IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	Graham Merrett	
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Appl. Serial No.:	18/143,387	
Filing Date:	May 4, 2023	
Title:	METHODS FOR BEARER SELECTION PERFORMED BY A SENDING MOBILE DEVICE	

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PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 11,991,600 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42

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APPLE-1005	U.S. Pub. No. 2004/0203956 ("Tsampalis")
APPLE-1006	U.S. Pub. No. 2002/0173308 ("Dorenbosch")
APPLE-1007	Chatterjee et al., "Instant Messaging and Presence Technologies for College Campuses." IEEE Network, May/June 2005. ("Chatterjee")
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APPLE-1021– APPLE-1024	RESERVED
APPLE-1025	Qi et al., 2004, July. "Multimedia Messaging Service." Available at

	https://www.zte.com.cn/global/about/magazine/zte-communications/2004/1/en_68/162264.html ("Qi")
APPLE-1026	RFC 3261 – SIP: Session Initiation Protocol. Available at http://www.faqs.org/rfcs/rfc3261.html. June 2002.
APPLE-1027 – APPLE-1031	RESERVED
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APPLE-1059 – APPLE-1060	RESERVED
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APPLE-1063	U.S. Pub. No. 2009/0325609 ("Rosen")
APPLE-1064	U.S. Patent No. 7,117,445 ("Berger")
APPLE-1065	RFC 3680: A Session Initiation Protocol (SIP) Event Package for Registrations (March 2004)
APPLE-1066	IMS Share Technote, *available at* https://www.sharetechnote.com/html/Handbook_IMS_SIP_Header_Expire.html
APPLE-1067	U.S. Pub. No. 2006/0036857 ("Hwang")
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LISTING OF CLAIMS

Claim 1	
1pre1	A method performed by
1pre2	a sending mobile phone that transmits short message service (SMS) messages and non-SMS based packet switched messages, the method comprising:
1a	retrieving a destination address of a message from the message, wherein the destination address is a phone number of a receiving mobile phone;
1b	sending information representing at least the phone number of the receiving mobile phone;
1c	receiving a response to the sending of the information;
1d1	based at least in part on the response, automatically selecting a bearer for the message,
1d2	wherein the bearer is selected from a group including: an SMS bearer;
1d3	a packet-switched message bearer supported by a cellular connection between the sending mobile phone and a cellular base station; and
1d4	a packet-switched message bearer supported by a wireless local area network (WLAN) connection between the sending mobile phone and a WLAN base station;
1e	after the automatically selecting, formatting the message for transmission via the selected bearer;
1f	after the formatting, transmitting, by the sending mobile phone using the selected bearer, the message, to the receiving mobile phone; and
1g1	performing the retrieving, the sending, the receiving, the automatically selecting, the formatting and the transmitting for at least first, second and third iterations, wherein:
1g2	during the first iteration, a first message is sent to a first receiving mobile phone using the SMS bearer;

1g3	during the second iteration, a second message is sent to a second receiving mobile phone using the packet-switched message bearer supported by the cellular connection; and
1g4	during the third iteration, a third message is sent to a third receiving mobile phone using the packet-switched message bearer supported by the WLAN connection;
1h	wherein a packet switched message service (PSMS) is used to send the third message to the third receiving mobile phone;
1i	wherein the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages;
1j	wherein a same messaging client on the sending mobile phone performs at least the retrieving, the sending, the receiving, the automatically selecting, the formatting and the transmitting for each of the first, second and third iterations.
Claim 2	
2a	The method of claim 1, wherein at the time the first message is sent to the first receiving mobile phone: a phone number corresponding to the first receiving mobile phone is on a list of subscribing addresses which is stored on a server of the PSMS; and
2b	a plurality of messages sent by the sending mobile phone, to the first receiving mobile phone, via the PSMS, are queued on a server of the PSMS.
Claim 3	
3	The method of claim 1, wherein at the time the first message is sent to the first receiving mobile phone: no phone number corresponding to the first receiving phone is associated with a subscriber of the PSMS.
Claim 4	

