a backend system, which thus may be a service/application which is external, at least in the sense that it is externally session-managed. It may also be another portal with its own external, (proprietary) session managing means.

According to the invention the portal session managing means particularly stores information relating to end user initiated actions, such as end user entering the portal, end user authentication, end user access of a service/application etc. into the portal storing means.

According to the invention, when an end user station requests a service/application from the portal, a session with a portal session identification is created by the portal session managing means. The request is subsequently forwarded to the requested service/application which, if it is an internal service/ application, uses the portal session identification. On the other hand, if the service/application is externally session-

managed, an external session identification is generated for the end user, which is used in communication between the portal and the service/application. For an externally session-managed service/ application, the external session managing means stores the external session identification information generated for a requesting end user for a defined time period, e.g. throughout the session, or until the session has been "inactive" for a given time period.

When a subsequent call request is received from the portal, i.e. a subsequent call by the same end user in the same session for the same service/application, the generated external session identification is used to find the session in the service/application. Application data is generated and application information data is sent to the portal using the external session identification which, by the portal session unifying means, is converted into/mapped onto the portal session identification.

In one implementation a namespace is created within the portal session, and for each accessed external service/application session, information data is stored within the namespace. In a particularly advantageous embodiment an external service/ application, or an external session managing means, creates an external (or proprietary) session with a service/application (proprietary) external session identification for an end user requesting access to the external service/application via the portal and introduces a metainformation tag, containing at least the proprietary or external session identification, into the data in the generic markup language, which is to be sent to the portal core. Particularly all data of the metainformation tag is stored in the corresponding portal session for the requesting end user.

In a particular implementation continuous navigation is provided to end user stations, irrespectively of where the service/application content is located, i.e. whether it is internal or external, through the introduction of metalinks to service/application data in a generic markup language, e.g. XML, to which the portal session id is added as a parameter. For this purpose the portal core comprises (first) translating means for processing such metalinks included in the service/application data. The portal core further comprises rendering means with (second) translating means for transforming the data in the generic markup language into a markup language understood by the requesting end user station, which is mobile or fixed. Continuous navigation as referred to above relates to a particularly advantageous implementation which, with advantage, may be combined with the unified session management as described in the present invention. The provision of continuous navigation by means of introduction of metalinks to the service/application data by the services/applications is described in the copending Swedish application "An arrangement and a method relating to access of applications/services" by the same applicant and filed on the same day as the present invention, and the content of which herewith is incorporated herein by reference.

Thus, in a most advantageous embodiment the portal structure is mobile, and it supports access by mobile end user stations over a mobile communication network, such as for example GSM (Global System for Mobile communications), WCDMA (Wideband Code Division Multiple Access), GPRS (GSM General Packet Radio Service), UMTS (Universal Mobile Telecommunications System), Bluetooth (which is a short range radio technology), WAP (Wireless Application Protocol) etc. Advantageously the portal structure supports access by broadband devices such as PCs, or more generally fixed devices, as well as mobile devices such as WAP-devices.

In other terms the portal structure supports access by fixed as well as mobile end users stations using different access formats or using different markup languages for communication with the portal structure.

According to one particular embodiment a service or an application may optionally be provided with one or more other metainformation tags in addition to metainformation tags containing external session identification information.

Although the invention is not limited thereto, if a generic markup language is used, the generic markup language may be XML. The XML-data and possible metalinks are defined in a Document Type Definition language (DTD). A metalink tag in XML-data comprises information about metalink type, a reference and addressing attribute (URL) containing service/application location information. The translating means (of the rendering means) translates XML-data by performing a transformation (XSL), i.e. the XML-data is processed together with a transformation stylesheet (XSL transformation) to produce an output format, i.e. a markup language, appropriate for the accessing end user station, e.g. HTML (Hypertext Markup Language) for a fixed end user station and WML (Wireless Markup Language) for a mobile end user station. XSL is described in XSL Transformations (XSLT) Version 1.0, which is a W3C Recommendation dated 10 November 1999 and XSL Transformations (XSLT) Version 1.1., which is a W3C Working draft, 12 December 2000, which documents herewith are incorporated herein by reference.

Particularly, at a subsequent access of the same service/application by the same end user in the same session, the stored metainformation containing the external (proprietary) session identification is forwarded from the portal session managing means by the session unifying means to the external

service/application (external session managing means), such that the external session as indicated by the external session id can be found.

The invention also discloses an arrangement in a portal structure comprising a portal core with a presentation arrangement, portal session managing means generating and handling session related information, e.g. session identifications, and storing means for storing session related information. The arrangement further comprises a session unifying arrangement for unifying management of portal sessions and external sessions generated by external session managing means managing external services/applications. The portal session identification (only) is used in communication between the portal and an accessing end user station, and the external session identification information is used in communication between the portal and the external service/application. The unifying means comprises means for mapping between portal session identifications and external session identifications. Advantageously external service/application identification information is stored in the portal storing means in the respective portal session for a defined time period, e.g. throughout a session. The arrangement particularly comprises rendering means for translating service/ application data in a generic markup language into other markup languages, depending on the type of a requesting end user station, for rendering a service/application data output to end user stations having requested access to a service/application. Particularly such generic markup language is XML.

In a preferred embodiment external session identification information is provided in metainformation tags introduced into the external service/application data, and more particularly the metainformation data is stored in the portal session in the

portal storing means storing portal session information. The portal session identification is particularly added to the external application/service data as a parameter.

At a subsequent request to the portal for the same external service/application by an end user during an ongoing session, the metainformation is included into the request by the session unifying means upon forwarding the request to the external service/application, i.e. after mapping/transforming from portal to external session identification.

The invention also discloses a method of session management in a portal structure when external services/applications, which are externally session-managed, are accessed. The portal structure comprises a portal core with a presentation arrangement, portal session managing means handling session related information and portal storing means for storing session related information. The method includes the steps of; creating a portal session with a portal session identification when an end user requests access to a service/application, unless a portal session already exists; forwarding the request to the requested external service/ application; creating, in or for the external service, by external session managing means, an external service/ application session, whereby an external service/application session identification is generated unless the session already exists for the requesting end user; whereby, in the service/application the following steps are performed; generating service/application data; introducing information about the external session identification to the service/ application data; returning service/application data including the external session identification to the portal; whereby in the portal the following steps are performed: mapping the external session identification onto the portal session identification; storing the external session identification into

the portal session in the portal storing means; sending the service/application data to the requesting end user using the portal session identification only.

The method further includes the steps of; looking up the portal session in the portal storing means at a subsequent request by the end user for the external service/application; establishing if the portal session related information contains an external session identification; if yes, forwarding the request including the external session identification to the requested external service/application; looking up the external proprietary service/application session in the service/application or in external session managing means, using the external session identification; generating service/application data; adding the external session identification to the service/application data; sending the service/application data with the external session identification to the portal session managing means etc. In a preferred implementation the external service/application generates a generic markup language, e.g. XML. Preferably the step of adding external session identification comprises generation of, and introduction of, a metainformation tag containing at least external session identification to the external service/application data.

The invention also discloses a method of integrating portal session management with the external session management of an externally session-managed system, which comprises the steps of; mapping between portal session identifications and external session identifications; storing information relating to external session identifications in portal storing means in a generated portal session; using the portal session identification in communication with an end user station; using information relating to the external session identification in communication with externally session-managed systems.

DETAILED DESCRIPTION OF THE DRAWINGS

The invention will in the following be further described in a non-limiting manner and with reference to the accompanying drawings, in which:

Fig. 1 schematically illustrates an overview of a portal structure according to one implementation of the invention,

Fig. 2 illustrates a conceptual division of the presentation arrangement (layer) into a rendering functional layer and a service functional layer,

Fig. 3A is a block diagram of a portal through which an end user first requests access to an external application,

Fig. 3B is a block diagram as in Fig. 3A when the end user again accesses the application during the session,

Fig. 4 is a flow diagram schematically describing a general implementation of the inventive concept,

Fig. 5 is a flow diagram describing the flow when an end user accesses a portal requesting access to an external service/application when there is no session,

Fig. 6 is a flow diagram describing the procedure when an end user subsequently accesses the same application in the same session, and

Fig. 7 is a diagram illustrating the session mapping interactions in the session unification procedure.

DETAILED DESCRIPTION OF THE INVENTION

With reference to Figs. 1 and 2 an exemplary portal structure will be described in a quite detailed manner. Such a portal structure may be used in the implementation of the inventive concept which is described with reference to Figs. 3-7. It should also be clear that the invention by no means is limited to be implemented on a portal as described in Figs. 1 and 2, this portion of the description mainly being included for describing some exemplifying underlying concepts and the functioning of one portal structure as such.

Fig. 1 thus shows one example on a portal structure 10 according to the invention. The portal structure 10 comprises a portal core 1 handling presentation functionalities, subscription and session management functionalities, a number of services and applications 2, comprising for example personal communication services, personal information services and Mobile E-Commerce services. In brief it is not important which kind of services that are provided and the inventive concept is applicable to any kind of service, content and application. When explaining the inventive concept in a more detailed manner (Figs. 3-7), when an end user requests access to a service or an application, any service or application (or content) is meant and can be seen as conceptually included in the portal structure, although some of the services and applications actually are located outside the portal structure and are provided by any external service provider, which in this document however are denoted external in case they are externally-session managed, i.e. if they are not session managed by the portal session managing means.

The portal core structure 1 further includes a layer 3 including a number of service enabling means, also called service enablers 31-37, 38A-38D. The service enablers are among other things involved in authentication and basic services such as gateways

and IP infrastructure. In this figure some examples on service enablers are given such as unified messaging 31, IP infrastructure 32, AAA-Server 33, notification support 34, charging support 35 and operation and maintenance support 36. Further examples of service enablers are mobile positioning system 37, WAP gateway 38A, SMS- C gateway 38B, multimedia proxy 38C, mobile E-pay 38D etc. It should be clear that some of these service enablers are more or less mandatory, whereas others are optional.

The portal structure is here also seen as including a connectivity or a (mobile) bearer layer comprising the mobile base stations and switching nodes, such as BTS (Base Transceiver Station), BSC (Base Station Controller), MSC (Mobile Switching Center) nodes etc. Which the nodes are, depends on which mobile network access is provided over, e.g. GSM. For GPRS or UMTS corresponding nodes are included in this layer; for example GGSN (Gateway GPRS Support Node). Whichever is the network, the network is the data bearer for the portal for access of mobile devices such as WAP-devices (Wireless Application Protocol). In Fig. 1 it is supposed that the accessing end user station comprises a WAP-telephone 5.

One example on such a portal structure is the Ericsson WISE™ Portal.

Internal applications or services can be seen as applications leveraging the service enablers and connectivity layers to add application specific values to mobile Internet applications of various categories, for example mobile services, personal communications as unified messaging or mail services, and personal information services. The information may be retrieved by the user through searches, but the information may also be

provided to the end user by means of the push technology. This is open to end user customization.

It is advantageously supposed that the portal supports access by mobile end user stations, such as WAP-telephones 5 over a mobile network. Therefore nodes or components of the relevant mobile network have to be provided in mobile network connectivity and data bearer layer. In Fig. 1 a component denoted ISP network, Internet Service Provider network, is disclosed. This is an optional component which may be included or not.

In the layer comprising the service enablers 3 some types of service enablers are mandatory whereas other are not. Some of the service enablers are as seen as important components for providing mobile Internet functionalities. Some of the service enablers are seen as one part of the interface components between Internet and the mobile network. One component is here denoted IP infrastructure 32. An optional service enabler comprises the notification support 34, which generally is an optional component enabling applications to send out filtered notifications to end users using the SMS (Short Message Service) channel, but it may also be adapted to include other channels supporting WAP technology and 3G (3GPP) technology. Charging support enabler 35 may be provided to allow for flexibly choosing charging events. Another service enabler 36 relates to operation and maintenance support and generally it is a mandatory component. A service enabler WAP gateway 38A is an optional service enabler WAP gateway/proxy forming the access point between the wireless world and the Internet world. It supports mobile clients accessing the WAP gateway/proxy using GSM circuit switched data or WAP over SMS (SMS over MAP (Mobile Application Protocol)). The client uses a WAP enabled browser in the mobile device to connect to the WEB-server where the desired WAP application resides. Another service enabler, mobile

positioning system, 37 is an optional component allowing sending the position of a user to the application requesting it. Another service enabler is a multimedia proxy 38C responsible for transmitting multimedia data over GPRS or UMTS. This however is an optional service enabling means. Also SMS-C (centre) gateway 38B is an optional component responsible for sending or receiving, storing and forwarding short messages between mobile stations and servers. Proprietary protocols are used for communication with applications. Mobile E-pay 38D is a component offering the basic functionality for Mobile E-Commerce and it is an optional component. AAA-Server 33 is a service enabling component relating to authentication, authorization and accounting. These functionalities may be provided in other manners but they may also be integrated in a functionality server, for example enabling traffic based charging and period charging. Such a component, either if it is split up into different components or comprises a single component, which is common for a number of functionalities, is mandatory, and in an advantageous implementation it is used for session management functionalities.

However, it should be clear that Fig. 1 merely shows examples on service enabling means that may be provided in a service enabling layer 3. At least some of the illustrated service enablers may be excluded, still others may be included etc.

The portal core, or the portal core layer, handles, as referred to above, presentation, subscription and session management and service tiers comprising a number of internal (and external) application servers. The core 1 comprises a presentation arrangement 11 which enables mobile portal presentation on multiple devices using multiple protocols. It may e.g. be XML driven (or more generally driven by a generic markup language).

In one implementation it is a Java™ and XML driven multimarkup language capable presentation module.

The presentation arrangement 11 comprises a rendering means (a rendering engine) which in one implementation uses XML/XSLT technologies to ensure that information presented by services within the portal is displayed in a standardized way, regardless of which type of end user station (or browser) an end user uses when accessing the portal structure. Through the use of a generic markup language, for example XML/XSLT, the "look and feel" of content presented to end users may be customized. XSL is an abbreviation for Extensible Style Sheet Language. The Swedish patent application "An arrangement and a method for presentation customization in a portal structure", which is an application filed on the same date and by the same applicant as the present application, and the content of which herewith is incorporated herein by reference, relates to user customization in a portal structure as described herein, and particularly it is concerned with "look and feel" customization.

The functionalities within the portal core 1 and of the presentation arrangement 11 in particular will be further described with reference to Fig 2.

The portal core 1 also includes the subscription manager. In one implementation subscription manager component information is stored in an LDAP (Lightweight Directory Access Protocol) directory and it is managed by a service called subscription manager. The subscription manager includes functions for the operator to create, maintain and delete subscriber information in the subscriber database. It also enables the end user of the system to subscribe to the services in the system. In a particular implementation a self-registration and self-service concept is supported in order to minimize costs by minimizing

the workload on a customer care center. Information about available services may also be kept in the directory referred to above, and handled by the subscription manager. As a new service is entered into the directory, it will immediately be available for subscription by the end users. In the directory end users can be grouped so as to make new services available only to defined sets of end users. The subscription manager 12 can be interfaced with an existing customer care system through the application programming interface (API) it uses.

The session manager 13 is a general mechanism that can be used by applications and services. It comprises an interface to a subsystem for keeping track of all visitors to the portal and to provide the profile information of the visitors. When an end user enters the system/application, a session id entity is allocated and it is stored for that particular end user until logging out of the service or when the end user has been idle for a preset period of time. When a participating application starts, it first checks if there is an active session id for a particular user and if there is one, it would be able to resume from where the session was broken. The session management functionalities according to the inventive concept will be described below with reference to Figs. 3A-7.

Finally, the portal core structure 1 here comprises two "internal" application servers 14A, 14B and one or more external application server 14C. The external application server 14C contains links to external application servers running existing services. In one implementation the service tier comprises three classes of services, of which a first is developed in compliance with the portal core specifications implemented using the portal core environment. A second service class relates to services which not necessarily are implemented in the portal core environment, such as for example an external e-mail system

running on a non-portal core environment adapted to present itself through the portal core presentation. The third service class relates to external services which do not comply with the portal core service development or presentation architectures. This will be further explained with reference to Fig. 2.

In the following the portal core, and specifically the presentation arrangement, comprised in the presentation layer, will be more thoroughly described, first with a general reference to Fig. 2.

The service tier in one advantageous implementation comprises three service classes. The service class portal core service (pcoreservice) complies with the specifications of the portal core and it is used to leverage the portal core characteristics. In one implementation the services are implemented using the J2EE IBM WEBSphere Environment (an application server used to develop programmatic services involving logic, algorithms etc.). Such services generally have three or four tier architectures deploying JSP (Java Server Pages) on the front end, Java servlets and Enterprise Java Beans (EJB) in the middle layer and various entities on the back end. The second service class are the integrated portal core services (integrated pcore services) which leverage pcore presentation services but which are not necessarily implemented in the portal core J2EE environment, e.g. an external e-mail system running on a non-portal core environment, but adapted to present itself through the portal core presentation. The third service class, pcore external services, neither complies with the portal core service development nor with the presentation architectures but the services included in this class may e.g. be triggered to the portal core.

In one implementation there are two types of service options available within the service layer. One may consist of services provided by Broadvision (CORBA) for creating optimized rule based and personalized services connected to commerce and retail, and optimized for content delivery by a matching engine operating on content, profile and business rules. The other service type relates to programmatic services for example requiring algorithms, logic etc. which are not easily built in an optimized content delivery system. If these services are of pcore service class, then they may be industrialized for IBM WEBSphere J2EE environment and if they are of integrated services class and running in an external service server, they are adapted to the portal core presentation.

A service needs specifications including elements on the rendering functionality of the presentation layer as well as relating to the service layer functionality, i.e. schemes and logic. The portal core presentation architecture may, as referred to above, in one advantageous embodiment implement the J2EE architecture for the mechanisms of creating and employing services in specific elements or for defining services. However, the invention is not limited to a portal structure using J2EE and Broadvision which merely are given as examples.

The presentation layer is conceptually split-up into two tiers, one rendering layer residing in the portal core itself and a service layer available to any service that wants to present its content through the portal core presentation structure. The rendering layer in one advantageous implementation uses XML/XSLT technologies. Thereby it is also ensured that information presented by services within the portal can be displayed in a standardized way irrespectively of which is the end user station, i.e. irrespectively of which kind of end user station the end user uses when accessing the portal. Through the use of

XML/XSLT it can be assured that a unified "look and feel" of content is presented within the presentation space.

If XML is used as a generic markup language, a service produces an output in the form of an XML document formatted using structure information from a pcore DTD. The XML output from the service is then used to feed the presentation engine of the presentation arrangement. The presentation engine uses pcore SS and pcore grid information associated with the pcore DTD of the XML document supplied by the service to generate the desired interface. Services which do not produce XML from a pcore DTD are particularly also able to present themselves through the presentation services.

As referred to earlier, the portal structure is advantageously able to handle different devices such as WAP-phones and broadband devices such as PCs, or the browser used thereby. A portal core structure platform and the logic in it are particularly totally separated from the presentation layer functionality, which makes it very easy to implement support for all different types of clients, even voice and speech synthesizers. By using for example XML/XSL, it is very easy to implement support for instance for a new type of WAP-display size. It is also possible to adapt the rendering process to various WEB-devices, existing and future hand-held devices, voice browsing and interactive TV.

In one particular implementation the WEB-interface is composed of square elements also denoted bricks. A brick is a container of a service, a picture or an application, displayed on the screen of the end user station. Using such bricks or containers, it is possible to customize the portal. A brick is thus an application created to be used inside the portal structure, which has a link to the application. The application has to

provide display information to the portal when it wishes to render the brick. Advantageously a brick can appear in more than one format. The disposition of the bricks or containers represent a so called brick interface. In order to enable easy navigation, the WAP-interface may in one implementation be structured in the same way. In the WEB-interface the user is presented with a list of available bricks. Each brick contains an application, service or a background picture that can be included in the user's built WEB-site. A brick can also be a pre-configured service from an external company or provider. A Brick-grid is a non-visual representation of a customized portal. Depending on device, the brick grid is represented in a way that is most suitable for the device in use. The grid can be designed in many ways as well as the way the bricks are presented and organized, for example with tags. The brick grid is stored in a generic format and it is device/end user station independent.

Preferably the end user authenticates himself towards the portal with a one time login which will give the end user access to all the functionality within the portal. Any authentication towards connected or to external content or service providers is handled by the platform security system. Advantageously each application or service within the portal can be personalized to fit the needs of the end user and each application can be personalized for different devices. This is particularly advantageous when an end user wants to limit the amount of data sent to another end user station with limited capacity to present larger amounts of data, e.g. a WAP-phone. It is possible to select one application more than once and to give each of the different instances its own personalization.

Above one example on a portal structure has been described in which the inventive concept can be implemented. However, the

invention as such is of course not limited to be implemented in such a portal but it is based on the assumption that a portal structure is provided which is able to provide end users, i.e. entities accessing the portal, with access to services/applications. For each end user a session is created by the portal and each session contains end user specific data. A service/application may be external or internal. In this context an internal application or service is defined as an application or service using the session management of the portal, whereas an external application or service is defined as an application or service using an external session management, which means that it may provide for the session management itself, or it may be session-managed by a third party.

The inventive concept will in the following be described in detail with reference to Figs. 3A-6.

Figs. 3A, 3B show an implementation in which it is supposed that the portal structure supports access by mobile as well as fixed end user stations. In an advantageous implementation access to the portal structure itself, for different types of end user stations, is enabled even if the types are not known by the portal structure. This may be carried out as described in the Swedish patent application "Arrangement and method relating to end user stations accessing a portal", filed on the same date and by the same applicant as the present application, and the content of which herewith is incorporated herein by reference.

Fig. 3A is a schematical illustration of an end user station 5, which here is a WAP-device accessing the portal core 1 of a portal structure to get access to an external application 26. In the portal core only the means that are of interest for the functioning of the present invention are illustrated, namely presentation arrangement 11 with rendering means 15, request

broker 16, portal session managing means 13, session unifying means 50 and portal session storing means 51.

If the end user station 5 wants access to an external application 26, a request (I_0) is provided to the session unifier 50, and, as it is the first transaction of the connection, i.e. there is no session available for end user 5 relating to the external application 26, a session is created by portal session manager 13, which receives the request (II_0) from the session unifier 50. The session contains user specific data and it is stored into the portal storing means 51. A portal session identification, or briefly a portal session id, is created. The session unifier 50 also forwards the request (III_0) to the request broker 16, which passes it on to the external application 26, (IV_0). The external application detects that there is no (external) session for the requesting user, generates data (e.g. XML), creates an external session with an external session id, and introduces the external session id as a metainformation tag to the (XML) data, which subsequently is sent as a reply to the portal request broker 16 (V_0) containing the metainformation tag. The data with the metainformation tag is passed on to the rendering means 15, (VI_0), which detects the metainformation tag and passes it on to the session unifier 50, which transforms it to the portal session id which then is returned to the rendering means, (VII_0). In the rendering process the portal session id is written into the reply data which is passed on to the request broker 16 (IX_0) for sending it on to the end user station 5.

In Fig. 3B it is supposed that a session already does exist and end user station 5 again tries to access application 26 in the same session, (I). The session unifier 50 retrieves the user portal session from the portal session manager 13 (portal storing means) (II). The session unifier 50 retrieves service/

application data for the service/application to be accessed, e.g. the external (backend) session id, (III). The external session id is then passed on to the request broker 16 (IV), which calls the external application 26, (V). The application generates data (e.g. XML) which includes the external session id in the metainformation tag and sends it to the portal, (VI). The request broker forwards the data to the rendering means 15 for rendering (VII). The rendering means 15 communicates with the session unifier 50, which maps the external session id onto the portal session id and returns the latter to the rendering means 15, (VIII). The rendering means then writes the portal session id into the reply intended for the end user station 5, (IV). Via the request broker the reply is sent to the end user station 5 (X).

For access of an internal application the portal session id is used both for communication between the portal and the internal application and for communication between the end user station and the portal core.

If the application generates a generic markup language, e.g. XML, the XML data is also translated in the rendering means 15 and rendered and output to the end user station 5 in the markup language understandable to the end user station, e.g. HTML if it is a PC and WML if it is a WAP-device.

This means that, for communication between the end user station and the portal, only the portal session id is used once assigned whereas, between the portal and an external application, only the external application session id is used, once generated.

In a portal structure implementing to the inventive concept a session management unification framework consisting of the session unifier is provided. The session unifier provides a

generic one-to-many session mapping mechanism, i.e. if there are a plurality of external systems (applications, services, portals) having their own session management, the session unifier is able to transform portal sessions to the sessions of external systems and vice versa.

The procedure will be described in general terms with reference to the flow diagram of Fig. 4. It is thus supposed that a request for an application, here denoted C, is received in the portal structure from end user U, 100. The portal checks if there is a session available in the storing means for end user U relating to application C, 101. If not, a portal session is created which is assigned a portal session id, 102. It is established whether application C is externally session-managed, 103. If not, the application will use the portal session id in communication with application C and with end user U, 104, and there is no need of unification of sessions. If, however, application C is externally session-managed, the request is forwarded to application C, 106 (of course also if the application is internally session-managed, i.e. uses the portal session management, the request is forwarded to the application etc., but this is not relevant for the inventive concept and will therefore not be further discussed herein). In application C (or more generally the external system), it is examined if there is a session available for end user U, 107. If not, an external application proprietary session with an external session id, also denoted an external (application) id is generated, 108. Application data is generated which is provided with information on the external session id. A response containing the application data and the information about external session id is sent to the portal, 109.

When the reply is received within the portal, the external session id information is stored in the portal session created

for end user U for application C, which portal session is stored in the portal session storing means, 110. Subsequently, for further communication between the end user and the portal, the portal session id is used. Information on the external session id is included in communication with application C, 111.

If in step 101 above it was established to that there was a session available in the storing means, for an external application the information about the external session id, is particularly found, 105. Then the portal session id is used in communication between the end user and the portal, whereas the external session id is used for communication between the portal and the application as referred to above, 111. If however there was no information stored about an external session id in the portal session stored in the portal storing means, 105, it may indicate that the application is internal and the portal session id is used in communication both with application C and with end user U.

Step 103 above may give the impression that there has to be a separate detection as to whether an application is external. This may however be inherently detected, for an already existing session, when the portal session is fetched by the session unifying means from the portal storing means via the portal session managing means. For a new session it may be detected as the response is received from the application which then contains a metainformation tag with the external session id, particularly by the rendering means.

Fig. 5 is a flow diagram describing somewhat more in detail, for a particular embodiment, the procedure when a request from an end user U1 is received in the portal relating to an external application A for the first time, i.e. there is no session, 200. The portal session managing means detects that there is no

session for U1 relating to application A, 201. The portal then creates a session for end user U1 and application A with a portal session id, 202. Subsequently the request is forwarded to application A, 203. Application A detects that there is no session for U1, 204. Application A then creates a proprietary external session for U1 and a metainformation tag with at least an external session id, i.e. with the identity of the created session, 205. The application also generates application data, in this embodiment in XML, and sends the application data with the metainformation tag to the portal core, 206. Thus, in the XML data there is a metainformation tag containing the application session id. It may for example look like:

<metainfo name="application_session_id" value="4711" />

The portal session unifying means maps the external session id onto the portal session id for U1, 207. The portal session managing means stores the metainformation data, particularly all metainformation data if, in an advantageous implementation, not only metainformation relating to the session id is included, but also other data, into the portal session, 208. In one implementation the application data also contains metalinks referring to other services/applications which may be processed and translated by translating means, as further discussed in the copending patent application "An Arrangement and A Method Relating to Access of Applications/ Services", and the session id of the portal is added as a parameter.

The rendering means of the portal core renders the application data, i.e. translates it into a format appropriate for the end user station, and sends it to end user U1 using only the portal session id, 209.

Fig. 6 is a flow diagram describing the procedure when end user U1 tries to access applications A once again during the same session. Thus it is supposed that a subsequent request for application A is received in the portal from U1, 210. This means for example that the end user U1 clicks on a link in his browser to application A which link has a parameter to the portal session id. Via the session unifier the portal session managing means looks up the portal session for U1 using the portal session id, 211. It is detected that there is metainformation contained in the portal session for U1, 212, relating to application A. The portal request broker contacts the application and includes the metainformation as parameters and forwards the request to application A, 213. The metainformation comprises the external session id, which thus will be sent to the application, i.e. used in communication with application A. Application A uses its external session id as included in the metainformation to look up the external session for the end user U1, 214. The application creates application (XML) data, includes the metainformation tag into the XML data and sends XML data with the metainformation tag to the portal, 215. Then the flow proceeds as in steps 207, 208 of Fig. 5 (216) etc.

According to one implementation the external application, or more generally the external system, also denoted the backend system, provides the following operations in order to make the session unifying means (session unifier) functional:

1. BackendSession bs = backend,createSession()
2. Bs.updateSession()
3. Stream s = backend.serializeSession(BackenSession bs)

The session unifier implements the following operations:

1. PortalSession ps = Portal.getSession()

2. BackendSession bs =
Ps.getBackendSession(backendService)
3. ps.callBackendService(backendService), bs)
4. ps.storeBackendSession(backendSersvice, bs)

The session unification procedure thus functions as follows according to this implementation:

1. The unifier calls ps.getSession () to retrieve the portal session associated with the request/call for the service/ application.
2. The unifier calls bs = ps.getBackendSession(backendService)
3. The unifier calls ps.callBackendService(backendService, bs)
4. If there is no backend session for the user(bs = 0), the backend calls bs = backend,createSession() and sends this session along with the reply to the portal. Otherwise, the backend calls bs.updateSession(), and sends this along with the reply to the portal. Sending the backend session is accomplished by calling backend.serializeSession(bs).

5. The portal stores the backend session by calling ps.storeBackendSession(backendService, bs)

Fig. 7 is an interaction diagram describing the steps of the session unification procedure described above.

P.getSession() can be implemented by any session management system following e.g. the Servlet Session API.

P.getBackendSession(backendService) can be implemented by creating a namespace within the portal session for each backendService accessed, and storing, within the namespace, the backendService related data.

To reduce the bandwidth requirements, B.serialiseSession() can be implemented by sending only an identifier of the session from the backend system.

It is an advantage of the invention that through provision of session unification, a seamless integration of different session management systems into one unified session management is enabled. For portal structures this may considerably reduce the integration time between portal and external application service providers. Particularly for mobile portals, supporting access also by mobile stations, such unifying of session management provides a powerful means to reduce the amount of data that has to be sent to wireless end user stations through converting lengthy backend-session data into short unified sessions. Access by mobile end user stations, such as WAP-devices, to externally session managed systems might otherwise not even be possible due to the large amount of data that has to be transferred in case both a portal session id and an external session id have to be included in communication with the end user station, since such amounts of data may be unacceptable for a mobile end user station. Even if an end user station is able to handle such amounts of data only for identification purposes, it is a waste of resources and time.

It should be clear that the invention is not limited to the specifically illustrated embodiments but that it can be varied in a number of ways within the scope of the appended claims.

CLAIMS

1. A portal structure providing end user stations with access to services/applications, comprising a portal core, (service enabling means, connectivity means via which end user access is provided) and a number of services/applications, said portal core comprising a presentation arrangement, portal session managing means generating session related information, e.g. session identifications, portal storing means for storing session related information (and subscriber managing means), wherein at least some of the services/applications comprise external services/applications, or are provided by external systems, implementing external session managing means generating external session identifications,
c h a r a c t e r i z e d i n
that the portal structure further comprises session unifying means for mapping between portal session identifications and external session identifications and in that for communication between the portal core and external services/applications the external service/application external identification is used as session identification, whereas, in communication between an end user station and the portal core, only the portal session identification is used as session identification.

2. A portal structure according to claim 1,
c h a r a c t e r i z e d i n
that the services/applications generate a generic markup language.

3. A portal structure according to claim 2,
c h a r a c t e r i z e d i n
that the generic markup language is XML.

4. A portal structure according to any one of claims 1-3, characterized in that external service/application proprietary external session identification information for all external services/ applications active in a session is stored in the corresponding portal session in the portal storing means for a defined time period, e.g. throughout the duration of the respective session.

5. A portal structure at least according to claim 2, characterized in that the presentation arrangement comprises rendering means for translating service/ application data in the generic markup language into a different markup language used by an end user station.

6. A portal service according to claim 5, characterized in that it is mobile, i.e. it supports access by mobile end user stations, e.g. WAP-devices, in addition to fixed end user stations.

7. A portal structure at least according to claim 2, characterized in that data representing services/applications in the generic markup language are defined in a Document Type Definition (DTD) language with an URL-attribute.

8. A portal structure according to any one of the preceding claims, characterized in that an external system with an external proprietary session managing means comprises another portal.

9. A portal structure according to any one of the preceding claims,
c h a r a c t e r i z e d i n
that the portal session managing means operate according to the servlet session API or the session EJB:s specifications defining basic session management operations.

10. A portal structure according to any one of the preceding claims,
c h a r a c t e r i z e d i n
that the portal session managing means stores information relating to end user initiated actions such as end user entering the portal, end user authentication, end user access of a service/application etc. into the portal storing means.

11. A portal structure according to any one of the preceding claims,
c h a r a c t e r i z e d i n
that upon reception of an end user request for a service/application, a portal session with a session identification is created by the portal session managing means, and when the request is forwarded to the service/application the service/application uses the portal session identification information if it is an internal service/ application whereas the service/application is provided with an external (proprietary) session identification if it is managed by an external session managing means.

12. A portal structure according to claim 11,
c h a r a c t e r i z e d i n
that for a service/application managed by external session managing means, the external session managing means stores the external, session identification information generated for a requesting end user for a defined time period, e.g. throughout

the duration of the session, and in that when a subsequent call request is received from the portal during the session, service application data is generated and a reply is returned to the portal core comprising the service/application data and the external session identification, by the unifying means is converted/mapped to the portal session identification such that the service/application data can be forwarded to the end user by using the portal session identification only.

13. A portal structure according to claim 12,
c h a r a c t e r i z e d i n
that a namespace is created within the portal session for each accessed service/application and in that the external session information data at least including external session identification is stored within the namespace.

14. A portal structure according to claim 2, 11 or 12,
c h a r a c t e r i z e d i n
that an external service/application creates an external proprietary session with an external service/application external (proprietary) id for an end user requesting access to the external service/application via the portal and introduces a metainformation tag containing at least the external (proprietary) session identification into the service/application data in the generic markup language, to be returned to the portal core.

15. A portal structure according to claim 14,
c h a r a c t e r i z e d i n
that all data of the metainformation tag is stored in the corresponding portal session for the requesting end user.

16. A portal structure according to claim 15,
c h a r a c t e r i z e d i n

that the portal core comprises first translating means for processing possible metalinks included in the service/application data in the generic markup language to which the portal session identification is added as a parameter and in that the portal core further comprises rendering means with second translating means for transforming the data in the generic markup language to a markup language understandable by the requesting end user station.

17. A portal structure according to claim 16,
c h a r a c t e r i z e d i n
that for a subsequent access of the same service/application by the same end user in the same session, the stored metainformation containing the external session identification is forwarded from the portal session unifying means) to the external service/application such that the external service/application is able to find the external session as indicated by the external, session identification.

18. An arrangement in a portal structure comprising a portal core with a presentation arrangement, portal session managing means generating session related information, at least portal session identifications and portal storing means for storing portal session related information,
c h a r a c t e r i z e d i n
that it comprises session unifying means for unifying management of portal sessions and external sessions generated by external session managing means managing external services/applications, that only the portal session identification is used in communication between the portal and an accessing end user station and in that the external session identification is used in communication between the portal core and the external service/application, and in that the unifying means are used for mapping/transforming between portal session identifications and

external, session identifications of external services/ applications.

19. An arrangement according to claim 18,
c h a r a c t e r i z e d i n
that external service/application proprietary, external session identification information is stored in the portal session to which it is mapped for a defined time period, e.g. throughout a session.

20. An arrangement according to claim 18,
c h a r a c t e r i z e d i n
that the presentation arrangement comprises rendering means for translating service/application data in a generic markup language into other markup languages depending on the type of a requesting end user station for rendering service/application data output to end user stations having requested access to a(n) service/application into a markup language understandable by the end user station.

21. An arrangement according to claim 20,
c h a r a c t e r i z e d i n
that the generic markup language is XML.

22. An arrangement according to any one of claims 18-21,
c h a r a c t e r i z e d i n
that external session identification information is provided in a metainformation tag introduced into the external service/ application data and in that the metainformation data is stored in the corresponding portal session in the portal storing means storing portal session-information, and in that the portal session identification is added to the external application/ service data as a parameter in communication with the end user station, replacing the external session identification.

23. An arrangement according to claim 22,
characterized in
that for a subsequent request to the portal for the same external service/application by an end user during a session, the metainformation is included into the request when forwarded from the portal core to the external service/ application.

24. A method of session management in a portal structure comprising a portal core comprising a presentation arrangement, portal session managing means handling session related information and portal storing means for storing session related information, comprising the steps of:

- creating a portal session with a portal session identification when an end user requests access to a service/ application, unless a portal session already exists;
- forwarding the request to the requested external service/ application if the requested service/application is externally session managed;
- creating in the external session managing means an external service/application proprietary session identification for the requesting end user unless a session already exists;
- generating service/application data in the service/ application;
- introducing information about the external session identification into the service/application data;
- returning service/application data including external session identification to the portal;
- mapping the external session identification to the portal session identification;
- storing the external session identification in the corresponding portal session means;
- sending the service/application data to the requesting end user using only the portal session identification.

25. A method according to claim 24,
c h a r a c t e r i z e d i n
that it comprises the steps of:
in the portal:
- looking up the portal session in the storing means at a subsequent request by an end user for an external service/ application during the session;
- establishing if the portal session related information contains an external session identification, if yes;
- forwarding the request including the external session identification to the requested external service/application;

in the external session managing means or in the external service/application:
- looking up the external service/application session;
- generating service/application data;
- adding the external session identification to the service/ application data;
- returning the service/application data with the external session identification to the portal session managing means;

in the portal:
- replacing the external session identification by the corresponding portal session identification;
- sending the service/application data to the end user station using the portal session identification only.

26. A method according to claim 24 or 25,
c h a r a c t e r i z e d i n
that the external service/application generates a generic markup language, e.g. XML.

27. A method according to claim 26,

characterized in

that the step of adding external session identification comprises generation of and introduction of a metainformation tag containing at least external session identification to the service/application data.

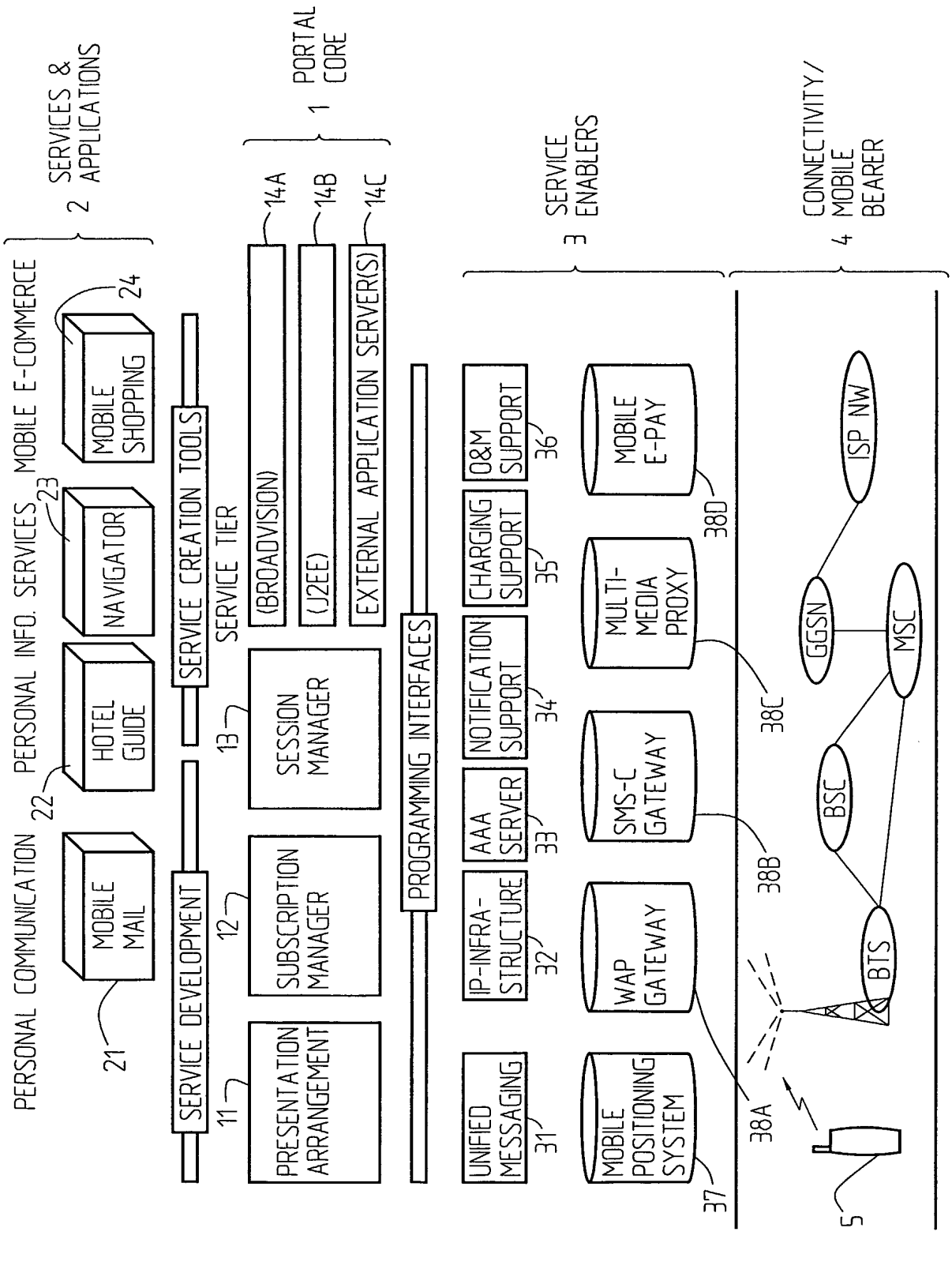
PERSONAL COMMUNICATION
PERSONAL INFO. SERVICES
MOBILE E-COMMERCE
SERVICES & APPLICATIONS
2
PORTAL CORE
1
SERVICE ENABLERS
3
CONNECTIVITY/ MOBILE BEARER
4
MOBILE MAIL
21
HOTEL GUIDE
22
NAVIGATOR
23
MOBILE SHOPPING
24
SERVICE DEVELOPMENT
11
SERVICE CREATION TOOLS
SERVICE TIER
PRESENTATION ARRANGEMENT
SUBSCRIPTION MANAGER
12
SESSION MANAGER
13
(BROADVISION)
14A
(J2EE)
14B
EXTERNAL APPLICATION SERVER(S)
14C
PROGRAMMING INTERFACES
UNIFIED MESSAGING
31
IP-INFRA-STRUCTURE
32
AAA SERVER
33
NOTIFICATION SUPPORT
34
CHARGING SUPPORT
35
O&M SUPPORT
36
MOBILE POSITIONING SYSTEM
37
WAP GATEWAY
38B
SMS-C GATEWAY
38C
MULTI-MEDIA PROXY
38D
MOBILE E-PAY
38A
BTS
BSC
GGSN
MSC
ISP NW
5

Fig. 1

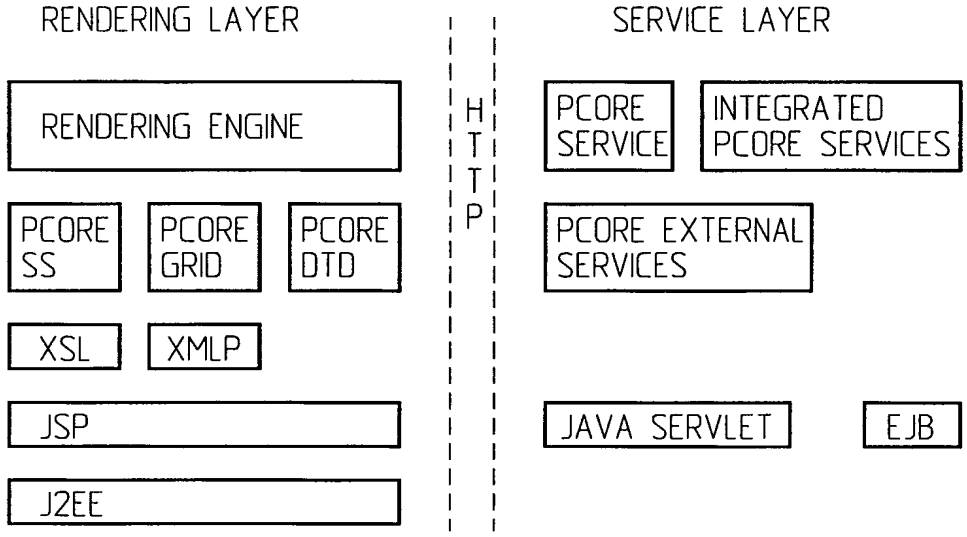
RENDERING LAYER
SERVICE LAYER
RENDERING ENGINE
PCORE SS
PCORE GRID
PCORE DTD
XSL
XMLP
JSP
J2EE
HTTP
PCORE SERVICE
INTEGRATED PCORE SERVICES
PCORE EXTERNAL SERVICES
JAVA SERVLET
EJB