4	The method of claim 1, wherein the messaging client provides an option to modify the third message, wherein the option is not available to modify the first message.
Claim 5	
5	The method of claim 1, wherein the response originates from a server which is located outside of a cellular core network, wherein the sending mobile phone is authenticated to the PSMS via SMS and the sending mobile phone is authenticated to the PSMS via a hardware identifier of the sending mobile phone.
Claim 6	
6	The method of claim 1, wherein the response is correlated with a status of the receiving mobile phone when the receiving mobile phone is associated with a subscriber of the PSMS.
Claim 7	
7	The method of claim 1, wherein the sending mobile phone is authenticated to the PSMS via SMS and the sending mobile phone is authenticated to the PSMS via a randomly generated authentication identifier.
Claim 8	
8	The method of claim 1, wherein the sending mobile phone simultaneously displays a left arrow and a right arrow in an interface which displays message content corresponding to a plurality of messages exchanged between the sending mobile phone and the third receiving mobile phone.
Claim 9	
9	The method of claim 1, wherein the first receiving mobile phone, the second receiving mobile phone and the third receiving mobile phone are different mobile phones.
Claim 10	

10	The method of claim 1, wherein the first receiving mobile phone, the second receiving mobile phone and the third receiving mobile phone are the same mobile phone.
Claim 11	
11pre	The method of claim 1, wherein:
11a	between the automatically selecting and the formatting of the third iteration, an attachment option is presented; and
11b	during the entirety of the first iteration, the attachment option is not presented.
Claim 12	
12	The method of claim 11, wherein the attachment option is a voice message attachment option.
Claim 13	
13pre	A system comprising:
13a	a sending mobile phone comprising a message client, wherein the sending mobile phone retrieves a destination address of a message from the message, wherein the destination address is a phone number of a receiving mobile phone; and
13b1	a server of a packet switched message service (PSMS)
13b2	that receives information, wherein the information indicates the phone number of the receiving mobile phone;
13c	wherein the server of the PSMS sends a response in response to receipt of the information;
13d1	wherein, based at least in part on the response, the sending mobile phone automatically selects a bearer for the message, wherein the bearer is selected from a group including:
13d2	a short message service (SMS) bearer;

13d3	a packet-switched message bearer supported by a cellular connection between the sending mobile phone and a cellular base station; and
13d4	a packet-switched message bearer supported by a wireless local area network (WLAN) connection between the sending mobile phone and a WLAN base station;
13e	wherein, after the sending mobile phone automatically selects the bearer, the sending mobile phone formats the message for transmission via the selected bearer;
13f	wherein, after the message is formatted, the sending mobile phone transmits, using the selected bearer, the message to the receiving mobile phone;
13g	wherein the sending mobile phone sends a first message to a first receiving mobile phone using the SMS bearer;
13h	wherein the sending mobile phone sends a second message to a second receiving mobile phone using the packet-switched message bearer supported by the cellular connection; and
13i	wherein the sending mobile phone sends a third message to a third receiving mobile phone using the packet-switched message bearer supported by the WLAN connection;
13j	wherein the server of the PSMS receives content of the third message and sends the content to the third receiving mobile phone;
13k	wherein the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages;
13l	wherein the message client retrieves the destination address and formats the message.
Claim 14	
14pre	The system of claim 13, further comprising:
14a	a subscriber data store;

14b	wherein the server of the PSMS receives an indication that a subscriber of the PSMS has become associated with a mobile phone which has capabilities different than those reflected in the subscriber data store;
14c	wherein the server updates the subscriber data store to reflect a change of mobile phone.
Claim 15	
15	The system of claim 14, wherein the subscriber data store is updated to reflect that the subscriber is no longer associated with a mobile phone which is identified by the subscriber data store.
Claim 16	
16	The system of claim 15, wherein the subscriber data store is located outside of a cellular core network.
Claim 17	
17	The system of claim 13, wherein the message client displays at least one of a right arrow and a left arrow simultaneously with the third message.
Claim 18	
18pre	The system of claim 13, wherein:
18a	a phone number associated with a plurality of receiving mobile wireless devices is received by the server of the PSMS; and
18b	the server of the PSMS sends a response in response to receipt of the phone number associated with the plurality of receiving mobile wireless devices indicating that each one of the plurality of receiving mobile wireless devices corresponds to a subscriber of the service.
Claim 19	
19pre	The system of claim 13, wherein:
19a	a phone number associated with a plurality of receiving mobile wireless devices is received by the server of the PSMS; and