Fig. 2

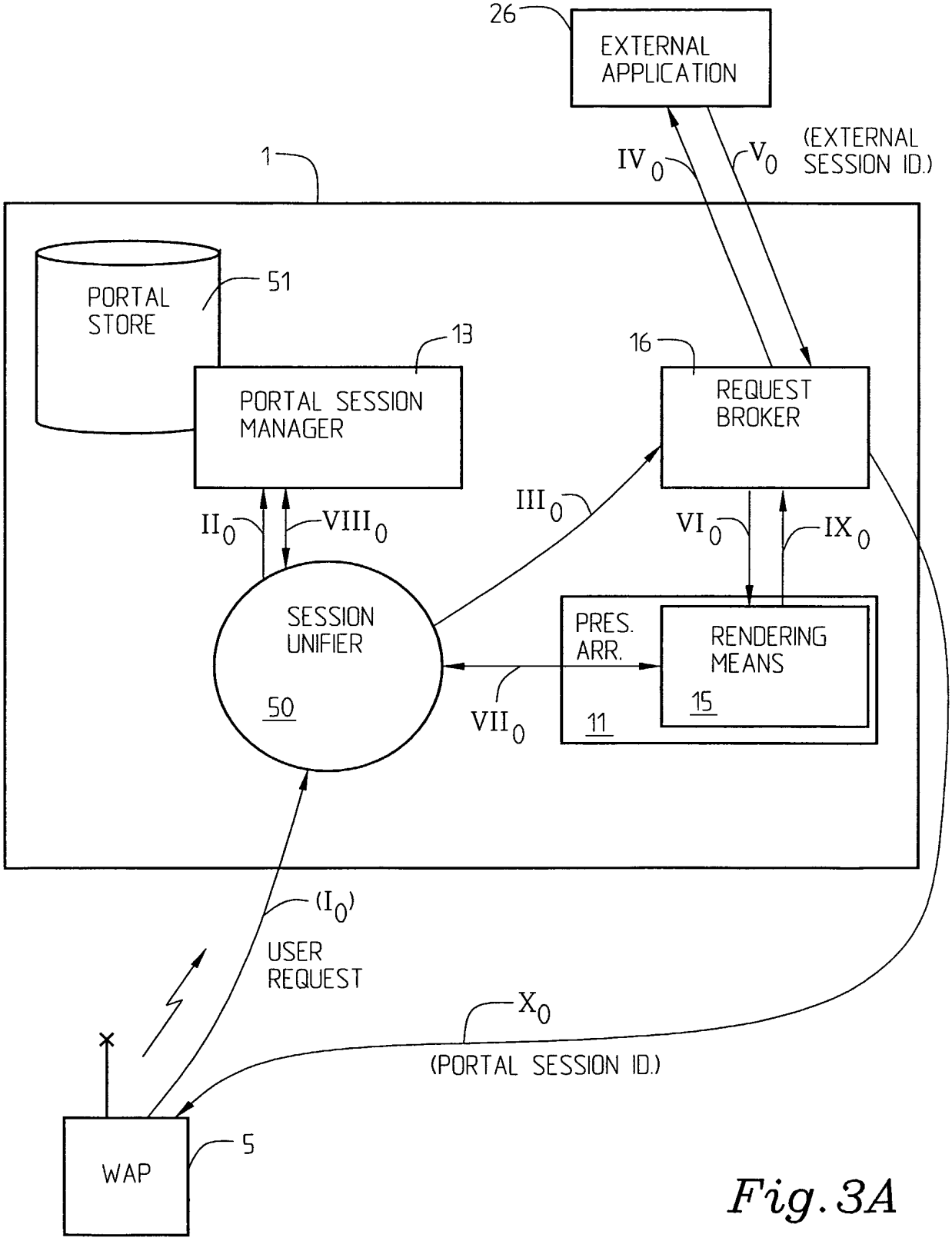
26
EXTERNAL APPLICATION
IV 0
V 0
(EXTERNAL SESSION ID.)
1
PORTAL STORE
51
13
PORTAL SESSION MANAGER
16
REQUEST BROKER
II 0
VIII 0
III 0
VI 0
IX 0
SESSION UNIFIER
50
PRES. ARR.
11
RENDERING MEANS
15
VII 0
(I 0)
USER REQUEST
X 0
(PORTAL SESSION ID.)
WAP
5

Fig. 3A

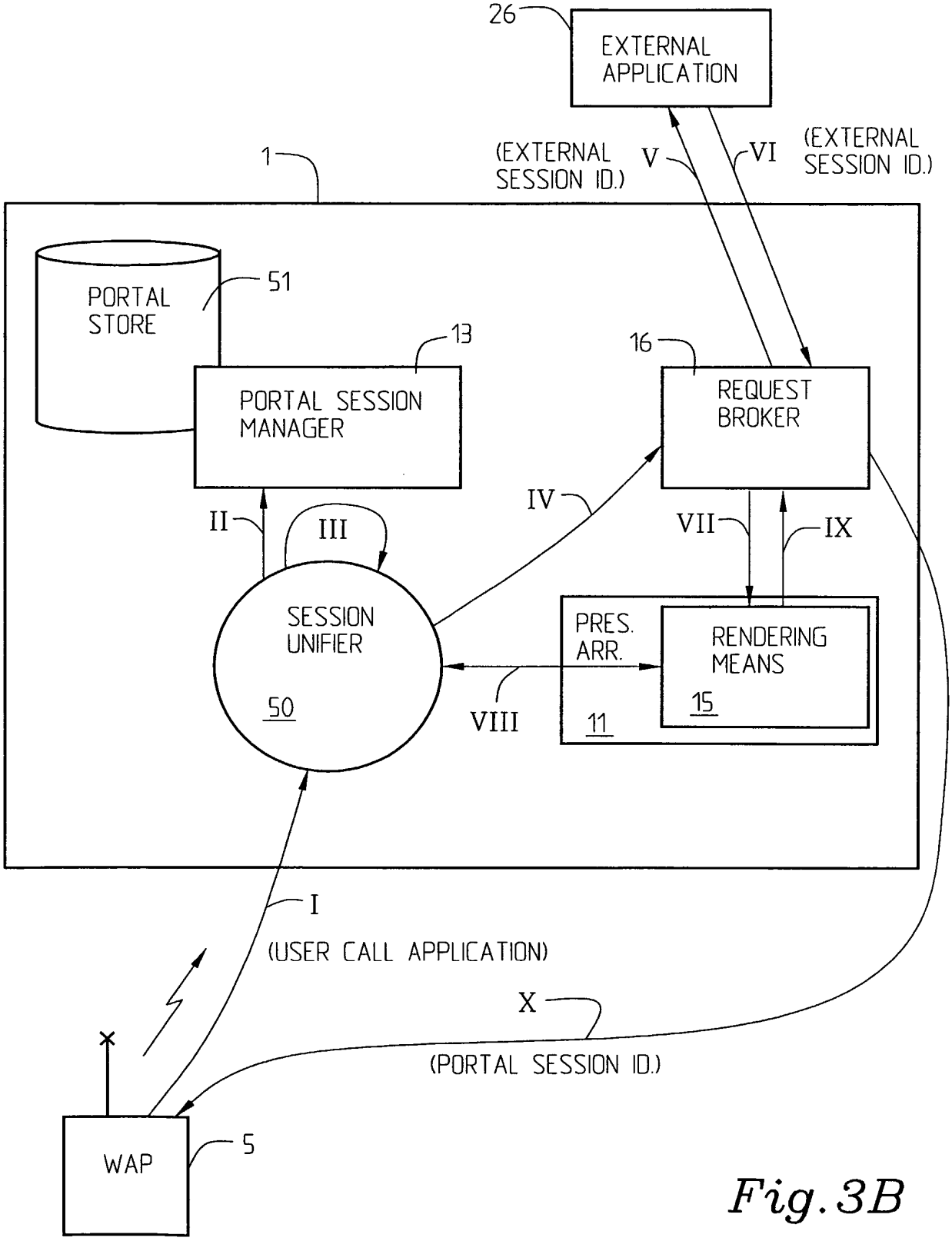
26
EXTERNAL APPLICATION
(EXTERNAL SESSION ID.)
V
VI
(EXTERNAL SESSION ID.)
1
PORTAL STORE
51
13
PORTAL SESSION MANAGER
16
REQUEST BROKER
II
III
IV
VII
IX
SESSION UNIFIER
50
PRES. ARR.
11
RENDERING MEANS
15
VIII
I
(USER CALL APPLICATION)
X
(PORTAL SESSION ID.)
WAP
5

Fig. 3B

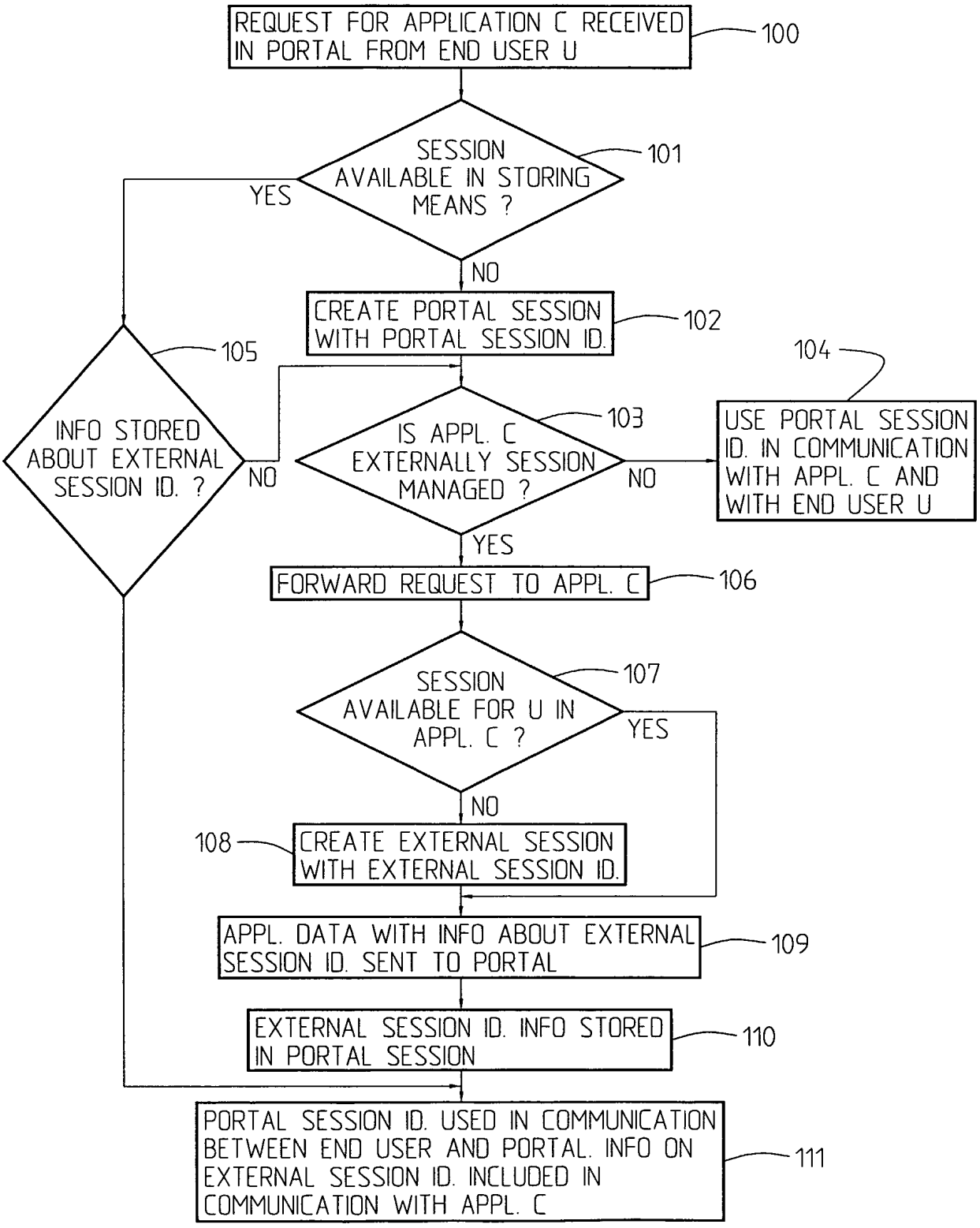
REQUEST FOR APPLICATION C RECEIVED IN PORTAL FROM END USER U
100
SESSION AVAILABLE IN STORING MEANS ?
101
YES
NO
CREATE PORTAL SESSION WITH PORTAL SESSION ID.
102
INFO STORED ABOUT EXTERNAL SESSION ID. ?
105
NO
IS APPL. C EXTERNALLY SESSION MANAGED ?
103
NO
USE PORTAL SESSION ID. IN COMMUNICATION WITH APPL. C AND WITH END USER U
104
YES
FORWARD REQUEST TO APPL. C
106
SESSION AVAILABLE FOR U IN APPL. C ?
107
YES
NO
CREATE EXTERNAL SESSION WITH EXTERNAL SESSION ID.
108
APPL. DATA WITH INFO ABOUT EXTERNAL SESSION ID. SENT TO PORTAL
109
EXTERNAL SESSION ID. INFO STORED IN PORTAL SESSION
110
PORTAL SESSION ID. USED IN COMMUNICATION BETWEEN END USER AND PORTAL. INFO ON EXTERNAL SESSION ID. INCLUDED IN COMMUNICATION WITH APPL. C
111

Fig. 4

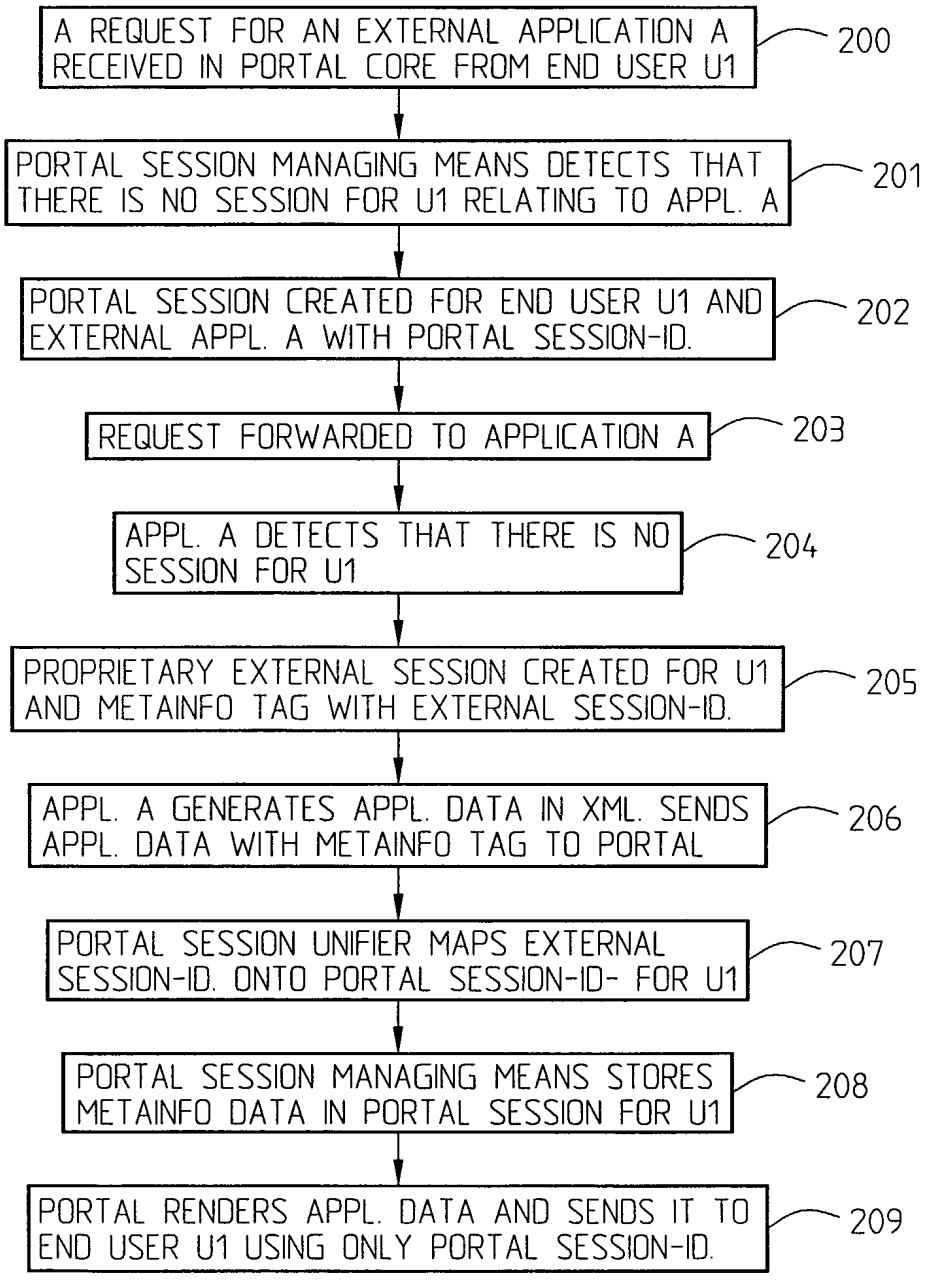
A REQUEST FOR AN EXTERNAL APPLICATION A RECEIVED IN PORTAL CORE FROM END USER U1
200
PORTAL SESSION MANAGING MEANS DETECTS THAT THERE IS NO SESSION FOR U1 RELATING TO APPL. A
201
PORTAL SESSION CREATED FOR END USER U1 AND EXTERNAL APPL. A WITH PORTAL SESSION-ID.
202
REQUEST FORWARDED TO APPLICATION A
203
APPL. A DETECTS THAT THERE IS NO SESSION FOR U1
204
PROPRIETARY EXTERNAL SESSION CREATED FOR U1 AND METAINFO TAG WITH EXTERNAL SESSION-ID.
205
APPL. A GENERATES APPL. DATA IN XML. SENDS APPL. DATA WITH METAINFO TAG TO PORTAL
206
PORTAL SESSION UNIFIER MAPS EXTERNAL SESSION-ID. ONTO PORTAL SESSION-ID- FOR U1
207
PORTAL SESSION MANAGING MEANS STORES METAINFO DATA IN PORTAL SESSION FOR U1
208
PORTAL RENDERS APPL. DATA AND SENDS IT TO END USER U1 USING ONLY PORTAL SESSION-ID.
209

Fig. 5

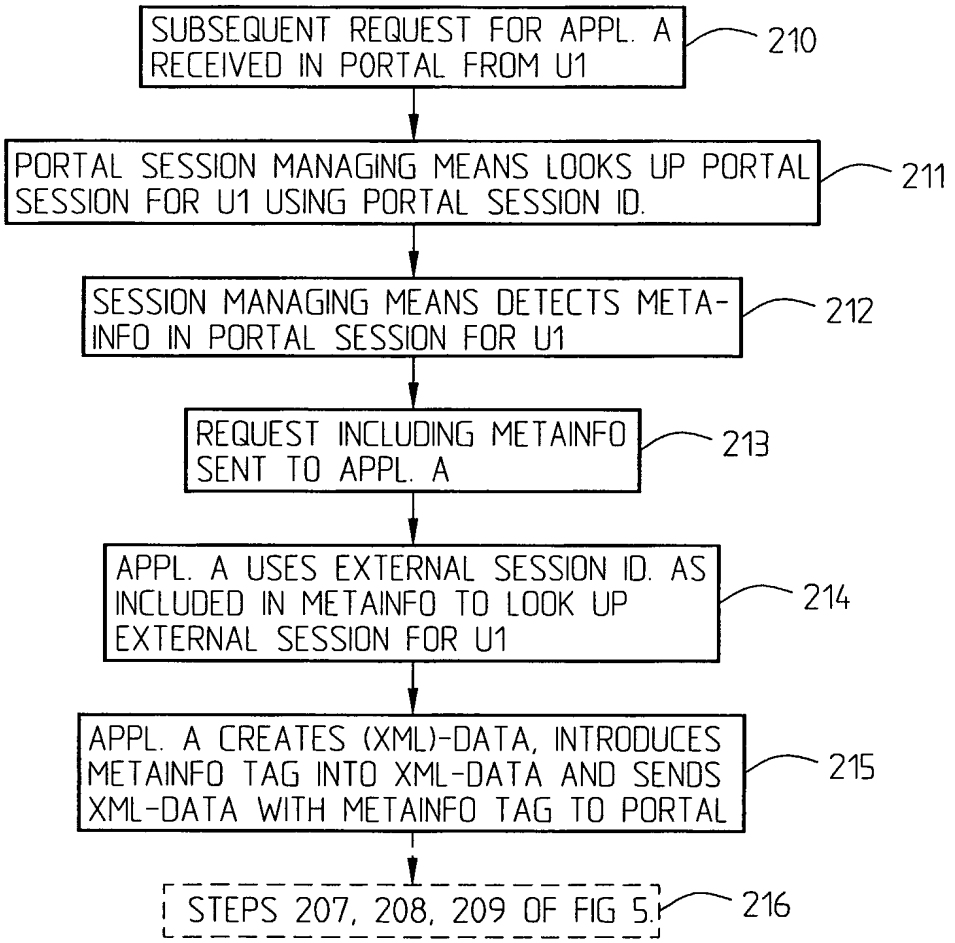
SUBSEQUENT REQUEST FOR APPL. A RECEIVED IN PORTAL FROM U1
210
PORTAL SESSION MANAGING MEANS LOOKS UP PORTAL SESSION FOR U1 USING PORTAL SESSION ID.
211
SESSION MANAGING MEANS DETECTS META-INFO IN PORTAL SESSION FOR U1
212
REQUEST INCLUDING METAINFO SENT TO APPL. A
213
APPL. A USES EXTERNAL SESSION ID. AS INCLUDED IN METAINFO TO LOOK UP EXTERNAL SESSION FOR U1
214
APPL. A CREATES (XML)-DATA, INTRODUCES METAINFO TAG INTO XML-DATA AND SENDS XML-DATA WITH METAINFO TAG TO PORTAL
215
STEPS 207, 208, 209 OF FIG 5.
216

Fig. 6

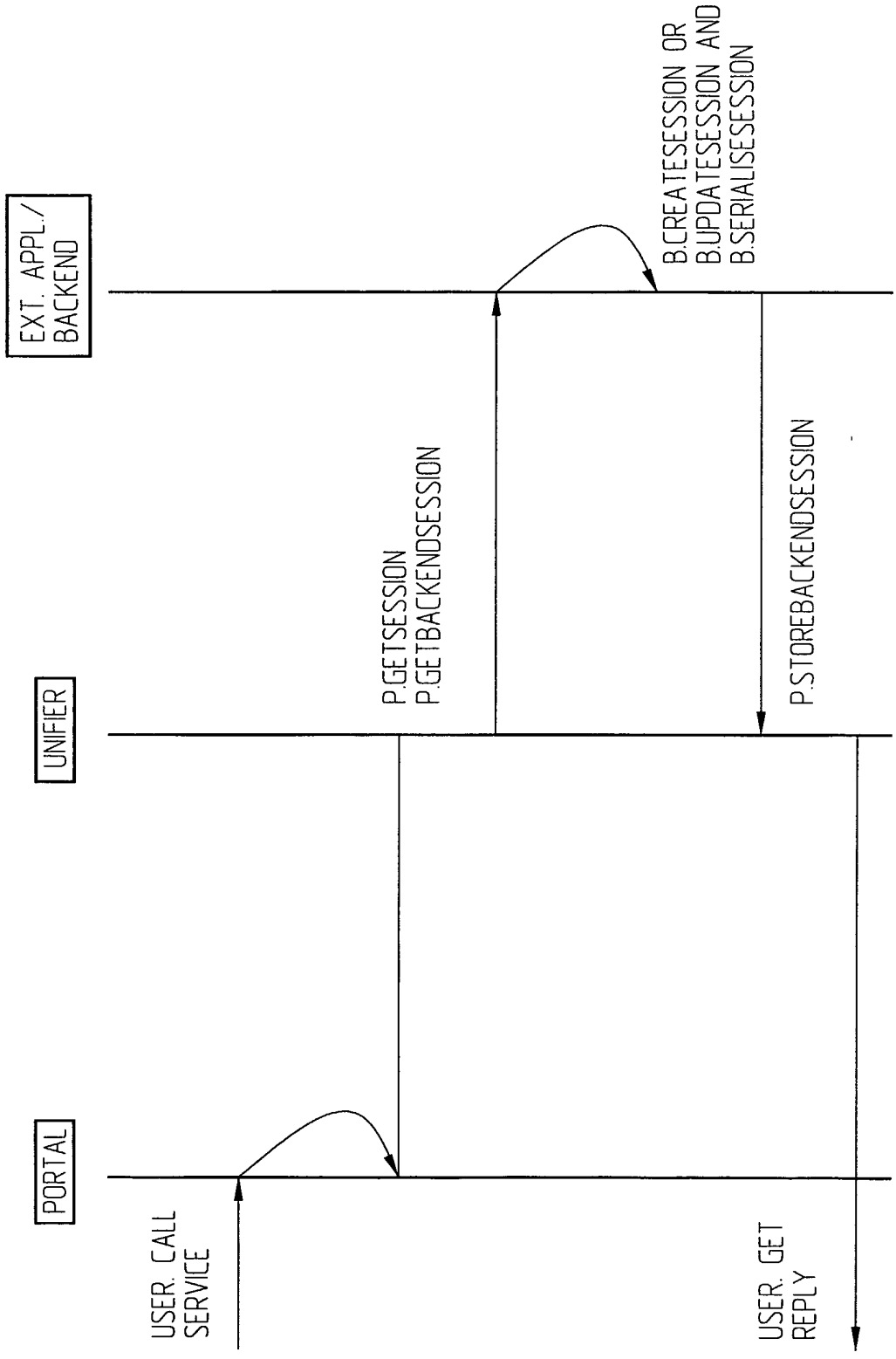
EXT. APPL./
BACKEND
UNIFIER
PORTAL
B.CREATESESSION OR
B.UPDATESESSION AND
B.SERIALISESESSION
P.GETSESSION
P.GETBACKENDSESSION
P.STOREBACKENDSESSION
USER. CALL
SERVICE
USER. GET
REPLY

Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 02/00113

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 17/30, H04L 29/06
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F, H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 0065773 A2 (FIRSTPERSOM.COM), 2 November 2000 (02.11.00), page 1, line 31 - page 2, line 36, claim 1, abstract --	1-27
A	US 6012098 A (BAYEH,E.N. ET AL.), 4 January 2000 (04.01.00), column 3, line 30 - column 5, line 5, figure 4, claim 1, abstract --	1-27
A	WO 0039666 A1 (SPYGLASS, INC), 6 July 2000 (06.07.00), page 8, line 1 - page 10, line 5, abstract --	1-27

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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23 April 2002	30 -04- 2002
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 02/00113

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	WO 0144936 A2 (MICROSOFT CORP), 21 June 2001 (21.06.01) --	1-27

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0065773 A2	02/11/00	AU 4495400 A	10/11/00
US 6012098 A	04/01/00	NONE	
WO 0039666 A1	06/07/00	DE 19962192 A	06/07/00
		FI 992746 A	28/06/00
		GB 2347329 A	30/08/00
		GB 9930699 D	00/00/00
		JP 2000194612 A	14/07/00
		SE 9904687 A	29/06/00
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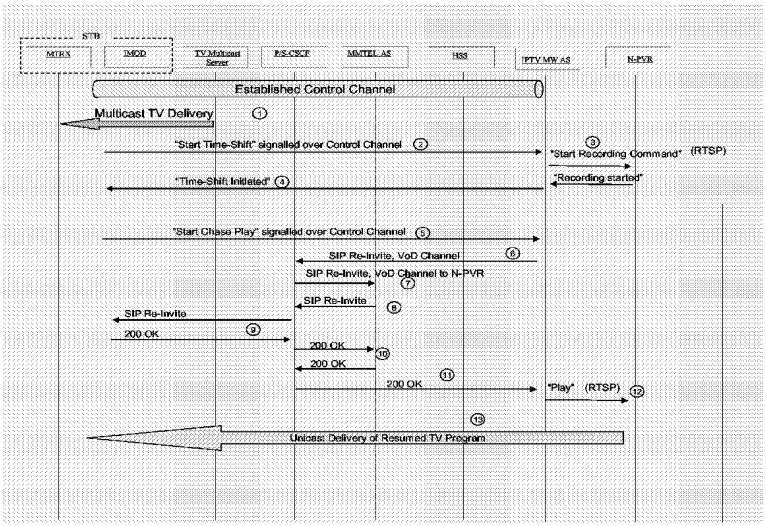
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TIME-SHIFTING AND CHASE-PLAY FOR AN IPTV SYSTEM



(57) Abstract: Time-shifting and chase-play is provided for an IPTV system, utilising a control channel established between the originating user and a selected IPTV Application Server (IPTV-AS). When time shifting of the IPTV content is required, for example due to receipt of a telephone call, a start time-shift command is sent to the IPTV-AS over the control channel. A start recording command is then sent from the IPTV-AS to a Network PVR system to initiate recording of the current multicast content. Subsequently, when the user is ready to resume viewing of the time-shifted content, a start chase-play command is sent to the IPTV-AS over the control channel to establish a unicast channel for playback of the time-shifted content; and a playback command is sent from the IPTV-AS to the Network PVR system to initiate playback of the time-shifted content over the unicast channel. Such a solution utilizes the standardized IMS communication system and its network architecture and a PVR residing in the Network to limit the traffic transmitted over the first mile connection to a home.

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Time-Shifting and Chase-Play for an IPTV System

Field of the Invention

The present invention relates to time-shifting and chase-play for an IPTV system.

Reference is also made to the Applicant's copending PCT Application No. PCT/EP2006/060279, the contents of which are incorporated herein by reference..

Background to the Invention

IP Multimedia services provide a dynamic combination of voice, video, messaging, data, etc. within the same session. By increasing the number of basic applications and the media that it is possible to combine, it is possible to increase the number of services offered to the end users, and thus to enrich the inter-personal communication experience. This will lead to a new generation of personalised, rich multimedia communication services, including so-called "combinational IP Multimedia" services that are considered in more detail below.

IP Multimedia Subsystem (IMS) is the technology defined by the Third Generation Partnership Project (3GPP) to provide IP Multimedia services over mobile communication networks (3GPP TS 22.228, TS 23.218, TS 23.228, TS 24.228, TS 24.229, TS 29.228, TS 29.229, TS 29.328 and TS 29.329 Releases 5 to 7). IMS provides key features to enrich the end-user person-to-person communication experience through the use of standardised IMS Service Enablers, which facilitate new rich person-to-person (client-to-client) communication services as well as person-to-content (client-to-server) services over IP-based networks. The IMS makes use of the Session Initiation Protocol (SIP) to set up and control calls or sessions between user terminals (or user terminals and application servers). The Session Description Protocol (SDP), carried by SIP signalling is used to describe and negotiate the media components of the session. Whilst SIP was created as a user-to-user protocol,

IMS allows operators and service providers to control user access to services and to charge users accordingly.

The boundaries between the services provided by telecommunication operators, TV operators, and internet service providers are disappearing, and such companies are all offering customers all three services (so called "triple play"). For telecommunication operators wishing to offer TV services, a popular choice is to utilize so called IPTV which delivers the TV service over IP and the customer's broadband connection (e.g. ADSL, VDSL, Public Ethernet, etc.).

IPTV has a limited bandwidth at its disposal in the "first mile" of the broadband access from the xDSL modem and the broadband access (DSLAM). Linear content delivery, in which all channels in a subscription ("program package") are simultaneously delivered to the set top box (STB), is not suitable for IPTV due to the limited bandwidth. xDSL connection capacity varies depending on the DSL version used and the distance of the "first mile". ADSL can provide a capacity between 3 to 8 Mbps, whereas ADSL2 promises to deliver up to 25 Mbps downstream and VSDL data rates greater than 30 Mbps. Standard quality MPEG2 content requires 2 Mbps per channel, and HDTV will require 8-10 Mbps per channel. Luckily, the new MPEG4 standard will decrease the required bandwidth to half with the same quality as the MPEG2 coded content. Nevertheless, the available bandwidth is a scarce resource, and IPTV solutions must limit the number of channels to be delivered over the "first mile".

Existing time-shift/chase-play solutions are either based on proprietary network technology or on use of a Private Video Recorder (PVR) in the home. The solution described herein, utilizes the standardized IMS communication system and its network architecture, and a PVR residing in the Network to limit the traffic transmitted over the first mile connection to a home.

Summary of the Invention

It is an object of the present invention to provide a time-shift/chase-play solution based on a Network Private Video Recorder (N-PVR).

According to a first aspect of the present invention there is provided a method of time-shifting and chase-play for an IPTV system, the method comprising:

establishing a control channel between the originating user and a selected IPTV Application Server (IPTV-AS);

sending a start time-shift command to the IPTV-AS over the control channel;

sending a start recording command from the IPTV-AS to a Network PVR system to initiate recording of current multicast content;

when the user is ready to resume viewing of the time-shifted content, sending a start chase-play command to the IPTV-AS over the control channel to establish a unicast channel for playback of the time-shifted content; and

sending a playback command from the IPTV-AS to the Network PVR system to initiate playback of the time-shifted content over the unicast channel.

The invention addresses the issue of time-shifting and chase-play by the use of a Network PVR (N-PVR). An N-PVR makes a lot of sense in IPTV solutions. A PVR in the home requires content to be delivered over the first mile, whereas an N-PVR does not. Content is recorded in the network and will thus not burden the first mile if a user wishes to watch one channel whilst recording another simultaneously.

A user may choose to initiate the time-shift function of IPTV content delivery by means of a set top box (STB) for a number of reasons, such as an event taking place in the home requiring the user's full attention, such as the ringing of a door-bell, the arrival of an ordered pizza, or the imminent start of booked laundry time; the occurrence of incoming communication services, such as telephony, video-telephony, messaging or chat; and notification of a user-subscribed-to event, such as notification of lottery results, notification of hockey/football results, or the imminent start of an ordered pay-per-view movie

The solution uses capabilities in IMS to establish a unicast delivery channel of recorded content when a user decides to watch the time-shifted content and initiates chase-play, and allows the IPTV service to integrate with other IMS based services. Examples of other IMS based services are telephony, video-telephony, messaging, chat and push-to-talk.

The solution includes a mechanism for switching from multicast/broadcast delivered content to unicast delivered content. Such switching typically takes place when a user decides to start the time-shifting of multicast delivered content, with the object of resuming delivery of the content at a later time utilising chase-play over a unicast channel.

Some of the advantages obtained by use preferred embodiments of the present invention include:

(i) The possibility of blending the IPTV Service, IMS Communication Services and Personalized Information Services.

(ii) Limitation of the amount of content transmitted over the first mile of a broadband connection (the first mile being a limited resource where many service fight for available capacity).

(iii) Intelligent delivery of TV content allowing other services to utilize available bandwidth.

(iv) An IMS based method for switching between multicast and unicast delivery of content.

(v) An IPTV-AS acting as a gateway between a Network PVR system and STBs. This enables STB – IPTV-AS specific user interaction while allowing operators to use many types of N-PVR system. The adjustment to N-PVR required procedures and protocols is handled by the IPTV-AS.

(vi) The network taking an active role in the IPTV delivery and allowing operators to offer personalized Triple-Play service offerings.

According to a further aspect of the present invention, there is provided a time-shifting and chase-play IPTV system, comprising:

channel control means for establishing a control channel between the originating user and a selected IPTV Application Server (AS);

start time-shift means for sending a start time-shift command to the IPTV-AS over the control channel;

start recording means for sending a start recording command from the IPTV-AS to a Network PVR system to initiate recording of current multicast content;

start chase-play means for sending a start chase-play command to the IPTV-AS over the control channel when the user is ready to resume viewing of the time-shifted content, to establish a unicast channel for playback of the time-shifted content; and

playback means for sending a playback command from the IPTV-AS to the Network PVR system to initiate playback of the time-shifted content over the unicast channel.

According to a further aspect of the present invention, there is provided computer program code for carrying out the method of the first aspect of the invention.

Brief Description of the Drawings

In order that the invention may be more fully understood, a preferred embodiment in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram illustrating the establishment of a control channel using a secure TCP/TLS connection;

Figure 2 is a schematic diagram illustrating a sequence for switching between multicast and unicast delivery of content;

Figure 3 is a schematic diagram illustrating a sequence for an Incoming Call Notification on screen; and

Figure 4 is a schematic diagram illustrating a sequence for a PSTN/ISDN Incoming Call Notification;

Figure 5 is a schematic diagram illustrating a sequence for an Extended Incoming Call Notification scenario with Time-shift; and
Figure 6 is a schematic diagram illustrating a sequence for an Event Triggered Time-shift.

Detailed Description of Preferred Embodiment

By way of background to the preferred embodiment, the following is a brief description of how the IP Multimedia Subsystem (IMS) fits into the mobile network architecture in the case of a GPRS/PS access network. Call/Session Control Functions (CSCFs) operate as SIP proxies within the IMS. The 3GPP architecture defines three types of CSCFs: the Proxy CSCF (P-CSCF) which is the first point of contact within the IMS for a SIP terminal; the Serving CSCF (S-CSCF) which provides services to the user that the user is subscribed to; and the Interrogating CSCF (I-CSCF) whose role is to identify the correct S-CSCF and to forward to that S-CSCF a request received from a SIP terminal via a P-CSCF.

A user registers with the IMS using the specified SIP REGISTER method. This is a mechanism for attaching to the IMS and announcing to the IMS the address at which a SIP user identity can be reached. The user receives a unique Uniform Resource Identifier (URI) from the S-CSCF to be used when it initiates a dialog. In 3GPP, when a SIP terminal performs a registration, the IMS authenticates the user, and allocates a S-CSCF to that user from the set of available S-CSCFs. Whilst the criteria for allocating S-CSCFs is not specified by 3GPP, these may include load sharing and service requirements. It is noted that the allocation of an S-CSCF is key to controlling (and charging for) user access to IMS-based services. Operators may provide a mechanism for preventing direct user-to-user SIP sessions that would otherwise bypass the S-CSCF.

During the registration process, it is the responsibility of the I-CSCF to select an S-CSCF if one is not already selected. The I-CSCF receives the required S-

CSCF capabilities from the home network's Home Subscriber Server (HSS), and selects an appropriate S-CSCF based on the received capabilities. (It is noted that S-CSCF allocation is also carried out for a user by the I-CSCF in the case where the user is called by another party, and the user is not currently allocated an S-CSCF.) When a registered user subsequently sends a session request (e.g. SIP INVITE) to the IMS, the request will include the P-CSCF and S-CSCF URIs so that the P-CSCF is able to forward the request to the selected S-CSCF. This applies both on the originating and terminating sides (of the IMS). (For the terminating call the request will include the P-CSCF address and the User Equipment (UE) address.)

Within the IMS service network, Application Servers (ASs) are provided for implementing IMS service functionality. ASs provide services to end-users in an IMS system, and may be connected either as end-points over the 3GPP defined Mr interface, or "linked in" by an S-CSCF over the 3GPP defined ISC interface. In the latter case, Initial Filter Criteria (IFC) are used by an S-CSCF to determine which ASs should be "linked in" during a SIP Session establishment. Different IFCs may be applied to different call cases. The IFCs are received by the S-CSCF from an HSS during the IMS registration procedure as part of a user's User Profile (UP). Certain ASs will perform actions dependent upon subscriber identities (either the called or calling subscriber, whichever is "owned" by the network controlling the AS). For example, in the case of call forwarding, the appropriate (terminating) application server will determine the new terminating party to which a call to a given subscriber will be forwarded.

The preferred embodiment to be described below relates to an IMS-enabled control channel for an IPTV set top box (STB). The control channel is set up using standard IMS procedures and is later used to send control messages to the IPTV applications server, as well as to deliver personalized content, such as advertisements, voting responses, personalized voting triggers and targeted interactive events.

IMOD Connection to IPTV AS

It should be noted that the STB is described as a single unit in the following. The sequences of the figures show division of the STB into an IMOD and a MTRX but the interaction between these is not described as this is not directly relevant to the inventive concepts described.

When the STB starts, it first registers on the IMS network using the IMS Private ID (IMPI - the private address of the STB) of the Identity and IMS Module (IMOD) in the authorization header, and the default 'family STB' public address in the "From" and "To" headers (as in the normal SIP REGISTER message). Both IMPUs representing the Media Transmitter/Receivers (MTRXs) and IMPUs representing users may register. For personalisation of services, a "User Connection to IPTV MW AS" use routine is executed.

Once the STB is registered, it establishes a secure TCP/TLS connection with the IPTV AS, using a SIP INVITE message. The procedure, as schematically indicated in Figure 1, is as follows (with reference to the numbers used in the figure):

1. The MTRX (the media end point of the STB) indicates to the IMOD (the Authentication / ISIM carrier part of the STB) that a connection to the IPTV MW AS should be established. The differentiation between the IMOD and the MTRX is optional, and can be seen as an STB internal realization. An STB not having this differentiation would behave identically in relation to the IMS network.

2. The IMOD sends a SIP INVITE message to the P-CSCF. The Public Service Identity of the IPTV MW AS is used to address the IPTV MW AS and may be pre-configured in the ISIM or configured by device management procedures. An SDP description of a TLS/TCP session is included. An alternative procedure would be to use an application framing protocol over the pure TCP/TLS channel, such as MSRP. In this case the SDP description contains MSRP/TLS/TCP instead of only TLS/TCP.

3. The SIP INVITE message is forwarded to the I-CSCF. 3GPP 23.228 describes alternative PSI routing on the terminating side, namely:

a. The I-CSCF interrogates I HSS where the HSS treats every PSI as a "user" and returns routing instructions to the end-point representing the PSI.

b. I-CSCF interrogation to the HSS where the HSS returns the user allocated S-CSCF. The S-CSCF routes the PSI addressed Invite according to IFC information stored per "PSI-subscriber". The "PSI-subscriber" is assigned an S-CSCF.

c. Sub-domain routing in the I-CSCF where the I-CSCF uses DNS to resolve the PSI into an IP-address for the end-point representing the PSI.

This solution requires Alternative b.

4. The I-CSCF uses DNS to translate the Public Service Identity to the IP address of the actual server that will handle this user this time (load sharing can be applied here). The S-CSCF then sends the SIP INVITE message to the chosen IPTV MW AS. The IPTV MW AS then executes the "Fetch User Data" sub-sequence.

5. The IPTV MW AS returns a 200 OK response. The URL of the user's TV service portal is included in the SDP, as, for example, an XML body that is interpreted in the STB but not in the intermediate nodes.

6. The S-CSCF forwards the 200 OK response.

7. The P-CSCF forwards the 200 OK response.

8. The IMOD receives the URL of the default user's TV service portal (i.e. the portal associated with the IMPU of the MTRX), and it is included in the SDP. This information may be included as an XML body in the 200 OK message, but other means are also possible.

9. The IMOD sends a SIP ACK response.

10. The P-CSCF forwards the SIP ACK response.

11. The S-CSCF forwards the SIP ACK response.

12. The IMOD sets up a TLS/TCP connection to the IPTV MW AS using a server side certificate.

This procedure can also be expanded to add distribution of keys for service protection (a.k.a. conditional access) if the service protection in the system is based on ciphering the content streams. This would involve additional steps after the last step above in which, for example, the keys could be fetched via HTTP. If the different users have different channel bundles, then that type of step would also be needed after the "User Connection, Local User" procedure.

This procedure could also be run only on an "as needed" basis (i.e. the connection would not be automatically set up at registration, but only when access to the IPTV MW AS is required), but the preferred alternative is that the connection is established immediately after the STB/MS registers. This is so that the delay in setting up this connection can be avoided at a time when interaction with the IPTV MW AS is required.

A new control channel is established for each MTRX that is to be connected to the IMOD, as described in the "IMS IPTV Architecture Study" ("Rechon Architecture", EAB-05:045608, Rev A, 2005-12-22).

The described control channel enables a plethora of functionalities, like remote control on the IPTB STB, as described in "IMS IPTV Architecture Study", EAB-06:001721, Rev A, 2006-02-08, or the user cases described in next section.

When the STB starts, it first registers on the IMS network using the IMS Private ID (IMPI - the private address of the STB) of the Identity and IMS Module (IMOD) in the authorization header, and the default 'family STB' public address in the "From" and "To" headers (as in the normal SIP REGISTER message). Once the STB has been registered, it establishes a secure TCP/TLS connection with the IPTV AS using a SIP INVITE message.

STB Initiated Time-Shift

In the event that the user requires time shifting of the content to begin, the following IMS based method for switching between multicast and unicast delivery of content can be initiated by the STB. The procedure, as schematically indicated in Figure 2, is as follows (with reference to the numbers used in the figure):

1) A control channel is established between the STB and the IPTV-AS by the procedure described above with reference to Figure 1. At this point the STB is receiving content that is delivered by multicast.

2) The user decides to start the Time-Shift function due to an event taking place in the home requiring the user's full attention, such as the ringing of a door-bell, the arrival of an ordered pizza, or the imminent start of booked laundry time, etc. The STB generates a "Start Time-Shift" command and sends this over the control channel to the IPTV-AS. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible. The IPTV-AS interprets the command before taking the appropriate action.

3) The IPTV-AS initiates recording of the currently viewed multicast channel. This is possible as the STB always reports which multicast channel it is

currently receiving after a channel change has occurred (not shown in the figure). A "Start Recording" command is sent from the IPTV-AS to the N-PVR system. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible. The IPTV-AS acts as a gateway between the N-PVR system and the STB. This enables STB / IPTV-AS specific user interaction whilst allowing use by operators of many different types of N-PVR system. The adjustment of the required N-PVR procedures and protocols is handled by the IPTV-AS.

4) An indication that the Time-Shift has started is returned to the STB and optionally displayed to the user. The multicast channel may or may not continue to be delivered to the STB after the Time-Shift has started. This is a deployment option.

5) When the user is ready to resume viewing of the time-shifted content, he initiates the Chase Play function and a "Start Chase Play" command is sent from the STB to the IPTV-AS over the control channel. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible. The IPTV-AS acts as a gateway between the N-PVR system and the STB. This enables STB / IPTV-AS specific user interaction whilst allowing use by operators of many different types of N-PVR system. The adjustment of the required N-PVR procedures and protocols is handled by the IPTV-AS. RTSP is used in the sequence by way of example but the invention is not limited to the use of RTSP.

6) The IPTV-AS sends a SIP INVITE message in the same SIP session as the "Start Chase Play" command that is associated with the control channel. The SIP Re-Invite message is a request to establish a unicast channel that will be used to deliver the recorded (time-shifted) content stored in the N-PVR system. As a result the content delivery changes from multicast to unicast delivery with IMS being used to effect this change.

7-8) The SIP INVITE message is transmitted over the ISC and the Multimedia Telephony (MMTEL) AS, MMTel being used as the IMS Communication Service for IPTV in this case, thus resulting in the invocation of the MMTel AS over the ISC. It should however be noted that the method will work with other IMS Communication Services and is not limited to MMTel, MMTel being given merely by way of example. The MMTel AS may invoke supplementary services, such as restriction on the number of concurrent unicast deliveries, but this is not included in the sequence.

9-10) The SIP INVITE message is sent to the STB which acknowledges the request with a 200 OK response to accept the unicast channel invitation.

10, 11) The 200 OK response is sent along the SIP session path to the IPTV-AS.

12) The IPTV AS initiates playback of the recorded content by means of a "Play" command to the N-PVR system. The IPTV-AS acts as a gateway between the Network PVR system and the STB. This enables STB / IPTV-AS specific user interaction whilst allowing use by operators of many different types of N-PVR system. The adjustment of the required N-PVR procedures and protocols is handled by the IPTV-AS. RTSP is used as an example in the sequence but the invention is not limited to RTSP.

13) Unicast delivery is started.

Incoming Call Notification

This sequence describes how an Incoming Call Notification on a TV-screen and user determined call handling can be implemented for IMS calls to the STB/TV. The call is established to the STB/TV in this scenario, and the STB/TV is also used to notify a user of an incoming call and to allow the user to specify how the call shall be handled. The procedure, as schematically indicated in Figure 3, is as follows (with reference to the numbers used in the figure):

1) A control channel is established between the STB and the IPTV-AS by the procedure described above with reference to Figure 1. At this point the STB is receiving content that is delivered by multicast.

2) The I-CSCF in the called subscriber's network (the STB's network) receives a SIP INVITE message from the same IMS network or another IMS network, or from an IMS gateway to another network (e.g. ISDN/PSTN). The I-CSCF returns a 100 Trying response to the sender of the SIP Invite message to stop periodic retransmission of the same SIP INVITE message.

3) I-CSCF uses a Diameter LIR (Location Information Request) to obtain the called subscriber's S-CSCF address and the HSS returns this address in the LIA (Location Information Answer).

4) The SIP INVITE message is sent to the called subscriber's S-CSCF (100 trying response returned by the S-CSCF).