19b	the server of the PSMS sends a response in response to receipt of the phone number associated with the plurality of receiving mobile wireless devices indicating that a message to the plurality of receiving mobile wireless devices should not be sent via the service.
Claim 20	
20	The system of claim 19, wherein: prior to the response sent in response to receipt of the phone number associated with the plurality of receiving mobile wireless devices being sent, the server of the PSMS determines that at least one of the plurality of receiving mobile wireless devices has an inactive status with the PSMS.
Claim 21	
21pre1	A method performed by
21pre2	a sending mobile device that transmits short message service (SMS) messages and non-SMS based packet switched messages, the method comprising:
21a	sending first information representing a first phone number of a first receiving mobile device to a server;
21b	receiving a first response to the sending of the first information;
21c	based at least in part on the first response, automatically selecting an SMS bearer for a first message;
21d	formatting the first message for transmission via the SMS bearer;
21e	transmitting the first message using the SMS bearer;
21f	retrieving a destination address of a second message, wherein the destination address of the second message represents at least a second phone number of a second receiving mobile device;
21g	sending the destination address of the second message to the server;
21h	receiving a second response to the sending of the destination address of the second message;

21i	based at least in part on the second response, automatically selecting a first packet-switched message bearer for the second message;
21j	formatting the second message for transmission via a cellular connection between the sending mobile device and a cellular base station;
21k	transmitting, via the cellular connection, the second message to the second receiving mobile device;
21l	retrieving a destination address of a third message, wherein the destination address of the third message represents at least a third phone number of a third receiving mobile device;
21m	sending the destination address of the third message to the server;
21n	receiving a third response to the sending of the destination address of the third message, wherein the third response indicates that a plurality of receiving mobile devices corresponding to the destination address of the third message are associated with a packet switched message service (PSMS);
21o	based at least in part on the third response, automatically selecting a second packet-switched bearer for the third message;
21p	formatting the third message for transmission via the second packet-switched bearer and a wireless local area network (WLAN) connection between the sending mobile device and a WLAN base station; and
21q	transmitting, using the second packet-switched bearer and the WLAN connection, the third message to the plurality of receiving mobile devices;
21r	wherein the PSMS is a service for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages.
Claim 22	

22	The method of claim 21, wherein each one of the first response, second response and third response originates from a server which is located outside of a cellular network.
Claim 23	
23	The method of claim 22, further comprising: sending a group based message to the third receiving mobile device and to a fourth receiving mobile device, via the PSMS and the WLAN, wherein the group based message comprises video information.
Claim 24	
24	The method of claim 21, wherein the first phone number is not listed as being associated with a subscriber of the PSMS at the time the first response is received.
Claim 25	
25	The method of claim 21, wherein the second receiving mobile device is authenticated to the PSMS, via SMS protocol, prior to the transmitting of the second message, wherein the second message is routed via the PSMS; wherein the first receiving mobile device is not authenticated to the PSMS, via SMS protocol, prior to receiving at least one SMS message from one of the plurality of receiving mobile devices.
Claim 26	
26	The method of claim 21, wherein the second receiving mobile device is not connected to the PSMS during the entire time between which the destination address of the second message is sent and the second response is received, wherein the second message is routed via the PSMS.
Claim 27	
27	The method of claim 21, wherein the destination address of the second message is a sequence of decimal numbers and the destination address of the third message is a sequence of decimal numbers.
Claim 28	

28	The method of claim 21, wherein the sending mobile device simultaneously displays a left arrow and a right arrow in an interface which displays message content corresponding to a plurality of messages exchanged between the sending mobile device and a receiving mobile device associated with the PSMS.
Claim 29	
29pre1	A method performed by
29pre2	a sending mobile device that transmits short message service (SMS) messages and non-SMS based packet switched messages, the method comprising:
29a	sending first information representing a first phone number of a first receiving mobile device to a server;
29b	receiving a first response to the sending of the first information;
29c	based at least in part on the first response, automatically selecting an SMS bearer for a first message;
29d	formatting the first message for transmission via the SMS bearer; and
29e	transmitting the first message using the SMS bearer;
29f	retrieving a destination address of a second message, wherein the destination address of the second message represents at least a second phone number of a second receiving mobile device;
29g	sending the destination address of the second message to the server;
29h	receiving a second response to the sending of the destination address of the second message indicating that the second message is not to be sent to at least one of a first plurality of receiving mobile devices corresponding to the destination address of the second message via a packet switched message service (PSMS);

29i	based at least in part on the second response, automatically selecting the SMS bearer for sending the second message to the at least one of the first plurality of receiving mobile devices;
29j	formatting the second message for transmission via a cellular connection between the sending mobile device and a cellular base station;
29k	transmitting, via the cellular connection, the second message to the at least one of the first plurality of receiving devices;
29l	retrieving a destination address of a third message, wherein the destination address of the third message represents at least a third phone number of a third receiving mobile device;
29m	sending the destination address of the third message to the server;
29n	receiving a third response to the sending of the destination address of the third message, wherein the third response indicates that a second plurality of receiving mobile devices corresponding to the destination address of the third message are associated with the PSMS;
29o	based at least in part on the third response, automatically selecting a packet-switched bearer for the third message;
29p	formatting the third message for transmission via the packet-switched bearer and a wireless local area network (WLAN) connection between the sending mobile device and a WLAN base station; and
29q	transmitting, using the packet-switched bearer and the WLAN connection, the third message to the second plurality of receiving mobile devices.
Claim 30	
30	The method of claim 29, wherein the sending mobile phone simultaneously displays a left arrow and a right arrow in an interface which displays message content corresponding to a plurality of messages exchanged between the sending mobile device and a receiving mobile device associated with the PSMS.

I. INTRODUCTION

Apple Inc. ("Apple" or "Petitioner") petitions for IPR of claims 1-30 ("Challenged Claims") of U.S. Patent No. 11,991,600 ("the '600 Patent").

II. REQUIREMENTS FOR IPR

A. Grounds for Standing

Apple Inc. certifies that the '600 Patent is available for IPR. Petitioner is not barred or estopped from requesting this review challenging the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

Apple requests institution of IPR and cancellation of the Challenged Claims based on the following grounds:

Ground	Claims	§103 Basis
1A	1, 3-25, 27-30	Horvath-Tsampalis-Kansal
1B	2, 26	Horvath-Tsampalis-Kansal-Dorenbosch

Grounds 1A and 1B are supported by the expert testimony of Dr. Patrick Traynor (APPLE-1003) and corroborating evidence.

The '600 Patent's earliest claimed priority date is July 24, 2007. For purpose of this proceeding alone and without conceding its propriety, Petitioner treats this as the Critical Date. APPLE-1003, ¶¶17-18.

Reference	Filing Date	Publication Date
Horvath (APPLE-1004)	5/1/2006	11/1/2007

Tsampalis (APPLE-1005)	12/31/2002	10/142004
Kansal (APPLE-1042)	12/19/2006	6/26/2008
Dorenbosch (APPLE-1006)	5/15/2001	11/21/2002

C. Level of Ordinary Skill in the Art

A person of ordinary skill in the art relating to the subject matter of the ’600 Patent as of the Critical Date (“POSITA”) would have had at least a bachelor’s degree in computer science, electrical engineering, computer engineering, or a related field, with 2-3 years of industry experience in computer networking and wireless telecommunications. APPLE-1003, ¶21. Additional graduate education could substitute for professional experience, and *vice versa*. *Id*.

III. SUMMARY OF THE ’600 PATENT

A. Brief Description

The ’600 Patent describes techniques for messaging over wireless networks in which a sending wireless device selects a transmission mode for sending an outgoing message based on information indicating whether an intended recipient of the message is a subscriber of a service for receiving messages via a packet-switched bearer. APPLE-1001, Abstract, 3:6-44, 8:4-10:7; APPLE-1003, ¶¶24-25.

FIG. 3 is a flowchart that illustrates an example process for selecting a transmission mode for an outgoing message based on information about the recipient:

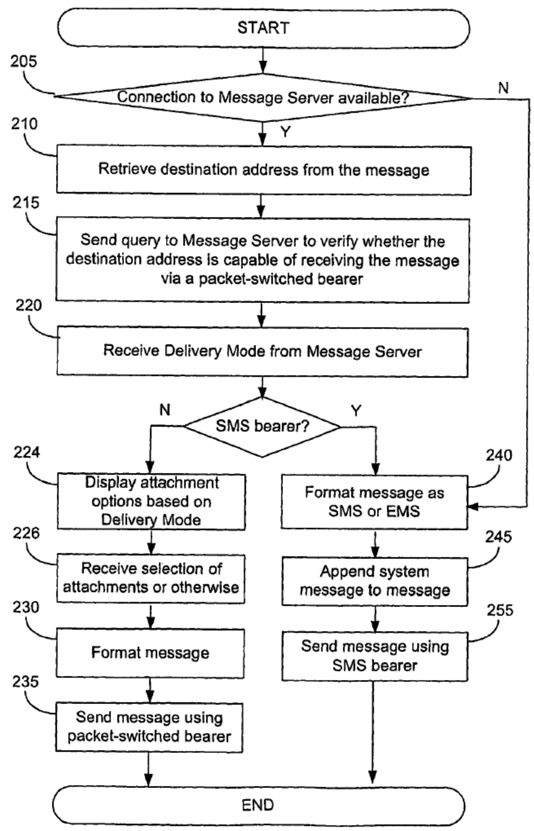

FIG. 3

APPLE-1001, FIG. 3

B. Prosecution History

In the only Office Action issued during prosecution, the Examiner identified claims 18-27 as allowable because the prior art of record allegedly "fails to teach wherein based at least in part on the third response, automatically selecting a packet-switched bearer for the third message; formatting the third message for transmission via the packet-switched bearer and a wireless local area network (WLAN) connection." APPLE-1002, 155-156, 161-165; APPLE-1003, ¶26.

C. Claim Construction

Petitioner submits that no formal constructions are presently necessary. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011). Indeed, this Petition demonstrates that the prior art renders obvious the claims when applied in a manner consistent with disclosures of the '600 Patent itself and Patent Owner's allegations of infringement before the district court. *See generally* APPLE-1101.

IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. GROUND 1A – Horvath-Tsampalis-Kansal Renders Obvious Claims 1, 3-25, 27-30

1. Analogous Art

Horvath, Tsampalis, Kansal, and Dorenbosch are all analogous art, each being in the same field of endeavor (mobile messaging over wireless networks) and reasonably pertinent to the problems said to be addressed by the '600 Patent. APPLE-1003, ¶27; APPLE-1001, Title, Abstract; APPLE-1004, Title, Abstract; APPLE-1005, Title, Abstract; APPLE-1042, Abstract; APPLE-1006, Abstract; *infra*, §IV; *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). Like the '600 Patent, the Horvath, Tsampalis, Kansal and Dorenbosch each seek to provide users with a wider range of messaging options. *See* APPLE-1001, 3:18-25; APPLE-

1004, [0009]; APPLE-1005, [0065]; APPLE-1042, [0009]; APPLE-1006, [0002]; APPLE-1003, ¶27.

2. Proposed Combination

(a) Horvath (APPLE-1004)

Horvath discloses "transmitting short message service messages" with "a wireless device" over "a packet data network 102 and a circuit services network 104." *See e.g.*, APPLE-1004, Title, [0001]-[0002], [0007], [0024]-[0026], [0033], FIGS. 1, 2. Horvath's wireless device (*e.g.*, "wireless device 106") is "a dual mode device capable of communicating on either the packet data network 102 or the circuit services network 104," "based on [a] registration status of the wireless device." APPLE-1004, [0007]-[0008], [0024], [0061], FIGS. 1 (below), 2, 6, 7. That is, if a wireless device is registered on a packet-data network, it will send and receive messages via an information processing system over the packet-data network, and otherwise will send and receive messages via the information processing system over the circuit-services network. *Id.*; APPLE-1003, ¶¶28-31.