5) The trigger criteria for the called subscriber are stored by the S-CSCF. This IFC contains information about which AS's are to be invoked over the ISC interface. This example shows an incoming call for the MMTel IMS communication service and the MMTel AS is invoked over the ISC. The MMTel AS may invoke supplementary services, such as barring or forwarding of incoming sessions, but this is not included in the sequence.

6) The MMTel AS exposes enabling services towards other AS's to allow these to affect the session set up. The IPTV AS has subscribed to the incoming call event from the MMTel AS, and the service definition of the exposed services is based on the Parlay-X Web Service definitions for Call Control. A Parlay-X "Handle Called Number Request" is sent to the IPTV-AS. It should be noted that a Parlay-X service can also be exposed by an OSA(Open Service Access)/Parlay(-X) gateway that is connected over the ISC (IMS Service Control) interface in the same way as an IMS (IP Multimedia Subsystem) AS. It

should further be noted that the IPTV-AS can be connected over the ISC in series with the MMTel AS to perform the Call Notification procedures described below. Whilst this description only refers to the alternative where the Parlay-X Call Control service is exposed by the MMTel AS, it will be appreciated that the invention is not limited to this.

7) An "Incoming Call Notification" command is sent from the IPTV-AS to the STB over the control channel. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible. The user is given a number of call handling options, such as:

- allow call to STB/TV
- forward call to voice-mail (multimedia mail)
- forward call to another number

The user's choice is returned by the STB to the IPTV-AS. In the following it is assumed that the user chooses to allow the call.

8) The IPTV-AS returns a Parlay-X "Handle Called Number Response" to the MMTel AS with information specifying that the call set up may proceed to the STB.

9) The S-CSCF receives the SIP Invite message from the MMTel AS (MMTel works as a B2BUA in this example). An S-CSCF may perform forking for the contacts registered for one particular Public User Identity (PUI). The STB has a unique PUI in this example and no other SIP UA is allowed to register as a contact for the STB's PUI. The STB may however register as a contact for other user assigned PUIs, and this allows a mobile phone and the STB to register as possible contacts for one particular PUI for example.

10, 11, 12 13) The SIP Invite message is sent to the STB and the STB returns a 180 Ringing response which is relayed along the SIP path.

14, 15, 16, 17) A 200 OK response from the STB indicates that the session has been accepted and that the media plane can be established.

18) The media plane for speech is established and the call proceeds.

PSTN/ISDN Incoming Call Notification

This sequence describes how an Incoming Call Notification on a TV-screen and user determined call handling can be implemented for PSTN/ISDN phones in the home. It should be noted that the call is not established to the STB/TV in this scenario. The STB/TV is only used to notify a user of an incoming call and to allow the user to specify how the call shall be handled. The procedure, as schematically indicated in Figure 4, is as follows (with reference to the numbers used in the figure):

1) A control channel is established between the STB and the IPTV-AS by the procedure described above with reference to Figure 1. At this point the STB is receiving content that is delivered by multicast.

2, 3) An SSF (Service Switching Function) in the called subscriber's network receives an ISUP(ISDN User Part) IAM (Initial Address Message). This triggers the SSF to contact a Service Control Point (SCP) in an IN (Intelligent Network) architecture.
An OSA/Parlay GW (Gateway) plays the role of an SCP towards the SSF, but allows AS's to take the real decisions on how to handle calls. Many different variants on INAP protocols exist, e.g. CS1, CS2, CAP, etc. This description is given with reference to an IDP (Initial Detection Point) operation invocation which can be found in CAP (CAMEL Application Part), although it will be appreciated that the invention is not limited to this particular type of INAP (Intelligent Network Application Part).

4) The IDP is translated into the Parlay-X Web service definition for Call Control. A Parlay-X "Handle Called Number Request" is sent to the IPTV-AS. This is the same message that was sent in the previous sequence from the MMTel IMS AS to the IPTV AS, and enables the IPTV AS to have a common call handling interface for IMS and PSTN/ISDN calls. It should be noted that the

IPTV-AS can also be connected as an SCP (Service Control Point) via INAP. This description refers only to the alternative where the Parlay-X Call Control service is used, but the invention is not limited to this.

5) An "Incoming Call Notification" command is sent from the IPTV-AS to the STB over the control channel. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible. The user is given a number of call handling options, such as:

- allow call to STB/TV
- forward call to voice-mail (multimedia mail)
- forward call to another number

The user's choice is returned by the STB to the IPTV-AS. In the following it is assumed that the user chooses to allow the call.

6) The IPTV-AS returns a Parlay-X "Handle Called Number Response" to the MMTel AS with information specifying that the call set up to the PSTN/ISDN phone may proceed.

7) The OSA/Parlay GW returns the appropriate INAP message to the SSF, e.g. a Continue operation invocation.

8) The SSF sends an ISUP IAM message to the Local Exchange that the user's PSTN/ISDN phone is connected to.

9) A Q.931 ISDN Set-up message is sent to the ISDN phone (only ISDN shown from now on), and is acknowledged by a Call Confirmed message.

10, 11) An ISUP ACM (Address Complete Message) message is sent from the Local Exchange to the SSF (Service Switching Function) and onwards.

12, 13, 14) An alert is forwarded in ISUP CPG (Call Progress).

15, 16, 17) An Answer message is translated into an ISUP ANM (Answer Message).

18) The ISDN/PSTN call is established.

Extended Incoming Call Scenario with Time-shift

This sequence extends the Incoming Call Notification sequence with Time-Shift functionality. The procedure, as schematically indicated in Figure 5, is as follows (with reference to the numbers used in the figure):

1) A control channel is established between the STB and the IPTV-AS by the procedure described above with reference to Figure 1. At this point the STB is receiving content that is delivered by multicast.

2) The I-CSCF in the called subscriber's network (the STB's network) receives a SIP Invite message from the same IMS network or another IMS network, or from an IMS gateway to another network (e.g. ISDN/PSTN). The I-CSCF returns a 100 Trying response to the sender of the SIP Invite message to stop periodic retransmission of the same SIP Invite message.

3) I-CSCF uses a Diameter LIR (Location Information Request) to obtain the called subscriber's S-CSCF address and the HSS returns this address in the LIA (Location Information Answer).

4) The SIP INVITE message is sent to the called subscriber's S-CSCF (100 trying response returned by the S-CSCF).

5) The trigger criteria for the called subscriber are stored by the S-CSCF. This IFC contains information about which AS's that are to be invoked over the ISC interface. This example shows an incoming call for the MMTel IMS communication service and the MMTel AS is invoked over the ISC. The MMTel AS may invoke supplementary services such as barring or forwarding of incoming sessions, but this is not included in the sequence.

6) The MMTel AS exposes enabling services towards other AS's to allow these to affect the session set up. The IPTV AS has subscribed to the incoming call event from the MMTel AS, and the service definition of the exposed services is based on the Parlay-X Web Service definitions for Call Control. A Parlay-X "Handle Called Number Request" is sent to the IPTV-AS. It should be noted that a Parlay-X service can also be exposed by an OSA/Parlay(-X) gateway (OSA = Open Service Access) that is connected over the ISC (IMS Service Control) interface in the same way as an IMS-AS. It should further be noted that the IPTV-AS can be connected over the ISC in series with the MMTel AS to perform the Call Notification procedures described below. Whilst this description only refers to the alternative where the Parlay-X Call Control service is exposed by the MMTel AS, it will be appreciated that the invention is not limited to this.

7) An "Incoming Call Notification" command is sent from the IPTV-AS to the STB over the control channel. The exact procedure and syntax of the command is a matter between the STB and the IPTV, and many different variants are possible. The user is given a number of call handling options, such as:

- allow call to STB/TV
- forward call to voice-mail (multimedia mail)
- forward call to another number
- allow call and start Time-Shift

The user's choice is returned by the STB to the IPTV-AS. In this example the user chooses to allow the call and to start Time-Shift.

8) The IPTV-AS initiates recording of the currently viewed multicast channel. This is possible since the STB always reports which multicast channel it is currently receiving after a channel change (not shown in the sequences). A "Start Recording" command is sent from the IPTV-AS to the N-PVR system. The IPTV-AS acts as a gateway between the Network PVR system and the STB. This enables STB / IPTV-AS specific user interaction whilst allowing use

by operators of many different types of N-PVR system. The adjustment of the required N-PVR procedures and protocols is handled by the IPTV-AS.

9) The IPTV-AS returns a Parlay-X "Handle Called Number Response" to the MMTel AS with information specifying that the call set up may proceed to the STB. The S-CSCF receives the SIP INVITE message from the MMTel AS (MMTel works as a B2BUA in this example). An S-CSCF may perform forking for the contacts registered for one particular Public User Identity. The STB has a unique PUI in this example and no other SIP UA is allowed to register as a contact for the STB's PUI. The STB may however register as a contact for other user assigned PUIs, and this allows a mobile phone and the STB to register as possible contacts for one particular PUI for example.

10, 11, 12 13) The SIP INVITE message is sent to the STB and the STB returns a 180 Ringing response which is relayed along the SIP path.

14, 15, 16, 17) A 200 OK response from the STB indicates that the session has been accepted and that the media plane can be established.

18) The media plane for speech is established and the call proceeds.

19) When the user is ready to resume viewing of the time-shifted content, he initiates the Chase Play function.

20) A "Start Chase Play" command is sent from the STB to the IPTV-AS over the control channel. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible. The IPTV-AS acts as a gateway between the Network PVR system and the STB. This enables STB / IPTV-AS specific user interaction whilst allowing use by operators of many different types of N-PVR system. The adjustment of the required N-PVR procedures and protocols is handled by the IPTV-AS. RTSP is used as an example in the sequence but the invention is not limited to RTSP.

21) The IPTV-AS sends a SIP INVITE message on the same SIP session that is associated with the control channel. The SIP INVITE message is a request to establish a unicast channel that will be used to deliver the recorded (time-shifted) content stored in the N-PVR system. As a result the content delivery changes from multicast to unicast with the IMS being used to effect this change.

22, 23) The SIP INVITE message is transmitted over the ISC and the MMTEL AS.

24, 25) The SIP INVITE message is sent to the STB which acknowledges the request with a 200 OK response to accept the unicast channel invitation.

26) The IPTV AS initiates playback of the recorded content by means of a "Play" command to the N-PVR system. The IPTV-AS acts as a gateway between the Network PVR system and the STB. This enables STB / IPTV-AS specific user interaction whilst allowing use by operators of many different types of N-PVR system. The adjustment of the required N-PVR procedures and protocols is handled by the IPTV-AS. RTSP is used as an example in the sequence but the invention is not limited to RTSP.

27) Unicast delivery is started.

Event Triggered Time-Shift

This sequence is an example of how operators can use the control channel to deliver personalized information services combined with the Time-Shift function described previously. This solution makes it possible to combine IPTV Service, IMS Communication Services and Personalized Information Services and enables the network to take an active role in IPTV delivery and operators to offer personalized Triple-Play service offerings. The procedure, as schematically indicated in Figure 7, is as follows (with reference to the numbers used in the figure):

1) A control channel is established between the STB and the IPTV-AS by the procedure described above with reference to Figure 1. At this point the STB is receiving content that is delivered by multicast.

2, 3) Two user subscribed-to information events are delivered to the IPTV-AS. The procedure for subscribing to the events is not shown in the sequence but can be implemented over the control channel.

4) The first event reporting lottery results is delivered to the STB over the control channel, and the results are displayed by the STB. The user may start the Time-Shift function if so desired, but this is not shown.

5) A notification is sent over the control channel specifying that a recorded football goal is available. The subscribed-to event may for example be goals occurring in a particular football game. When presented with this information, the user can choose to watch the goal and start the Time Shift for the channel that he is currently watching.

6) As a result the IPTV-AS initiates recording of the currently viewed multicast channel. This is possible as the STB always reports which multicast channel it is currently receiving after a channel change has occurred (not shown in the figure).

7) The IPTV-AS sends a SIP INVITE message in the same SIP session as that of the notification sent over the control channel. The SIP INVITE message is a request to establish a unicast channel that will be used to deliver the football goal stored in the N-PVR2 system.

8,9) The SIP INVITE message is transmitted over the ISC and the MMTEL AS. MMTel is used as the IMS Communication Service for IPTV in this method, thus resulting in the invocation of the MMTel AS over the ISC.

10, 11) The SIP INVITE message is sent to the STB which acknowledges the request with a 200 OK response to accept the unicast channel invitation.

12) The IPTV AS initiates playback of the recorded goal by means of a "Play" command to the N-PVR system. The IPTV-AS acts as a gateway between a N-PVR system and the STB.

13) Unicast delivery of the goal is started.

14) When the user is ready to resume viewing of the time-shifted content, he initiates the Chase Play function.

15) A "Start Chase Play" command is sent from the STB to the IPTV-AS over the control channel. The exact procedure and syntax of the command is a matter between the STB and the IPTV-AS, and many different variants are possible.

16) The IPTV-AS sends a SIP INVITE message in the same SIP session as that of the "Start Chase Play" command sent over the control channel. The SIP INVITE message is a request to establish a unicast channel that will be used to deliver the recorded (time-shifted) content stored in the N-PVR1 system.

17) The SIP INVITE message is transmitted over the ISC and the MMTEL AS.

18, 19 20) The SIP INVITE message is sent to the STB which acknowledges the request with a 200 OK response to accept the unicast channel invitation.

21) The IPTV AS initiates playback of the recorded content by means of a "Play" command to the N-PVR1 system.

22) Unicast delivery of the originally viewed program is started

The above described IMS based method for switching between multicast and unicast delivery of content relies on the IPTV-AS acting as a gateway between the Network PVR system and the STB's so that the network takes an active role in IPTV delivery and permits operators to offer a personalized Triple-Play service. By limiting the amount of content transmitted over the first mile of a broadband connection this frees up available bandwidth for use by other services.

It will be appreciated by the persons skilled in the art that various modifications may be made to the embodiment described above without departing from the scope of the present invention.

CLAIMS:

1. A method of time-shifting and chase-play for an IPTV system, the method comprising:

establishing a control channel between the originating user and a selected IPTV Application Server (IPTV-AS);

sending a start time-shift command to the IPTV-AS over the control channel;

sending a start recording command from the IPTV-AS to a Network PVR system to initiate recording of current multicast content;

when the user is ready to resume viewing of the time-shifted content, sending a start chase-play command to the IPTV-AS over the control channel to establish a unicast channel for playback of the time-shifted content; and

sending a playback command from the IPTV-AS to the Network PVR system to initiate playback of the time-shifted content over the unicast channel.

2. A method according to claim 1, wherein the control channel is set up using standard IMS procedures.

3. A method according to claim 1 or 2, wherein an indication that recording has been started is returned from the IPTV-AS to the originating user.

4. A method according to any one of the preceding claims, wherein a SIP INVITE message is sent from the IPTV-AS to establish the unicast channel for playback of the time-shifted content.

5. A method according to any one of the preceding claims, wherein a SIP INVITE message is sent from the IPTV-AS to the originating user to provide notification of an incoming call.

6. A method according to claim 5, wherein a user decision instruction for handling the incoming call is sent by the originating user to the IPTV-AS.

7. A method according to claim 6, wherein a media plane within the IPTV system is established for speech or multimedia communication in response to the user decision instruction.

8. A method according to claim 6, wherein a separate ISDN/PSTN channel is established for speech in response to the user decision instruction.

9. A method according to claim 6, 7 or 8, wherein the start recording command from the IPTV-AS to the Network PVR system is triggered in response to the user decision instruction.

10. A method according to any one of the preceding claims, wherein an indication that a subscribed-to event is available for viewing is sent from the IPTV-AS to the originating user, and the user is given the option of sending a start time-shift command to the IPTV-AS to initiate recording of current multicast content whilst the subscribed-to event is viewed.

11. A time-shifting and chase-play IPTV system, comprising:

channel control means for establishing a control channel between the originating user and a selected IPTV Application Server (AS);

start time-shift means for sending a start time-shift command to the IPTV-AS over the control channel;

start recording means for sending a start recording command from the IPTV-AS to a Network PVR system to initiate recording of current multicast content;

start chase-play means for sending a start chase-play command to the IPTV-AS over the control channel when the user is ready to resume viewing of the time-shifted content, to establish a unicast channel for playback of the time-shifted content; and

playback means for sending a playback command from the IPTV-AS to the Network PVR system to initiate playback of the time-shifted content over the unicast channel.

12. Computer program code for carrying out the method of any of claims 1 to 10.

Figure 1

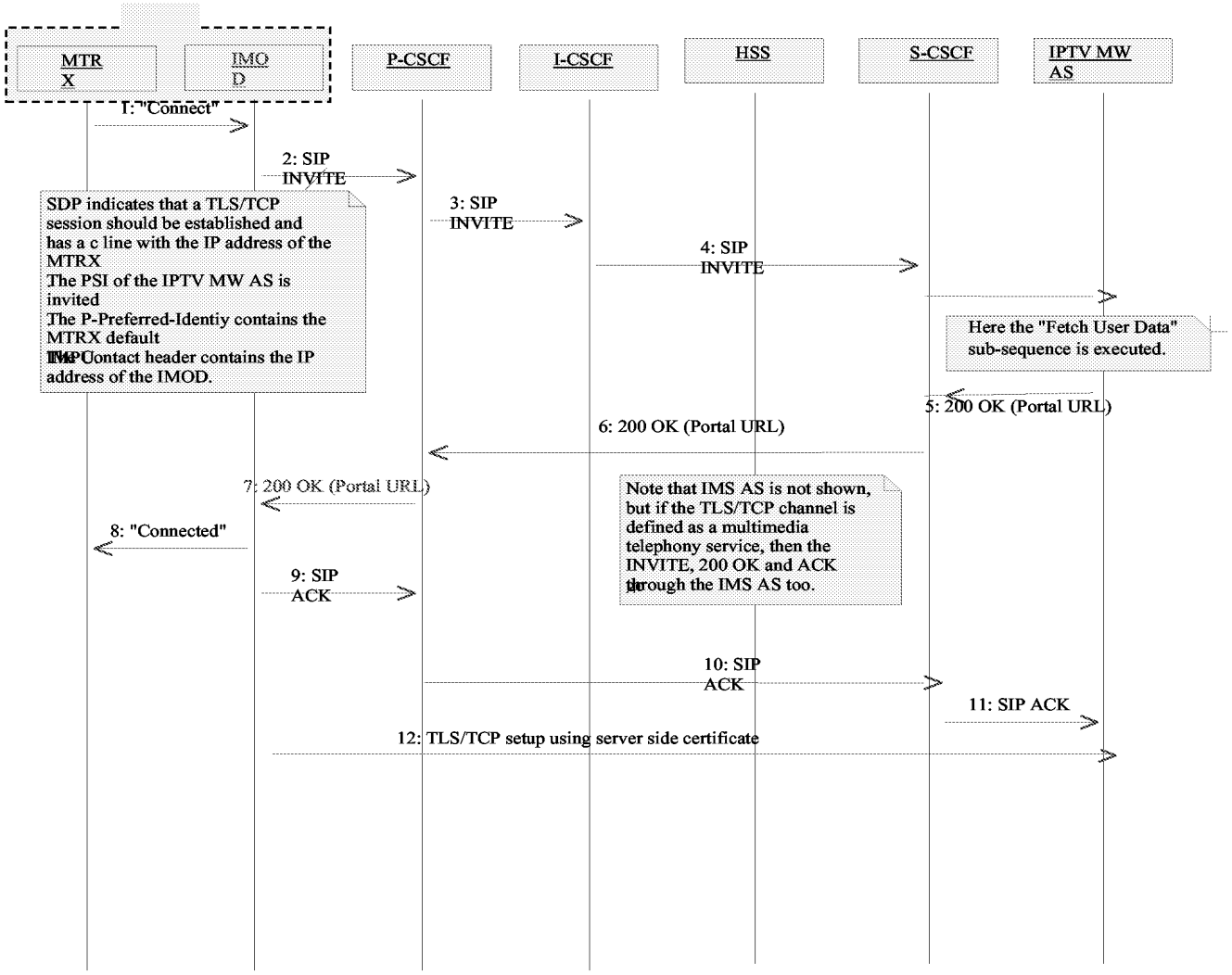

MTRX
IMOD
P-CSCF
I-CSCF
HSS
S-CSCF
IPTV MW AS
1: "Connect"
2: SIP INVITE
3: SIP INVITE
4: SIP INVITE
SDP indicates that a TLS/TCP session should be established and has a c line with the IP address of the MTRX
The PSI of the IPTV MW AS is invited
The P-Preferred-Identiy contains the MTRX default
IMPU
Contact header contains the IP address of the IMOD.
Here the "Fetch User Data" sub-sequence is executed.
5: 200 OK (Portal URL)
6: 200 OK (Portal URL)
7: 200 OK (Portal URL)
Note that IMS AS is not shown, but if the TLS/TCP channel is defined as a multimedia telephony service, then the INVITE, 200 OK and ACK through the IMS AS too.
8: "Connected"
9: SIP ACK
10: SIP ACK
11: SIP ACK
12: TLS/TCP setup using server side certificate

Figure 2

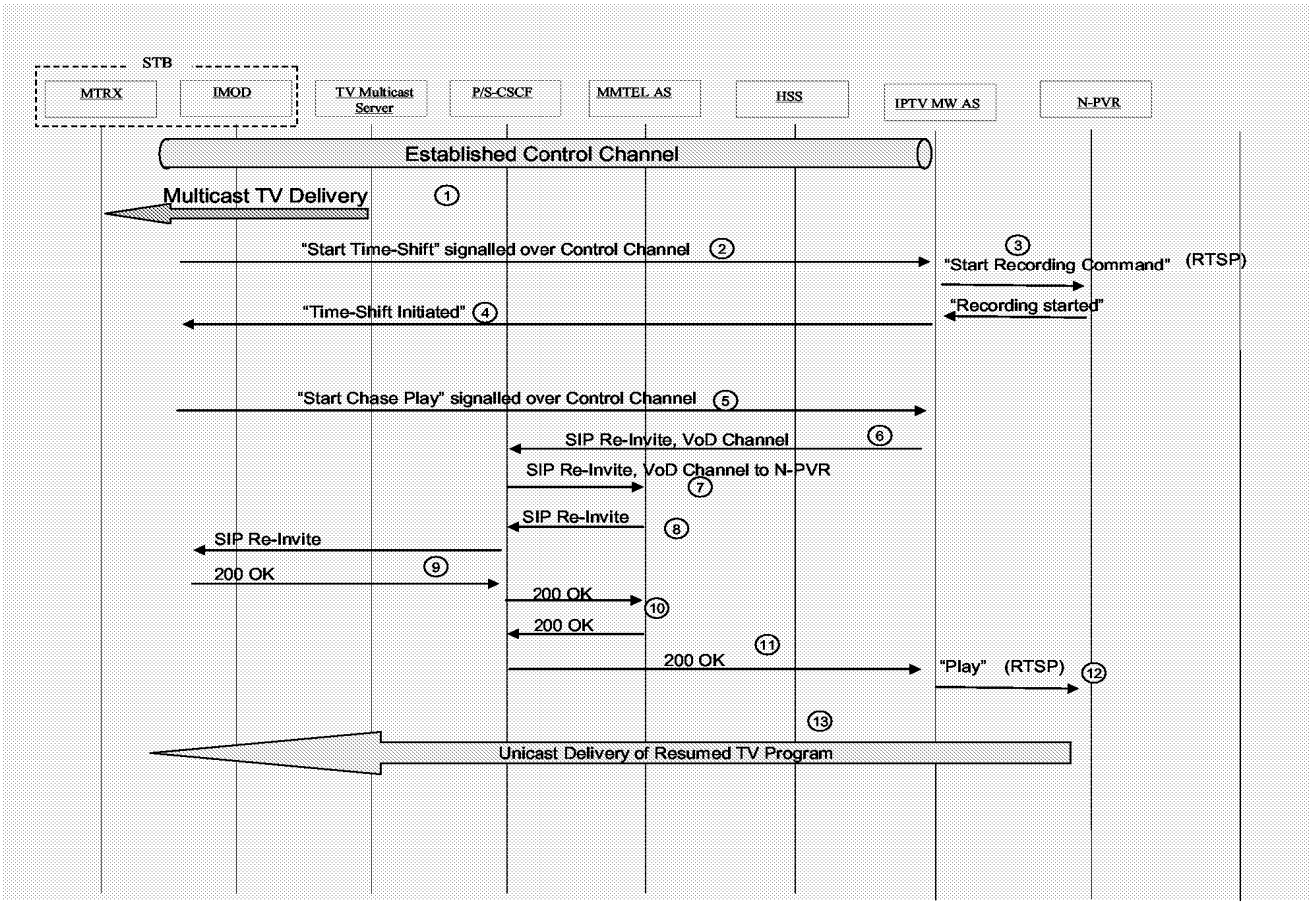

STB
MTRX
IMOD
TV Multicast Server
P/S-CSCF
MMTEL AS
HSS
IPTV MW AS
N-PVR
Established Control Channel
Multicast TV Delivery
1
"Start Time-Shift" signalled over Control Channel
2
3
"Start Recording Command" (RTSP)
"Recording started"
"Time-Shift Initiated"
4
"Start Chase Play" signalled over Control Channel
5
SIP Re-Invite, VoD Channel
6
SIP Re-Invite, VoD Channel to N-PVR
7
SIP Re-Invite
8
SIP Re-Invite
200 OK
9
200 OK
10
200 OK
11
200 OK
"Play" (RTSP)
12
13
Unicast Delivery of Resumed TV Program

Figure 3

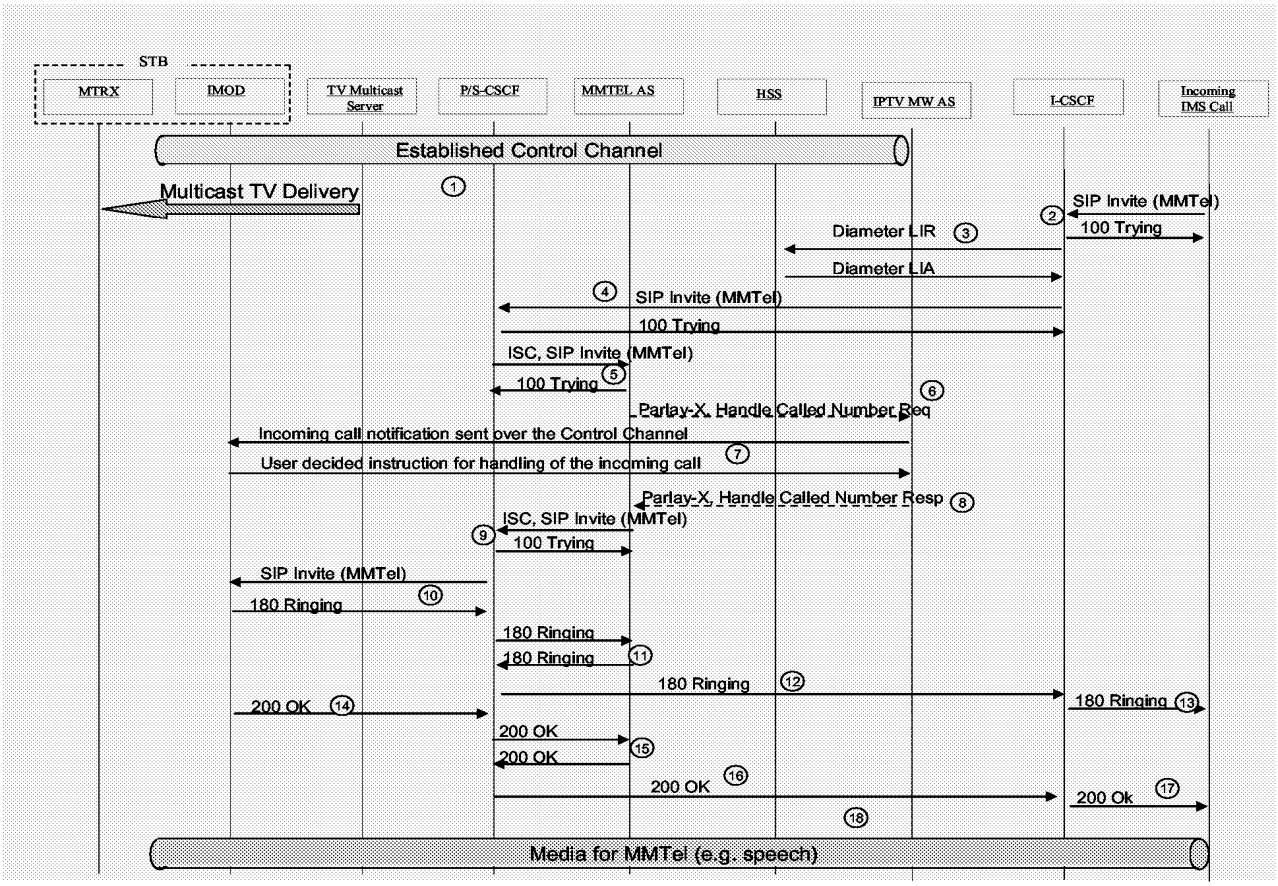

STB
MTRX
IMOD
TV Multicast Server
P/S-CSCF
MMTEL AS
HSS
IPTV MW AS
I-CSCF
Incoming IMS Call
Established Control Channel
Multicast TV Delivery
1
SIP Invite (MMTel)
2
100 Trying
Diameter LIR
3
Diameter LIA
4
SIP Invite (MMTel)
100 Trying
ISC, SIP Invite (MMTel)
5
100 Trying
6
Parlay-X, Handle Called Number Req
Incoming call notification sent over the Control Channel
7
User decided instruction for handling of the incoming call
Parlay-X, Handle Called Number Resp
8
ISC, SIP Invite (MMTel)
9
100 Trying
SIP Invite (MMTel)
10
180 Ringing
180 Ringing
180 Ringing
11
180 Ringing
12
180 Ringing
13
200 OK
14
200 OK
200 OK
15
200 OK
16
200 Ok
17
18
Media for MMTel (e.g. speech)

Figure 4

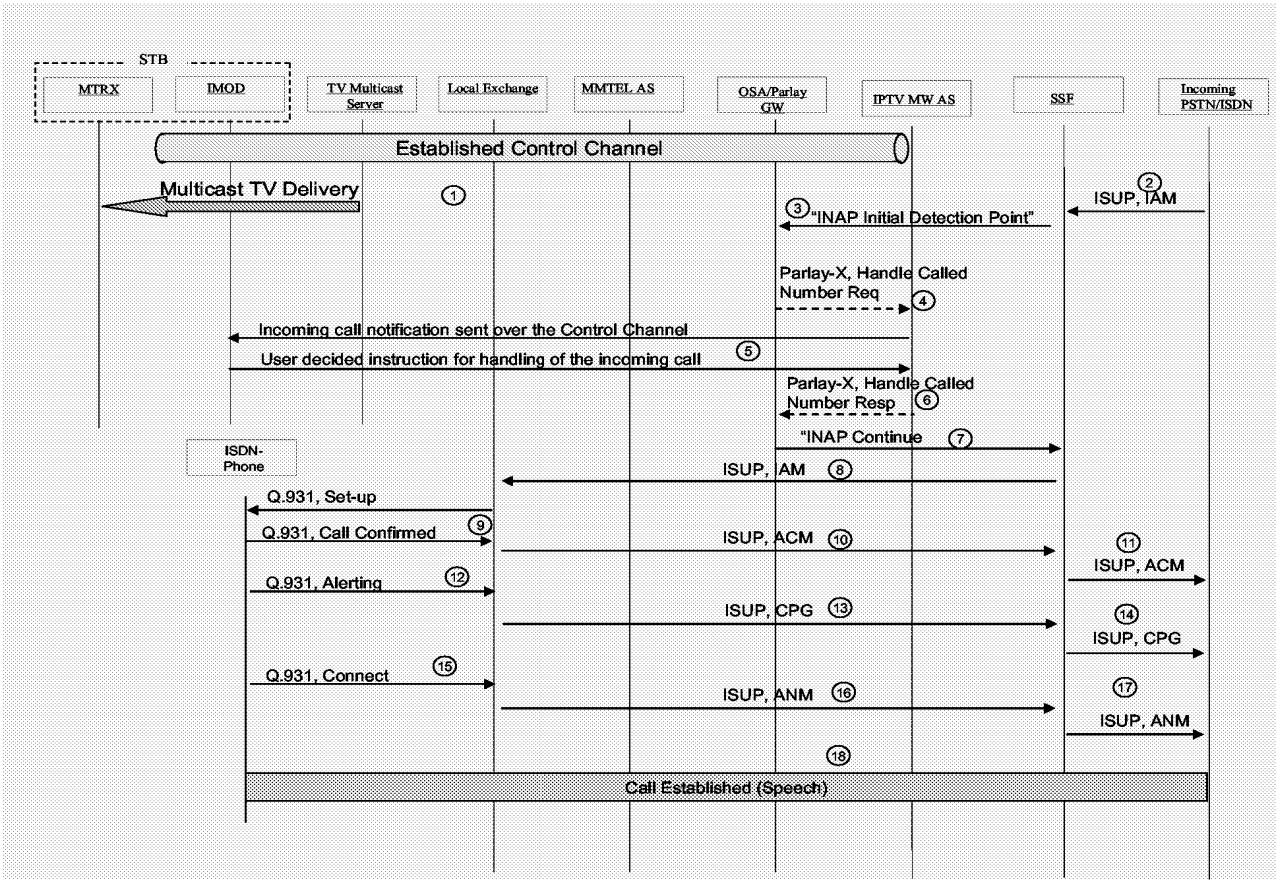
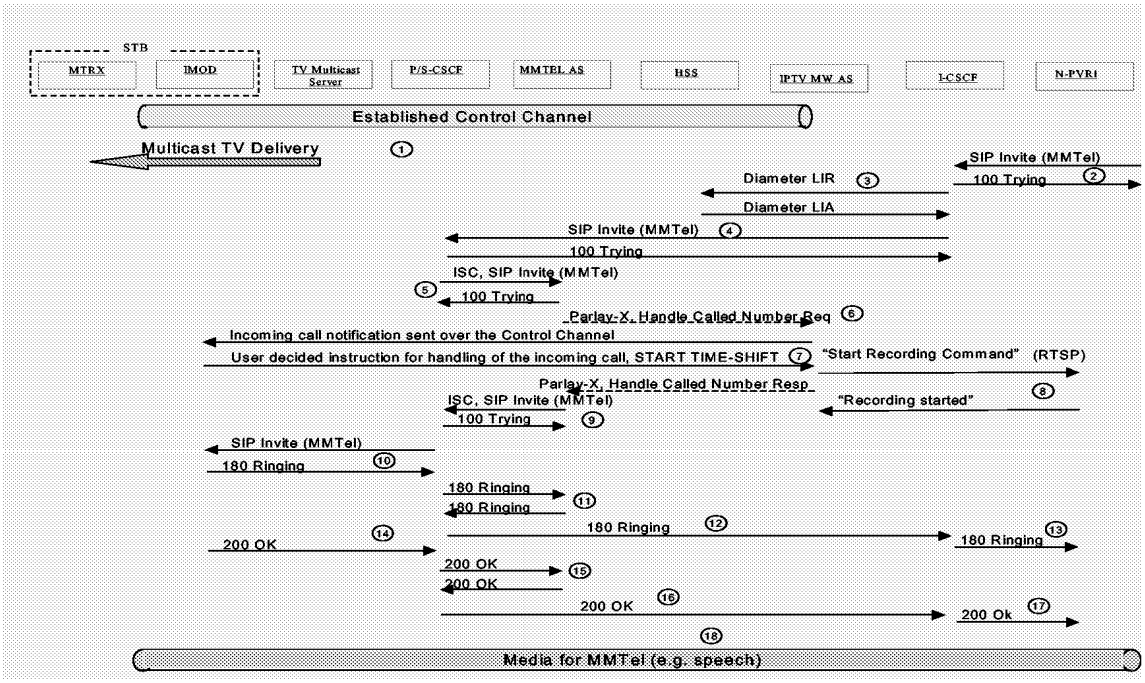

STB
MTRX
IMOD
TV Multicast Server
Local Exchange
MMTEL AS
OSA/Parlay GW
IPTV MW AS
SSF
Incoming PSTN/ISDN
Established Control Channel
Multicast TV Delivery
1
2 ISUP, IAM
3 "INAP Initial Detection Point"
Parlay-X, Handle Called Number Req
4
Incoming call notification sent over the Control Channel
User decided instruction for handling of the incoming call
5
Parlay-X, Handle Called Number Resp
6
"INAP Continue
7
ISDN-Phone
ISUP, AM
8
Q.931, Set-up
Q.931, Call Confirmed
9
ISUP, ACM
10
11
ISUP, ACM
Q.931, Alerting
12
ISUP, CPG
13
14
ISUP, CPG
Q.931, Connect
15
ISUP, ANM
16
17
ISUP, ANM
18
Call Established (Speech)

Figure 5


STB
MTRX
IMOD
TV Multicast Server
P/S-CSCF
MMTEL AS
HSS
IPTV MW AS
I-CSCF
N-PVR1
Established Control Channel
Multicast TV Delivery
1
SIP Invite (MMTel)
100 Trying
2
Diameter LIR
3
Diameter LIA
SIP Invite (MMTel)
4
100 Trying
ISC, SIP Invite (MMTel)
5
100 Trying
Parlay-X, Handle Called Number Req
6
Incoming call notification sent over the Control Channel
User decided instruction for handling of the incoming call, START TIME-SHIFT
7
"Start Recording Command" (RTSP)
Parlay-X, Handle Called Number Resp
8
"Recording started"
ISC, SIP Invite (MMTel)
100 Trying
9
SIP Invite (MMTel)
180 Ringing
10
180 Ringing
11
180 Ringing
180 Ringing
12
180 Ringing
13
200 OK
14
200 OK
15
200 OK
200 OK
16
200 Ok
17
18
Media for MMTel (e.g. speech)

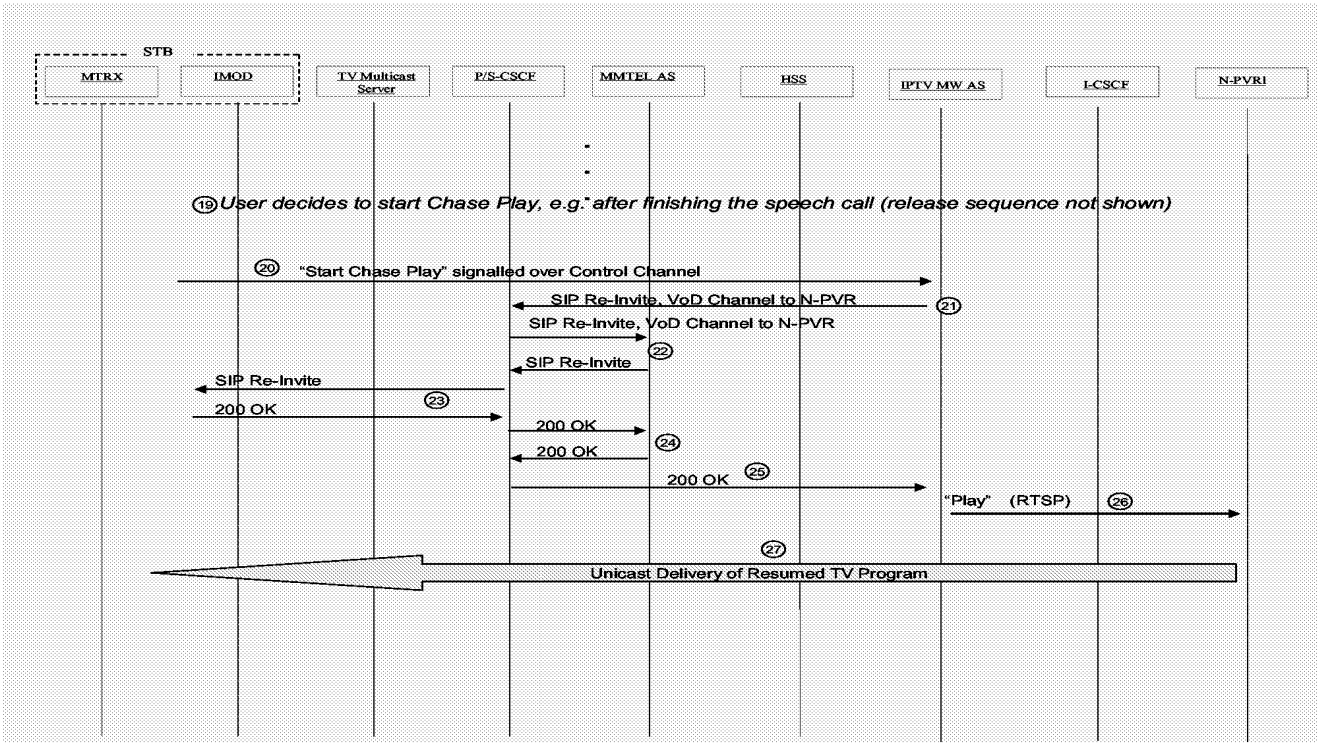
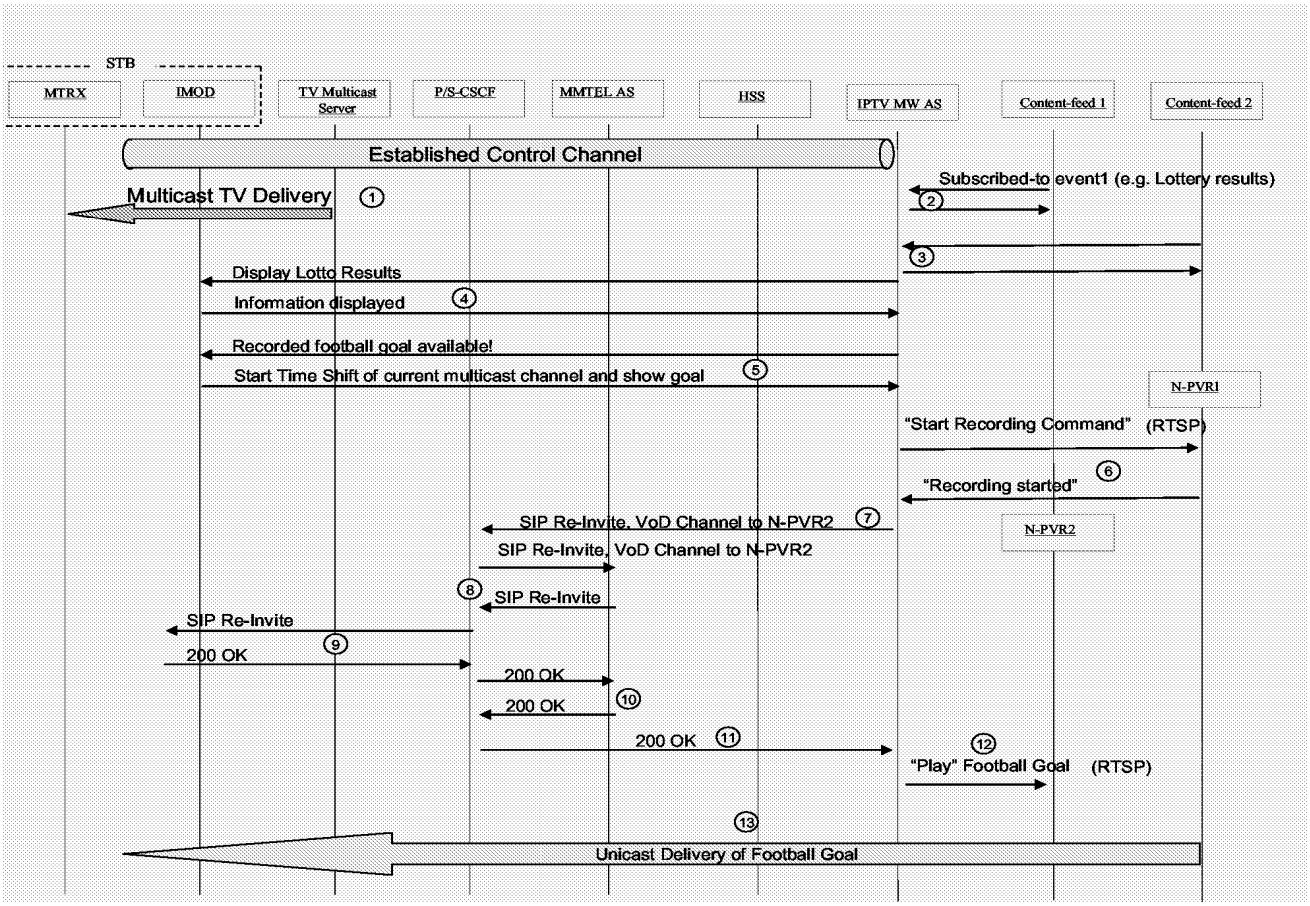

STB
MTRX
IMOD
TV Multicast Server
P/S-CSCF
MMTEL AS
HSS
IPTV MW AS
I-CSCF
N-PVR1
19 User decides to start Chase Play, e.g. after finishing the speech call (release sequence not shown)
20
"Start Chase Play" signalled over Control Channel
SIP Re-Invite, VoD Channel to N-PVR
21
SIP Re-Invite, VoD Channel to N-PVR
22
SIP Re-Invite
SIP Re-Invite
23
200 OK
200 OK
24
200 OK
200 OK
25
"Play" (RTSP)
26
27
Unicast Delivery of Resumed TV Program

Figure 6


STB
MTRX
IMOD
TV Multicast Server
P/S-CSCF
MMTEL AS
HSS
IPTV MW AS
Content-feed 1
Content-feed 2
Established Control Channel
Multicast TV Delivery
1
Subscribed-to event1 (e.g. Lottery results)
2
3
Display Lotto Results
Information displayed
4
Recorded football goal available!
Start Time Shift of current multicast channel and show goal
5
N-PVR1
"Start Recording Command" (RTSP)
6
"Recording started"
SIP Re-Invite, VoD Channel to N-PVR2
7
N-PVR2
SIP Re-Invite, VoD Channel to N-PVR2
8
SIP Re-Invite
SIP Re-Invite
9
200 OK
200 OK
200 OK
10
200 OK
11
12
"Play" Football Goal (RTSP)
13
Unicast Delivery of Football Goal

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/060530

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04N7/24 H04N7/173

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2005/183120 A1 (JAIN SAURABH ET AL) 18 August 2005 (2005-08-18) abstract paragraphs [0008] - [0021] paragraphs [0035] - [0089] figures 1-10	1-4, 10-12 5-9
Y A	US 6 882 709 B1 (SHERLOCK PETER ET AL) 19 April 2005 (2005-04-19) abstract column 6, lines 23-36 figures 1-6	5-9 1-4, 10-12

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 November 2006	23/11/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	MARZAL-ABARCA, X

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MAGEDANZ T ET AL: "The IMS Playground @ Fokus - An Open Testebed for Next Generation Network Multimedia Services" TESTBEDS AND RESEARCH INFRASTRUCTURES FOR THE DEVELOPMENT OF NETWORKS AND COMMUNITIES, 2005. TRIDENTCOM 2004. FIRST INTERNATIONAL CONFERENCE ON TRENTO, ITALY 23-25 FEB. 2005, PISCATAWAY, NJ, USA,IEEE, 23 February 2005 (2005-02-23), pages 2-11, XP010774253 ISBN: 0-7695-2219-X the whole document	1-4, 10-12
A	FENG LIU ET AL: "An approach of integrating sip in converged multimodal/multimedia communication services" COMPUTER COMMUNICATIONS AND NETWORKS, 2003. ICCCN 2003. PROCEEDINGS. THE 12TH INTERNATIONAL CONFERENCE ON DALLAS, TX, USA 20-22 OCT. 2003, PISCATAWAY, NJ, USA,IEEE, 20 October 2003 (2003-10-20), pages 137-142, XP010695709 ISBN: 0-7803-7945-4 Section 2.1 Multimedia Technology Integration Platform Section 2.2 Integrating SIP with MTIP	1-4, 10-12
A	FRANZ R ED - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS: "Control architecture for voice/data convergence" ICC 2001. 2001 IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS. CONFERENCE RECORD. HELSINKY, FINLAND, JUNE 11 - 14, 2001, IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS, NEW YORK, NY : IEEE, US, vol. VOL. 1 OF 10, 11 June 2001 (2001-06-11), pages 758-762, XP010553104 ISBN: 0-7803-7097-1 the whole document	1-4, 10-12
A	J-F REY ET AL: "SIP Technology in the Enterprise: SIP technology will be the next step in IP telephony, bringing new Internet telephony services to enterprise users" ALCATEL TELECOMMUNICATIONS REVIEW, ALCATEL, PARIS CEDEX, FR, October 2002 (2002-10), XP007005899 ISSN: 1267-7167 the whole document	1-4, 10-12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2006/060530

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [X] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[X] The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4,10,11,12

Time-shifting and chase-play for an IPTV system.