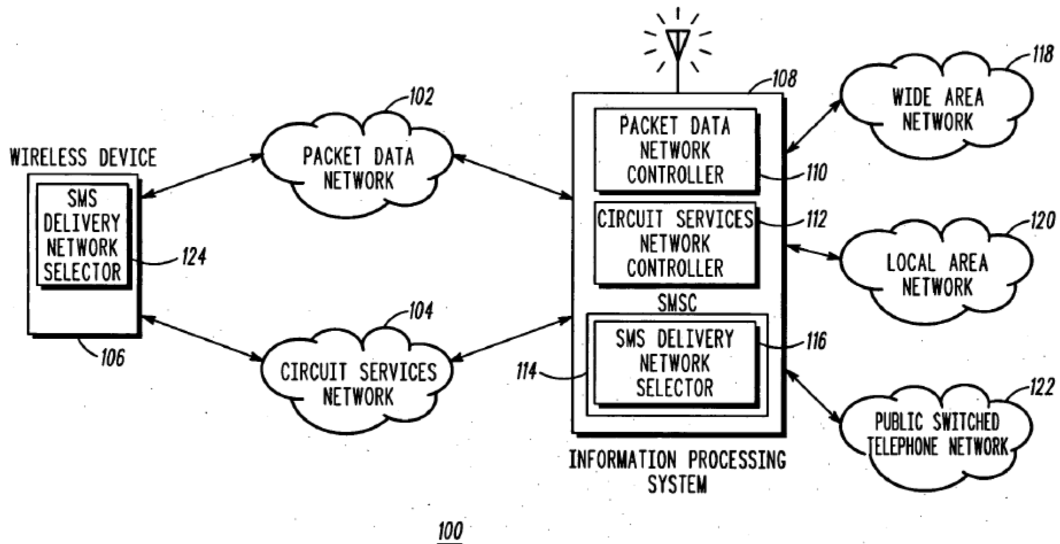

FIG. 1

APPLE-1004, FIG. 1

As shown in FIG. 1, wireless device 106 exchanges messages with remote recipient devices, as sender or receiver, via information processing system 108. *See* APPLE-1004, [0024], [0028]-[0029], [0074]-[0078], FIGS. 1, 6-7. When instructed to send an SMS message (*i.e.*, operating as a sender device), "the wireless device 106 first determines if it [*i.e.*, the sending wireless device] is registered on the packet data network 102," and based on this determination, an "SMS delivery network selector 124" residing on the wireless device 106 "selects a network 102, 104 for the wireless device 106 to transmit [the] SMS message on." APPLE-1004, [0050], [0062], [0078], FIGS. 1, 4, 7.

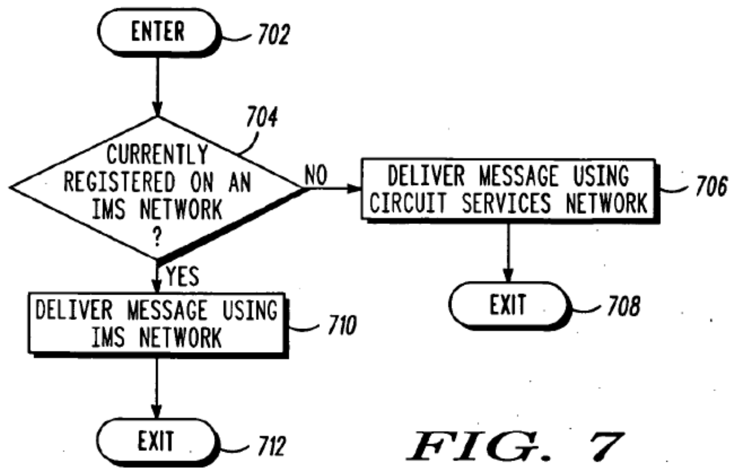

FIG. 7

APPLE-1004, FIG. 7 (sender device perspective)

Although Horvath focuses on the selective use of packet-data or circuit-services bearers for delivery of SMS messages, Horvath notes that wireless device 106 can transmit other types of messages as well, including instant messages ("IM"). APPLE-1004, [0025], [0033] ("The SIP network is used for establishing instant messaging…"), [0038]-[0039]. With this, Horvath encourages operation of a session initiation protocol ("SIP") network atop the packet-data network 102 to establish communication sessions and carry messages between wireless devices when the circuit-services network 104 is not used. *Id.*, [0041], [0050], FIG. 5.

Per Horvath, message requests are first routed to a server system (*e.g.*, information processing system 108) including a "Short Message Service Center ('SMSC' [114])." APPLE-1004, [0045]-[0047], FIGS. 1-2. SMSC 114, utilizing its "SMS delivery network selector 116," "selects either the packet data network 102 or the circuit services network 104 for delivery of a SMS message" based on whether the intended recipient of the message is currently registered with the packet-data network 102.[1] *Id.*, Abstract, [0002], [0006], [0008], [0028], [0033]-[0038], [0045]-[0047], [0053], [0075]-[0076], FIGS. 1, 2, 3, 6. When available, Horvath delivers messages to wireless devices over a packet-data network rather than a circuit-services network to reduce the amount of traffic transmitted over the circuit-services network, thereby freeing bandwidth for voice calls or other services on the circuit-services network. APPLE-1004, [0009], [0021], [0039], [0050]. An example of this network selection process is further described at [0016] and illustrated by the following FIG. 6 flowchart.

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[1] The SIP network is supported by an "Internet Protocol multimedia subsystem" (IMS) core and is capable of transmitting rich **multimedia** data. APPLE-1004, [0034]; *see also* APPLE-1012; APPLE-1003, ¶31.