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2. claims: 5-9

Voice call handling

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2006/060530

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005183120 A1	18-08-2005	NONE	
US 6882709 B1	19-04-2005	NONE	

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
KONINKLIJKE KPN N.V.
Attn. Wuyts, K.M.
P.O. Box 95321
NL-2509 CH The Hague
PAYS-BAS

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 403418WO	Date of mailing *(day/month/year)* 15/02/2010
International application No. PCT/EP2010/000278	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
Applicant KONINKLIJKE KPN N.V.	International filing date *(day/month/year)* 19/01/2010

1. [x] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Anita Rothenbücher

Form PCT/ISA/220 (July 2009)

(See notes on accompanying sheet)

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, International Phase, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
403418WO		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/EP2010/000278	19/01/2010	19/01/2009
Applicant		
KONINKLIJKE KPN N.V.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language,** the international search was carried out on the basis of:

[X] the international application in the language in which it was filed

[ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

[X] the text is approved as submitted by the applicant

[ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

a. the figure of the **drawings** to be published with the abstract is Figure No. 2

[X] as suggested by the applicant

[ ] as selected by this Authority, because the applicant failed to suggest a figure

[ ] as selected by this Authority, because this figure better characterizes the invention

b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/000278

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/033249 A1 (SAMDADIYA PARAG [US] ET AL) 8 February 2007 (2007-02-08) page 1, paragraph 7 page 2, paragraph 15 - paragraph 18 page 3, paragraph 24 - paragraph 26 page 4, paragraph 36 - page 5, paragraph 43 page 5, paragraph 47 - paragraph 49	1-19
Y	WO 02/059787 A (ERICSSON TELEFON AB L M [SE]; PAPANIKOLAOU THOMAS [DE]; AAKERFELDT JAN) 1 August 2002 (2002-08-01) page 10, line 9 - line 19 page 11, paragraph 28 - page 12, paragraph 8 page 16, line 12 - page 17, line 34 page 30, line 4 - line 28 page 31, line 32 - page 32, line 5	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 February 2010	15/02/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Karavassilis, N

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2010/000278

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007033249 A1	08-02-2007	NONE	
WO 02059787 A	01-08-2002	DE 10295699 T5	15-04-2004
		GB 2386726 A	24-09-2003
		JP 2004518219 T	17-06-2004
		SE 519936 C2	29-04-2003
		SE 0100187 A	25-07-2002
		US 2004049589 A1	11-03-2004

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2010/000278	19.01.2010	19.01.2009

International Patent Classification (IPC) or both national classification and IPC
INV. H04L29/06

Applicant
KONINKLIJKE KPN N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	see form PCT/ISA/210	Karavassilis, N Telephone No. +31 70 340-4273

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-19
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-19
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V.

1. Reference is made to the following documents:
   D1 : US 2007/033249 A1 (SAMDADIYA PARAG [US] ET AL) 8 February 2007 (2007-02-08)

   D2 : WO 02/059787 A (ERICSSON TELEFON AB L M [SE]; PAPANIKOLAOU THOMAS [DE]; AAKERFELDT JAN) 1 August 2002 (2002-08-01)

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claims 1-19 does not involve an inventive step in the sense of Article 33(3)PCT, due to the following reasons:

2.1 With respect to independent method claim 1, document D1 discloses (references in parentheses applying to D1):

Method for managing associated sessions in a network, ~~the network comprising a network element configured for managing associated sessions between the network and user equipment~~, the method comprising: providing a composition session identifier for associating sessions in a network (page 2, paragraph 15); ~~exchanging the composition session identifier between a user equipment and the network element~~; and associating two or more sessions with the composition session by exchanging the composition session identifier (page 5, paragraph 43).

D1 differs from the subject matter of independent method claim 1, in that it does not disclose the features defined in this claim of:

the network comprising a network element configured for managing associated sessions between the network and user equipment and exchanging the composition session identifier between a user equipment and the network element.

The problem solved by the differing features of claim 1 may be regarded as: how to decouple the user from the end service providers by having an intermediate network

node manage the session associations. However, these differing features have already been employed for the same purpose in a similar method as shown in D2. D2 discloses a network node portal, which maps service session ids used between the portal and the end service providers into a unifying portal session id exchanged between the portal and the end user (see document D2: page 30, lines 1-28; page 31, line 27 - page 32, line 5). It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method according to document D1, thereby arriving at a method according to claim 1. The subject-matter of claim 1 does not therefore involve an inventive step (Article 33(3) PCT).

Similar argumentation applies for corresponding independent claims 13 (system), 14 (user equipment), 16 (network element) and 19 (computer program product).

2.2 Dependent claims 2-12, 15, 17 and 18 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)
(Case No. 11-905-WO-US)

In re Application of:	)	
	)	
Hans Maarten Stokking et al.	)	
	)	**Examiner: TBA**
Serial No.: Not yet assigned	)	
Int'l Appln. No.: PCT/EP2010/000278	)	**Art Unit: TBA**
	)	
Int'l. Filing Date: 19 January 2010	)	
	)	
For: Managing Associated Sessions in a Network	)	

PRELIMINARY AMENDMENT

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Prior to examination of the concurrently filed United States National application corresponding to PCT/EP2010/000278, Applicants respectfully request entry of the attached amendments to the specification beginning on page 2 and the claims beginning on page 3, as well as consideration of the attached Remarks beginning on page 8.

AMENDMENT TO THE SPECIFICATION

In the first page, after the Title of the Invention, please insert the following:

"CROSS REFERENCE TO RELATED APPLICATIONS

The present application is a national stage entry of PCT/EP2010/000278, filed January 19, 2010, and claims priority to EP 09000661.0, filed January 19, 2009, the entire contents of which is incorporated herein by reference."

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) ~~Method~~ A method for managing associated sessions in a network, the network having ~~comprising~~ a network element configured for managing associated sessions between the network and user equipment, the method comprising:

- providing a composition session identifier for associating sessions in a network;
- exchanging the composition session identifier between a user equipment and the network element; and
- associating two or more sessions with the composition session identifier by exchanging the composition session identifier

2. (Currently amended) ~~Method~~ The method according to claim 1, wherein the method further comprises ~~the step of~~ initiating a composition session.

3. (Currently amended) ~~Method~~ The method according to claim 2, wherein the method further comprises ~~the steps of~~:

- the user equipment generating a composition session identifier; and
- sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier.

4. (Currently amended) ~~Method~~ The method according to claim 2, wherein the method further comprises ~~the steps of~~:

- sending a request for initiating a composition session from the user equipment to the network element;
- the network element generating a composition session identifier in response to the receipt of the request; and
- sending the composition session identifier to the user equipment.

5. (Currently amended) ~~Method~~ The method according to claim 1 ~~any of claims 1-4~~, wherein the method further comprises ~~the steps of~~:

- the user equipment initiating two or more sessions by sending two or more session initiation requests for a session~~, preferably using a SIP INVITE message,~~ to the network element, each request comprising the composition session identifier

6. (Currently amended) ~~Method~~ The method according to claim 1 ~~any of claims 1-4~~, wherein the method further comprises ~~the steps of~~:

- the network element initiating two or more sessions by sending two or more requests for a session~~, preferably using a SIP INVITE message,~~ to the user equipment, each request comprising the composition session identifier.

7. (Currently amended) ~~Method~~ The method according to claim 3, ~~any of claims 3-4,~~ wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

8. (Currently amended) ~~Method~~ The method according to claim 5, ~~claims 5 or 6,~~ wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID), a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and[[/or]] a shared content (SC) session associated with a SC identifier.

9. (Currently amended) ~~Method~~ The method according to claim 1, ~~any of claims 1-8,~~ wherein [[the]] combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

10. (Currently amended) ~~Method~~ The method according to claim 1 ~~any of claims 1-9~~, wherein the network further comprises storage ~~means, preferably a database~~, the method further comprising ~~the step of~~:

– the network element storing the composition session identifier and the two or more associated session identifiers in the storage ~~means~~.

11. (Currently amended) ~~Method~~ The method according to claim 2 ~~any of claims 2-10~~, the method further comprising ~~the step of~~:

– modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session.

12. (Currently amended) ~~Method~~ The method according to claim 1 ~~any of claims 1-11~~, wherein the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), wherein the SCF is configured for managing associated sessions between the network and the User Equipment.

13. (Currently amended) A system for managing associated sessions in a network, the system comprising:

– a network element configured for (i) managing associated sessions between the network and a user equipment, (ii) [[; for]] exchanging a composition session identifier with a user equipment, and (iii) ~~; and, for~~ associating two or more sessions with the composition session identifier by exchanging the composition session identifier; and

– a user equipment configured for (i) providing a composition session identifier for associating sessions in a network and (ii) ~~;; and, for~~ exchanging the composition session identifier with the network element.

14. (Currently amended) A user equipment for use in a system according to claim 13, the user equipment comprising:

– an ID generator for generating a composition session identifier; and

– a multimedia client configured for (i) receiving the composition session identifier from the ID generator, (ii) [[;]] exchanging the composition session identifier with a network element, (iii) ~~; for~~ initiating one or more multimedia sessions with the network element, and (iv) ~~; and for~~ exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

15. (Currently amended) [[A]] The user equipment according to claim 14, [[14.,]] the user equipment further configured for initiating a composition session.

16. (Currently amended) A network element for use in a system according to claim 13, the network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment[[; x;]] and for setting up and modifying multimedia sessions; and
- [[a]] storage ~~means~~ configured for storing composition session information, the composition session information comprising information regarding composition session identifiers and the associated sessions.

17. (Currently amended) [[A]] The network element according to claim 16, further configured for at least one of initiating, ~~and or~~ terminating and ~~or~~ modifying a composition session

18. (Currently amended) [[A]] The network element according to claim 16 ~~or 17~~, the network element further comprising:

- an ID generator for generating a composition session identifier.[[;]

19. (Currently amended) A computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps according to claim 1. ~~any of claims 1-12.~~

20. (New) The method according to claim 4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

21. (New) The method according to claim 6, wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier

(NPVRContentID), a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and a shared content (SC) session associated with a SC identifier.

REMARKS

No new matter has been introduced into the present application as a result of the above amendments.

Applicant submits this preliminary amendment to put the claims in better condition for examination. Prompt consideration and entry of this amendment prior to examination is respectfully requested. If there are any questions or comments regarding this Amendment or application, the Examiner is encouraged to contact the undersigned attorney as indicated below.

Respectfully submitted,

Date: July 13, 2011

/Scott M. Miller/
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PTO/SB/14 (11-08)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	11-905-WO-US
	Application Number	
Title of Invention	Managing Associated Sessions in a Network	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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PTO/SB/14 (11-08)
Approved for use through 09/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	11-905-WO-US
	Application Number	
Title of Invention	Managing Associated Sessions in a Network	

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All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

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Application Information:

Title of the Invention	Managing Associated Sessions in a Network		
Attorney Docket Number	11-905-WO-US	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	10	**Suggested Figure for Publication (if any)**	

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	11-905-WO-US
	Application Number	
Title of Invention	Managing Associated Sessions in a Network	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	a 371 of international	PCT/EP2010/000278	2010-01-19

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Remove

Application Number	Country [i]	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
09000661.0	EP	2009-01-19	◉ Yes ○ No

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	11-905-WO-US
	Application Number	
Title of Invention	Managing Associated Sessions in a Network	

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Phone Number		Fax Number	
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Signature:

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Signature	/Scott M. Miller/			Date (YYYY-MM-DD)	2011-07-13
First Name	Scott M.	Last Name	Miller	Registration Number	62967

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

(54) **Title**: MANAGING ASSOCIATED SESSIONS IN A NETWORK

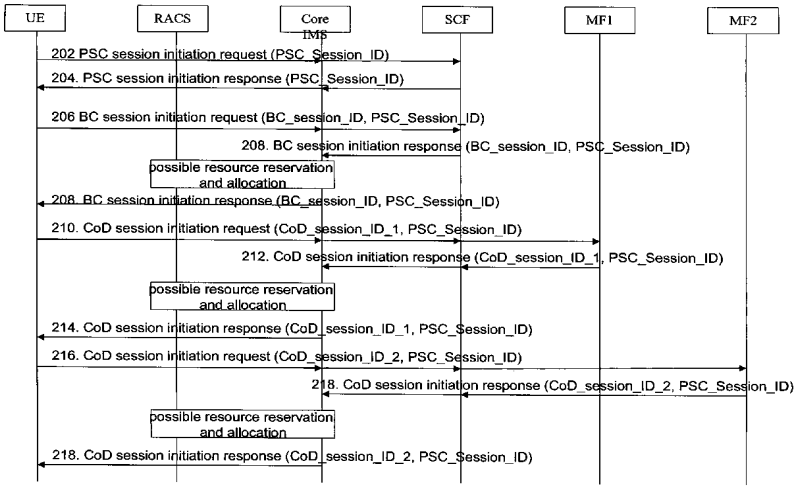

Figure 2

(57) **Abstract**: A method and a system for managing associated sessions in a network is described, wherein the network comprises a network element configured for managing associated sessions between the network and user equipment. The method comprises the steps of providing a composition session identifier for associating sessions in a network; exchanging the composition session identifier between a user equipment and the network element; and associating two or more sessions with the composition session identifier by exchanging the composition session identifier.

WO 2010/081744 A1

Managing associated sessions in a network

Field of the invention

The invention relates to managing associated sessions in a network, though not exclusively, to a method and a system for managing associated multimedia sessions in a network, a network element and a user equipment for use in such system and a computer program product for executing the method.

Background of the invention

The IP Multi-Media Subsystem (IMS) architecture is a unified architecture that supports a wide range of services enabled by the flexibility of Session Initiation Protocol (SIP). IMS is defined by certain 3GPP and 3GPP2 standards (such as 3GPP TS 22.228, TS 23.218, TS 23.228, TS 24.228, TS 24.229, TS 29.228, TS 29.229, TS 29.328 and TS 23.320 Releases 5-7).

In order to leverage the investments in the IMS infrastructure new types of multi-media services are developed. One type of IMS-enabled services regards the so-called combinational services also referred to as blended or composite services, which combine services of various platforms and make use of the functionalities and capabilities of various platforms and distribution techniques(e.g. phone, multicast, broadcast, television/video, content-on-demand etc.). A type of IMS-enabled services regards interactive multi-media services wherein the end-user is an active participant instead of a passive viewer.

Further enhancements of this type of IMS-enabled services may include an end-user and/or the network operator to compose a multimedia service from different multimedia streams. For example an end-user may compose a personalized multimedia service by enriching a main service, for example a

TV broadcast (BC) with personally selected multi-media content, such as content-on-demand (CoD), user-generated content (UCG), ect., originating from different sources in the network.

An example of an implementation of such a personalized TV service in a state-of-the-art architecture is described in the article of Rauschenbacher et. al, "A scalable interactive TV service supporting synchronized delivery over broadcast and broadcast networks", a Fraunhofer white paper of May 14, 2004. In this document a system is described wherein the main content stream is transported over a DVB network in the form of a broadcast channel to a Home Media Server at the end-user location. In addition, multiple additional content streams may be transported via a broadband IP network to the Home Media Server. At the Home Media Server, these additional content streams may be synchronized with the main content stream and thus presented to the end-user (display) device in a synchronized manner.

One of the disadvantages of the scheme described in Rauschenbacher et. al is that all end-user display equipment needs to be connected directly to the Home Media Server (HMS) for consuming these enriched services. Another disadvantage is that the HMS is a type of equipment of substantial complexity and needs to have a robust design with the necessary processing power to realize the personalized TV service functionality. In short, the prior art only allows the managing of the enriched television experience by the end-user. Information regarding the relation between the different multimedia streams originating from different sources in the network and delivered as separate streams to user equipment only exists at the user equipment (HMS).

An exemplary network architecture, such as an IMS network, more in particular the IMS network elements managing the multimedia services in the IMS network, is however not

aware of the fact that these multimedia sessions are used in combination by an end-user to generate a personalized multimedia service. It may however be convenient and/or even be necessary to manipulate the personalized television experience from within the network. For example, it may be convenient to simultaneously pause associated multimedia streams, that together form the personalized television experience, in order to deliver a targeted advertisement or a hurricane warning or other content to the end-user before resuming the personalized television experience. Also, reserving bandwidth in the network for all related streams may also be convenient. Another example whereby the network needs to know which streams are related is the situation of an incoming phone call. If a number of streams relate to a personalized television experience, and a number relate to individual download sessions or to a multimedia recording session on the background, it would be convenient if the network could only pause the streams related to the personalized television experience and not those related to the background download or recording sessions.

In WO2007/101473 describes an example of such a combinational service, where in response to the receipt of a incoming call, a TV program is recorded on a network personal video recording (NPVR) system. In this solution a broadcast stream (channel) is paused upon the receipt of an incoming call and recorded in the network. Upon the user's request, the content may be played from the moment it was paused as a unicast stream. This type of network intervention however only works for a single stream and does not work for the personalized television experience comprising a multiple of streams, possibly originating from different resources, in combination with the presence of one or more other active sessions to the same User Equipment

Within the state-of-the-art IMS architecture, such streams, controlled by and/or originating from different resources would require the set-up of multiple parallel sessions. One session would comprise the stream with the main content and additional sessions for each of the additional streams would comprise the additional content items (for example different subtitles, voice-over, Picture in Picture, etc.). From a network perspective these sessions from the outside would all look the same and no different from other active recording, downloading, gaming, telephony or other sessions. Currently the IMS standards do not allow an end-user and/or the network to compose associated multimedia sessions and to collectively control and/or manage these associated multimedia sessions and their used network resources. Hence, there is a desire in the prior art for methods and systems for managing associated sessions in a network.

Summary of the invention

It is an object of the invention to reduce or eliminate at least one of the drawbacks known in the prior art and to provide in a first aspect of the invention a method for managing associated sessions in a network, the network comprising a network element configured for managing associated sessions between the network and user equipment. The method comprising the steps of: providing a composition session identifier (PSCID) for associating sessions in a network;
; exchanging the composition session identifier between a user equipment and the network element; and, associating two or more sessions with the composition session by exchanging the composition session identifier.

The composition session identifier, if generated by the user equipment, or provided to the user equipment via a

third party provider (such as via an Electronic Program Guide), may be sent to the network element where the session management takes place. Alternatively, the composition session identifier may be sent to the user equipment from or under control of the network element. The sending of such composition session identifier in either direction may be referred to as an 'exchange'. Exchange may take place at any moment, that is: during the set-up of a composition session; during the set-up of a multimedia session which is destined to be associated with a composition session; or at other moments during the session management.

The invention allows network centric administration of the composition session identifier at a network element or at a location accessible to a network element. Whenever a multimedia session is set up, either initiated by a network element or by the user equipment, and an allocated composition session identifier is exchanged, the multimedia session may be associated under control of the network element with a composition session identifier. That way it may be associated with other multimedia sessions that may have already been assigned to the same composition session identifier.

Further, the network centric association of sessions enables the management of a group of sessions from within the network separate from other sessions that are not part of the group. Hence, using the composition session identifier the group of sessions may be manipulated as if there where only one session. For example it allows collective epausing (for example in response to an incoming call, destined for the user equipment), replaying, diverting of the data streams associated with the group of sessions.

In addition, the invention enables intergroup management of the sessions. If for instance bandwidth constrains appear in the network and a group of sessions and one separate session to the same user equipment exists, the

session management logic in the network element may select the separate session to be terminated, leaving the group of associated sessions intact.

Alternatively, if only one group of sessions is active, and their combined existence is vital to the delivery of for instance a personalized television experience to a user equipment, the network may determine that none of the sessions in the group may be terminated for reasons of bandwidth constrains. The session management logic, being aware of the association of sessions, may then be configured to look for another solution, such as downscaling one of the sessions within the group of sessions, such that the bandwidth constrains are alleviated.

In further embodiments, the method may comprise the step of initiating a composition session. Although in principle it may be sufficient to just generate a composition session identifier and store this in a place in the network under control of a network element, which is in charge of managing the associated sessions, there may be advantages in initiating a separate signaling session (composition session) as well. For instance such composition session may be used to exchange the composition session identifier between the user equipment and the network element. If no such composition session is initiated, the composition session identifier may be incorporated in the signaling of the individual sessions.

The composition session may be used for the management of associated sessions and various kinds of signaling between the user equipment and a network element associated with to this task. Such signaling may include agreeing on the duration of all sessions or negotiations regarding to bandwidth requirements (for all associated sessions together).

In addition, initiating such a composition session may provide for more effective use of resources in het network

and on the user equipment. For example using a composition session network initiated teardown of associated sessions may require less signaling to the user equipment . Further, continuous screening of all signaling messages for the presence of a composition session identifier, and subsequently probing the service logic (whether in the user equipment or in the network element) for a next course of action may be avoided. Messages only related to individual sessions (within a group of associated sessions) may not require such probing.

Further by associating sessions to a composition session identifier which is assigned to a composite session, the associated sessions are automatically assigned to the composition session.

In one embodiment the method further comprises the steps of: the user equipment generating a composition session identifier; sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier.

In another embodiment the method further comprises the steps of: sending a request for initiating a composition session from the user equipment to the network element; the network element generating a composition session identifier in response to the receipt of the request; sending the composition session identifier to the user equipment.

In an alternative embodiment, the method further comprises the steps of: the user equipment receiving a composition session identifier (PSCID) from the network prior to the sending of a request for initiating a composition session from the user equipment to the network element; said request comprising said received composition session identifier. The PSCID may be received via an Electronic Program Guide (EPG). By selecting a channel and activating the composition session modus via the remote control, the PSCID may be sent to the network element, which may be interpreted

by the network element as a request for initiating a composition session.

Hence, contrary to known schemes, the invention allows a network centric administration of groups of sessions using the composition session identifier. The administration may be located at the network element or at a location reachable by the network element. This provides the advantage that the network element itself may manage the associated sessions upon request from the network and/or upon triggers initiated by events in the network, without the prior intervention from the user equipment. The invention thereby enables a whole new spectrum of enhanced multimedia services. The network element for managing the group of associated sessions and/or composition session may for instance be configured to pause a plurality of associated multimedia sessions, (relating to a personalized TV service transmitted to a user equipment) upon the detection of an incoming call destined for the same user equipment. At the same time a downloading session, not being recognized by the network element as part of the associated sessions, may be left untouched and continue in the background. Such complex multi session service interaction is not possible in known systems.

In yet another embodiment the method further comprises the steps of: the user equipment initiating two or more sessions by sending two or more session initiation requests for a session, preferably using a SIP INVITE message, to the network element, each request comprising the composition session identifier.

In one embodiment the method further comprises the steps of: the network element initiating two or more sessions by sending two or more requests for a session, preferably using a SIP INVITE message, to the user equipment, each request comprising the composition session identifier.

In another embodiment the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

In yet another embodiment the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID, a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and/or a shared content (SC) session associated with a SC identifier. Said identifiers are all examples of session identifiers.

In a further embodiment the combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

In an embodiment the network further comprises storage means, preferably a database wherein the method further comprises the step of: the network element storing the composition session identifier and the two or more associated session identifiers in the storage means.

In yet another embodiment the method further comprises the step of: modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session. The initiation of a modification may be directed by the User Equipment, sending

a request thereto. Alternatively the initiation of a modification may be directed by the Network Element responsible for the session management. Typically, the session management may be a part of a Service Control Function in the network.

In yet another embodiment the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), the SCF being the network element configured for managing associated sessions between the network and the User Equipment.

In a further aspect the invention relates to a system for managing associated sessions in a network, the system comprising:

- a network element configured for managing associated sessions between the network and a user equipment; for exchanging a composition session identifier with a user equipment; and, for associating two or more sessions with the composition session by exchanging the composition session identifier;
- a user equipment configured for providing a composition session identifier for associating sessions in a network; for initiating a composition session; and, for exchanging the composition session identifier with the network element.

In yet a further aspect the invention relates to user equipment for use in a system as described above, wherein the user equipment comprises:

- an ID generator for generating a composition session identifier;
- a multimedia client configured for receiving the composition session identifier from the ID generator; for initiating a composition session and exchanging the composition session identifier with a network element; for initiating one or more multimedia sessions with the

network element; and for exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

In a further aspect the invention relates to a network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment; for initiating, and or terminating and or modifying a composition session; and for setting up and modifying multimedia sessions;
- a storage means for storing composition session information, the composition session information comprising information regarding composition sessions and the associated sessions.

In one embodiment the network element further comprises: an ID generator for generating a composition session identifier;

The invention also relates to a computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps as described above.

The invention will be further illustrated with reference to the attached drawings, which schematically will show embodiments according to the invention. It will be understood that the invention is not in any way restricted to these specific embodiments.

Brief description of the drawings

Fig. 1 depicts a system according to one embodiment of the invention.

Fig. 2 depicts a flow diagram of a method according to one embodiment of the invention.

Fig. 3 depicts a data structure of session information according to one embodiment of the invention.

Fig. 4 depicts a flow diagram of a method according to another embodiment of the invention.

Fig. 5 depicts a flow diagram of a method according to yet another embodiment of the invention.

Fig. 6 depicts a flow diagram of a method according to a further embodiment of the invention.

Fig. 7A and B depict a flow diagram of a method according to an exemplary embodiment of the invention.

Fig. 8A and **B** depict a flow diagram of a method according to a further embodiment of the invention.

Detailed description

Fig. 1 illustrates an example of an IMS-based IPTV system **100** as defined by ETSI TISPAN TS 182.027. The system is adapted for managing associated multimedia sessions according to a first embodiment of the invention. The system comprises an IMS core **102** formed by a set of Call/Session Control Functions (CSCF): a Proxy-CSCF (P-CSCF), an Interrogating-CSCF (I-CSCF) and an Serving-CSCF (S-CSCF). The IMS core is connected to User Equipment (UE) **104**, IPTV service control functions (SCF) **106** for controlling IPTV services in the network (e.g. a broadcast SCF, a Content-on-Demand SCF, etc.) and to Media Functions (MF) **108** comprising Media Control Functions (MCF) and Media Delivery Functions (MDF) control the delivery of media contents via Transport Functions (TF) and Transport Control Functions (TCF) to the User Equipment.

Further, a Service Selection Function (SSF) **110** connected to the user equipment provides the user equipment with information about the available services using e.g. Electronic Programming Guide (EPG) and the Resource and

Admission Control Subsystem (RACS) **112** manages resource usage and resource allocation for delivery of the media contents to the user equipment.

The User Equipment (UE) may be any type of equipment connectable via a network to a session management system. The User Equipment may relate to any type of desktop/laptop/handheld computer, PDA, mobile terminal, set-top box, Home Media Gateway, or any equivalent of those. In one embodiment, the network element comprising the session management system may be based on IMS architecture. It may for instance be a logical IMS network element referred to as a Service Control Function (SCF). Alternatively, the network element may be any other session management system performing functions which are equivalent to those of the SCF. The network connecting the UE to the network element may relate to any type of wireless or wired network., For the purpose of the invention, associated sessions are sessions that in order to enable new types of services require that they should not be managed independent from each other.

The IPTV system uses the Session Initiation Protocol (SIP) to set up and control sessions between user terminals or user terminals and the applications servers comprising the SCFs and MFs. The Session Description Protocol (SDP) carried by SIP signaling is used to describe and negotiate the media components in the session. Further, the Real Time Streaming Protocol (RTSP) is used for media control providing e.g. broadcast trick modes, Content-on-Demand (CoD) and Network Personal Video Recorder (NPVR) and the Real Time Transport Protocol (RTP) is used for media transport.

In order to allow the IPTV system to be aware of associated multimedia sessions, the SCFs and the user equipment are configured to setup composition sessions. A composition session allows both the user equipment and the network to keep track of and to control associated multimedia

sessions. For the purpose of this invention, the composition session may also be referred to as PSC session, Composite session or Combi session. These are all equivalent terms used throughout this invention disclosure to indicate the same concept.

Upon initiation of such composition session a composition session identifier (PSCID) is generated and exchanged between the SCF and the user equipment using SIP messaging.

It is to be noted that for the purpose of the invention the terms PSCID, PSCid, PSC_Session_ID and Combi_session_ID are all equivalent/substitutable and/or interchangeable terms, used to indicate one and the same type of identifier.

The composition session identifier (PSCID) may be generated by the SCF or the user equipment. Alternatively, the PSCID may be provided by a third party provider (application server or AS), and provided via for instance an Electronic Program Guide (EPG)to the user equipment. After establishment of the composition session, multimedia sessions, e.g. broadcast sessions, CoD sessions, Targeted Advertisement Insertion (TAI) sessions, User-Generated Content (UGC) sessions, etc. may be associated with the composition session by adding the multimedia sessions to the composition session using the composition session identifier. An ensemble of sessions tied together by the PSCID, may be provided to the user equipment as a Personalized Service Composition service (PSC-service).

Addition of the multimedia sessions to a composition session may be realized for example by initiating a multimedia session using SIP, e.g. using the SIP INVITE message comprising the composition session identifier and the multimedia session identifier. Alternatively, addition to a composition session may be realized by adding an already

existing (active) multimedia session to the composition session. This may be accomplished by modifying the existing multimedia session using SIP, e.g. using the SIP REINVITE message comprising the composition session identifier and the multimedia session identifier.

The SCF and the user equipment may keep track of the composition sessions and the multimedia sessions associated with each of these compositions sessions by storing for each composition session identifier the associated multimedia session identifiers in a session database **114** connected to the SCF and a memory for storing session information **116** in the user equipment respectively.

Further, the SCF and the user equipment are configured to modify and/or to terminate a composition session. For example in order to free up network resources to make room for the addition of another media session, the network may want to replace a HDTV broadcast session in a particular composition session with a normal broadcast session that occupies less bandwidth. In such a case, by using the session information stored in the session database, the SCF is able to identify and manipulate the relevant multimedia session associated with the composition session. Using the session information, the SCF may identify the HDTV broadcast session, terminate the HTDV broadcast session and add a new multimedia session relating to a Standard Definition TV stream (SDTV), which occupies less bandwidth, to the composition session. The modification of the composition session is registered in the session database and the memory of the user equipment by replacing the multimedia HDTV session identifier with the multimedia SDTV session identifier.

The session database in the network and the session information stored in the memory of the user equipment may thus keep track of newly generated composition sessions, modifications in existing composition sessions and/or

terminations of composition sessions and thus allows network elements in the IMS network, such as the SCF to be aware of the presence of associated multimedia sessions.

Fig. 2 depicts one exemplary protocol flow **200** representing the initiation of a composition session, in this case a personalized stream or service composition (PSC) session, using a composition session identifier and the subsequent association of three multimedia sessions to the composition session using the composition session identifier. In this example, the associated multimedia sessions comprise three sessions: a broadcast (BC) session comprising a first video stream and first and second Content-on-Demand (CoD) sessions comprising a second and third video stream respectively. The first stream may comprise a TV broadcast, e.g. a sport game with a particular commentator, and the second and third stream may comprise two separate unicast streams originating from different sources in the network and comprising a second and third camera angle of the sports event, which may be presented to the user as two separate Picture-in-Picture modii, simultaneously with the TV broadcast.

The first, second and third video streams may be related to a personalized television program preconfigured in the SSF or, alternative, configured by the user using the program information provided by the SSF. Selection of the multimedia streams in the personalized television program (which is an example of a PSC service) may be realized by presenting Electronic Programming Guide (EPG) data provided by the SSF to the user. Using a remote control the user may compose its own personalized television program by selecting two or more multimedia streams from the set of multimedia streams presented to the user. Composing personalized television programs from multiple BC and/or CoD session

offerings may require more complex EPG data as supported e.g. by the OMA BCAST service guide.

After having selected the multimedia streams, the user equipment generates a composition session identifier, in this case a personalized stream composition session identifier (hereafter: PSC ID), that is used by the user equipment (UE) and the network to correlate the different selected multimedia sessions to the PSC session. In one embodiment, the PSCID may be created by the UE prior to the actual selection of the offered sessions (for instance by entering PSC service modus through pressing a for this purpose configured button on the remote control). In another embodiment, the UE may receive the PSC via the EPG or may request it from the network element (such as a SCF) or from a third party AS. The user equipment stores the generated or received PSC ID and the selected BC and CoD multimedia identifiers in a memory used for storing session information.

Thereafter the PSC session is initiated by a PSC session initiation request. The PSC session may be initiated using the SIP protocol by sending a SIP INVITE comprising the PSC ID via the IMS core to the SCF (step **202**). The PSC ID may be coded in the request URI of the SIP message. In further embodiments, the PSC ID may be implemented as a SIP Call ID (as defined in RFC 3261) oin plain HTTP, or for instance in a SIP RTSP messageAlternatively the PSCID may be transported in a separate SIP INVITE or SIP INFO message to the SCF. Two examples of such a specially crafted SIP INVITE message are given below. The PSCID is shown in bold characters, in the SDP part of both SIP/SDP messages:

Example 1. SIP INVITE message to initiate a Broadcast (BC) service (session) as part of a PSC session

```
INVITE sip:bc-service@serviceprovider.com SIP/2.0
```

```
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: BC Service <sip:bc-service@serviceprovider.com>
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
```

```
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=Broadcast session
m=video 51372 RTP/AVP 33
c=IN IP4 225.2.17.12/127
a=recvonly
a=bc_service:tv:bbc1.co.uk
a=PSCid:873467631243@serviceprovider.com
b=AS:2000
```

Example 2. SIP INVITE message to initiate an empty PSC session

```
INVITE sip:PSC@serviceprovider.com SIP/2.0
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: PSC <sip:PSC@serviceprovider.com>
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
```

```
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=PSC session
a=PSCid:873467631243@serviceprovider.com
```

The SCF acknowledges the initiation of PSC session by sending a PSC session initiation response back to the user equipment (step **204**). The response may be a SIP 200 OK response comprising the PSC ID. Further, the SCF stores the newly created PSC ID in the session database. An example of such an especially crafted SIP OK message is illustrated here below:

Example 3. SIP 200 OK message to confirm a BC Service within a PSC session.

```
SIP/2.0 200 OK
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
To: BC Service <sip:bc-
service@serviceprovider.com>;tag=876567465
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.atlanta.com
CSeq: 314159 INVITE
Contact: <sip:bc-service@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 131
```

```
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=Broadcast session
m=video 51372 RTP/AVP 33
c=IN IP4 225.2.17.12/127
a=recvonly
```

```
a=bc_service:tv:bbc1.co.uk
a=PSCid:873467631243@serviceprovider.com
b=AS:2000
```

Then the user equipment may initiate the selected BC session using the session information, i.e. the PSC ID and the newly generated BC multimedia session ID, stored in its memory. Initiation of the BC session may be realized by using adapted standard procedures as defined in ETSI TS 182 027 section 8.1.3 and ETSI TS 183 063 section 5.3.1. The adaptation of the standard procedures regards the inclusion in the initiation request of the PSC-ID of the PSC session of which the BC multimedia session is part of. This parameter may be included e.g. as a parameter in the request-URI of a SIP INVITE used to setup the session. Hence, the BC session is initiated by sending a BC initiation request comprising the newly generated BC multimedia session ID and the PSC ID to the SCF (step **206**). During session setup, resources in the network may be verified and reserved by the RACS for and/or allocated to the BC multimedia session.

After having received the BC initiation request, the SCF stores the BC multimedia session ID hierarchically under the PSC ID in the session database and acknowledges the initiation of BC multimedia session by sending a response message, e.g. SIP 200 OK message, comprising the BC multimedia session ID and the PSC ID to the user equipment/UE (step **208**).

Next, a first CoD session is setup. This may be done e.g. by using adapted standard procedures as defined in ETSI TS 182 027 section 8.4.1 and ETSI TS 183 063 section 5.3.2. The adaptation of the standard procedures regards the inclusion in the CoD initiation request of the PSC-ID of the PSC session of which the CoD session is part of. This parameter may be included e.g. as a parameter in the request-URI of a SIP INVITE used to setup the session. Hence, the CoD

session is initiated by sending a CoD initiation request comprising a newly generated CoD multimedia session ID and the PSC-ID via the SCF to a first multimedia function MF1 controlling the CoD media content (step **210**).

In response the MF1 replies to the SCF with an acknowledgement message, e.g. a SIP 200 OK, comprising the CoD multimedia session ID and the PSC_ID. The SCF then stores in response the CoD multimedia session ID hierarchically under the PSC-ID in the session database. Thereafter the acknowledgement message is sent to the user equipment/UE (step **212**). During the first CoD session setup, resources in the network may be reserved by the RACS for and/or allocated to the CoD multimedia session.

In a similar manner a second CoD session is setup to a second media function MF2 (steps **214** through **218**). Also the initiation of the second CoD session is registered in the session database by the SCF, that stores the second CoD multimedia session ID also hierarchically under the same PSC - ID as the one used to hierarchically store the first coD multimediasession in the database.

Using the steps as described above a PSC session is created containing one BC multimedia session and 2 CoD multimedia sessions. Both SCF and UE may keep track of the PSC session and which media sessions it contains using e.g. a data model as shown in **Fig. 3**. This exemplary figure shows that one PSC session may be empty or contain 1 or more BC sessions and/or 1 or more CoD sessions. Of course BC and CoD sessions are just examples of sessions that may be associated, using the invention.

In a variant (not shown) of the process flow depicted in **Fig.2**, it is the SCF instead of the user equipment which initiates a PSC session. To that end the PSC session initiation request, which is sent to the SCF (step **202** in Fig.2) comprises the PSC ID and the selected BC and CoD

multimedia identifiers relating to the BC and CoD multimedia sessions to be associated to the PSC session. Furthermore, the request may comprise handling instructions, for example instructions for the SCF how to handle asituation wherein insufficient bandwidth is available in (parts of)the network for all requested BC and CoD sessions to be active(d) at the same moment. Using the information in the request, the SCF subsequently initiates the requested multimedia PSC session in a similar way as described in relation to **Fig.2**. This variant has the advantage that the SCF can e.g. first determine, e.g. in combination with the RACS, if sufficient network resources are available. If this is the case, the SCF sets up the different sessions. If this is not the case, the SCF sends a PSC session reject message to the UE. Other reasons for rejecting a PSC session may include, but are not limited to, insufficient prepaid balance, authorization failure because of subscription restrictions, etc.

Fig. 4 depicts an exemplary use of the PSC session as described above in relation to **Fig. 2**. In this example a PSC session similar to the one described in relation with **Fig.2** is set up. However in this case the second CoD multimedia session setup fails because the RACS informs the SCF that insufficient bandwidth is available for the second CoD session (step **402**).

Because the SCF is aware of the particular associationbetween the different media sessions in the PSC session (in that these media sessions should be active simultaneously to create the requested personalized broadcasting/TV service), the SCF causes the network to manage bandwidth usage of the PSC session as a whole. The SCF may to that extend be configured as follows: In response to the notification from the IMS Corethat insufficient bandwidth is available, the SCF service logic causes the BC multimedia session - in this case comprising a high bandwidth HDTV stream - to be modified using a session modification e.g. as

described in procedures in TS 182 027 section 8.3.2 and TS 183 063 section 5.1.3.2.

Therefore, in response to the insufficient bandwidth notification, the SCF sends a BC session modification request comprising the BC multimedia session ID and the PSC-ID to the user equipment (steps **404**). In response to the receipt of this request, the user equipment (UE) may automatically select a low bandwidth alternative for the initially selected HDTV stream. Alternatively, the UE may allow the user to select an alternative, low bandwidth TV stream, such as for example Standard Definition TV stream (SDTV). An example of such a modification request message is shown below:

Example 4: SIP re-INVITE message to modify a BC Service to add it to a PSC.

(This may be for instance a second/third/… SIP INVITE within a SIP dialog)

```
INVITE sip:bc-service@serviceprovider.com SIP/2.0
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: BC Service <sip:bc-
service@serviceprovider.com>;tag=876567465
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
```

```
s=Broadcast session
m=video 51372 RTP/AVP 33
c=IN IP4 239.2.17.12/127
a=recvonly
a=bc_service:tv:bbc1.co.uk
a=PSCid:873467631243@serviceprovider.com
b=AS:2000
```

In this case, because a BC session modification does not cause it's BC session ID to change, also the PSCID and the other associated multimedia session IDs remain correct and do not have to be changed. Thereafter, a BC session modification response, which informs the RACS to modify the resource allocation, is sent via the IMS core (step 406) to the SCF. After the resource (re-)allocation is completed, sufficient bandwidth is available for the SCF to set up the second CoD session (step **408**).

Fig. 5 depicts an example of a process flow regarding the termination of a PSC session as described above in relation to **Fig. 2**, wherein the termination is initiated by the network, in this case the SCF. Termination may for example be necessary because of parental control (the kids may only watch 2 hours of TV each day, after which it is terminated) or because a user has configured its set-top box such that for example as soon as a particular broadcasted show begins, he wants his channel to change to that show and therefore to end the PSC session (e.g. the personalized TV-experience) in favour of a regular (non-personalized) BC session. The SCF is now configured to, from a particular moment in time, end the PSC session and all linked associated sessions and to set-up a new session for receiving the regular broadcast.

An example of a termination message from an UE for terminating a session within a PSC session is illustrated here below:

Example 5. SIP BYE message to terminate a session within a PSC.

```
BYE sip:bc-service@serviceprovider.com SIP/2.0
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: BC Service <sip:bc-
service@serviceprovider.com>;tag=876567465
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=Broadcast session
a=PSCid:873467631243@serviceprovider.com
```

Fig. 6 depicts a process flow **600** regarding a further use of a PSC session involving three different user terminals UE1,UE2,UE3. Different services, provided to different UEs, e.g. a television broadcast service to UE1, a telephony service to UE2 and a gaming service to UE3, are now added to one composition session, and hence associated with each other.

In this example, before the UE's set-up the sessions related to the respective services, first a PSC session (composite session) to the SCF is set up, using requests in steps **602**, **606** and **610**. Because an UE in this particular example does not know if such a composite session already exists, the individual UE's do not generate a composition session identifier, PSC-ID. Instead, the PSC-ID is generated

by the SCF and subsequently sent back to the respective UE's. The PSCID will be the same for each UE1, UE2 and UE3 since all sessions will belong to the same PSC session. The SCF inserts the PSC-ID in the responses to the PSC session initiation requests, so the UE's may store this ID and the one or more associated multimedia session IDs. After becoming part of the PSC session, an UE may setup any multimedia session required for the PSC service and make those sessions part of the PSC session (steps **604-612**).

In a further step **614** the SCF decides to tear down the PSC session, for example because the prepaid balance has run out or because of parental control which states that kids have to go to bed. In this case, the SCF may just send a termination request using the PSCID to tear down any service sessions belonging to the PSC session.

Fig.6 relates to a situation wherein the PSC session is a multi-device session. In case of standardized IMS, such a session is currently not supported using the call-ID field for a PSCID. Nevertheless, because during session setup of this PSC session no port numbers or IP addresses need to be exchanged between terminals, such a multi-device session may be started without e.g. a conference bridge or similar session bridge. For the PSC session, only signalling messages need to be exchanged. So, the IMS core needs to be able to fork signalling messages, e.g. SIP messages, to the different devices part of the PSC session. This forking is normally done based on e.g. SIP URIs, but could also be done using any other part of a signalling message. If the PSCID is e.g. contained as a service parameter in the request URI, messages may be forked by the core IMS based on detection of the PSCID in this header field. This is done in **Fig.6** in step **616**. The IMS core receives a session termination request from the SCF, and forks this message to all involved UEs, in this case UE1, UE2 and UE3.

The following use case related to the figures 7A and 7B demonstrates how the invention may be used when network based service intervention is required. In this particular embodiment three sessions to the user equipment, for instance a Home Media Gateway (HMG) are active at one time. Two CoD sessions are associated to a Composition Session Identifier PSCid and together form a PSC Service. For instance a personalized television experience wherein CoD session 1 comprises a main television view of a soccer match and CoD session 2 represents a small Picture in Picture (PIP) view of another angle of the soccer match, present as an overlay on the main view. CoD Session 3 is unrelated to the two other sessions, and comprise the downloading of a movie to a PVR in the HMG.

The user expects an important phone call during the consumption of the personalized television experience, which he has to take. He may want to watch the personalized television experience again after the phone call, or he may stop at all. What he doesn't want is that the CoD session 3, related to the downloading of a movie is however interrupted. The following is an exemplary sequence of steps to illustrate how the invention may be used in combination with a FoneFreeze service. It is demonstrated how the objectives of the user are accomplished.

More importantly this embodiment further demonstrates that the initiation of a composition session is not necessarily in all cases. The key is to associate related sessions by providing a composition session identifier and by exchanging this between the user equipment and the network element or elements in charge of the session management.

1) In a first step 7010, the UE sends a request for the FoneFreeze service. This request may be for instance in the form of a SIP MESSAGE message or an HTTP POST message.

2) In a second step 7020, the IPTV SCF (the network element) receives the request and **generates a PSCid.**

3) In step 7030, the IPTV SCF issues a FoneFreeze subscribe request to a Telephony SCF, **including the PSCid.** This subscribe request may be contained in a SIP SUBSCRIBE message or an XMPP SUBSCRIBE (RFC 3921)

4) In step 7040, the IPTV SCF confirms the FoneFreeze request **including the PSCid.** This response may be a SIP 200 OK message or an HTTP 200 OK message.

---

5) In step 7050 the UE sends a session initiation request for a COD session 1 **including the PSCid and a COD session 1 ID to the IPTV SCF (in this step the PSCid is exchanged between the user equipment and the network element) .**

6) In step 7060 the IPTV SCF **associates the** COD Session 1 with the PSCid and therefore also with the FoneFreeze request.

7) In step 7070 the IPTV SCF forwards the message to MF1

8) In step 7080 the MF1 confirms CoD session 1 to IPTV SCF with a 200 OK message.

9) In step 7090 the IPTV SCF confirms CoD session 1 to UE with a 200 OK message.

10) In step 7100 the MF1 starts media delivery for CoD session 1 (delivery of video stream 1)

---

11) In step 7110 the UE sends a session initiation request for a COD session 2 **including the PSCid and a COD session 2 ID to the IPTV SCF (in this step the PSCid is exchanged between the user equipment and the network element) .**

12) In step 7120 the IPTV SCF **associates the** COD Session 2 with the PSCid and therefore also with CoD session 1 and with the FoneFreeze request.

13) In step 7130 the IPTV SCF forwards the message to MF1

14) In step 7140 the MF1 confirms CoD session 2 to IPTV SCF with a 200 OK message.

15) In step 7150 the IPTV SCF confirms CoD session 2 to UE with a 200 OK message.

16) In step 7160 the MF1 starts media delivery for CoD session 2 (delivery of video stream 2)

---

17) In step 7170 the UE sends a session initiation request for COD session 2 **without PSCid.**

18) In steps 7180-7210 all of the steps 7130 to 7160 are repeated for the CoD session 3.

19) In step 7220 the Telephony SCF receives an incoming phone call.

20) In step 7230 the Telephony SCF sends notify message **including PSCid,** e.g. a SIP NOFIFY message or an XMPP status update.

21) In step 7240 the IPTV **uses PSCid** to associate FoneFreeze notification with CoD session 1 and CoD session 2

22) In step 7250 the IPTV SCF terminates CoD Session 1 and CoD Session 2, e.g. with SIP BYE messages (or suspends the session, or records the stream, or …)

23) In step 7260 the UE confirms the termination/suspension/recording of CoD session 1 and CoD session 2. The CoD session 3 is uninterrupted and continues, whilst the user can take his call.

Another example may be that the CoD sessions 1 and 2 form a personalized television experience viewed on a television set in the livingroom by a user 1, whilst the CoD

session 3 is another television program connected to a terminal in another room, but via the same Home Media Gateway and hence for the network element the same subscriber/user equipment. One can immediately visualize the power of the invention concept in such situations.

Figure 8A and B relate to another exemplifying embodiment of the invention. Just like the embodiment related to fig. 7A and B, it is not required to initiate a composition session. Here it is the network element that generates the PSCid and returns this to the User Equipment. Such an embodiment may be used for the insertion of advertisements in an existing CoD session. The steps shown in the figures are largely overlapping with those from other figures and are for the remainder self-explanatory to the skilled person.

It is to be understood that any feature described in relation to any one embodiment may be used alone, or in combination with other features described, and may also be used in combination with one or more features of any other of the embodiments, or any combination of any other of the embodiments. Furthermore, equivalents and modifications not described above may also be employed without departing from the scope of the invention, which is defined in the accompanying claims.

CLAIMS

1. Method for managing associated sessions in a network, the network comprising a network element configured for managing associated sessions between the network and user equipment, the method comprising:

- providing a composition session identifier for associating sessions in a network;
- exchanging the composition session identifier between a user equipment and the network element; and
- associating two or more sessions with the composition session identifier by exchanging the composition session identifier

2. Method according to claim 1, wherein the method further comprises the step of initiating a composition session.

3. Method according to claim 2, wherein the method further comprises the steps of:

- the user equipment generating a composition session identifier;
- sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier.

4. Method according to claim 2, wherein the method further comprises the steps of:

- sending a request for initiating a composition session from the user equipment to the network element;

- the network element generating a composition session identifier in response to the receipt of the request;
- sending the composition session identifier to the user equipment.

5. Method according to any of claims 1-4, wherein the method further comprises the steps of:

- the user equipment initiating two or more sessions by sending two or more session initiation requests for a session, preferably using a SIP INVITE message, to the network element, each request comprising the composition session identifier

6. Method according to any of claims 1-4, wherein the method further comprises the steps of:

- the network element initiating two or more sessions by sending two or more requests for a session, preferably using a SIP INVITE message, to the user equipment, each request comprising the composition session identifier.

7. Method according to any of claims 3-4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

8. Method according to claims 5 or 6, wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier

(NPVRContentID, a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and/or a shared content (SC) session associated with a SC identifier.

9. Method according to any of claims 1-8, wherein the combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

10. Method according to any of claims 1-9, wherein the network further comprises storage means, preferably a database, the method further comprising the step of:

- the network element storing the composition session identifier and the two or more associated session identifiers in the storage means.

11. Method according to any of claims 2-10, the method further comprising the step of:

- modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session.

12. Method according to any of claims 1-11, wherein the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), the SCF configured for managing associated sessions between the network and the User Equipment.

13. A system for managing associated sessions in a network, the system comprising:

- a network element configured for managing associated sessions between the network and a user equipment; for exchanging a composition session identifier with a user equipment; and, for associating two or more sessions with the composition session identifier by exchanging the composition session identifier;
- a user equipment configured for providing a composition session identifier for associating sessions in a network;; and, for exchanging the composition session identifier with the network element.

14. A user equipment for use in a system according to claim 13, the user equipment comprising:

- an ID generator for generating a composition session identifier;
- a multimedia client configured for receiving the composition session identifier from the ID generator; exchanging the composition session identifier with a network element; for initiating one or more multimedia sessions with the network element; and for exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

15. A user equipment according to claim 14., further configured for initiating a composition session.

16. A network element for use in a system according to claim 13, the network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment; x; and for setting up and modifying multimedia sessions;
- a storage means for storing composition session information, the composition session information

comprising information regarding composition session identifiers and the associated sessions.

17. A network element according to claim 16, further configured for initiating, and or terminating and or modifying a composition session

18. A network element according to claim 16 or 17, the network element further comprising:

- an ID generator for generating a composition session identifier;

19. A computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps according to any of claims 1-12.

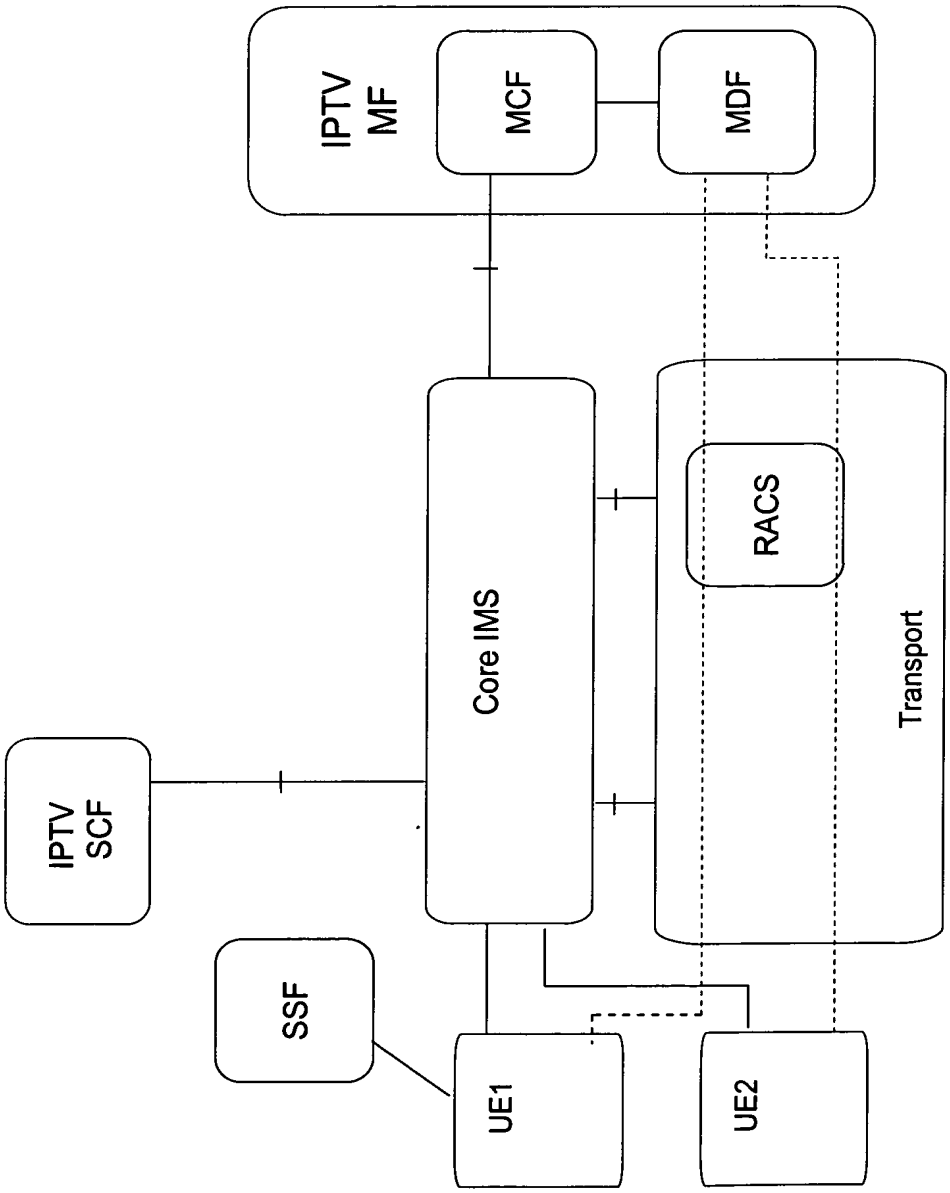

Figure 1

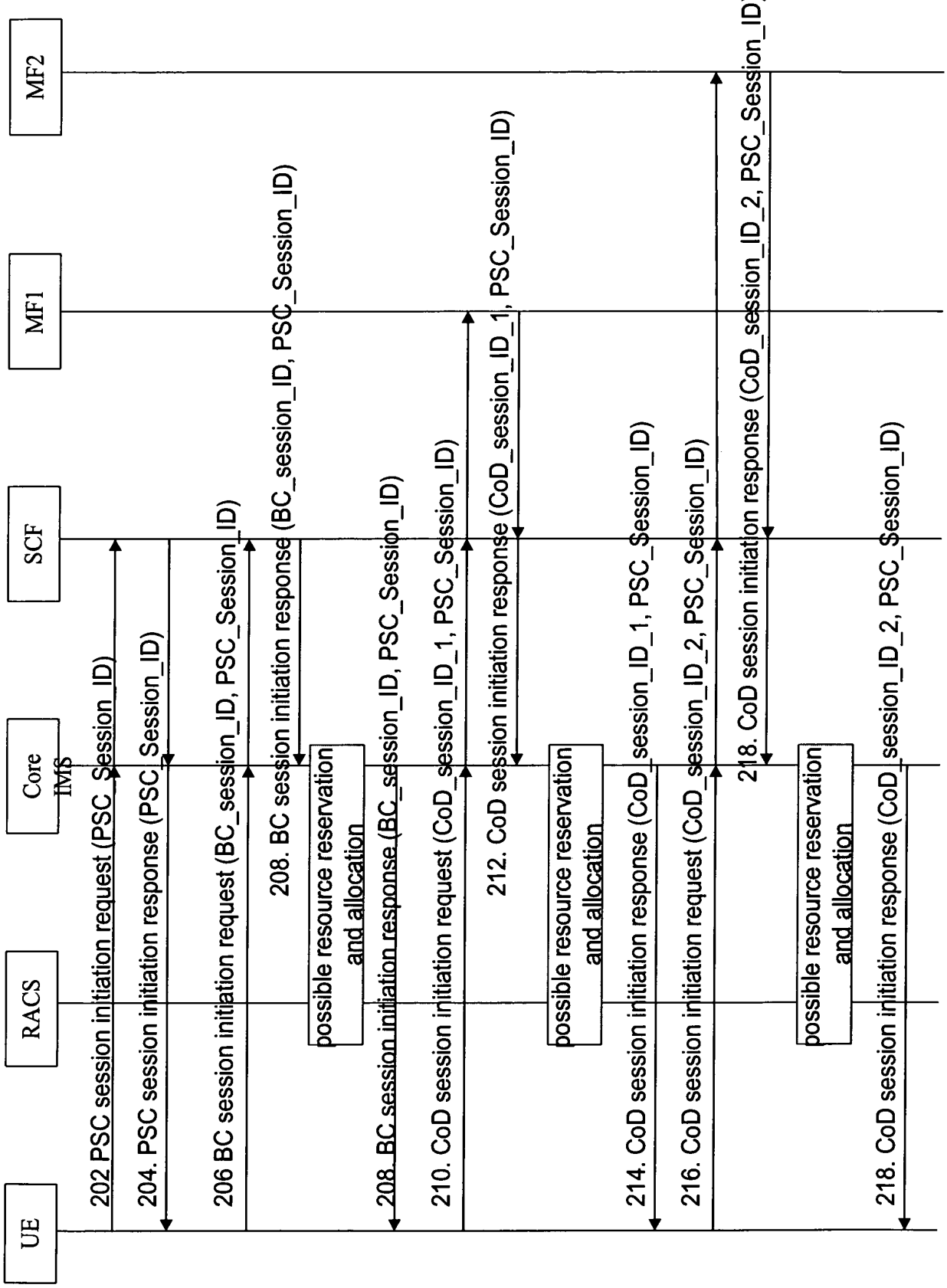
UE
RACS
Core IMS
SCF
MF1
MF2
202 PSC session initiation request (PSC_Session_ID)
204. PSC session initiation response (PSC_Session_ID)
206 BC session initiation request (BC_session_ID, PSC_Session_ID)
208. BC session initiation response (BC_session_ID, PSC_Session_ID)
possible resource reservation and allocation
208. BC session initiation response (BC_session_ID, PSC_Session_ID)
210. CoD session initiation request (CoD_session_ID_1, PSC_Session_ID)
212. CoD session initiation response (CoD_session_ID_1, PSC_Session_ID)
possible resource reservation and allocation
214. CoD session initiation response (CoD_session_ID_1, PSC_Session_ID)
216. CoD session initiation request (CoD_session_ID_2, PSC_Session_ID)
218. CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
possible resource reservation and allocation
218. CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)

Figure 2

3

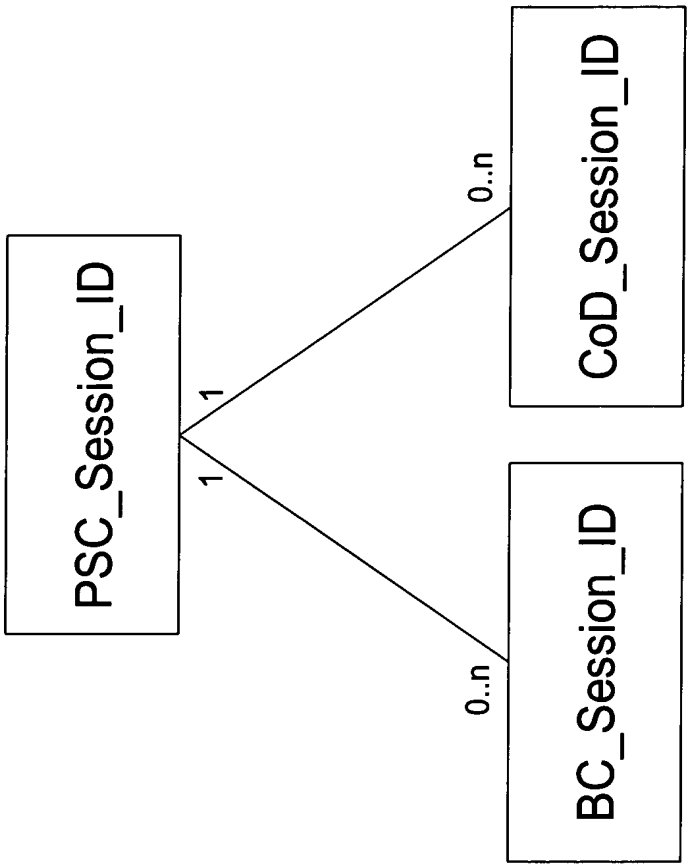

Figure 3

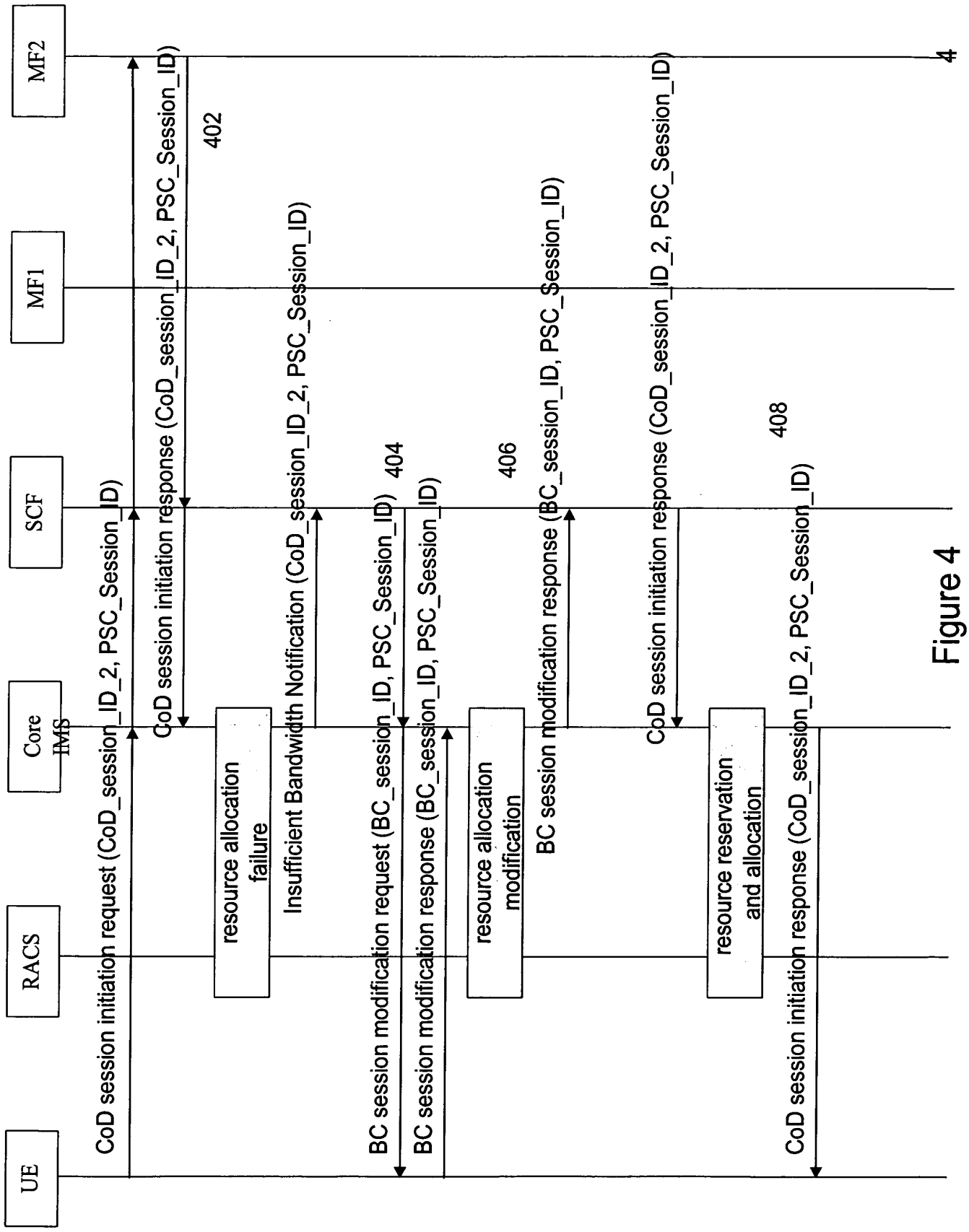
UE
RACS
Core HMS
SCF
MF1
MF2
CoD session initiation request (CoD_session_ID_2, PSC_Session_ID)
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
402
resource allocation failure
Insufficient Bandwidth Notification (CoD_session_ID_2, PSC_Session_ID)
BC session modification request (BC_session_ID, PSC_Session_ID)
404
BC session modification response (BC_session_ID, PSC_Session_ID)
resource allocation modification
406
BC session modification response (BC_session_ID, PSC_Session_ID)
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
resource reservation and allocation
408
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
4

Figure 4

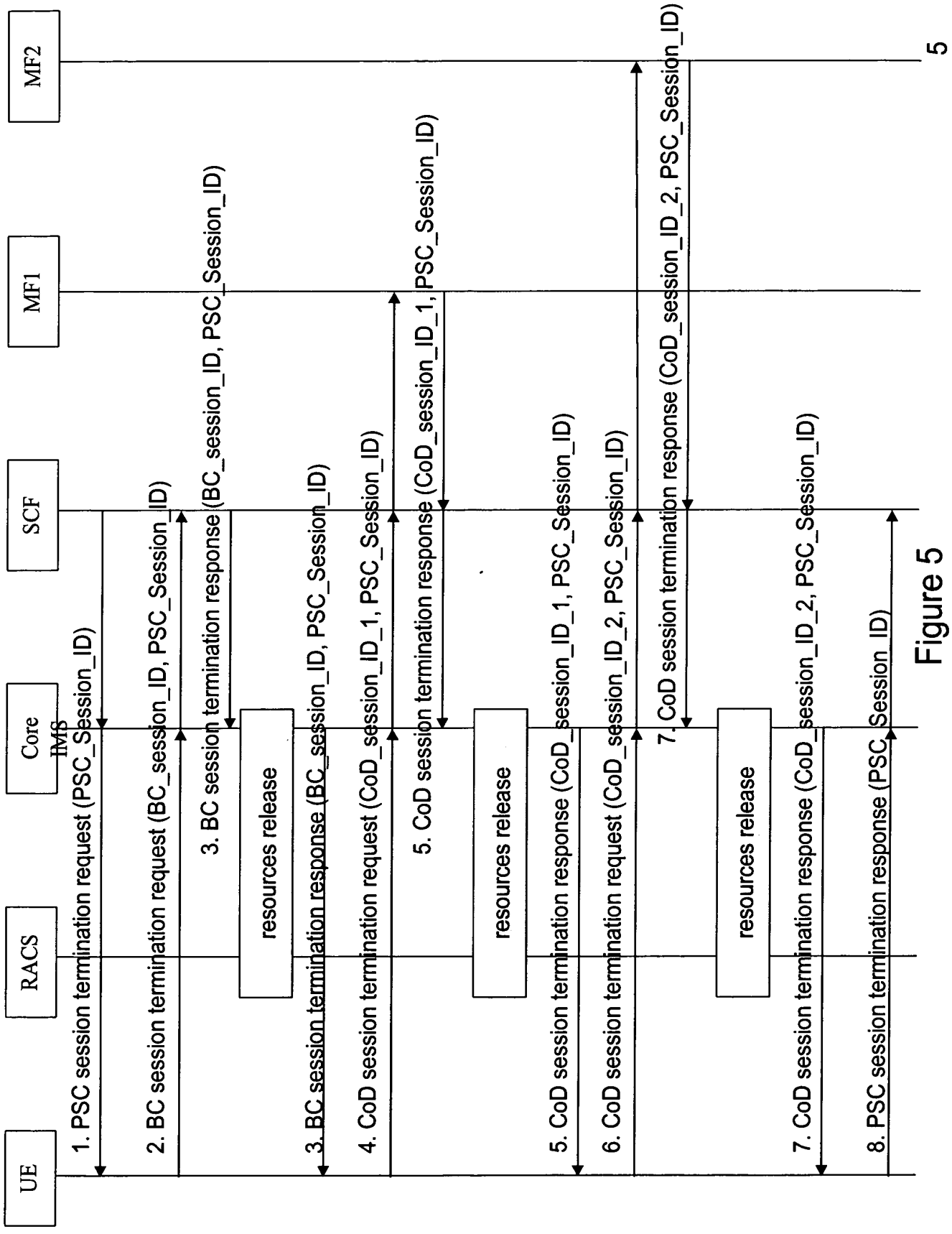
UE
RACS
Core IMS
SCF
MF1
MF2
1. PSC session termination request (PSC_Session_ID)
2. BC session termination request (BC_session_ID, PSC_Session_ID)
3. BC session termination response (BC_session_ID, PSC_Session_ID)
resources release
3. BC session termination response (BC_session_ID, PSC_Session_ID)
4. CoD session termination request (CoD_session_ID_1, PSC_Session_ID)
5. CoD session termination response (CoD_session_ID_1, PSC_Session_ID)
resources release
5. CoD session termination response (CoD_session_ID_1, PSC_Session_ID)
6. CoD session termination request (CoD_session_ID_2, PSC_Session_ID)
7. CoD session termination response (CoD_session_ID_2, PSC_Session_ID)
resources release
7. CoD session termination response (CoD_session_ID_2, PSC_Session_ID)
8. PSC session termination response (PSC_Session_ID)

Figure 5

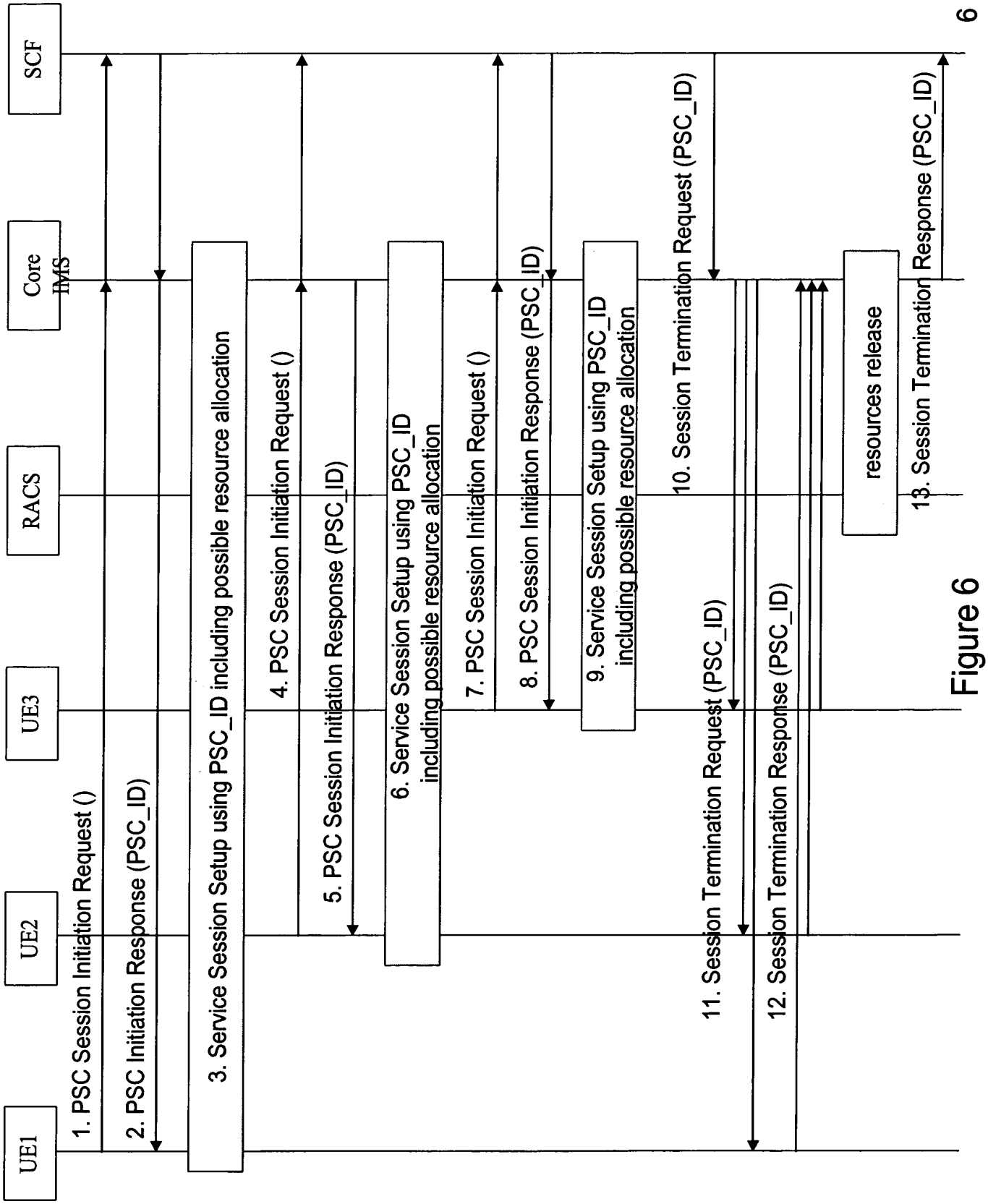
UE1
UE2
UE3
RACS
Core IMS
SCF
1. PSC Session Initiation Request ()
2. PSC Initiation Response (PSC_ID)
3. Service Session Setup using PSC_ID including possible resource allocation
4. PSC Session Initiation Request ()
5. PSC Session Initiation Response (PSC_ID)
6. Service Session Setup using PSC_ID including possible resource allocation
7. PSC Session Initiation Request ()
8. PSC Session Initiation Response (PSC_ID)
9. Service Session Setup using PSC_ID including possible resource allocation
10. Session Termination Request (PSC_ID)
11. Session Termination Request (PSC_ID)
12. Session Termination Response (PSC_ID)
resources release
13. Session Termination Response (PSC_ID)

Figure 6

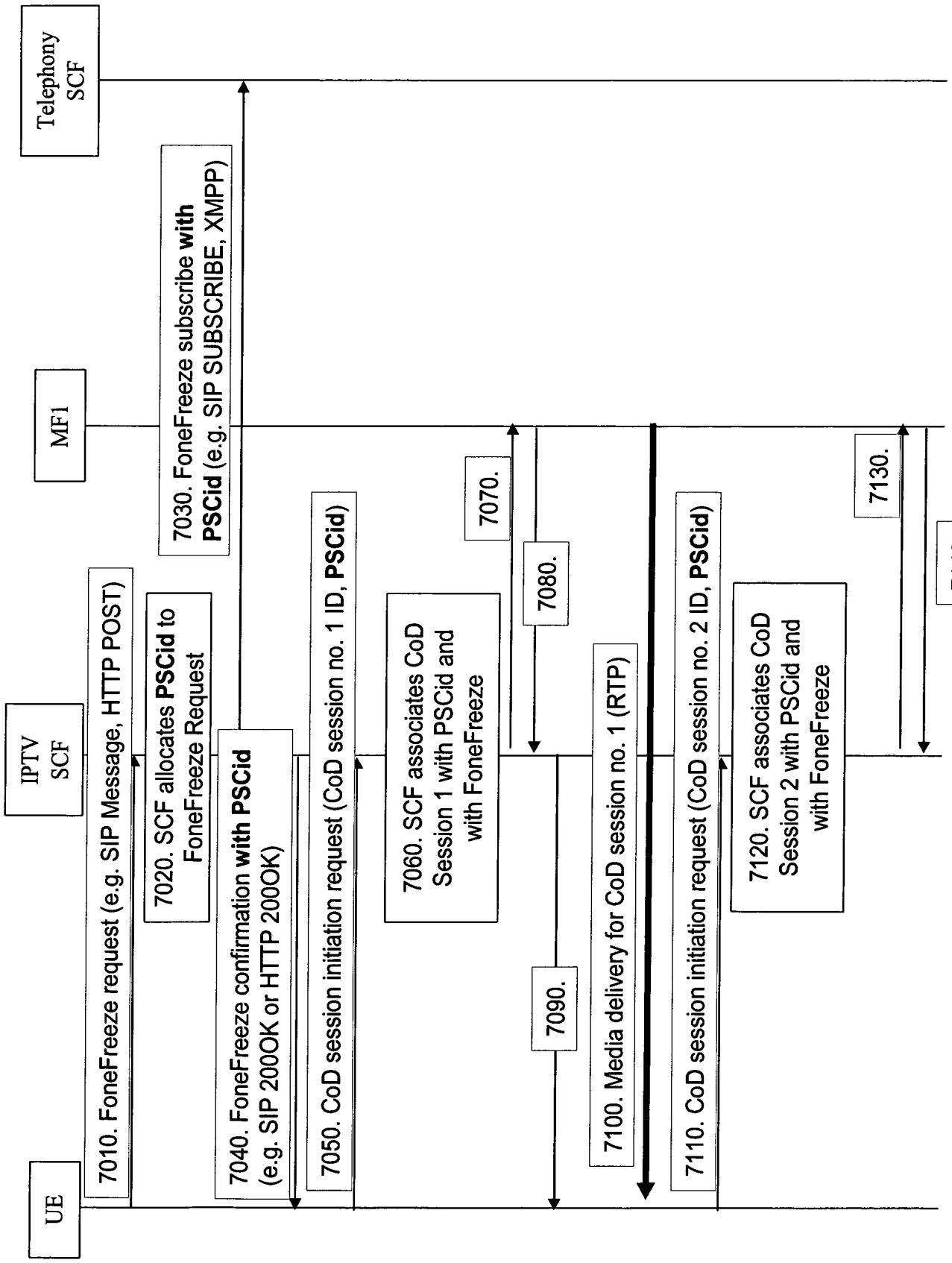
UE
IPTV SCF
MF1
Telephony SCF
7010. FoneFreeze request (e.g. SIP Message, HTTP POST)
7020. SCF allocates PSCid to FoneFreeze Request
7030. FoneFreeze subscribe with PSCid (e.g. SIP SUBSCRIBE, XMPP)
7040. FoneFreeze confirmation with PSCid (e.g. SIP 200OK or HTTP 200OK)
7050. CoD session initiation request (CoD session no. 1 ID, PSCid)
7060. SCF associates CoD Session 1 with PSCid and with FoneFreeze
7070.
7080.
7090.
7100. Media delivery for CoD session no. 1 (RTP)
7110. CoD session initiation request (CoD session no. 2 ID, PSCid)
7120. SCF associates CoD Session 2 with PSCid and with FoneFreeze
7130.
7140.

Figure 7A

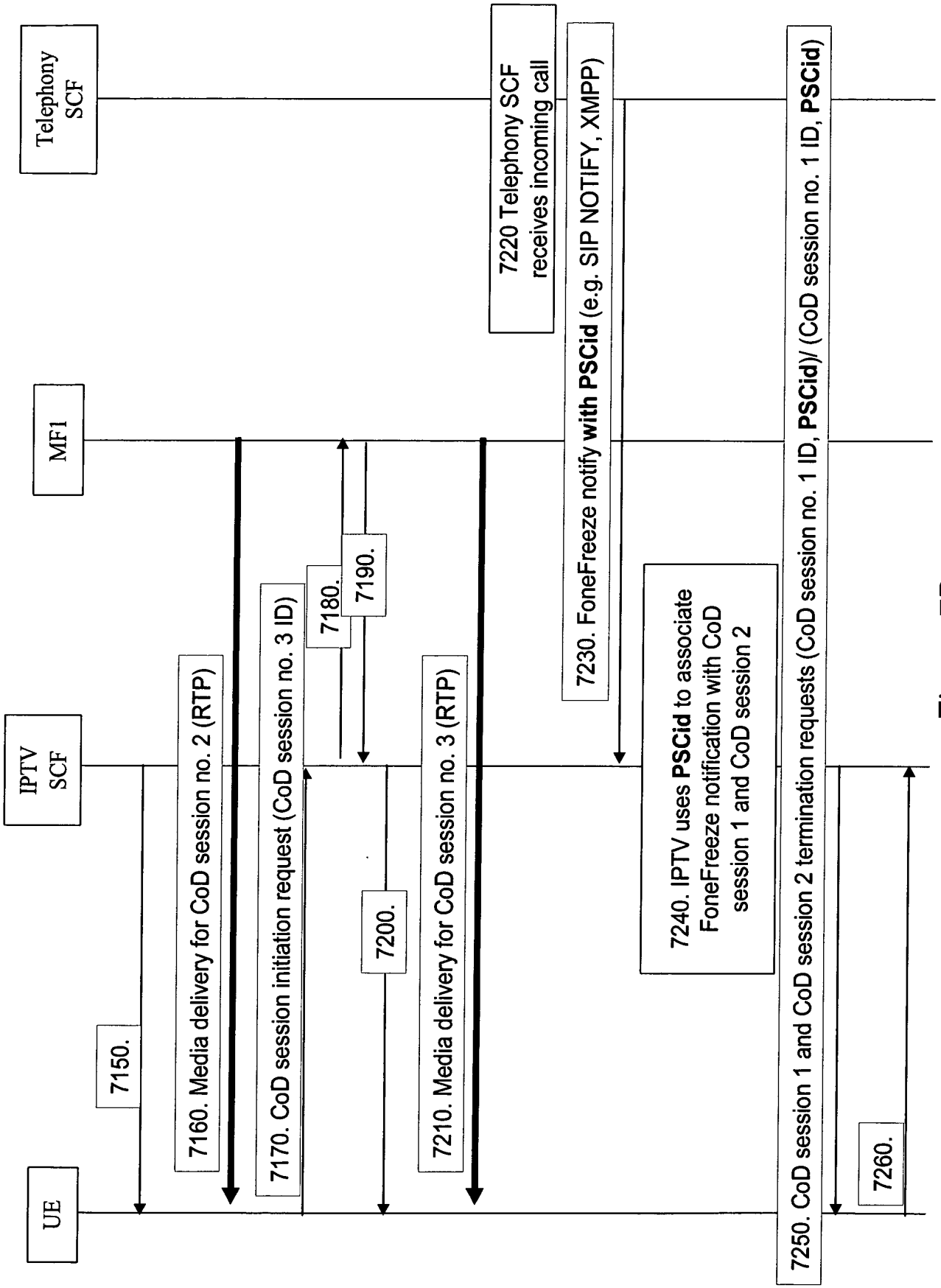
Telephony SCF
MF1
IPTV SCF
UE
7220 Telephony SCF receives incoming call
7230. FoneFreeze notify with PSCid (e.g. SIP NOTIFY, XMPP)
7240. IPTV uses PSCid to associate FoneFreeze notification with CoD session 1 and CoD session 2
7250. CoD session 1 and CoD session 2 termination requests (CoD session no. 1 ID, PSCid)/ (CoD session no. 1 ID, PSCid)
7150.
7160. Media delivery for CoD session no. 2 (RTP)
7170. CoD session initiation request (CoD session no. 3 ID)
7180.
7190.
7200.
7210. Media delivery for CoD session no. 3 (RTP)
7260.

Figure 7B

8

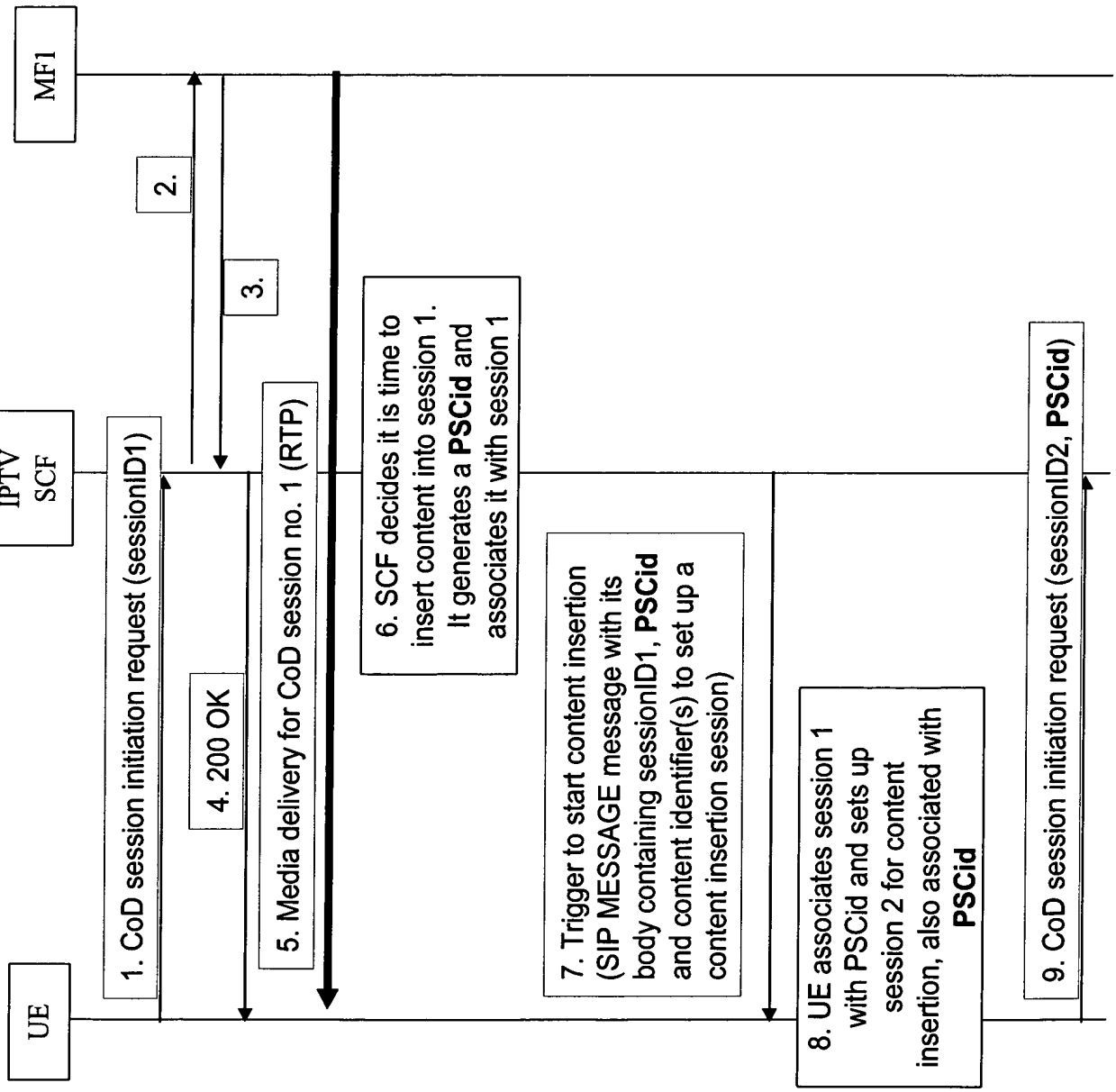
UE
IPTV SCF
MF1
1. CoD session initiation request (sessionID1)
2.
3.
4. 200 OK
5. Media delivery for CoD session no. 1 (RTP)
6. SCF decides it is time to insert content into session 1. It generates a PSCid and associates it with session 1
7. Trigger to start content insertion (SIP MESSAGE message with its body containing sessionID1, PSCid and content identifier(s) to set up a content insertion session)
8. UE associates session 1 with PSCid and sets up session 2 for content insertion, also associated with PSCid
9. CoD session initiation request (sessionID2, PSCid)

Figure 8A

9

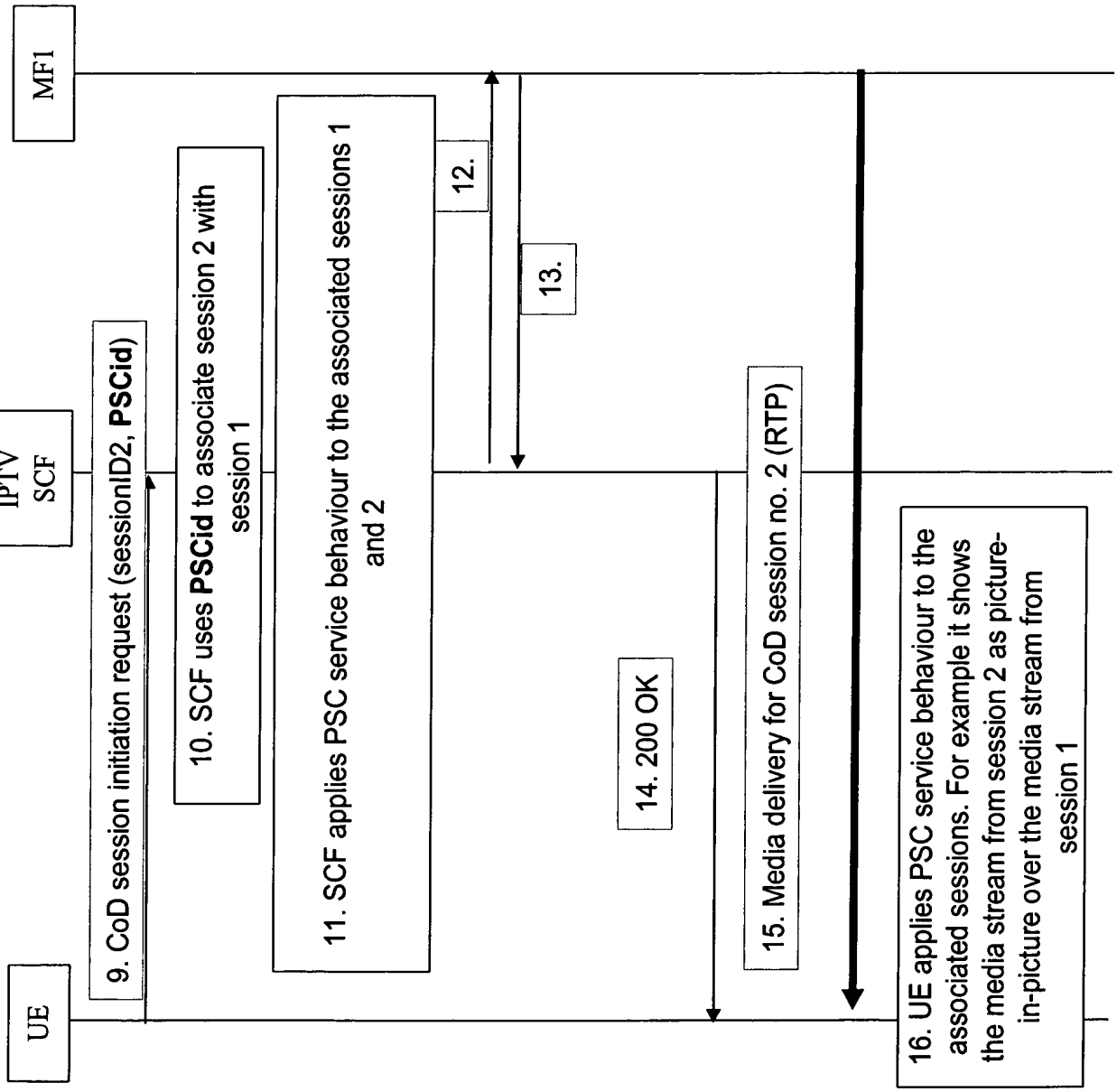
UE
IPTV SCF
MF1
9. CoD session initiation request (sessionID2, PSCid)
10. SCF uses PSCid to associate session 2 with session 1
11. SCF applies PSC service behaviour to the associated sessions 1 and 2
12.
13.
14. 200 OK
15. Media delivery for CoD session no. 2 (RTP)
16. UE applies PSC service behaviour to the associated sessions. For example it shows the media stream from session 2 as picture-in-picture over the media stream from session 1

Figure 8B

10

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/000278

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/033249 A1 (SAMDADIYA PARAG [US] ET AL) 8 February 2007 (2007-02-08) page 1, paragraph 7 page 2, paragraph 15 - paragraph 18 page 3, paragraph 24 - paragraph 26 page 4, paragraph 36 - page 5, paragraph 43 page 5, paragraph 47 - paragraph 49	1-19
Y	WO 02/059787 A (ERICSSON TELEFON AB L M [SE]; PAPANIKOLAOU THOMAS [DE]; AAKERFELDT JAN) 1 August 2002 (2002-08-01) page 10, line 9 - line 19 page 11, paragraph 28 - page 12, paragraph 8 page 16, line 12 - page 17, line 34 page 30, line 4 - line 28 page 31, line 32 - page 32, line 5	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 February 2010	15/02/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Fax: (+31–70) 340–3016	Karavassilis, N

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2010/000278

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007033249 A1	08-02-2007	NONE	
WO 02059787 A	01-08-2002	DE 10295699 T5	15-04-2004
		GB 2386726 A	24-09-2003
		JP 2004518219 T	17-06-2004
		SE 519936 C2	29-04-2003
		SE 0100187 A	25-07-2002
		US 2004049589 A1	11-03-2004

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
KONINKLIJKE KPN N.V.
Attn. Wuyts, K.M.
P.O. Box 95321
NL-2509 CH The Hague
PAYS-BAS

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 403418WO	Date of mailing *(day/month/year)* 15/02/2010
International application No. PCT/EP2010/000278	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
Applicant KONINKLIJKE KPN N.V.	International filing date *(day/month/year)* 19/01/2010

1. [x] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Anita Rothenbücher

Form PCT/ISA/220 (July 2009)

(See notes on accompanying sheet)

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims,description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Annex B).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, International Phase, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet or sheets containing a complete set of claims in replacement of all the claims previously filed must be submitted.

Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively in Arabic numerals (Section 205(a)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
403418WO		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/EP2010/000278	19/01/2010	19/01/2009
Applicant		
KONINKLIJKE KPN N.V.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of:

   [X] the international application in the language in which it was filed

   [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**

   a. the figure of the **drawings** to be published with the abstract is Figure No. 2

   [X] as suggested by the applicant

   [ ] as selected by this Authority, because the applicant failed to suggest a figure

   [ ] as selected by this Authority, because this figure better characterizes the invention

   b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/000278

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/033249 A1 (SAMDADIYA PARAG [US] ET AL) 8 February 2007 (2007-02-08) page 1, paragraph 7 page 2, paragraph 15 - paragraph 18 page 3, paragraph 24 - paragraph 26 page 4, paragraph 36 - page 5, paragraph 43 page 5, paragraph 47 - paragraph 49	1-19
Y	WO 02/059787 A (ERICSSON TELEFON AB L M [SE]; PAPANIKOLAOU THOMAS [DE]; AAKERFELDT JAN) 1 August 2002 (2002-08-01) page 10, line 9 - line 19 page 11, paragraph 28 - page 12, paragraph 8 page 16, line 12 - page 17, line 34 page 30, line 4 - line 28 page 31, line 32 - page 32, line 5	1-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
8 February 2010	15/02/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Karavassilis, N

1

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2010/000278

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007033249 A1	08-02-2007	NONE	
WO 02059787 A	01-08-2002	DE 10295699 T5	15-04-2004
		GB 2386726 A	24-09-2003
		JP 2004518219 T	17-06-2004
		SE 519936 C2	29-04-2003
		SE 0100187 A	25-07-2002
		US 2004049589 A1	11-03-2004

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2010/000278	19.01.2010	19.01.2009

International Patent Classification (IPC) or both national classification and IPC
INV. H04L29/06

Applicant
KONINKLIJKE KPN N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	see form PCT/ISA/210	Karavassilis, N Telephone No. +31 70 340-4273

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material:

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing:

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in electronic form.

      ☐ furnished subsequently to this Authority for the purposes of search.

4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-19
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-19
Industrial applicability (IA)	Yes:	Claims	1-19
	No:	Claims	

2. Citations and explanations

see separate sheet

Re Item V.

1. Reference is made to the following documents:
   D1 : US 2007/033249 A1 (SAMDADIYA PARAG [US] ET AL) 8 February 2007 (2007-02-08)

   D2 : WO 02/059787 A (ERICSSON TELEFON AB L M [SE]; PAPANIKOLAOU THOMAS [DE]; AAKERFELDT JAN) 1 August 2002 (2002-08-01)

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claims 1-19 does not involve an inventive step in the sense of Article 33(3)PCT, due to the following reasons:

2.1 With respect to independent method claim 1, document D1 discloses (references in parentheses applying to D1):

Method for managing associated sessions in a network, ~~the network comprising a network element configured for managing associated sessions between the network and user equipment~~, the method comprising: providing a composition session identifier for associating sessions in a network (page 2, paragraph 15); ~~exchanging the composition session identifier between a user equipment and the network element~~; and associating two or more sessions with the composition session by exchanging the composition session identifier (page 5, paragraph 43).

D1 differs from the subject matter of independent method claim 1, in that it does not disclose the features defined in this claim of:

the network comprising a network element configured for managing associated sessions between the network and user equipment and exchanging the composition session identifier between a user equipment and the network element.

The problem solved by the differing features of claim 1 may be regarded as: how to decouple the user from the end service providers by having an intermediate network

node manage the session associations. However, these differing features have already been employed for the same purpose in a similar method as shown in D2. D2 discloses a network node portal, which maps service session ids used between the portal and the end service providers into a unifying portal session id exchanged between the portal and the end user (see document D2: page 30, lines 1-28; page 31, line 27 - page 32, line 5). It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a method according to document D1, thereby arriving at a method according to claim 1. The subject-matter of claim 1 does not therefore involve an inventive step (Article 33(3) PCT).

Similar argumentation applies for corresponding independent claims 13 (system), 14 (user equipment), 16 (network element) and 19 (computer program product).

2.2 Dependent claims 2-12, 15, 17 and 18 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

WUYTS, Koenraad, Maria
Koninklijke KPN N.V.
P.O. Box 95321
NL-2509 CH The Hague
PAYS-BAS

Date of mailing *(day/month/year)* 17 February 2010 (17.02.2010)	
Applicant's or agent's file reference 403418WO	**IMPORTANT NOTIFICATION**
International application No. PCT/EP2010/000278	International filing date *(day/month/year)* 19 January 2010 (19.01.2010)
International publication date *(day/month/year)* **Not yet published**	Priority date *(day/month/year)* 19 January 2009 (19.01.2009)
Applicant KONINKLIJKE KPN N.V. et al	

1. By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letters "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

2. *(If applicable)* The **letters "NR"** appearing in the right-hand column denote **a priority document which, on the date of mailing of this Form, had not yet been received by the International Bureau** under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

3. *(If applicable)***An asterisk (*)** appearing next to a date of receipt, in the right-hand column, denotes **a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b)** (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices, for their consideration. In case such a copy is not accepted by the designated Office as the priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
19 January 2009 (19.01.2009)	09000661.0	EP	01 February 2010 (01.02.2010)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer
Agnes Wittmann-Regis
e-mail PT06.PCT@WIPO.INT
Telephone No. +41 22 338 74 06

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Filer:	Scott Michael Miller
Attorney Docket Number:	11-905-WO-US

Filed as Large Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
National Stage Fee	1631	1	330	330
Natl Stage Search Fee - Report provided	1642	1	430	430
National Stage Exam - all other cases	1633	1	220	220
Pages:				
Claims:				
Claims in excess of 20	1615	1	52	52
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	1032

Electronic Acknowledgement Receipt

EFS ID:	10509445
Application Number:	13144385
International Application Number:	PCT/EP10/00278
Confirmation Number:	5301
Title of Invention:	Managing Associated Sessions in a Network
First Named Inventor/Applicant Name:	Hans Maarten Stokking
Customer Number:	20306
Filer:	Scott Michael Miller
Filer Authorized By:	
Attorney Docket Number:	11-905-WO-US
Receipt Date:	13-JUL-2011
Filing Date:	
Time Stamp:	15:10:04
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1032
RAM confirmation Number	1359
Deposit Account	132490
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. 1.492 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	11_905_WO_US_Transmittal.pdf	523992 fa14a27aba969b23b865da90b9145ea9fea93f21	no	4
Warnings:					
Information:					
2	Oath or Declaration filed	11_905_WO_US_Declaration.pdf	320450 3d1421b4fee0b1ed1934b40ccab5fe3f97144a8d	no	4
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	11_905_WO_US_IDS.pdf	612539 7b0d0e1dad22fb4188d1767658e06f19ac5cc41b	no	4
Warnings:					
Information:					
4	Foreign Reference	WO2002059787.pdf	2289542 2996dbd78c28ae00b9ccde5236817fd7583e7937	no	59
Warnings:					
Information:					
5	Foreign Reference	WO2007101473.pdf	2995476 777e06047f92cd8f4d4b169e920571428a095ed7	no	39
Warnings:					
Information:					
6	Non Patent Literature	NPL_1.pdf	198213 e5168cbdc20eaed96af9ce729fd6fae8218eb658	no	6
Warnings:					
Information:					
7	Non Patent Literature	NPL_2.pdf	443980 12016ea0b3eb155a838b5587f6791bd80cb520d1	no	11
Warnings:					
Information:					
8	Non Patent Literature	NPL_3.pdf	98244 c9010954e5c4710e8c627a4d07d1568e102f93be	no	8

Warnings:					
Information:					
9		11_905_WO_US_Pre_Amend.pdf	45910 ed9d79e0541b4dd2b693e61171a3450899961514	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	2
	Claims	3	7
	Applicant Arguments/Remarks Made in an Amendment	8	8

Warnings:					
Information:					
10	Application Data Sheet	11_905_WO_US_ADS.pdf	1032046 e9e46712d23932fc6b25efa6c930505439fa850f	no	5
Warnings:					
Information:					
11	Documents submitted with 371 Applications	PCTEP2010000278.pdf	1831572 3f4fd95f5f9663ccff34b8d8243b89ecb8a351c9	no	48
Warnings:					
Information:					
12	Documents submitted with 371 Applications	11_905_WO_US_Search_Written_Opinion.pdf	443980 4e83f2d23d14e471fcdcb28e47ceba85ee14b41d	no	11
Warnings:					
Information:					
13	Documents submitted with 371 Applications	11_905_WO_US_IB304.pdf	67827 2664d8ff2505ef32d589359b2af076b4d72a3703	no	1
Warnings:					
Information:					
14	Fee Worksheet (SB06)	fee-info.pdf	36267 1bde7486b2513131b340506f2ad3cb8012e68c6f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	10940038		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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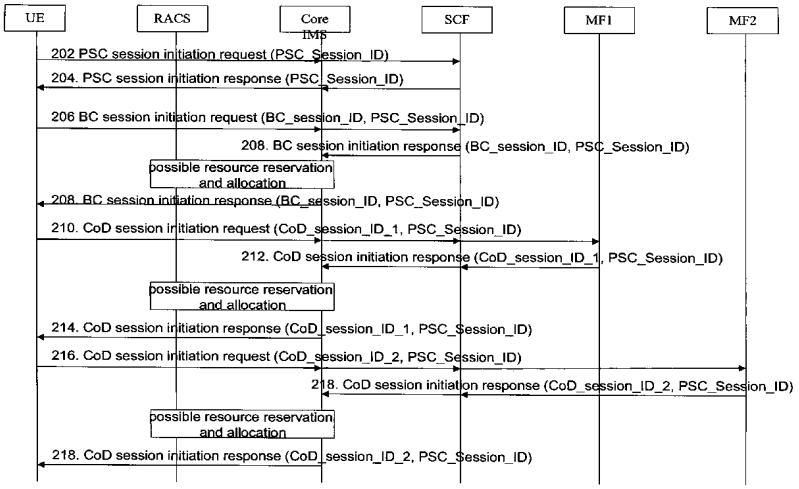

Figure 2

(57) **Abstract**: A method and a system for managing associated sessions in a network is described, wherein the network comprises a network element configured for managing associated sessions between the network and user equipment. The method comprises the steps of providing a composition session identifier for associating sessions in a network; exchanging the composition session identifier between a user equipment and the network element; and associating two or more sessions with the composition session identifier by exchanging the composition session identifier.

WO 2010/081744 A1

Managing associated sessions in a network

Field of the invention

The invention relates to managing associated sessions in a network, though not exclusively, to a method and a system for managing associated multimedia sessions in a network, a network element and a user equipment for use in such system and a computer program product for executing the method.

Background of the invention

The IP Multi-Media Subsystem (IMS) architecture is a unified architecture that supports a wide range of services enabled by the flexibility of Session Initiation Protocol (SIP). IMS is defined by certain 3GPP and 3GPP2 standards (such as 3GPP TS 22.228, TS 23.218, TS 23.228, TS 24.228, TS 24.229, TS 29.228, TS 29.229, TS 29.328 and TS 23.320 Releases 5-7).

In order to leverage the investments in the IMS infrastructure new types of multi-media services are developed. One type of IMS-enabled services regards the so-called combinational services also referred to as blended or composite services, which combine services of various platforms and make use of the functionalities and capabilities of various platforms and distribution techniques(e.g. phone, multicast, broadcast, television/video, content-on-demand etc.). A type of IMS-enabled services regards interactive multi-media services wherein the end-user is an active participant instead of a passive viewer.

Further enhancements of this type of IMS-enabled services may include an end-user and/or the network operator to compose a multimedia service from different multimedia streams. For example an end-user may compose a personalized multimedia service by enriching a main service, for example a

TV broadcast (BC) with personally selected multi-media content, such as content-on-demand (CoD), user-generated content (UCG), ect., originating from different sources in the network.

An example of an implementation of such a personalized TV service in a state-of-the-art architecture is described in the article of Rauschenbacher et. al, "A scalable interactive TV service supporting synchronized delivery over broadcast and broadcast networks", a Fraunhofer white paper of May 14, 2004. In this document a system is described wherein the main content stream is transported over a DVB network in the form of a broadcast channel to a Home Media Server at the end-user location. In addition, multiple additional content streams may be transported via a broadband IP network to the Home Media Server. At the Home Media Server, these additional content streams may be synchronized with the main content stream and thus presented to the end-user (display) device in a synchronized manner.

One of the disadvantages of the scheme described in Rauschenbacher et. al is that all end-user display equipment needs to be connected directly to the Home Media Server (HMS) for consuming these enriched services. Another disadvantage is that the HMS is a type of equipment of substantial complexity and needs to have a robust design with the necessary processing power to realize the personalized TV service functionality. In short, the prior art only allows the managing of the enriched television experience by the end-user. Information regarding the relation between the different multimedia streams originating from different sources in the network and delivered as separate streams to user equipment only exists at the user equipment (HMS).

An exemplary network architecture, such as an IMS network, more in particular the IMS network elements managing the multimedia services in the IMS network, is however not

aware of the fact that these multimedia sessions are used in combination by an end-user to generate a personalized multimedia service. It may however be convenient and/or even be necessary to manipulate the personalized television experience from within the network. For example, it may be convenient to simultaneously pause associated multimedia streams, that together form the personalized television experience, in order to deliver a targeted advertisement or a hurricane warning or other content to the end-user before resuming the personalized television experience. Also, reserving bandwidth in the network for all related streams may also be convenient. Another example whereby the network needs to know which streams are related is the situation of an incoming phone call. If a number of streams relate to a personalized television experience, and a number relate to individual download sessions or to a multimedia recording session on the background, it would be convenient if the network could only pause the streams related to the personalized television experience and not those related to the background download or recording sessions.

In WO2007/101473 describes an example of such a combinational service, where in response to the receipt of a incoming call, a TV program is recorded on a network personal video recording (NPVR) system. In this solution a broadcast stream (channel) is paused upon the receipt of an incoming call and recorded in the network. Upon the user's request, the content may be played from the moment it was paused as a unicast stream. This type of network intervention however only works for a single stream and does not work for the personalized television experience comprising a multiple of streams, possibly originating from different resources, in combination with the presence of one or more other active sessions to the same User Equipment

Within the state-of-the-art IMS architecture, such streams, controlled by and/or originating from different resources would require the set-up of multiple parallel sessions. One session would comprise the stream with the main content and additional sessions for each of the additional streams would comprise the additional content items (for example different subtitles, voice-over, Picture in Picture, etc.). From a network perspective these sessions from the outside would all look the same and no different from other active recording, downloading, gaming, telephony or other sessions. Currently the IMS standards do not allow an end-user and/or the network to compose associated multimedia sessions and to collectively control and/or manage these associated multimedia sessions and their used network resources. Hence, there is a desire in the prior art for methods and systems for managing associated sessions in a network.

Summary of the invention

It is an object of the invention to reduce or eliminate at least one of the drawbacks known in the prior art and to provide in a first aspect of the invention a method for managing associated sessions in a network, the network comprising a network element configured for managing associated sessions between the network and user equipment. The method comprising the steps of: providing a composition session identifier (PSCID) for associating sessions in a network;

; exchanging the composition session identifier between a user equipment and the network element; and, associating two or more sessions with the composition session by exchanging the composition session identifier.

The composition session identifier, if generated by the user equipment, or provided to the user equipment via a

third party provider (such as via an Electronic Program Guide), may be sent to the network element where the session management takes place. Alternatively, the composition session identifier may be sent to the user equipment from or under control of the network element. The sending of such composition session identifier in either direction may be referred to as an 'exchange'. Exchange may take place at any moment, that is: during the set-up of a composition session; during the set-up of a multimedia session which is destined to be associated with a composition session; or at other moments during the session management.

The invention allows network centric administration of the composition session identifier at a network element or at a location accessible to a network element. Whenever a multimedia session is set up, either initiated by a network element or by the user equipment, and an allocated composition session identifier is exchanged, the multimedia session may be associated under control of the network element with a composition session identifier. That way it may be associated with other multimedia sessions that may have already been assigned to the same composition session identifier.

Further, the network centric association of sessions enables the management of a group of sessions from within the network separate from other sessions that are not part of the group. Hence, using the composition session identifier the group of sessions may be manipulated as if there where only one session. For example it allows collective epausing (for example in response to an incoming call, destined for the user equipment), replaying, diverting of the data streams associated with the group of sessions.

In addition, the invention enables intergroup management of the sessions. If for instance bandwidth constrains appear in the network and a group of sessions and one separate session to the same user equipment exists, the

session management logic in the network element may select the separate session to be terminated, leaving the group of associated sessions intact.

Alternatively, if only one group of sessions is active, and their combined existence is vital to the delivery of for instance a personalized television experience to a user equipment, the network may determine that none of the sessions in the group may be terminated for reasons of bandwidth constrains. The session management logic, being aware of the association of sessions, may then be configured to look for another solution, such as downscaling one of the sessions within the group of sessions, such that the bandwidth constrains are alleviated.

In further embodiments, the method may comprise the step of initiating a composition session. Although in principle it may be sufficient to just generate a composition session identifier and store this in a place in the network under control of a network element, which is in charge of managing the associated sessions, there may be advantages in initiating a separate signaling session (composition session) as well. For instance such composition session may be used to exchange the composition session identifier between the user equipment and the network element. If no such composition session is initiated, the composition session identifier may be incorporated in the signaling of the individual sessions.

The composition session may be used for the management of associated sessions and various kinds of signaling between the user equipment and a network element associated with to this task. Such signaling may include agreeing on the duration of all sessions or negotiations regarding to bandwidth requirements (for all associated sessions together).

In addition, initiating such a composition session may provide for more effective use of resources in het network

and on the user equipment. For example using a composition session network initiated teardown of associated sessions may require less signaling to the user equipment . Further, continuous screening of all signaling messages for the presence of a composition session identifier, and subsequently probing the service logic (whether in the user equipment or in the network element) for a next course of action may be avoided. Messages only related to individual sessions (within a group of associated sessions) may not require such probing.

Further by associating sessions to a composition session identifier which is assigned to a composite session, the associated sessions are automatically assigned to the composition session.

In one embodiment the method further comprises the steps of: the user equipment generating a composition session identifier; sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier.

In another embodiment the method further comprises the steps of: sending a request for initiating a composition session from the user equipment to the network element; the network element generating a composition session identifier in response to the receipt of the request; sending the composition session identifier to the user equipment.

In an alternative embodiment, the method further comprises the steps of: the user equipment receiving a composition session identifier (PSCID) from the network prior to the sending of a request for initiating a composition session from the user equipment to the network element; said request comprising said received composition session identifier. The PSCID may be received via an Electronic Program Guide (EPG). By selecting a channel and activating the composition session modus via the remote control, the PSCID may be sent to the network element, which may be interpreted

by the network element as a request for initiating a composition session.

Hence, contrary to known schemes, the invention allows a network centric administration of groups of sessions using the composition session identifier. The administration may be located at the network element or at a location reachable by the network element. This provides the advantage that the network element itself may manage the associated sessions upon request from the network and/or upon triggers initiated by events in the network, without the prior intervention from the user equipment. The invention thereby enables a whole new spectrum of enhanced multimedia services. The network element for managing the group of associated sessions and/or composition session may for instance be configured to pause a plurality of associated multimedia sessions, (relating to a personalized TV service transmitted to a user equipment) upon the detection of an incoming call destined for the same user equipment. At the same time a downloading session, not being recognized by the network element as part of the associated sessions, may be left untouched and continue in the background. Such complex multi session service interaction is not possible in known systems.

In yet another embodiment the method further comprises the steps of: the user equipment initiating two or more sessions by sending two or more session initiation requests for a session, preferably using a SIP INVITE message, to the network element, each request comprising the composition session identifier.

In one embodiment the method further comprises the steps of: the network element initiating two or more sessions by sending two or more requests for a session, preferably using a SIP INVITE message, to the user equipment, each request comprising the composition session identifier.

In another embodiment the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

In yet another embodiment the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID, a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and/or a shared content (SC) session associated with a SC identifier. Said identifiers are all examples of session identifiers.

In a further embodiment the combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

In an embodiment the network further comprises storage means, preferably a database wherein the method further comprises the step of: the network element storing the composition session identifier and the two or more associated session identifiers in the storage means.

In yet another embodiment the method further comprises the step of: modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session. The initiation of a modification may be directed by the User Equipment, sending

a request thereto. Alternatively the initiation of a modification may be directed by the Network Element responsible for the session management. Typically, the session management may be a part of a Service Control Function in the network.

In yet another embodiment the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), the SCF being the network element configured for managing associated sessions between the network and the User Equipment.

In a further aspect the invention relates to a system for managing associated sessions in a network, the system comprising:

- a network element configured for managing associated sessions between the network and a user equipment; for exchanging a composition session identifier with a user equipment; and, for associating two or more sessions with the composition session by exchanging the composition session identifier;
- a user equipment configured for providing a composition session identifier for associating sessions in a network; for initiating a composition session; and, for exchanging the composition session identifier with the network element.

In yet a further aspect the invention relates to user equipment for use in a system as described above, wherein the user equipment comprises:

- an ID generator for generating a composition session identifier;
- a multimedia client configured for receiving the composition session identifier from the ID generator; for initiating a composition session and exchanging the composition session identifier with a network element; for initiating one or more multimedia sessions with the

network element; and for exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

In a further aspect the invention relates to a network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment; for initiating, and or terminating and or modifying a composition session; and for setting up and modifying multimedia sessions;
- a storage means for storing composition session information, the composition session information comprising information regarding composition sessions and the associated sessions.

In one embodiment the network element further comprises: an ID generator for generating a composition session identifier;

The invention also relates to a computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps as described above.

The invention will be further illustrated with reference to the attached drawings, which schematically will show embodiments according to the invention. It will be understood that the invention is not in any way restricted to these specific embodiments.

Brief description of the drawings

Fig. 1 depicts a system according to one embodiment of the invention.

Fig. 2 depicts a flow diagram of a method according to one embodiment of the invention.

Fig. 3 depicts a data structure of session information according to one embodiment of the invention.

Fig. 4 depicts a flow diagram of a method according to another embodiment of the invention.

Fig. 5 depicts a flow diagram of a method according to yet another embodiment of the invention.

Fig. 6 depicts a flow diagram of a method according to a further embodiment of the invention.

Fig. 7A and B depict a flow diagram of a method according to an exemplary embodiment of the invention.

Fig. 8A and **B** depict a flow diagram of a method according to a further embodiment of the invention.

Detailed description

Fig. 1 illustrates an example of an IMS-based IPTV system **100** as defined by ETSI TISPAN TS 182.027. The system is adapted for managing associated multimedia sessions according to a first embodiment of the invention. The system comprises an IMS core **102** formed by a set of Call/Session Control Functions (CSCF): a Proxy-CSCF (P-CSCF), an Interrogating-CSCF (I-CSCF) and an Serving-CSCF (S-CSCF). The IMS core is connected to User Equipment (UE) **104**, IPTV service control functions (SCF) **106** for controlling IPTV services in the network (e.g. a broadcast SCF, a Content-on-Demand SCF, etc.) and to Media Functions (MF) **108** comprising Media Control Functions (MCF) and Media Delivery Functions (MDF) control the delivery of media contents via Transport Functions (TF) and Transport Control Functions (TCF) to the User Equipment.

Further, a Service Selection Function (SSF) **110** connected to the user equipment provides the user equipment with information about the available services using e.g. Electronic Programming Guide (EPG) and the Resource and

Admission Control Subsystem (RACS) **112** manages resource usage and resource allocation for delivery of the media contents to the user equipment.

The User Equipment (UE) may be any type of equipment connectable via a network to a session management system. The User Equipment may relate to any type of desktop/laptop/handheld computer, PDA, mobile terminal, set-top box, Home Media Gateway, or any equivalent of those. In one embodiment, the network element comprising the session management system may be based on IMS architecture. It may for instance be a logical IMS network element referred to as a Service Control Function (SCF). Alternatively, the network element may be any other session management system performing functions which are equivalent to those of the SCF. The network connecting the UE to the network element may relate to any type of wireless or wired network., For the purpose of the invention, associated sessions are sessions that in order to enable new types of services require that they should not be managed independent from each other.

The IPTV system uses the Session Initiation Protocol (SIP) to set up and control sessions between user terminals or user terminals and the applications servers comprising the SCFs and MFs. The Session Description Protocol (SDP) carried by SIP signaling is used to describe and negotiate the media components in the session. Further, the Real Time Streaming Protocol (RTSP) is used for media control providing e.g. broadcast trick modes, Content-on-Demand (CoD) and Network Personal Video Recorder (NPVR) and the Real Time Transport Protocol (RTP) is used for media transport.

In order to allow the IPTV system to be aware of associated multimedia sessions, the SCFs and the user equipment are configured to setup composition sessions. A composition session allows both the user equipment and the network to keep track of and to control associated multimedia

sessions. For the purpose of this invention, the composition session may also be referred to as PSC session, Composite session or Combi session. These are all equivalent terms used throughout this invention disclosure to indicate the same concept.

Upon initiation of such composition session a composition session identifier (PSCID) is generated and exchanged between the SCF and the user equipment using SIP messaging.

It is to be noted that for the purpose of the invention the terms PSCID, PSCid, PSC_Session_ID and Combi_session_ID are all equivalent/substitutable and/or interchangeable terms, used to indicate one and the same type of identifier.

The composition session identifier (PSCID) may be generated by the SCF or the user equipment. Alternatively, the PSCID may be provided by a third party provider (application server or AS), and provided via for instance an Electronic Program Guide (EPG)to the user equipment. After establishment of the composition session, multimedia sessions, e.g. broadcast sessions, CoD sessions, Targeted Advertisement Insertion (TAI) sessions, User-Generated Content (UGC) sessions, etc. may be associated with the composition session by adding the multimedia sessions to the composition session using the composition session identifier. An ensemble of sessions tied together by the PSCID, may be provided to the user equipment as a Personalized Service Composition service (PSC-service).

Addition of the multimedia sessions to a composition session may be realized for example by initiating a multimedia session using SIP, e.g. using the SIP INVITE message comprising the composition session identifier and the multimedia session identifier. Alternatively, addition to a composition session may be realized by adding an already

existing (active) multimedia session to the composition session. This may be accomplished by modifying the existing multimedia session using SIP, e.g. using the SIP REINVITE message comprising the composition session identifier and the multimedia session identifier.

The SCF and the user equipment may keep track of the composition sessions and the multimedia sessions associated with each of these compositions sessions by storing for each composition session identifier the associated multimedia session identifiers in a session database **114** connected to the SCF and a memory for storing session information **116** in the user equipment respectively.

Further, the SCF and the user equipment are configured to modify and/or to terminate a composition session. For example in order to free up network resources to make room for the addition of another media session, the network may want to replace a HDTV broadcast session in a particular composition session with a normal broadcast session that occupies less bandwidth. In such a case, by using the session information stored in the session database, the SCF is able to identify and manipulate the relevant multimedia session associated with the composition session. Using the session information, the SCF may identify the HDTV broadcast session, terminate the HTDV broadcast session and add a new multimedia session relating to a Standard Definition TV stream (SDTV), which occupies less bandwidth, to the composition session. The modification of the composition session is registered in the session database and the memory of the user equipment by replacing the multimedia HDTV session identifier with the multimedia SDTV session identifier.

The session database in the network and the session information stored in the memory of the user equipment may thus keep track of newly generated composition sessions, modifications in existing composition sessions and/or

terminations of composition sessions and thus allows network elements in the IMS network, such as the SCF to be aware of the presence of associated multimedia sessions.

Fig. 2 depicts one exemplary protocol flow **200** representing the initiation of a composition session, in this case a personalized stream or service composition (PSC) session, using a composition session identifier and the subsequent association of three multimedia sessions to the composition session using the composition session identifier. In this example, the associated multimedia sessions comprise three sessions: a broadcast (BC) session comprising a first video stream and first and second Content-on-Demand (CoD) sessions comprising a second and third video stream respectively. The first stream may comprise a TV broadcast, e.g. a sport game with a particular commentator, and the second and third stream may comprise two separate unicast streams originating from different sources in the network and comprising a second and third camera angle of the sports event, which may be presented to the user as two separate Picture-in-Picture modii, simultaneously with the TV broadcast.

The first, second and third video streams may be related to a personalized television program preconfigured in the SSF or, alternative, configured by the user using the program information provided by the SSF. Selection of the multimedia streams in the personalized television program (which is an example of a PSC service) may be realized by presenting Electronic Programming Guide (EPG) data provided by the SSF to the user. Using a remote control the user may compose its own personalized television program by selecting two or more multimedia streams from the set of multimedia streams presented to the user. Composing personalized television programs from multiple BC and/or CoD session

offerings may require more complex EPG data as supported e.g. by the OMA BCAST service guide.

After having selected the multimedia streams, the user equipment generates a composition session identifier, in this case a personalized stream composition session identifier (hereafter: PSC ID), that is used by the user equipment (UE) and the network to correlate the different selected multimedia sessions to the PSC session. In one embodiment, the PSCID may be created by the UE prior to the actual selection of the offered sessions (for instance by entering PSC service modus through pressing a for this purpose configured button on the remote control). In another embodiment, the UE may receive the PSC via the EPG or may request it from the network element (such as a SCF) or from a third party AS. The user equipment stores the generated or received PSC ID and the selected BC and CoD multimedia identifiers in a memory used for storing session information.

Thereafter the PSC session is initiated by a PSC session initiation request. The PSC session may be initiated using the SIP protocol by sending a SIP INVITE comprising the PSC ID via the IMS core to the SCF (step **202)**. The PSC ID may be coded in the request URI of the SIP message. In further embodiments, the PSC ID may be implemented as a SIP Call ID (as defined in RFC 3261) oin plain HTTP, or for instance in a SIP RTSP messageAlternatively the PSCID may be transported in a separate SIP INVITE or SIP INFO message to the SCF. Two examples of such a specially crafted SIP INVITE message are given below. The PSCID is shown in bold characters, in the SDP part of both SIP/SDP messages:

Example 1. SIP INVITE message to initiate a Broadcast (BC) service (session) as part of a PSC session

```
INVITE sip:bc-service@serviceprovider.com SIP/2.0
```

```
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: BC Service <sip:bc-service@serviceprovider.com>
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
```

```
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=Broadcast session
m=video 51372 RTP/AVP 33
c=IN IP4 225.2.17.12/127
a=recvonly
a=bc_service:tv:bbc1.co.uk
a=PSCid:873467631243@serviceprovider.com
b=AS:2000
```

Example 2. SIP INVITE message to initiate an empty PSC session

```
INVITE sip:PSC@serviceprovider.com SIP/2.0
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: PSC <sip:PSC@serviceprovider.com>
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
```

```
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=PSC session
a=PSCid:873467631243@serviceprovider.com
```

The SCF acknowledges the initiation of PSC session by sending a PSC session initiation response back to the user equipment (step **204**). The response may be a SIP 200 OK response comprising the PSC ID. Further, the SCF stores the newly created PSC ID in the session database. An example of such an especially crafted SIP OK message is illustrated here below:

Example 3. SIP 200 OK message to confirm a BC Service within a PSC session.

```
SIP/2.0 200 OK
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
To: BC Service <sip:bc-
service@serviceprovider.com>;tag=876567465
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.atlanta.com
CSeq: 314159 INVITE
Contact: <sip:bc-service@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 131
```

```
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=Broadcast session
m=video 51372 RTP/AVP 33
c=IN IP4 225.2.17.12/127
a=recvonly
```

```
a=bc_service:tv:bbc1.co.uk
a=PSCid:873467631243@serviceprovider.com
b=AS:2000
```

Then the user equipment may initiate the selected BC session using the session information, i.e. the PSC ID and the newly generated BC multimedia session ID, stored in its memory. Initiation of the BC session may be realized by using adapted standard procedures as defined in ETSI TS 182 027 section 8.1.3 and ETSI TS 183 063 section 5.3.1. The adaptation of the standard procedures regards the inclusion in the initiation request of the PSC-ID of the PSC session of which the BC multimedia session is part of. This parameter may be included e.g. as a parameter in the request-URI of a SIP INVITE used to setup the session. Hence, the BC session is initiated by sending a BC initiation request comprising the newly generated BC multimedia session ID and the PSC ID to the SCF (step **206**). During session setup, resources in the network may be verified and reserved by the RACS for and/or allocated to the BC multimedia session.

After having received the BC initiation request, the SCF stores the BC multimedia session ID hierarchically under the PSC ID in the session database and acknowledges the initiation of BC multimedia session by sending a response message, e.g. SIP 200 OK message, comprising the BC multimedia session ID and the PSC ID to the user equipment/UE (step **208**).

Next, a first CoD session is setup. This may be done e.g. by using adapted standard procedures as defined in ETSI TS 182 027 section 8.4.1 and ETSI TS 183 063 section 5.3.2. The adaptation of the standard procedures regards the inclusion in the CoD initiation request of the PSC-ID of the PSC session of which the CoD session is part of. This parameter may be included e.g. as a parameter in the request-URI of a SIP INVITE used to setup the session. Hence, the CoD

session is initiated by sending a CoD initiation request comprising a newly generated CoD multimedia session ID and the PSC-ID via the SCF to a first multimedia function MF1 controlling the CoD media content (step **210**).

In response the MF1 replies to the SCF with an acknowledgement message, e.g. a SIP 200 OK, comprising the CoD multimedia session ID and the PSC_ID. The SCF then stores in response the CoD multimedia session ID hierarchically under the PSC-ID in the session database. Thereafter the acknowledgement message is sent to the user equipment/UE (step **212**). During the first CoD session setup, resources in the network may be reserved by the RACS for and/or allocated to the CoD multimedia session.

In a similar manner a second CoD session is setup to a second media function MF2 (steps **214** through **218**). Also the initiation of the second CoD session is registered in the session database by the SCF, that stores the second CoD multimedia session ID also hierarchically under the same PSC - ID as the one used to hierarchically store the first coD multimediasession in the database.

Using the steps as described above a PSC session is created containing one BC multimedia session and 2 CoD multimedia sessions. Both SCF and UE may keep track of the PSC session and which media sessions it contains using e.g. a data model as shown in **Fig. 3**. This exemplary figure shows that one PSC session may be empty or contain 1 or more BC sessions and/or 1 or more CoD sessions. Of course BC and CoD sessions are just examples of sessions that may be associated, using the invention.

In a variant (not shown) of the process flow depicted in **Fig.2**, it is the SCF instead of the user equipment which initiates a PSC session. To that end the PSC session initiation request, which is sent to the SCF (step **202** in Fig.2) comprises the PSC ID and the selected BC and CoD

multimedia identifiers relating to the BC and CoD multimedia sessions to be associated to the PSC session. Furthermore, the request may comprise handling instructions, for example instructions for the SCF how to handle asituation wherein insufficient bandwidth is available in (parts of)the network for all requested BC and CoD sessions to be active(d) at the same moment. Using the information in the request, the SCF subsequently initiates the requested multimedia PSC session in a similar way as described in relation to **Fig.2**. This variant has the advantage that the SCF can e.g. first determine, e.g. in combination with the RACS, if sufficient network resources are available. If this is the case, the SCF sets up the different sessions. If this is not the case, the SCF sends a PSC session reject message to the UE. Other reasons for rejecting a PSC session may include, but are not limited to, insufficient prepaid balance, authorization failure because of subscription restrictions, etc.

Fig. 4 depicts an exemplary use of the PSC session as described above in relation to **Fig. 2**. In this example a PSC session similar to the one described in relation with **Fig.2** is set up. However in this case the second CoD multimedia session setup fails because the RACS informs the SCF that insufficient bandwidth is available for the second CoD session (step **402**).

Because the SCF is aware of the particular associationbetween the different media sessions in the PSC session (in that these media sessions should be active simultaneously to create the requested personalized broadcasting/TV service), the SCF causes the network to manage bandwidth usage of the PSC session as a whole. The SCF may to that extend be configured as follows: In response to the notification from the IMS Corethat insufficient bandwidth is available, the SCF service logic causes the BC multimedia session - in this case comprising a high bandwidth HDTV stream - to be modified using a session modification e.g. as

described in procedures in TS 182 027 section 8.3.2 and TS 183 063 section 5.1.3.2.

Therefore, in response to the insufficient bandwidth notification, the SCF sends a BC session modification request comprising the BC multimedia session ID and the PSC-ID to the user equipment (steps **404**). In response to the receipt of this request, the user equipment (UE) may automatically select a low bandwidth alternative for the initially selected HDTV stream. Alternatively, the UE may allow the user to select an alternative, low bandwidth TV stream, such as for example Standard Definition TV stream (SDTV). An example of such a modification request message is shown below:

Example 4: SIP re-INVITE message to modify a BC Service to add it to a PSC.

(This may be for instance a second/third/… SIP INVITE within a SIP dialog)

```
INVITE sip:bc-service@serviceprovider.com SIP/2.0
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: BC Service <sip:bc-
service@serviceprovider.com>;tag=876567465
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142

v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
```

```
s=Broadcast session
m=video 51372 RTP/AVP 33
c=IN IP4 239.2.17.12/127
a=recvonly
a=bc_service:tv:bbc1.co.uk
a=PSCid:873467631243@serviceprovider.com
b=AS:2000
```

In this case, because a BC session modification does not cause it's BC session ID to change, also the PSCID and the other associated multimedia session IDs remain correct and do not have to be changed. Thereafter, a BC session modification response, which informs the RACS to modify the resource allocation, is sent via the IMS core (step 406) to the SCF. After the resource (re-)allocation is completed, sufficient bandwidth is available for the SCF to set up the second CoD session (step **408**).

Fig. 5 depicts an example of a process flow regarding the termination of a PSC session as described above in relation to **Fig. 2**, wherein the termination is initiated by the network, in this case the SCF. Termination may for example be necessary because of parental control (the kids may only watch 2 hours of TV each day, after which it is terminated) or because a user has configured its set-top box such that for example as soon as a particular broadcasted show begins, he wants his channel to change to that show and therefore to end the PSC session (e.g. the personalized TV-experience) in favour of a regular (non-personalized) BC session. The SCF is now configured to, from a particular moment in time, end the PSC session and all linked associated sessions and to set-up a new session for receiving the regular broadcast.

An example of a termination message from an UE for terminating a session within a PSC session is illustrated here below:

Example 5. SIP BYE message to terminate a session within a PSC.

```
BYE sip:bc-service@serviceprovider.com SIP/2.0
Via: SIP/2.0/UDP S-
CSCF.serviceprovider.com;branch=z9hG4bK776asdhds
Max-Forwards: 70
To: BC Service <sip:bc-
service@serviceprovider.com>;tag=876567465
From: STB1322499
<sip:STB1322499@serviceprovider.com>;tag=1928301774
Call-ID: a84b4c76e66710@pc33.serviceprovider.com
CSeq: 314159 INVITE
Contact: <sip:STB1322499@serviceprovider.com>
Content-Type: application/sdp
Content-Length: 142
v=0
o=STB1322499 2890844526 2890842807 IN IP4 126.16.64.4
s=Broadcast session
a=PSCid:873467631243@serviceprovider.com
```

Fig. 6 depicts a process flow **600** regarding a further use of a PSC session involving three different user terminals UE1,UE2,UE3. Different services, provided to different UEs, e.g. a television broadcast service to UE1, a telephony service to UE2 and a gaming service to UE3, are now added to one composition session, and hence associated with each other.

In this example, before the UE's set-up the sessions related to the respective services, first a PSC session (composite session) to the SCF is set up, using requests in steps **602**, **606** and **610**. Because an UE in this particular example does not know if such a composite session already exists, the individual UE's do not generate a composition session identifier, PSC-ID. Instead, the PSC-ID is generated

by the SCF and subsequently sent back to the respective UE's. The PSCID will be the same for each UE1, UE2 and UE3 since all sessions will belong to the same PSC session. The SCF inserts the PSC-ID in the responses to the PSC session initiation requests, so the UE's may store this ID and the one or more associated multimedia session IDs. After becoming part of the PSC session, an UE may setup any multimedia session required for the PSC service and make those sessions part of the PSC session (steps **604-612**).

In a further step **614** the SCF decides to tear down the PSC session, for example because the prepaid balance has run out or because of parental control which states that kids have to go to bed. In this case, the SCF may just send a termination request using the PSCID to tear down any service sessions belonging to the PSC session.

Fig.6 relates to a situation wherein the PSC session is a multi-device session. In case of standardized IMS, such a session is currently not supported using the call-ID field for a PSCID. Nevertheless, because during session setup of this PSC session no port numbers or IP addresses need to be exchanged between terminals, such a multi-device session may be started without e.g. a conference bridge or similar session bridge. For the PSC session, only signalling messages need to be exchanged. So, the IMS core needs to be able to fork signalling messages, e.g. SIP messages, to the different devices part of the PSC session. This forking is normally done based on e.g. SIP URIs, but could also be done using any other part of a signalling message. If the PSCID is e.g. contained as a service parameter in the request URI, messages may be forked by the core IMS based on detection of the PSCID in this header field. This is done in **Fig.6** in step **616**. The IMS core receives a session termination request from the SCF, and forks this message to all involved UEs, in this case UE1, UE2 and UE3.

The following use case related to the figures 7A and 7B demonstrates how the invention may be used when network based service intervention is required. In this particular embodiment three sessions to the user equipment, for instance a Home Media Gateway (HMG) are active at one time. Two CoD sessions are associated to a Composition Session Identifier PSCid and together form a PSC Service. For instance a personalized television experience wherein CoD session 1 comprises a main television view of a soccer match and CoD session 2 represents a small Picture in Picture (PIP) view of another angle of the soccer match, present as an overlay on the main view. CoD Session 3 is unrelated to the two other sessions, and comprise the downloading of a movie to a PVR in the HMG.

The user expects an important phone call during the consumption of the personalized television experience, which he has to take. He may want to watch the personalized television experience again after the phone call, or he may stop at all. What he doesn't want is that the CoD session 3, related to the downloading of a movie is however interrupted. The following is an exemplary sequence of steps to illustrate how the invention may be used in combination with a FoneFreeze service. It is demonstrated how the objectives of the user are accomplished.

More importantly this embodiment further demonstrates that the initiation of a composition session is not necessarily in all cases. The key is to associate related sessions by providing a composition session identifier and by exchanging this between the user equipment and the network element or elements in charge of the session management.

1) In a first step 7010, the UE sends a request for the FoneFreeze service. This request may be for instance in the form of a SIP MESSAGE message or an HTTP POST message.

2) In a second step 7020, the IPTV SCF (the network element) receives the request and **generates a PSCid.**

3) In step 7030, the IPTV SCF issues a FoneFreeze subscribe request to a Telephony SCF, **including the PSCid.** This subscribe request may be contained in a SIP SUBSCRIBE message or an XMPP SUBSCRIBE (RFC 3921)

4) In step 7040, the IPTV SCF confirms the FoneFreeze request **including the PSCid.** This response may be a SIP 200 OK message or an HTTP 200 OK message.

---

5) In step 7050 the UE sends a session initiation request for a COD session 1 **including the PSCid and a COD session 1 ID to the IPTV SCF (in this step the PSCid is exchanged between the user equipment and the network element) .**

6) In step 7060 the IPTV SCF **associates the** COD Session 1 with the PSCid and therefore also with the FoneFreeze request.

7) In step 7070 the IPTV SCF forwards the message to MF1

8) In step 7080 the MF1 confirms CoD session 1 to IPTV SCF with a 200 OK message.

9) In step 7090 the IPTV SCF confirms CoD session 1 to UE with a 200 OK message.

10) In step 7100 the MF1 starts media delivery for CoD session 1 (delivery of video stream 1)

---

11) In step 7110 the UE sends a session initiation request for a COD session 2 **including the PSCid and a COD session 2 ID to the IPTV SCF (in this step the PSCid is exchanged between the user equipment and the network element) .**

12) In step 7120 the IPTV SCF **associates the** COD Session 2 with the PSCid and therefore also with CoD session 1 and with the FoneFreeze request.

13) In step 7130 the IPTV SCF forwards the message to MF1

14) In step 7140 the MF1 confirms CoD session 2 to IPTV SCF with a 200 OK message.

15) In step 7150 the IPTV SCF confirms CoD session 2 to UE with a 200 OK message.

16) In step 7160 the MF1 starts media delivery for CoD session 2 (delivery of video stream 2)

---

17) In step 7170 the UE sends a session initiation request for COD session 2 **without PSCid.**

18) In steps 7180-7210 all of the steps 7130 to 7160 are repeated for the CoD session 3.

19) In step 7220 the Telephony SCF receives an incoming phone call.

20) In step 7230 the Telephony SCF sends notify message **including PSCid,** e.g. a SIP NOFIFY message or an XMPP status update.

21) In step 7240 the IPTV **uses PSCid** to associate FoneFreeze notification with CoD session 1 and CoD session 2

22) In step 7250 the IPTV SCF terminates CoD Session 1 and CoD Session 2, e.g. with SIP BYE messages (or suspends the session, or records the stream, or …)

23) In step 7260 the UE confirms the termination/suspension/recording of CoD session 1 and CoD session 2. The CoD session 3 is uninterrupted and continues, whilst the user can take his call.

Another example may be that the CoD sessions 1 and 2 form a personalized television experience viewed on a television set in the livingroom by a user 1, whilst the CoD

session 3 is another television program connected to a terminal in another room, but via the same Home Media Gateway and hence for the network element the same subscriber/user equipment. One can immediately visualize the power of the invention concept in such situations.

Figure 8A and B relate to another exemplifying embodiment of the invention. Just like the embodiment related to fig. 7A and B, it is not required to initiate a composition session. Here it is the network element that generates the PSCid and returns this to the User Equipment. Such an embodiment may be used for the insertion of advertisements in an existing CoD session. The steps shown in the figures are largely overlapping with those from other figures and are for the remainder self-explanatory to the skilled person.