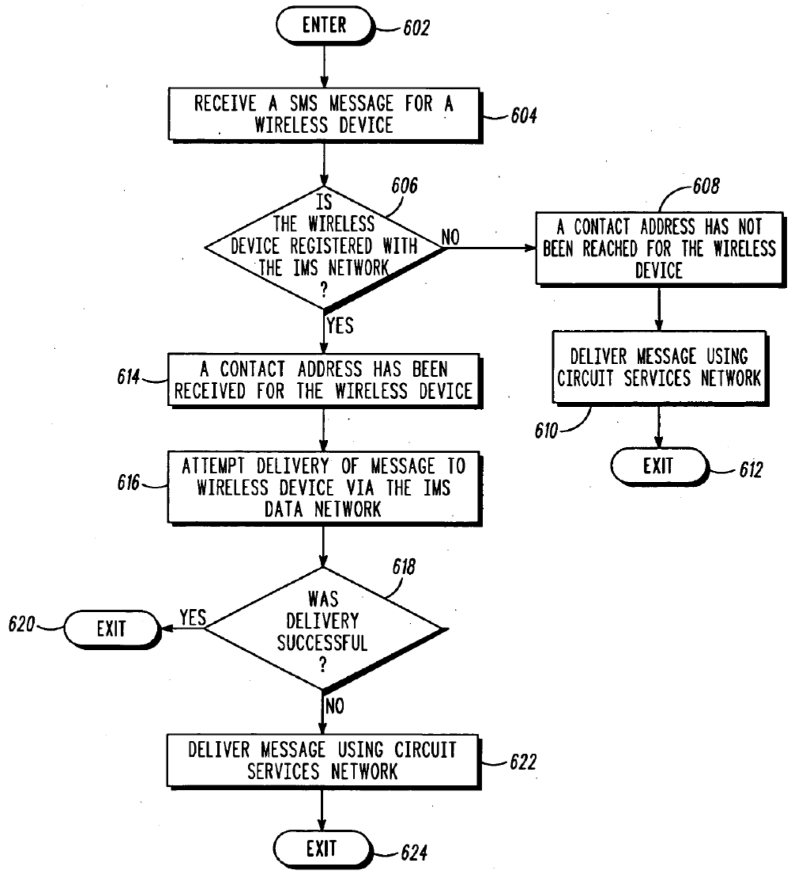


FIG. 6

APPLE-1004, FIG. 6 (server perspective)

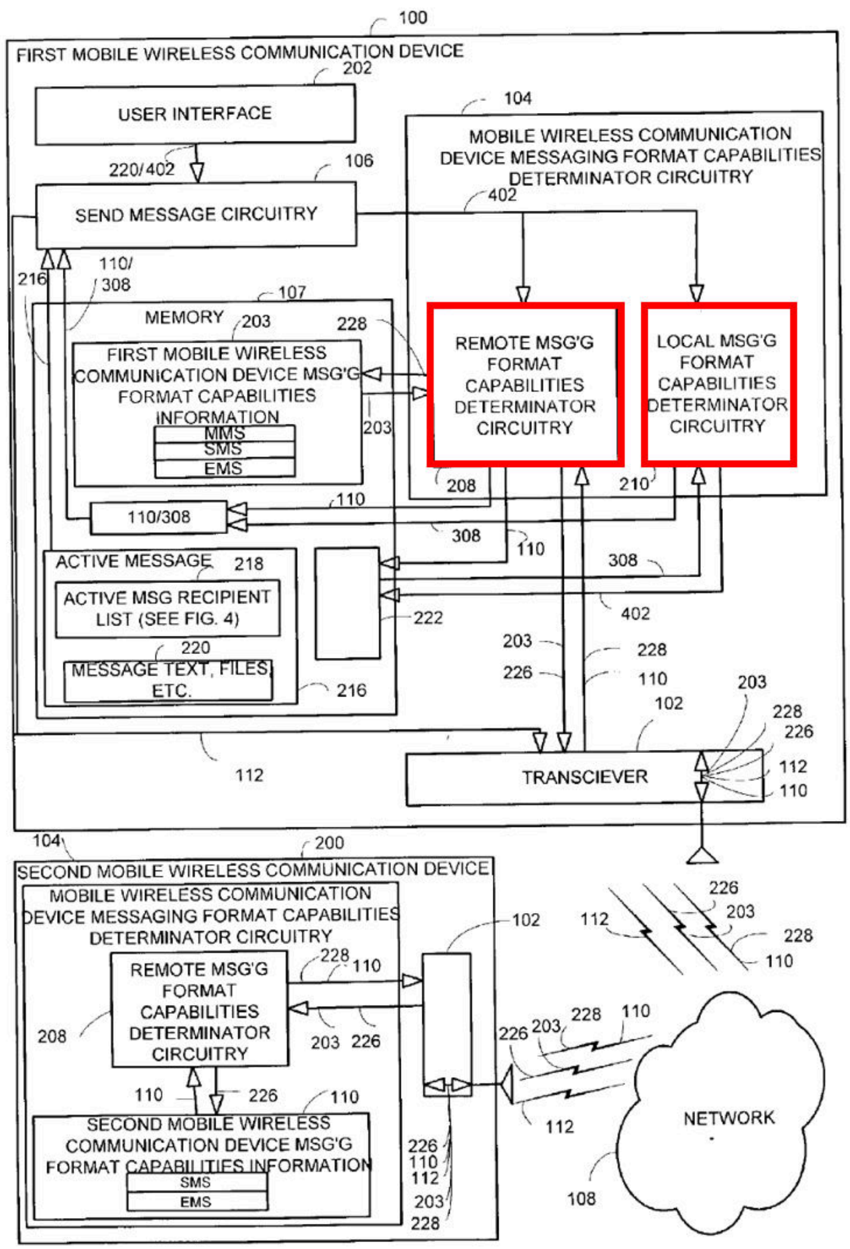
(b) Tsampalis (APPLE-1005)