It is to be understood that any feature described in relation to any one embodiment may be used alone, or in combination with other features described, and may also be used in combination with one or more features of any other of the embodiments, or any combination of any other of the embodiments. Furthermore, equivalents and modifications not described above may also be employed without departing from the scope of the invention, which is defined in the accompanying claims.

CLAIMS

1. Method for managing associated sessions in a network, the network comprising a network element configured for managing associated sessions between the network and user equipment, the method comprising:

- providing a composition session identifier for associating sessions in a network;
- exchanging the composition session identifier between a user equipment and the network element; and
- associating two or more sessions with the composition session identifier by exchanging the composition session identifier

2. Method according to claim 1, wherein the method further comprises the step of initiating a composition session.

3. Method according to claim 2, wherein the method further comprises the steps of:

- the user equipment generating a composition session identifier;
- sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier.

4. Method according to claim 2, wherein the method further comprises the steps of:

- sending a request for initiating a composition session from the user equipment to the network element;

- the network element generating a composition session identifier in response to the receipt of the request;
- sending the composition session identifier to the user equipment.

5. Method according to any of claims 1-4, wherein the method further comprises the steps of:

- the user equipment initiating two or more sessions by sending two or more session initiation requests for a session, preferably using a SIP INVITE message, to the network element, each request comprising the composition session identifier

6. Method according to any of claims 1-4, wherein the method further comprises the steps of:

- the network element initiating two or more sessions by sending two or more requests for a session, preferably using a SIP INVITE message, to the user equipment, each request comprising the composition session identifier.

7. Method according to any of claims 3-4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

8. Method according to claims 5 or 6, wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier

(NPVRContentID, a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and/or a shared content (SC) session associated with a SC identifier.

9. Method according to any of claims 1-8, wherein the combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

10. Method according to any of claims 1-9, wherein the network further comprises storage means, preferably a database, the method further comprising the step of:

- the network element storing the composition session identifier and the two or more associated session identifiers in the storage means.

11. Method according to any of claims 2-10, the method further comprising the step of:

- modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session.

12. Method according to any of claims 1-11, wherein the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), the SCF configured for managing associated sessions between the network and the User Equipment.

13. A system for managing associated sessions in a network, the system comprising:

- a network element configured for managing associated sessions between the network and a user equipment; for exchanging a composition session identifier with a user equipment; and, for associating two or more sessions with the composition session identifier by exchanging the composition session identifier;
- a user equipment configured for providing a composition session identifier for associating sessions in a network;; and, for exchanging the composition session identifier with the network element.

14. A user equipment for use in a system according to claim 13, the user equipment comprising:

- an ID generator for generating a composition session identifier;
- a multimedia client configured for receiving the composition session identifier from the ID generator; exchanging the composition session identifier with a network element; for initiating one or more multimedia sessions with the network element; and for exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

15. A user equipment according to claim 14., further configured for initiating a composition session.

16. A network element for use in a system according to claim 13, the network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment; x; and for setting up and modifying multimedia sessions;
- a storage means for storing composition session information, the composition session information

comprising information regarding composition session identifiers and the associated sessions.

17. A network element according to claim 16, further configured for initiating, and or terminating and or modifying a composition session

18. A network element according to claim 16 or 17, the network element further comprising:

- an ID generator for generating a composition session identifier;

19. A computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps according to any of claims 1-12.

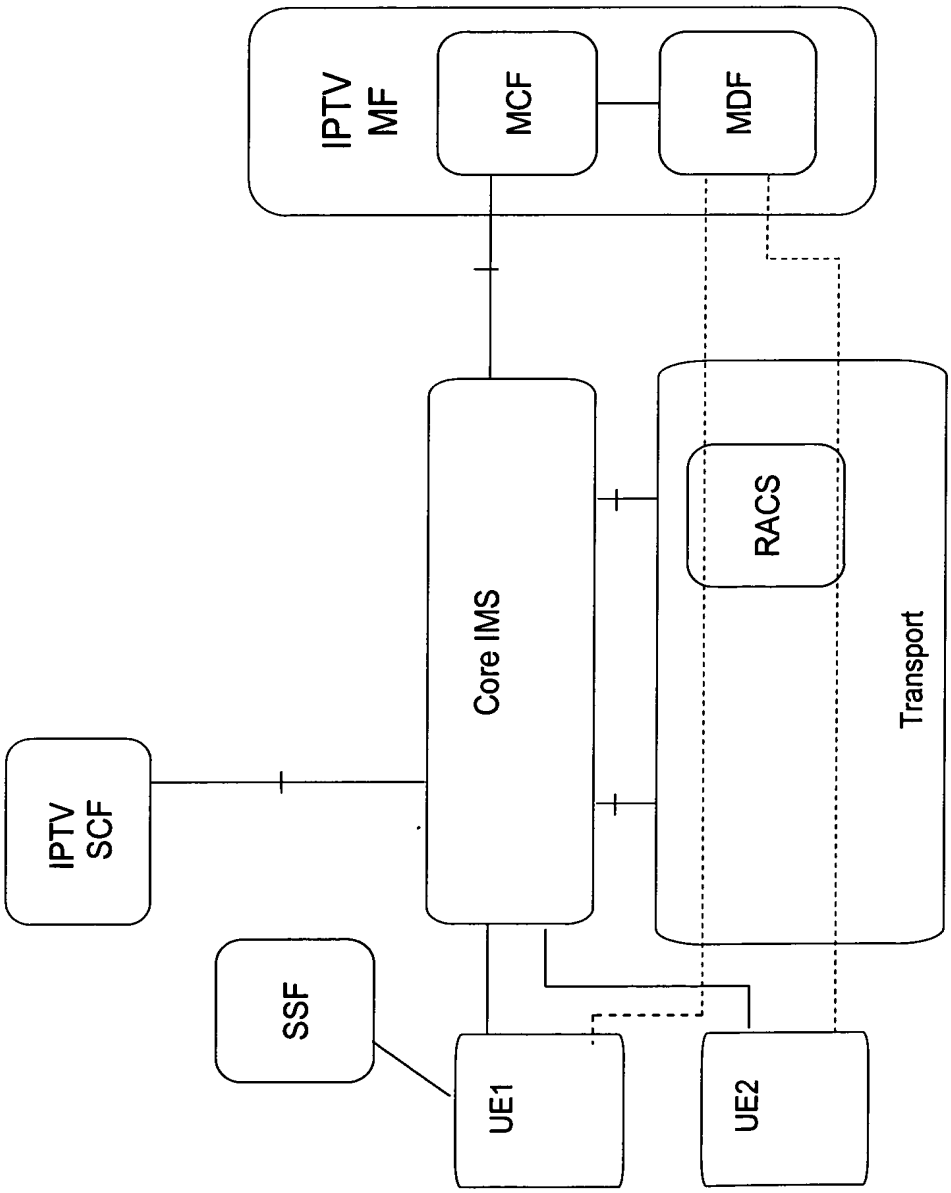

Figure 1

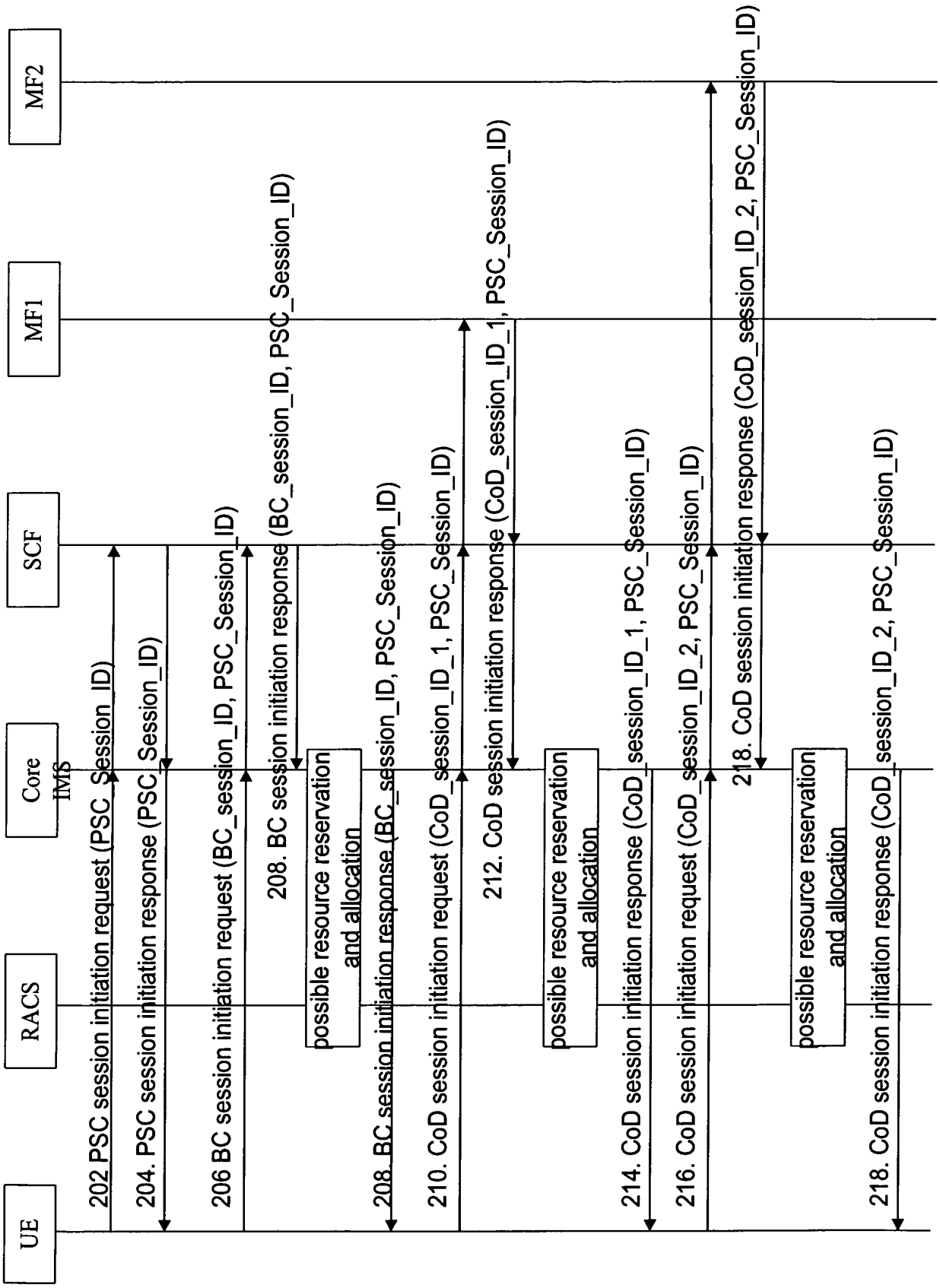
UE
RACS
Core IMS
SCF
MF1
MF2
202 PSC session initiation request (PSC_Session_ID)
204. PSC session initiation response (PSC_Session_ID)
206 BC session initiation request (BC_session_ID, PSC_Session_ID)
208. BC session initiation response (BC_session_ID, PSC_Session_ID)
possible resource reservation and allocation
208. BC session initiation response (BC_session_ID, PSC_Session_ID)
210. CoD session initiation request (CoD_session_ID_1, PSC_Session_ID)
212. CoD session initiation response (CoD_session_ID_1, PSC_Session_ID)
possible resource reservation and allocation
214. CoD session initiation response (CoD_session_ID_1, PSC_Session_ID)
216. CoD session initiation request (CoD_session_ID_2, PSC_Session_ID)
218. CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
possible resource reservation and allocation
218. CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)

Figure 2

3

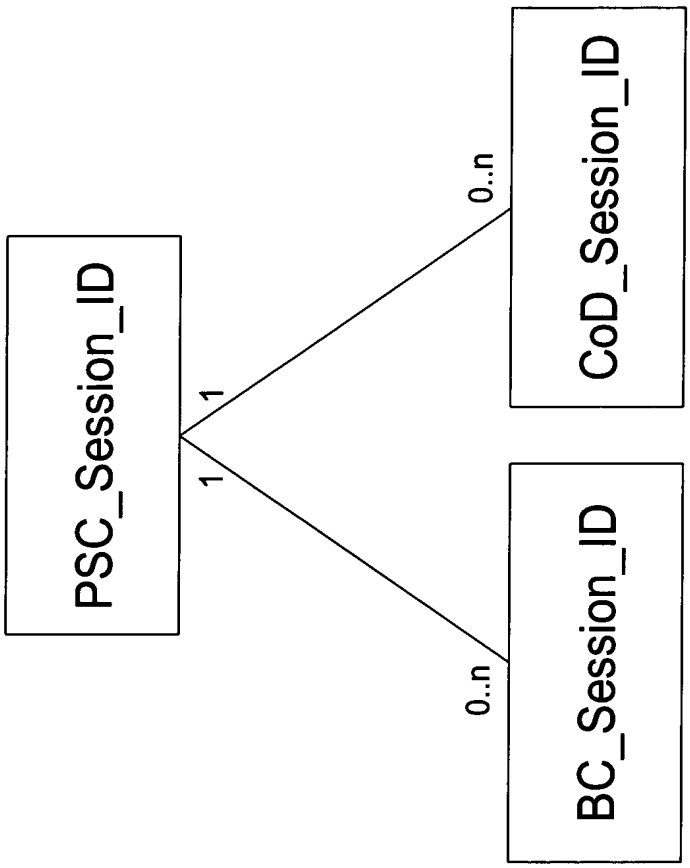

Figure 3

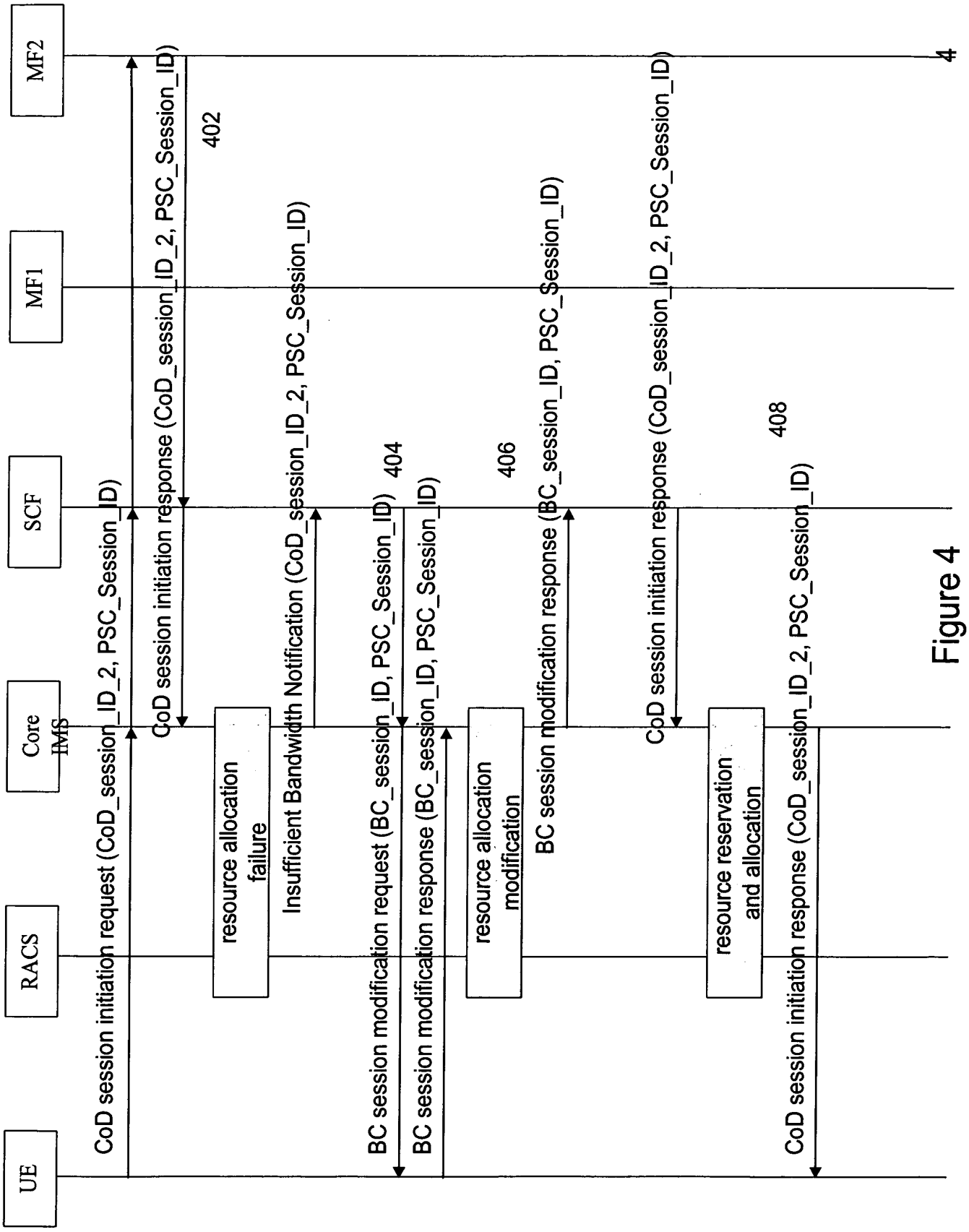
UE
RACS
Core IMS
SCF
MF1
MF2
CoD session initiation request (CoD_session_ID_2, PSC_Session_ID)
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
402
resource allocation failure
Insufficient Bandwidth Notification (CoD_session_ID_2, PSC_Session_ID)
BC session modification request (BC_session_ID, PSC_Session_ID)
404
BC session modification response (BC_session_ID, PSC_Session_ID)
resource allocation modification
406
BC session modification response (BC_session_ID, PSC_Session_ID)
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
resource reservation and allocation
408
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
4

Figure 4

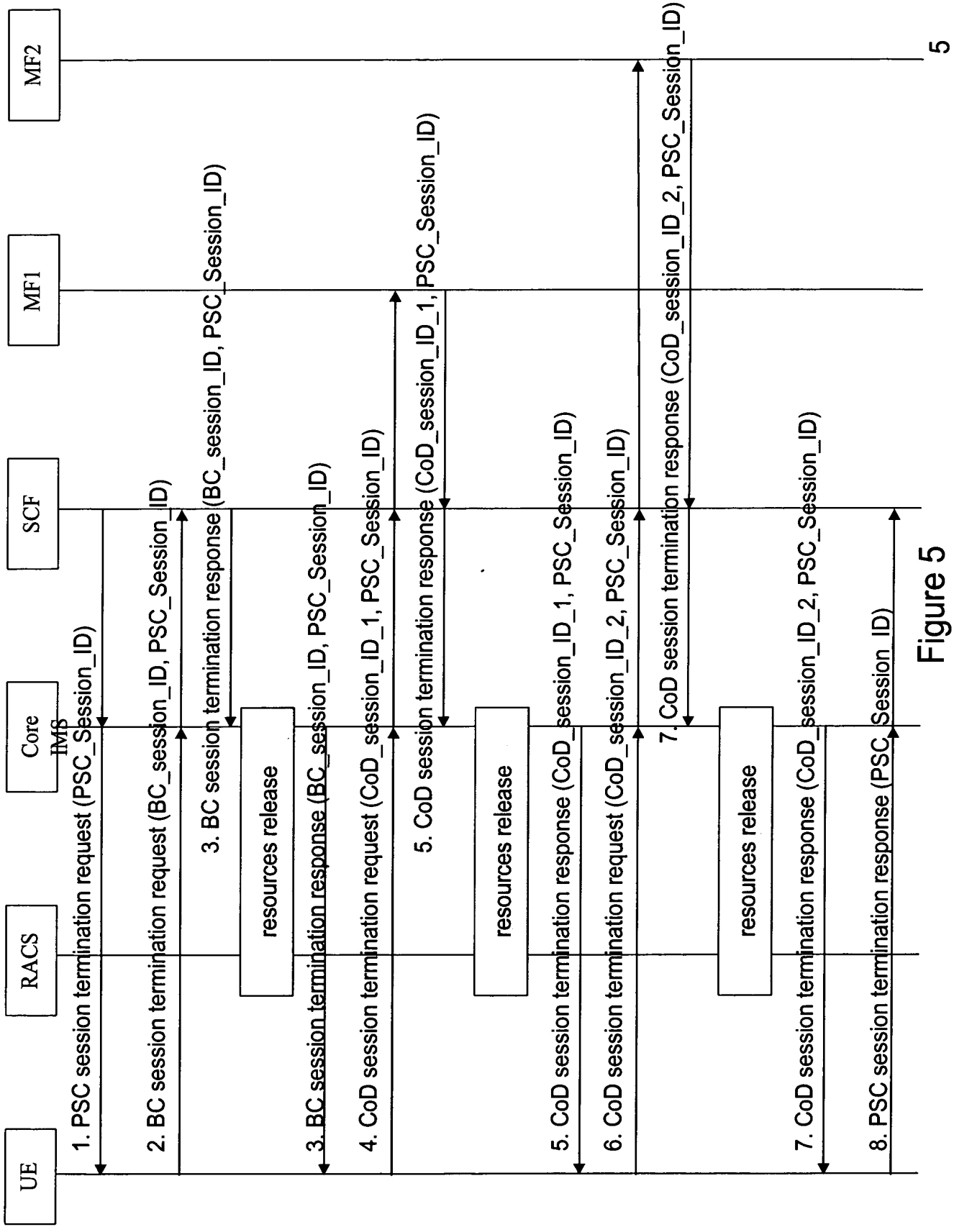
UE
RACS
Core IMS
SCF
MF1
MF2
1. PSC session termination request (PSC_Session_ID)
2. BC session termination request (BC_session_ID, PSC_Session_ID)
3. BC session termination response (BC_session_ID, PSC_Session_ID)
resources release
3. BC session termination response (BC_session_ID, PSC_Session_ID)
4. CoD session termination request (CoD_session_ID_1, PSC_Session_ID)
5. CoD session termination response (CoD_session_ID_1, PSC_Session_ID)
resources release
5. CoD session termination response (CoD_session_ID_1, PSC_Session_ID)
6. CoD session termination request (CoD_session_ID_2, PSC_Session_ID)
7. CoD session termination response (CoD_session_ID_2, PSC_Session_ID)
resources release
7. CoD session termination response (CoD_session_ID_2, PSC_Session_ID)
8. PSC session termination response (PSC_Session_ID)

Figure 5

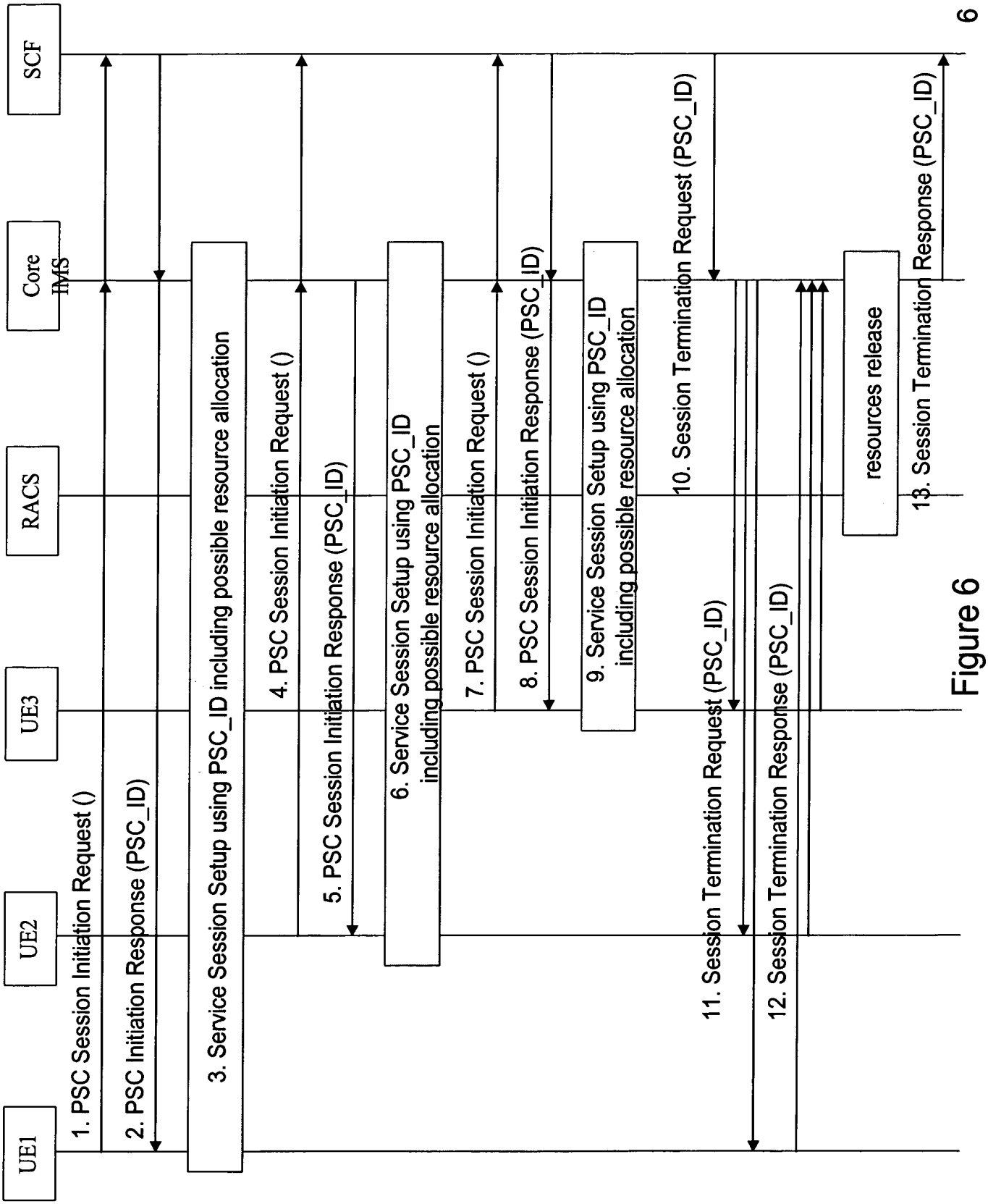
UE1
UE2
UE3
RACS
Core IMS
SCF
1. PSC Session Initiation Request ()
2. PSC Initiation Response (PSC_ID)
3. Service Session Setup using PSC_ID including possible resource allocation
4. PSC Session Initiation Request ()
5. PSC Session Initiation Response (PSC_ID)
6. Service Session Setup using PSC_ID including possible resource allocation
7. PSC Session Initiation Request ()
8. PSC Session Initiation Response (PSC_ID)
9. Service Session Setup using PSC_ID including possible resource allocation
10. Session Termination Request (PSC_ID)
11. Session Termination Request (PSC_ID)
12. Session Termination Response (PSC_ID)
resources release
13. Session Termination Response (PSC_ID)

Figure 6

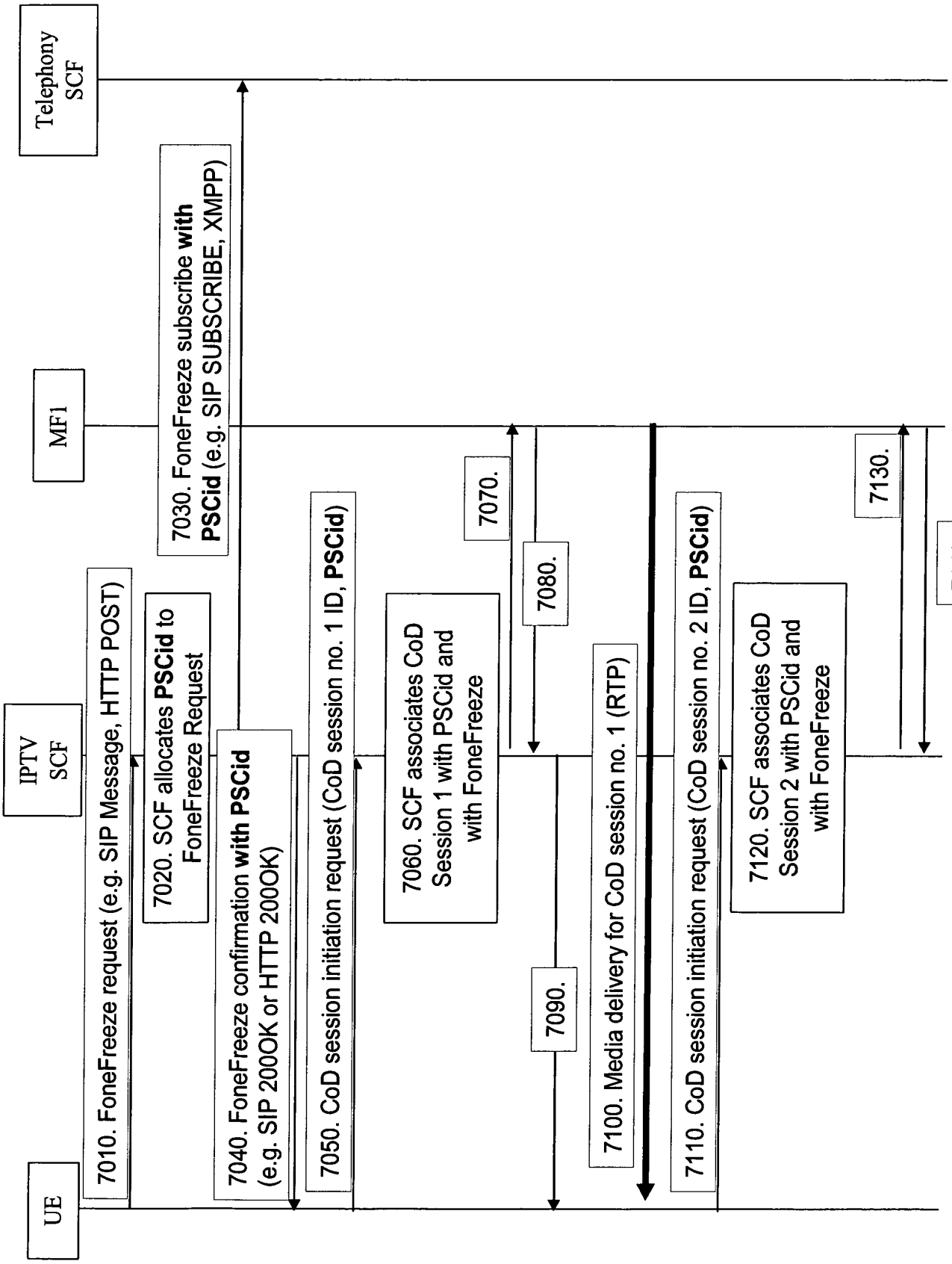
UE
IPTV SCF
MF1
Telephony SCF
7010. FoneFreeze request (e.g. SIP Message, HTTP POST)
7020. SCF allocates PSCid to FoneFreeze Request
7030. FoneFreeze subscribe with PSCid (e.g. SIP SUBSCRIBE, XMPP)
7040. FoneFreeze confirmation with PSCid (e.g. SIP 200OK or HTTP 200OK)
7050. CoD session initiation request (CoD session no. 1 ID, PSCid)
7060. SCF associates CoD Session 1 with PSCid and with FoneFreeze
7070.
7080.
7090.
7100. Media delivery for CoD session no. 1 (RTP)
7110. CoD session initiation request (CoD session no. 2 ID, PSCid)
7120. SCF associates CoD Session 2 with PSCid and with FoneFreeze
7130.
7140.

Figure 7A

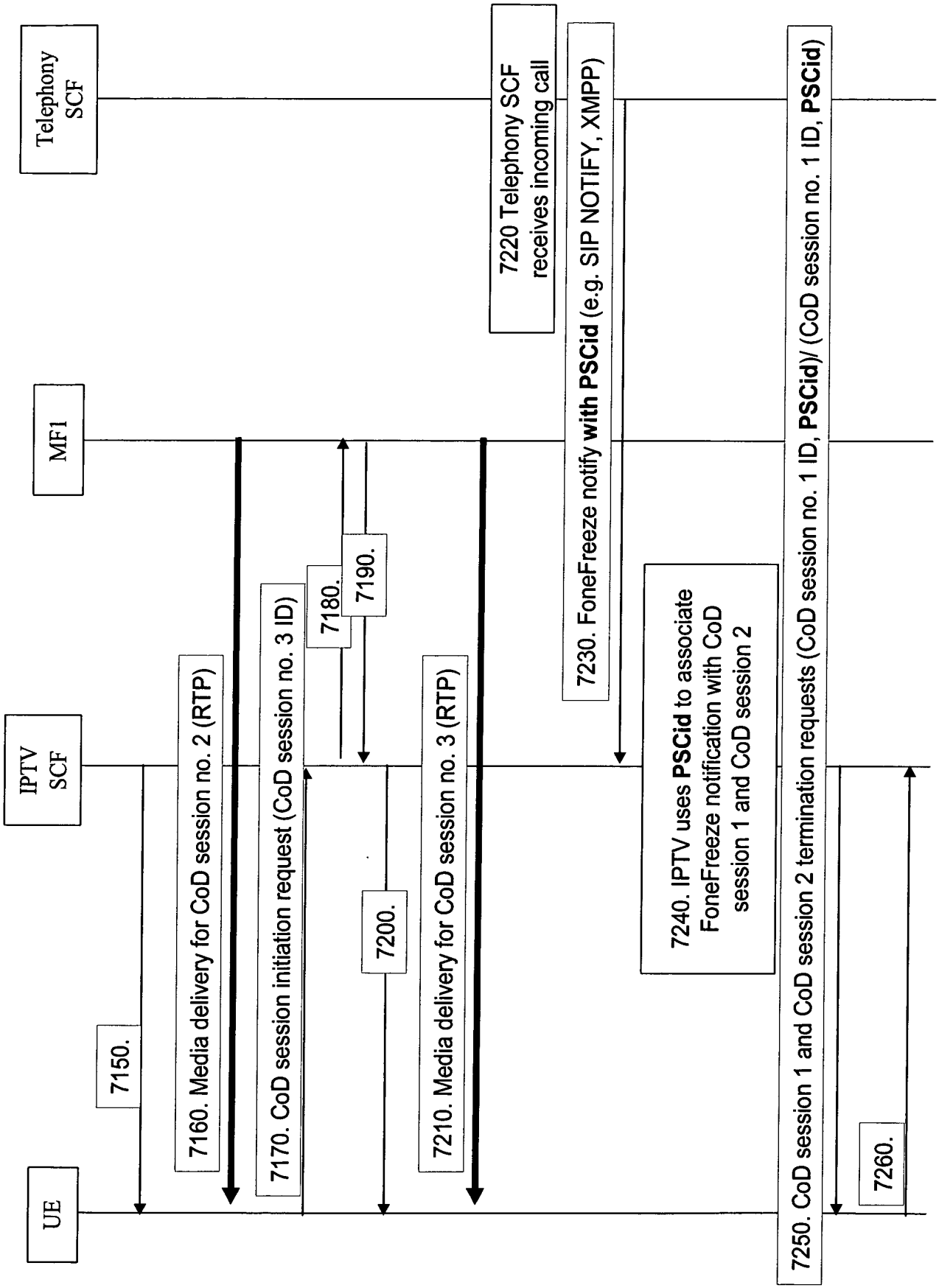
Telephony SCF
MF1
IPTV SCF
UE
7220 Telephony SCF receives incoming call
7230. FoneFreeze notify with PSCid (e.g. SIP NOTIFY, XMPP)
7240. IPTV uses PSCid to associate FoneFreeze notification with CoD session 1 and CoD session 2
7250. CoD session 1 and CoD session 2 termination requests (CoD session no. 1 ID, PSCid)/ (CoD session no. 1 ID, PSCid)
7150.
7160. Media delivery for CoD session no. 2 (RTP)
7170. CoD session initiation request (CoD session no. 3 ID)
7180.
7190.
7200.
7210. Media delivery for CoD session no. 3 (RTP)
7260.

Figure 7B

8

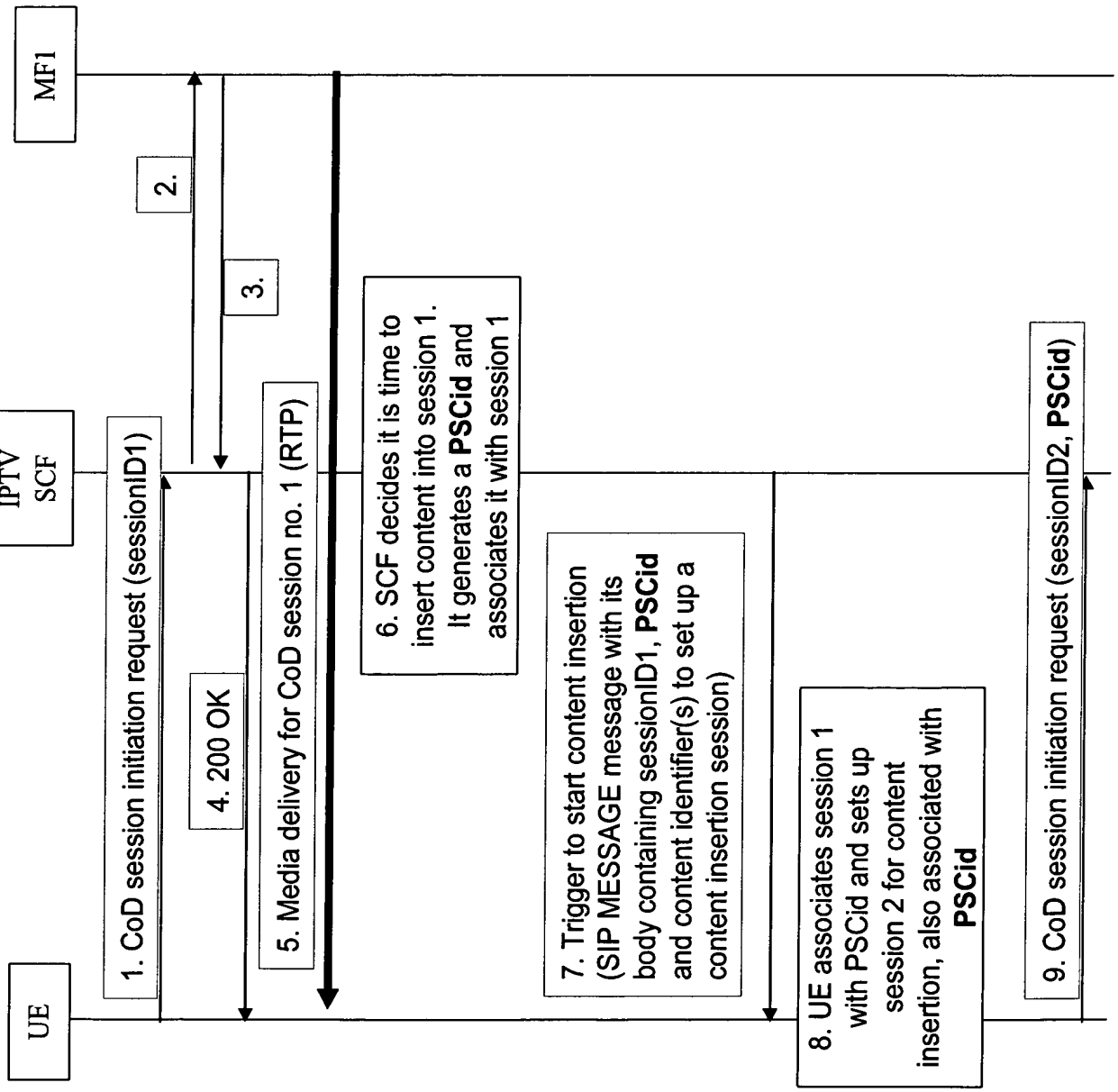
UE
IPTV SCF
MF1
1. CoD session initiation request (sessionID1)
2.
3.
4. 200 OK
5. Media delivery for CoD session no. 1 (RTP)
6. SCF decides it is time to insert content into session 1. It generates a PSCid and associates it with session 1
7. Trigger to start content insertion (SIP MESSAGE message with its body containing sessionID1, PSCid and content identifier(s) to set up a content insertion session)
8. UE associates session 1 with PSCid and sets up session 2 for content insertion, also associated with PSCid
9. CoD session initiation request (sessionID2, PSCid)

Figure 8A

9

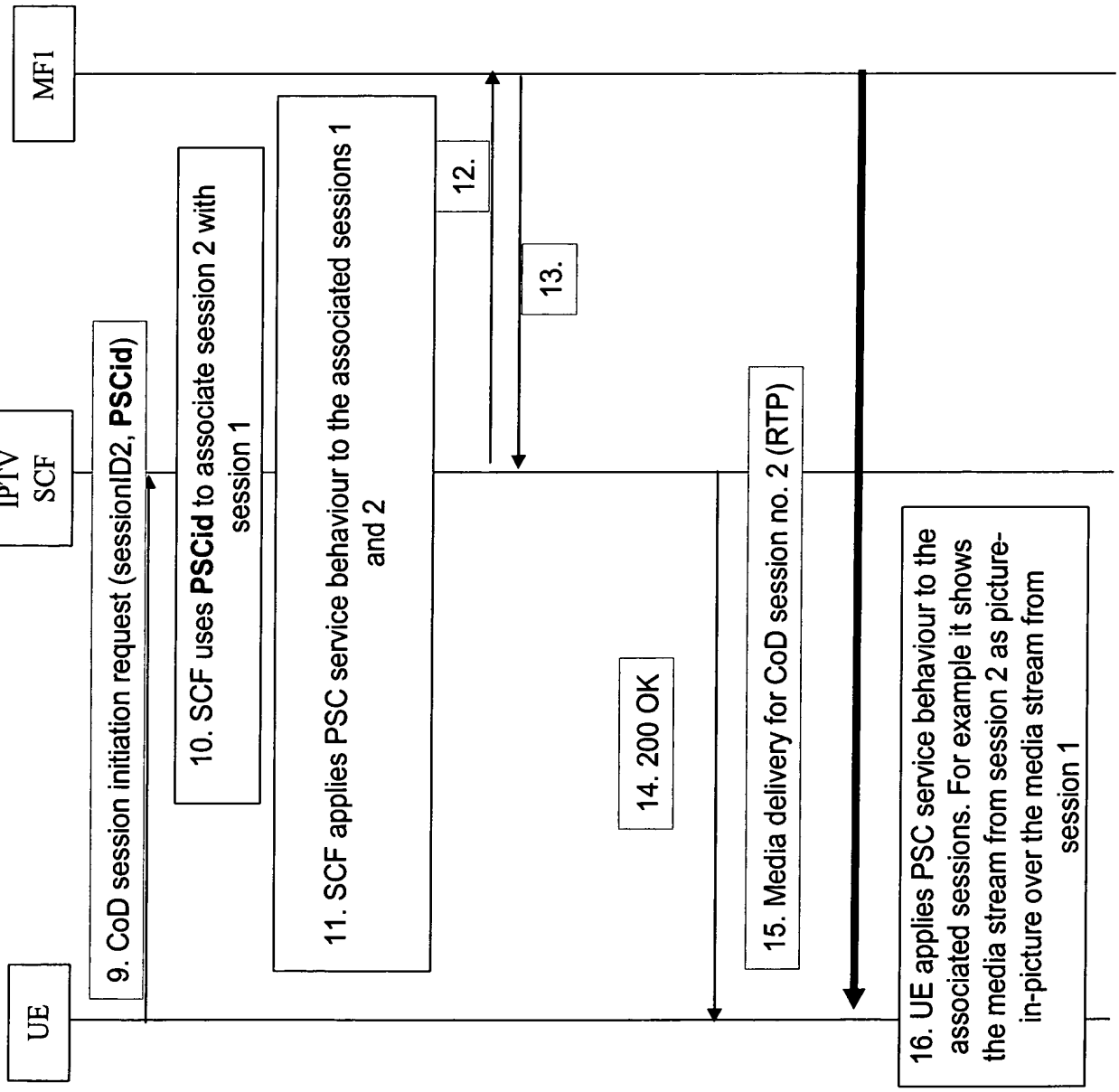
UE
IPTV SCF
MF1
9. CoD session initiation request (sessionID2, PSCid)
10. SCF uses PSCid to associate session 2 with session 1
11. SCF applies PSC service behaviour to the associated sessions 1 and 2
12.
13.
14. 200 OK
15. Media delivery for CoD session no. 2 (RTP)
16. UE applies PSC service behaviour to the associated sessions. For example it shows the media stream from session 2 as picture-in-picture over the media stream from session 1

Figure 8B

10

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Patentanmeldung Nr.	**Patent application No.**	**Demande de brevet n°**
	09000661.0 / EP09000661	

The organization code and number of your priority application, to be used for filing abroad under the Paris Convention, is EP09000661.

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Im Auftrag

For the President of the European Patent Office

Le President de l'Office européen des brevets
p.o.

R.C. van Dijk

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Bezeichnung der Erfindung / Title of the invention / Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se référer à la description.)

Managing associated sessions in a network

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Managing associated sessions in a network

Field of the invention

The invention relates to managing associated sessions in a network, though not exclusively, to a method and a system for managing associated multimedia sessions in a network, a network element and a user equipment for use in such system and a computer program product for executing the method.

Background of the invention

The IP Multi-Media Subsystem (IMS) architecture is a unified architecture that supports a wide range of services enabled by the flexibility of Session Initiation Protocol (SIP). IMS is defined by certain 3GPP and 3GPP2 standards (such as 3GPP TS 22.228, TS 23.218, TS 23.228, TS 24.228, TS 24.229, TS 29.228, TS 29.229, TS 29.328 and TS 23.320 Releases 5-7).

In order to leverage the investments in the IMS infrastructure new types of multi-media services are developed. One type of IMS-enabled services regards the so-called combinational services also referred to as blended or composite services, which combine services of various platforms and make use of the functionalities and capabilities of various platforms and distribution techniques(e.g. phone, multicast, broadcast, television/video, content-on-demand etc.). A type of IMS-enabled services regards interactive multi-media services wherein the end-user is an active participant instead of a passive viewer.

Further enhancements of this type of IMS-enabled services may include an end-user and/or the network operator to compose a multimedia service from different multimedia streams. For example an end user may compose a personalized multimedia service by enriching a main service, for example a

TV broadcast (BC), with personally selected multi-media content, such as content-on-demand (CoD), user-generated content (UCG), ect., originating from different sources in the network.

An example of an implementation of such a personalized TV service in a state-of-the-art architecture, is described in the article of Rauschenbacher et. al, "A scalable interactive TV service supporting synchronized delivery over broadcast and broadcast networks", a Fraunhofer white paper of May 14, 2004. In this document a system is described wherein the main content stream is transported over a DVB network in the form of a broadcastchannel to a Home Media Server at the end-user location. In addition, multiple additional content streams may be transported via a broadband IP network to the Home Media Server. At the Home Media Server, these additional content streams may be synchronized with the main content stream and thus presented to the end-user (display) device in a synchronized manner.

One of the disadvantages of the scheme described in Rauschenbacher et. al, is that all end-user display equipment, need to be connected directly to the Home Media Server (HMS) for consuming these enriched services. Another disadvantage is that the HMS is a type of equipment of substantial complexity and needs to have a robust design with the necessary processing power to realize the personalized TV service functionality. In short the prior art only allows the managing of the enriched television experience by the end-user. Information regarding the relation between the different multimedia streams originating from different sources in the network and delivered as separate streams to user equipment, only exists at the user equipment (HMS).

An exemplary network architecture, such as an IMS network, more in particular the IMS network elements managing the multimedia services in the IMS network, is however not

aware of the fact that these multimedia sessions are used in combination by an end user to generate a personalized multimedia service. It may however be convenient and or necessary to manipulate the personalized television experience from within the network. For example, it may be convenient to simultaneously pause associated multimedia streams, that together form the personalized television experience, in order to deliver a targeted advertisement or a hurricane warning or other content to the end-user, before resuming the personalized television experience. Also, reserving bandwidth in the network for all related streams may also be convenient. Another example whereby the network needs to know which streams are related is the situation of an incoming phone call. If a number of streams relate to a personalized television experience, and a number relate to individual download sessions or a multimedia recording session on the background, it would be convenient if the network could only pause the streams related to the personalized television experience and not those related to the background download or recording sessions.

In WO2007/101473 an example of such a combinational service, wherein in response to the receipt of a incoming call, a TV program is recorded on a network personal video recording (NPVR) system, is described as one of the embodiments. In this solution a broadcast stream (channel) is paused upon the incoming call and recorded in the network. later on, upon the users request, the content may be played from the moment it was paused, as a unicast stream. This type of network intervention only works for a single stream, and does not work for the personalized television experience comprising a multiple of streams, originating from different resources.

Within the state-of-the-art IMS architecture, such streams, controlled by and or originating from different

resources, would require the set-up of multiple parallel sessions. One session would comprise the stream with the main content and additional sessions for each of the additional streams would comprise the addition content items (different subtitles, voice-over, PIP, etc.). From a network perspective these sessions from the outside would all look the same and no different from an ongoing recording, download, gaming, telephony or other session. Currently the IMS standards do not allow an end user and/or the network to compose associated multimedia sessions and to collectively control and manage these associated multimedia sessions and their used network resources. Hence, there is a desire in the prior art for methods and systems for managing associated sessions in a network.

Summary of the invention

It is an object of the invention to reduce or eliminate at least one of the drawbacks known in the prior art and to provide in a first aspect of the invention a method for managing associated sessions in a network, the network comprising a network element configured for managing associated sessions between the network and user equipment. The method comprising the steps of: providing a composition session identifier for associating sessions in a network; initiating a composition session; exchanging the composition session identifier between a user equipment and the network element; and, associating two or more sessions with the composition session by exchanging the composition session identifier

In one embodiment the method further comprises the steps of: the user equipment generating a composition session identifier; sending a request for initiating a composition

session from the user equipment to the network element, the request comprising the composition session identifier.

In another embodiment the method further comprises the steps of: sending a request for initiating a composition session from the user equipment to the network element; the network element generating a composition session identifier in response to the receipt of the request; sending the composition session identifier to the user equipment.

In yet another embodiment the method further comprises the steps of: the user equipment initiating two or more sessions by sending two or more session initiation requests for a session, preferably using a SIP INVITE message, to the network element, each request comprising the composition session identifier.

In one embodiment the method further comprises the steps of: the network element initiating two or more sessions by sending two or more requests for a session, preferably using a SIP INVITE message, to the user equipment, each request comprising the composition session identifier.

In another embodiment the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

In yet another embodiment the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID, a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation

identifier and/or a shared content (SC) session associated with a SC identifier.

In a further embodiment the combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

In an embodiment the network further comprises storage means, preferably a database wherein the method further comprises the step of: the network element storing the composition session identifier and the two or more associated session identifiers in the storage means.

In yet another embodiment the method further comprises the step of: modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session.

In yet another embodiment the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), the SCF configured for managing associated sessions between the network and the User Equipment.

In a further aspect the invention relates to a system for managing associated sessions in a network, the system comprising:

- a network element configured for managing associated sessions between the network and a user equipment; for exchanging a composition session identifier with a user equipment; and, for associating two or more sessions with the composition session by exchanging the composition session identifier;
- a user equipment configured for providing a composition session identifier for associating sessions in a network; for initiating a composition session; and, for exchanging

the composition session identifier with the network element.

In yet a further aspect the invention relates to user equipment for use in a system as described above, wherein the user equipment comprises:

- an ID generator for generating a composition session identifier;
- a multimedia client configured for receiving the composition session identifier from the ID generator; for initiating a composition session and exchanging the composition session identifier with a network element; for initiating one or more multimedia sessions with the network element; and for exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

In a further aspect the invention relates to a network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment; for initiating, and or terminating and or modifying a composition session; and for setting up and modifying multimedia sessions;
- a storage means for storing composition session information, the composition session information comprising information regarding composition sessions and the associated sessions.

In one embodiment the network element further comprises: an ID generator for generating a composition session identifier;

The invention also relates to a computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps as described above.

The invention will be further illustrated with reference to the attached drawings, which schematically will show embodiments according to the invention. It will be understood that the invention is not in any way restricted to these specific embodiments.

Brief description of the drawings

Fig. 1 depicts a system according to one embodiment of the invention.

Fig. 2 depicts a flow diagram of a method according to one embodiment of the invention.

Fig. 3 depicts a data structure of session information according to one embodiment of the invention.

Fig. 4 depicts a flow diagram of a method according to another embodiment of the invention.

Fig. 5 depicts a flow diagram of a method according to yet another embodiment of the invention.

Fig. 6 depicts a flow diagram of a method according to a further embodiment of the invention.

Detailed description

Fig. 1 illustrates an example of an IMS-based IPTV system **100** as defined by ETSI TISPAN TS 182.027. The system is adapted for managing associated multimedia sessions according to a first embodiment of the invention. The system comprises an IMS core **102** formed by a set of Call/Session Control Functions (CSCF): a Proxy-CSCF (P-CSCF), an Interrogating-CSCF (I-CSCF) and an Serving-CSCF (S-CSCF). The IMS core is connected to User Equipment (UE) **104**, IPTV service control functions (SCF) **106** for controlling IPTV services in the network (e.g. a broadcast SCF, a Content-on-Demand SCF, etc.) and to Media Functions (MF) **108** comprising Media Control

Functions (MCF) and Media Delivery Functions (MDF) control the delivery of media contents via Transport Functions (TF) and Transport Control Functions (TCF) to the User Equipment.

Further, a Service Selection Function (SSF) **110** connected to the user equipment provides the user equipment with information about the available services using e.g. Electronic Programming Guide (EPG) and the Resource and Admission Control Subsystem (RACS) **112** manages resource usage and resource allocation for delivery of the media contents to the user equipment.

The IPTV system uses the Session Initiation Protocol (SIP) to set up and control sessions between user terminals or user terminals and the applications servers comprising the SCFs and MFs. The Session Description Protocol (SDP) carried by SIP signaling is used to describe and negotiate the media components in the session. Further, the Real Time Streaming Protocol (RTSP) is used for media control providing e.g. broadcast trick modes, Content-on-Demand (CoD) and Network Personal Video Recorder (NPVR) and the Real Time Transport Protocol (RTP) is used for media transport.

In order to allow the IPTV system to be aware of associated multimedia sessions, the SCFs and the user equipment are configured to setup composition sessions. A composition session allows both the user equipment and the network to keep track of and to control associated multimedia sessions.

Upon initiation of such composition session a composition session identifier is generated and exchanged between the SCF and the user equipment using SIP messaging. The composition session identifier may be generated by SCF or the user equipment. After establishment of the composition session, multimedia sessions, e.g. broadcast sessions, CoD sessions, Targeted Advertisement Insertion (TAI) sessions, User-Generated Content (UGC) sessions, etc. may be associated

with the composition session by adding the multimedia sessions to the composition session using the composition session identifier.

Addition of the multimedia sessions to a composition session may be realized for example by initiating a multimedia session using SIP messaging, e.g. using the SIP INVITE message, comprising the composition session identifier and the multimedia session identifier. Alternatively, addition to a composition session may be realized by adding an existing multimedia session to the composition session by modifying the existing multimedia session using SIP messaging, e.g. using the SIP REINVITE message, comprising the composition session identifier and the multimedia session identifier.

The SCFs and the user equipment keep track of the composition sessions and the multimedia sessions associated with each of these compositions sessions by storing for each composition session identifier the associated multimedia session identifiers in a session database **114** connected to the SCFs and a memory for storing session information **116** in the user equipment respectively.

Further, the SCFs and the user equipment are configured to modify and/or terminate a composition session. For example in order free up network resources to make room for the addition of another media session, the network may want to replace a HDTV broadcast session in a particular composition session with a normal broadcast session. In that case, using the session information stored in the session database, the SCF is able to access the multimedia session associated with the composition session. Using the session information, the SCF is able to identify the HDTV broadcast session, to terminate the HTDV broadcast session and to add a new multimedia session relating to a Standard Definition TV stream (SDTV) to the composition session. The modification to the composition session is registered in the session database

and the memory of the user equipment by replacing the multimedia HDTV session identifier with the multimedia SDTV session identifier.

The session database in the network and the session information stored in the memory of the user equipment thus keep track of newly generated composition sessions, modifications in existing composition sessions and/or terminations of composition sessions and thus allows network elements in the IMS network to be aware of the presence of associated multimedia sessions.

Fig. 2 depicts one exemplary protocol flow **200** representing the initiation of a composition session, in this case a personalized stream composition (PSC) session, using a composition session identifier and the subsequent association of three multimedia sessions to the composition session using the composition session identifier. In this example the associated multimedia sessions comprise three sessions: a broadcast (BC) session comprising a first video stream and first and second Content-on-Demand (CoD) sessions comprising a second and third video stream respectively. The first stream may comprise a TV broadcast, e.g. a sport game with a particular commentator, and the second and third stream may comprise two separate unicast streams origination from different sources in the network and comprising a second and third camera angle of the sports event, which is presented to the user in a Picture-in-Picture mode simultaneously with the TV broadcast.

The first, second and third video streams may be related to a personalized television program preconfigured in the SSF or, alternative, configured by the user using the program information provided by the SSF. Selection of the multimedia streams in the personalized television program may be realized by presenting Electronic Programming Guide (EPG) data provided by the SSF to the user. Using a remote control

the user may compose its own personalized television program by selecting two or more multimedia streams from the set of multimedia streams presented to the user. Composing personalized television programs from multiple BC and/or CoD session may require more complex EPG data as supported e.g. by the OMA BCAST service guide.

After having selected the multimedia streams, the user equipment generates a composition session identifier, in this case a personalized stream composition session identifier (hereafter: PSC ID), that is used by the user equipment and the network to correlate the different selected multimedia sessions to the PSC session. The user equipment stores the generated PSC ID and the selected BC and CoD multimedia identifiers in a memory used for storing session information.

Thereafter the PSC session is initiated by a PSC session initiation request. The PSC session may be initiated using the SIP protocol by sending a SIP INVITE comprising the PSC ID via the IMS core to the SCF (step **202**). The PSC ID may be coded in the request URI of the SIP message. In further embodiments, the PSC ID may be implemented as a SIP Call ID (as defined in RFC 3261) or transported in a separate SIP INFO message to the SCF.

The SCF acknowledges the initiation of PSC session by sending a PSC session initiation response back to the user equipment (step **204**). The response may be a SIP 200 OK response comprising the PSC ID. Further, the SCF stores the newly created PSC ID in the session database.

Then the user equipment may initiate the selected BC session using the session information, i.e. the PSC ID and the newly generated BC multimedia session ID, stored in its memory. Initiation of the BC session may be realized by using adapted standard procedures as defined in ETSI TS 182 027 section 8.1.3 and ETSI TS 183 063 section 5.3.1. The adaptation of the standard procedures regards the inclusion in

the initiation request of a reference to the PSC Session ID of the PSC session of which the BC multimedia session is part of. This parameter can be included e.g. as a parameter in the request-URI of a SIP INVITE used to setup the session. Hence, the BC session is initiated by sending a BC initiation request comprising the newly generated BC multimedia session ID and the PSC ID to the SCF (step **206**). During session setup, resources in the network may be verified and reserved by the RACS for and/or allocated to the BC multimedia session.

After having received the BC initiation request, the SCF stores the BC multimedia session ID under the PSC ID in the session database and acknowledges the initiation of BC multimedia session by sending a response message, e.g. SIP 200 OK message, comprising the BC multimedia session ID and the PSC ID to the user equipment (step **208**).

Next, a first CoD session is setup. This can be done e.g. by using adapted standard procedures as defined in ETSI TS 182 027 section 8.4.1 and ETSI TS 183 063 section 5.3.2. The adaptation of the standard procedures regards the inclusion in the CoD initiation request of a reference to the PSC ID of the PSC session of which the CoD session is part of. This parameter can be included e.g. as a parameter in the request-URI of a SIP INVITE used to setup the session. Hence, the CoD session is initiated by sending a CoD initiation request comprising a newly generated CoD multimedia session ID and the PSC ID via the SCF to a first multimedia function MF1 controlling the CoD media content (step **210**).

In response the MF1 sends an acknowledgement message, e.g. a SIP 200 OK, comprising the CoD multimedia session ID and the PSC ID back to the SCF, which stores in response the CoD multimedia session ID under the PSC ID in the session database. Thereafter the acknowledgement message is sent to the user equipment (step **212**). During the first CoD session

setup, resources in the network may be reserved by the RACS for and/or allocated to the CoD multimedia session.

In a similar manner a second CoD session is setup to a second media function MF2 (steps **214** through **218**). Also the initiation of the second CoD session is registered in the session database by the SCF storing the second CoD multimedia session ID under the PSC session ID in the database.

Using the steps as described above a PSC session is created containing one BC multimedia session and 2 CoD multimedia sessions. Both SCF and UE may keep track of the PSC session and which media sessions it contains using e.g. a data model as shown in **Fig. 3**. This figure shows that one PSC session may contain 0 or more BC sessions and 0 or more CoD sessions.

In a variant (not shown) of the process flow depicted in **Fig.2**, it is the SCF instead of the user equipment which initiates the multimedia session. To that end the PSC session initiation request, which is sent to the SCF (step **202** in Fig.2) comprises the PSC ID and the selected BC and CoD multimedia identifiers relating to the BC and CoD multimedia sessions associated to the PSC session. Further, the request may comprise handling instructions, e.g. instructions for the case that there is insufficient bandwidth for all requested BC and CoD session. Using the information in the request, the SCF subsequently initiates the requested multimedia session in a similar way as described in relation to **Fig.2**. This variant has the advantage that the SCF can e.g. first determine, e.g. in combination with the RACS, if sufficient network resources are available. If this is the case, the SCF can setup the different multimedia session. If this is not the case, the SCF can sent a PSC session reject message to the UE. Other reasons for rejecting a PSC session include, but are not limited to, insufficient prepaid balance, unauthorized because of subscription restrictions, etc.

Fig. 4 depicts one exemplary use of the PSC session as described above in relation to **Fig. 2**. In this example a PSC session similar to the one described in relation with **Fig.2** is set up, however in this case the second CoD multimedia session setup fails because the RACS informs the SCF that insufficient bandwidth is available is available for the second CoD session (step **402**).

Because the SCF is aware of the correlation between the different media sessions in the PSC session, it allows the network to manage bandwidth usage of the PSC session as a whole. In response to the notification from the IMS core that insufficient bandwidth is available, BC multimedia session - in this case comprising a high bandwidth HDTV stream - is modified using a session modification e.g. as described in procedures in TS 182 027 section 8.3.2 and TS 183 063 section 5.1.3.2.

Therefore, in response to the insufficient bandwidth notification, the SCF sends a BC session modification request comprising the BC multimedia session ID and the PSC ID to the user equipment (steps **404**). In response the user equipment may automatically select an low bandwidth alternative to the initially selected HDTV stream. Alternatively, the user equipment may allow the user to select an alterative, low bandwidth TV stream, e.g. Standard Definition TV stream (SDTV). In this case, because a BC session modification does not cause it's ID to change, the PSC and associated multimedia session IDs remain correct and do not have to be changed. Thereafter, a BC session modification response is sent via the IMS core (step 406) which informs the RACS to modify the resource allocation, to the SCF. After the resource allocation sufficient bandwidth is available for the SCF to complete the second CoD session (step **408**).

Fig. 5 depicts an example of a process flow regarding the termination of a PSC session as described above in

relation to **Fig. 2**, wherein the termination is initiated by the network, in this case the SCF. Termination may be necessary because of parental control (the kids may only watch 2 hours of TV each day, after which it is terminated) or because a user has configured its television that as soon as a particular show begins, he wants his channel to change to that show and thus end the PSC session in favor of a regular BC session. In order to realize such IPTV features, first the ongoing media session, in this case a PSC session, needs to be terminated.

Fig. 6 depicts a process flow **600** regarding a further use of a composition session involving three user terminals UE1,UE2,UE3. Different services are provided to different UEs, e.g. a television broadcast service to UE1, a telephony service to UE2 and a gaming service to UE3, are added to one composition session.

Before the UEs can setup the sessions actually used by the service, they first setup a composite session to the SCF, using requests in steps **602, 606** and **610**. Because an UE does not know if such a composite session already exists, it it does not generate a composition session identifier, Combi Session ID. Instead, the Combi Session ID is generated by the SCF and subsequently sent back to the UE. The Combi Session ID will be the same for each UE1, UE2 and UE3 since all sessions will belong to the same composition session. The SCF inserts the Combi Session ID in the responses to the composite session initiation requests, so the UE can store this ID and the one or more associated multimedia session IDs. After becoming part of the composition session, an UE can setup any multimedia sessions required for the service and make those sessions part of the composition session (steps **604-612**).

In a further step **614** the SCF decides to tear down the composite, for example because the prepaid balance has run out or because of parental control which states that kids have

to go to bed. In this case, the SCF can just send a termination request using the Combi Session ID to tear down any service sessions belonging to the composite.

Fig.6 relates to a situation wherein the composite session is a multi-device session. In case of standardized IMS, such a session is currently not supported using the call-ID field for a Combi Session ID. Nevertheless, because during session setup of this composite session no port numbers or IP addresses need to be exchanged between terminals, such a multi-device session can be started without e.g. a conference bridge or similar session bridge. For the composite session, only signalling messages need to be exchanged. So, the IMS core needs to be able to fork signalling messages, e.g. SIP messages, to the different devices part of the composite session. This forking is normally done based on e.g. SIP URIs, but could also be done using any other part of a signalling message. If the Combi Session ID is e.g. contained as a service parameter in the request URI, messages can be forked by the core IMS based on detection of the Combi Session ID in this header field. This is done in **Fig.6** in step **616**. The IMS core receives a session termination request from the SCF, and forks this message to all involved UEs, in this case UE1, UE2 and UE3.

It is to be understood that any feature described in relation to any one embodiment may be used alone, or in combination with other features described, and may also be used in combination with one or more features of any other of the embodiments, or any combination of any other of the embodiments. Furthermore, equivalents and modifications not described above may also be employed without departing from the scope of the invention, which is defined in the accompanying claims.

CLAIMS

1. Method for managing associated sessions in a network, the network comprising a network element configured for managing associated sessions between the network and user equipment, the method comprising:

- providing a composition session identifier for associating sessions in a network;
- initiating a composition session
- exchanging the composition session identifier between a user equipment and the network element; and
- associating two or more sessions with the composition session by exchanging the composition session identifier

2. Method according to claim 1, wherein the method further comprises the steps of:

- the user equipment generating a composition session identifier;
- sending a request for initiating a composition session from the user equipment to the network element, the request comprising the composition session identifier.

3. Method according to claim 1, wherein the method further comprises the steps of:

- sending a request for initiating a composition session from the user equipment to the network element;
- the network element generating a composition session identifier in response to the receipt of the request;
- sending the composition session identifier to the user equipment.

4. Method according to any of claims 1-3, wherein the method further comprises the steps of:

- the user equipment initiating two or more sessions by sending two or more session initiation requests for a session, preferably using a SIP INVITE message, to the network element, each request comprising the composition session identifier

5. Method according to any of claims 1-3, wherein the method further comprises the steps of:

- the network element initiating two or more sessions by sending two or more requests for a session, preferably using a SIP INVITE message, to the user equipment, each request comprising the composition session identifier.

6. Method according to any of claims 2-4, wherein the request for initiating a composition session further comprises one or more session identifiers and, optionally, resource reservation information and/or resource allocation information associated with the one or more sessions identified by the session identifiers.

7. Method according to claims 4 or 5, wherein the two or more sessions comprise at least one of a broadcast (BC) session associated with a BC identifier (BCServiceID), a content-on-demand (CoD) session associated with a CoD identifier (CoDID), a Targeted Advertisement Insertion (TAI) session associated with a TAI identifier, network personal video content (NPVC) session associated with a NPVR identifier (NPVRContentID, a user generated content (UGC) session associated with a UGC identifier, a Public Switched Telecommunications Network (PSTN) emulation session associated with a PSTN emulation identifier and/or a shared content (SC) session associated with a SC identifier.

8. Method according to any of claims 1-7, wherein the combined streams of the associated sessions are presented to the user as a personalized composed multimedia stream.

9. Method according to any of claims 1-8, wherein the network further comprises storage means, preferably a database, the method further comprising the step of:

- the network element storing the composition session identifier and the two or more associated session identifiers in the storage means.

10. Method according to any of claims 1-9, the method further comprising the step of:

- modifying the composition session by adding one or more sessions to the composition session, by terminating, or modifying one or more sessions in the composition session and/or by transferring one or more sessions from the composition session to a further composition session or outside the composition session.

11. Method according to any of claims 1-10, wherein the network is an IP Multimedia Subsystem (IMS) network comprising an IMS core connected to a Service Control Function (SCF), the SCF configured for managing associated sessions between the network and the User Equipment.

12. A system for managing associated sessions in a network, the system comprising:

- a network element configured for managing associated sessions between the network and a user equipment; for exchanging a composition session identifier with a user equipment; and, for associating two or more sessions with

the composition session by exchanging the composition session identifier;

- a user equipment configured for providing a composition session identifier for associating sessions in a network; for initiating a composition session; and, for exchanging the composition session identifier with the network element.

13. A user equipment for use in a system according to claim 12, the user equipment comprising:

- an ID generator for generating a composition session identifier;
- a multimedia client configured for receiving the composition session identifier from the ID generator; for initiating a composition session and exchanging the composition session identifier with a network element; for initiating one or more multimedia sessions with the network element; and for exchanging the composition session identifier with the network element during the set up of the multimedia sessions.

14. A network element for use in a system according to claim 12, the network element comprising:

- a session manager configured for exchanging a composition session identifier with a user equipment; for initiating, and or terminating and or modifying a composition session; and for setting up and modifying multimedia sessions;
- a storage means for storing composition session information, the composition session information comprising information regarding composition sessions and the associated sessions.

15. A network element according to claim 14, the network element further comprising:

- an ID generator for generating a composition session identifier;

16. A computer program product comprising software code portions configured for, when run in the memory of a user equipment or a network element, executing the method steps according to any of claims 1-11.

ABSTRACT

A method and a system for managing associated sessions in a network is described, wherein the network comprises a network element configured for managing associated sessions between the network and user equipment.

The method comprises the steps of providing a composition session identifier for associating sessions in a network; initiating a composition session; exchanging the composition session identifier between a user equipment and the network element; and associating two or more sessions with the composition session by exchanging the composition session identifier

+ Fig. 2

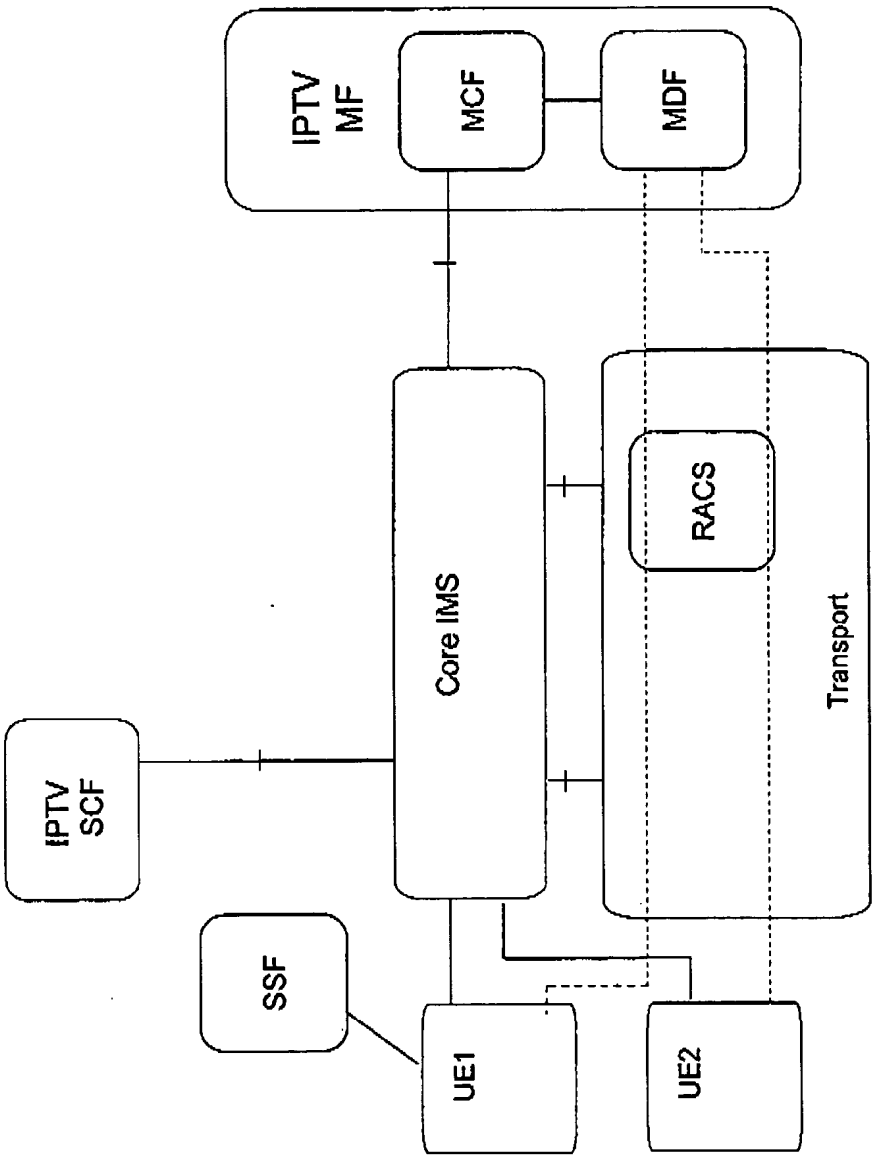

Figure 1

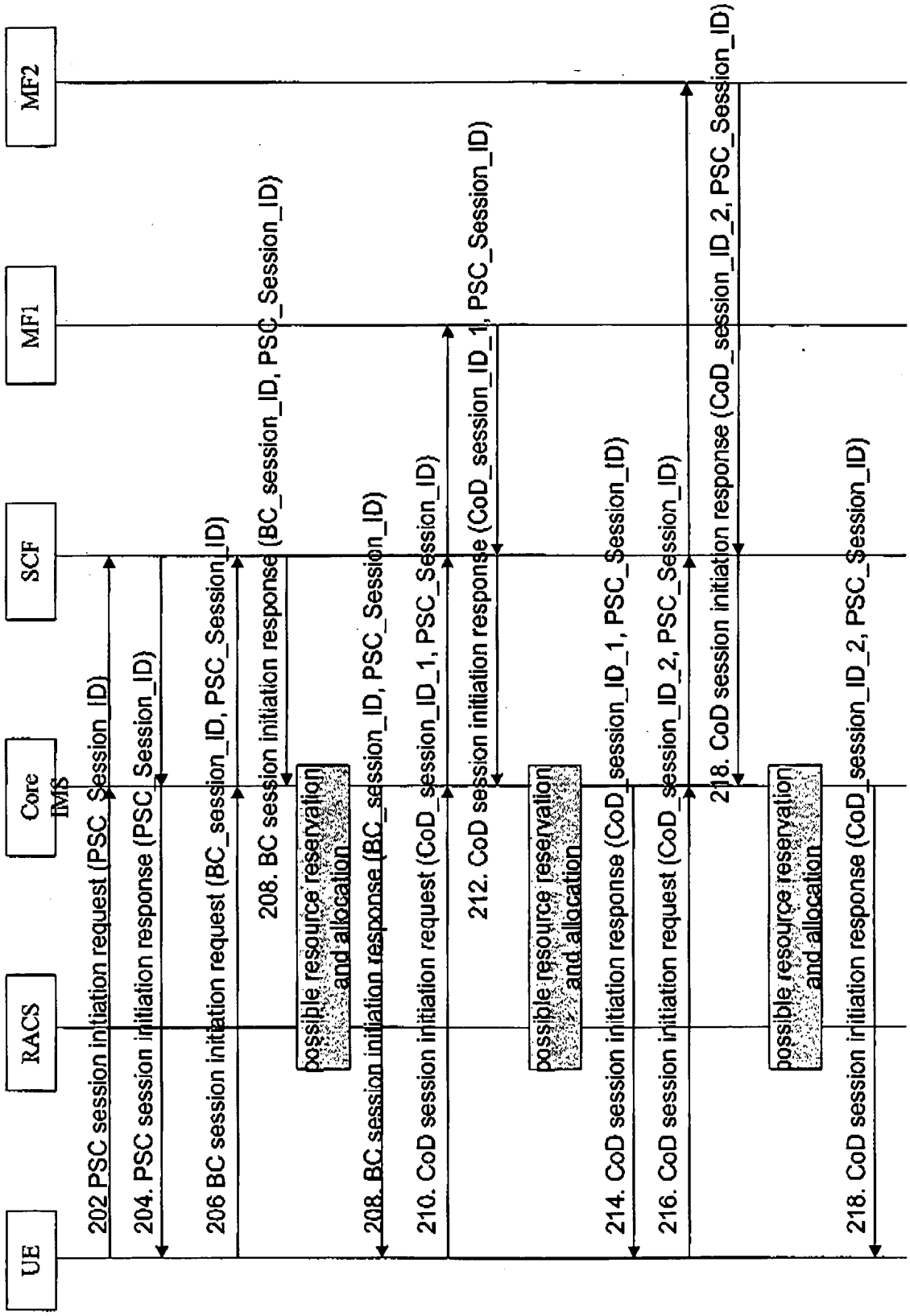
UE
RACS
Core IMS
SCF
MF1
MF2
202 PSC session initiation request (PSC_Session_ID)
204. PSC session initiation response (PSC_Session_ID)
206 BC session initiation request (BC_session_ID, PSC_Session_ID)
208. BC session initiation response (BC_session_ID, PSC_Session_ID)
possible resource reservation and allocation
208. BC session initiation response (BC_session_ID, PSC_Session_ID)
210. CoD session initiation request (CoD_session_ID_1, PSC_Session_ID)
212. CoD session initiation response (CoD_session_ID_1, PSC_Session_ID)
possible resource reservation and allocation
214. CoD session initiation response (CoD_session_ID_1, PSC_Session_ID)
216. CoD session initiation request (CoD_session_ID_2, PSC_Session_ID)
218. CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
possible resource reservation and allocation
218. CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)

Figure 2

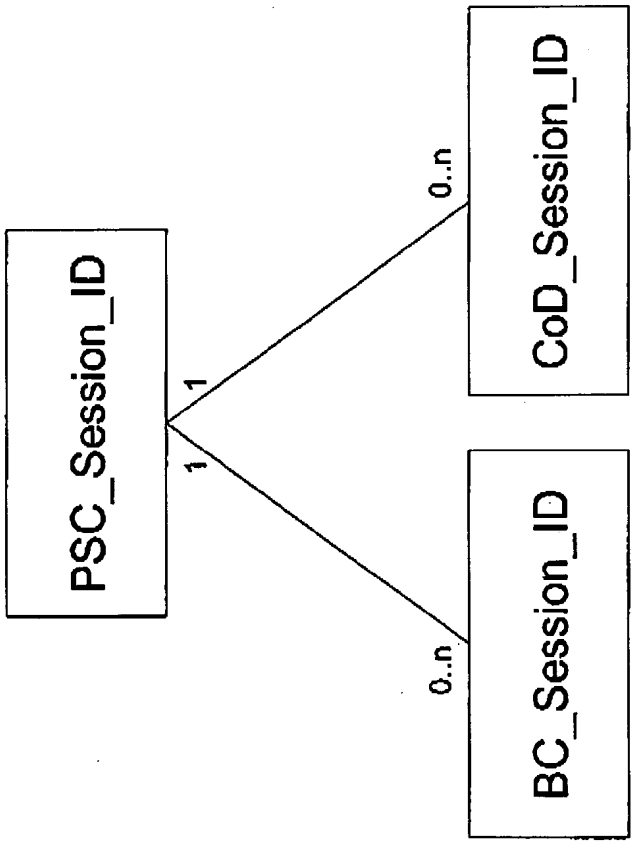

Figure 3

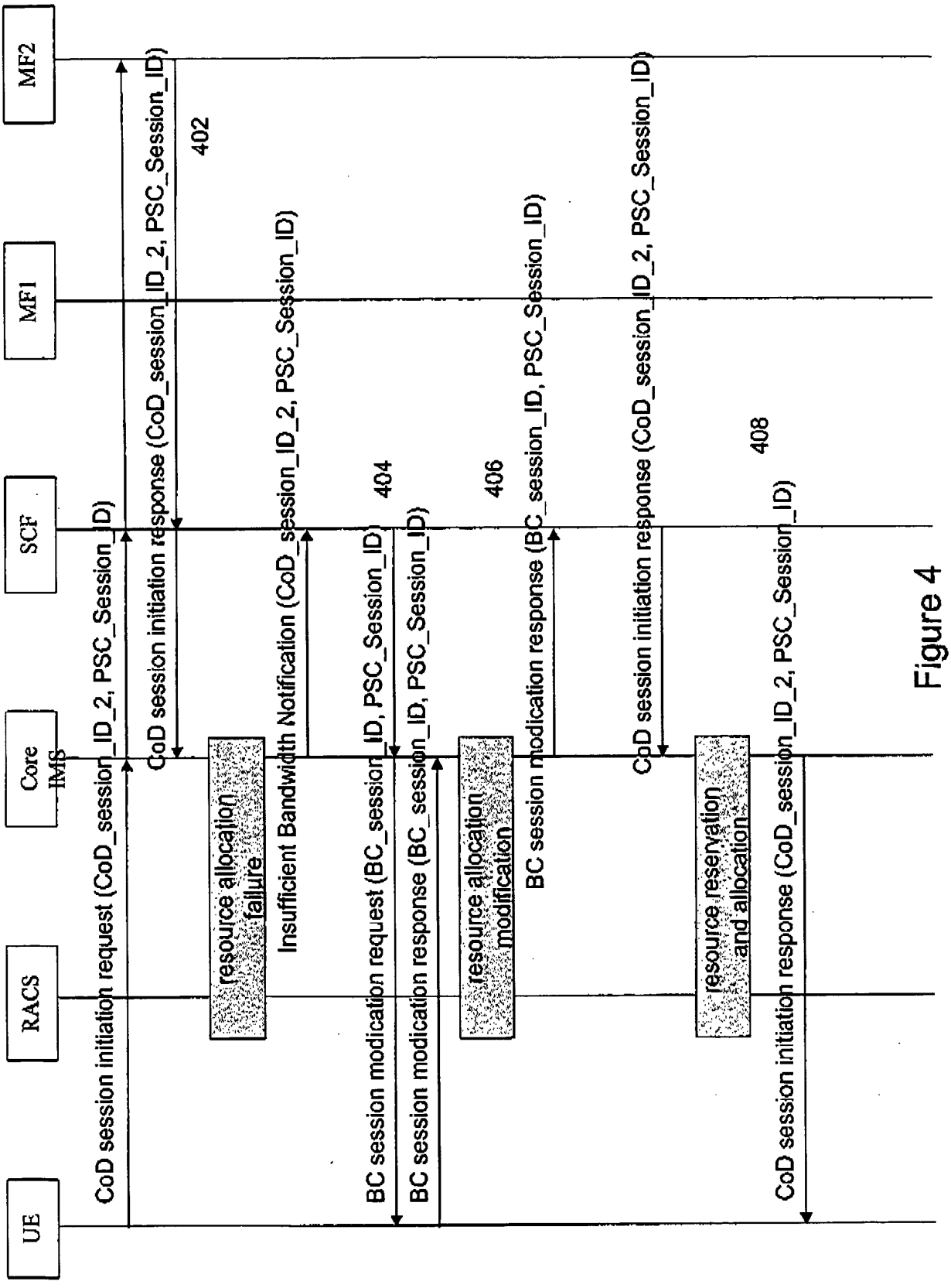
UE
RACS
Core IMS
SCF
MF1
MF2
CoD session initiation request (CoD_session_ID_2, PSC_Session_ID)
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
402
resource allocation failure
Insufficient Bandwidth Notification (CoD_session_ID_2, PSC_Session_ID)
BC session modication request (BC_session_ID, PSC_Session_ID)
404
BC session modication response (BC_session_ID, PSC_Session_ID)
resource allocation modification
406
BC session modication response (BC_session_ID, PSC_Session_ID)
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)
resource reservation and allocation
408
CoD session initiation response (CoD_session_ID_2, PSC_Session_ID)

Figure 4

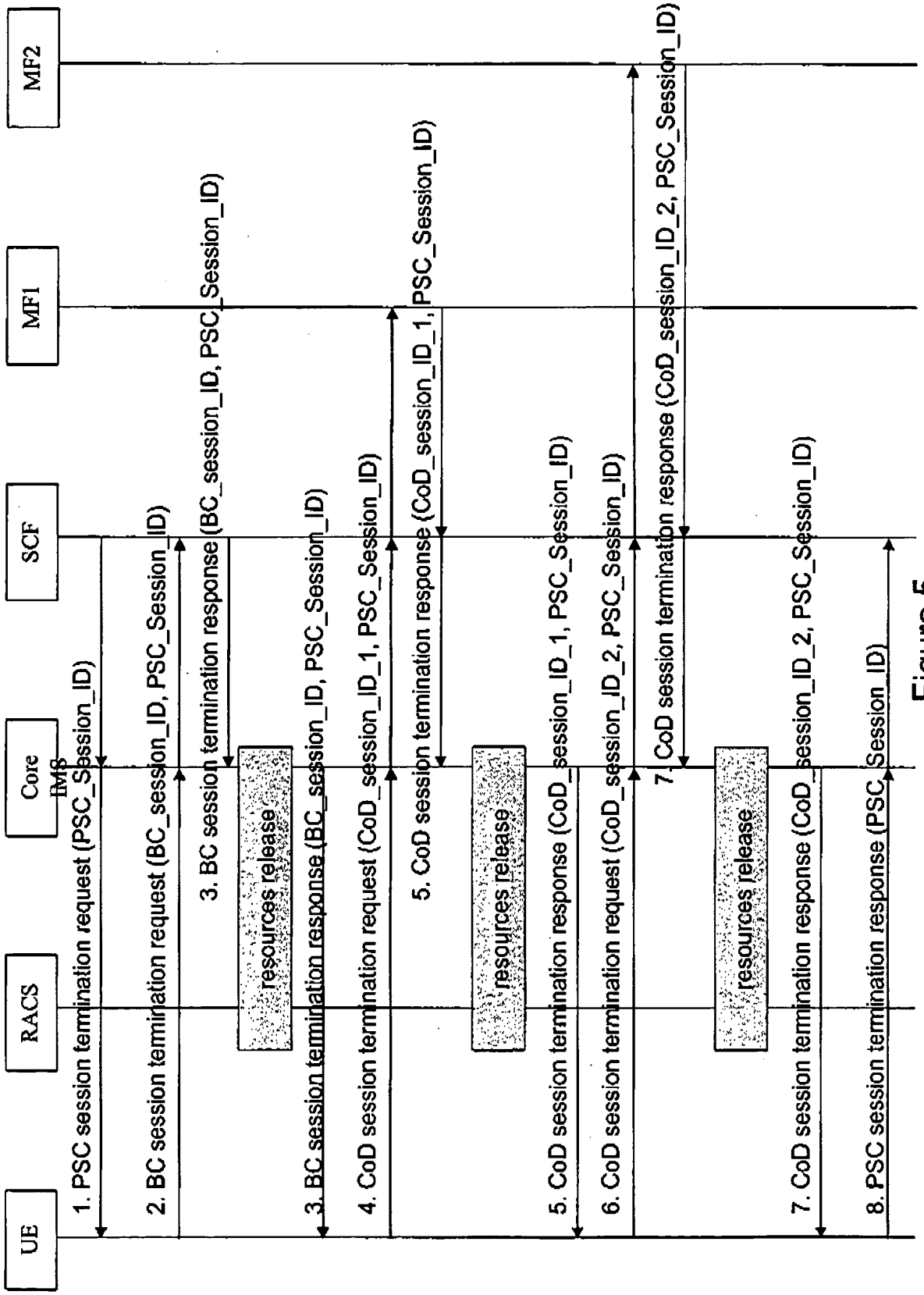
UE
RACS
Core IMS
SCF
MF1
MF2
1. PSC session termination request (PSC_Session_ID)
2. BC session termination request (BC_session_ID, PSC_Session_ID)
3. BC session termination response (BC_session_ID, PSC_Session_ID)
resources release
3. BC session termination response (BC_session_ID, PSC_Session_ID)
4. CoD session termination request (CoD_session_ID_1, PSC_Session_ID)
5. CoD session termination response (CoD_session_ID_1, PSC_Session_ID)
resources release
5. CoD session termination response (CoD_session_ID_1, PSC_Session_ID)
6. CoD session termination request (CoD_session_ID_2, PSC_Session_ID)
7. CoD session termination response (CoD_session_ID_2, PSC_Session_ID)
resources release
7. CoD session termination response (CoD_session_ID_2, PSC_Session_ID)
8. PSC session termination response (PSC_Session_ID)

Figure 5

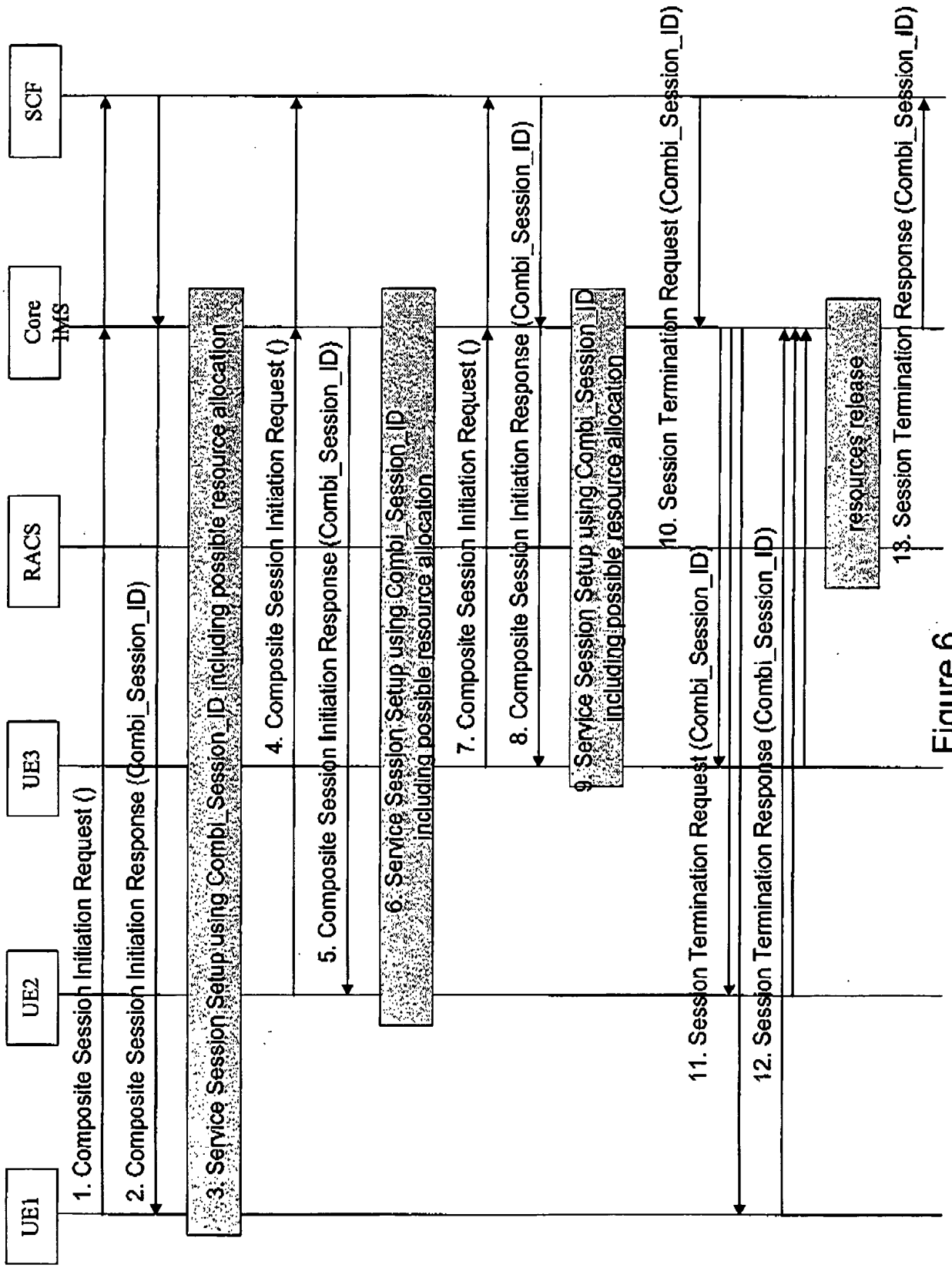
UE1
UE2
UE3
RACS
Core IMS
SCF
1. Composite Session Initiation Request ()
2. Composite Session Initiation Response (Combi_Session_ID)
3. Service Session Setup using Combi_Session_ID including possible resource allocation
4. Composite Session Initiation Request ()
5. Composite Session Initiation Response (Combi_Session_ID)
6. Service Session Setup using Combi_Session_ID including possible resource allocation
7. Composite Session Initiation Request ()
8. Composite Session Initiation Response (Combi_Session_ID)
9. Service Session Setup using Combi_Session_ID including possible resource allocation
10. Session Termination Request (Combi_Session_ID)
11. Session Termination Request (Combi_Session_ID)
12. Session Termination Response (Combi_Session_ID)
resources release
13. Session Termination Response (Combi_Session_ID)

Figure 6

Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)

The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

Declaration of inventorship (Rules 4.17(iv) and 51*bis*.1(a)(iv)) for the purposes of the designation of the United States of America:

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26*ter*).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: EP 09000661.0 filed on January 19, 2009

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Citizenship: NL

Inventor's Signature: ..... Date: .....
(The signature must be that of the inventor, not that of the agent)

☒ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

Continuation of Box no. VIII (iv)

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State of Residence: NL
This person is: Applicant end inventor
This person is applicant for the purposes of: The United States only

Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Citizenship: NL

Inventor's Signature: ..... Date: .....
(The signature must be that of the inventor, not that of the agent)

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Citizenship: NL

Inventor's Signature: ..... Date: 08-02-2010
(The signature must be that of the inventor, not that of the agent)

☒ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
13/144,385	07/13/2011	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/13/2011	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 21	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DEBORAH POLLARD/