Without regard for wireless network registration (*e.g.*, among packet-data network or circuit-services network) of either the sending or receiving wireless device, Tsampalis teaches the sending wireless device querying the receiving wireless device's messaging format capabilities to inform the type of messages (SMS, MMS, etc.) it is able to process and display. APPLE-1005, Abstract, [0002]-[0004], [0022], [0025]. In this way, Tsampalis complements Horvath.

APPLE-1003, ¶¶32-34.

Tsampalis describes a sender (*e.g.*, first mobile wireless communication device 100) obtaining, either locally or via "a web server" or other "network element," the "messaging format capabilities information [MFCI] 110" of a recipient (*e.g.*, a second mobile wireless communication device 200), to inform delivery of messages from the sender to the recipient. *See e.g.*, APPLE-1005, Title, Abstract, [0029]-[0039], FIG. 1, FIG. 2 (below), FIGS. 5-7. Among the MFCI 110 are the types of messages (*e.g.*, SMS, MMS, EMS) that the intended recipient device is capable of processing. APPLE-1005, [0022]-[0024].

FIG. 2



APPLE-1005, FIG. 2 (annotated)

By way of example, the sender device 100 generates and sends a "mobile wireless communication device [MFCI] **request**" to a remote web server when recipient device 200's MFCI 110 "must be retrieved remotely," and the sender device "receiv[es] a **response** [*e.g.*, from the web server] to the request where the response contains the second mobile wireless communication device [MFCI] 110." APPLE-1005, [0024], [0027], [0042], [0034], [0056]-[0057], FIGS. 6 (below), 13 (below). Exchanged MFCI 110 can be stored, according to Tsampalis, in "a network element within the network 108" (*e.g.*, "a web server,") or elsewhere (*e.g.*, at the remote relay/server 1304). *Id.*, [0039], [0057]. When stored within network 108, the sender device can retrieve the recipient device's MFCI 110 from a remote server using the process described by Tsampalis' FIG. 13 (below). *Id.*; *see also id.*, [0056]-[0060], FIGS. 13-15.

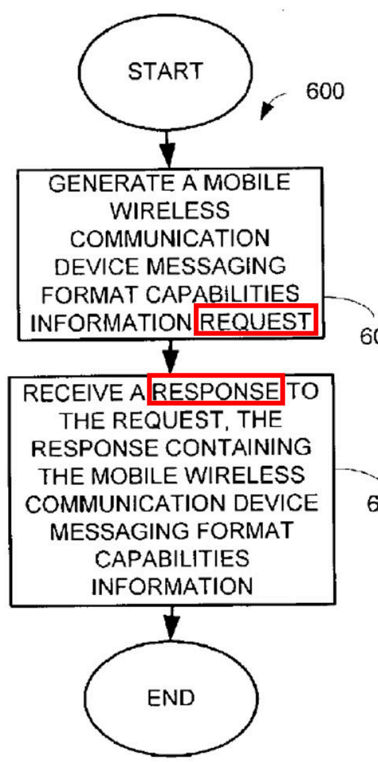
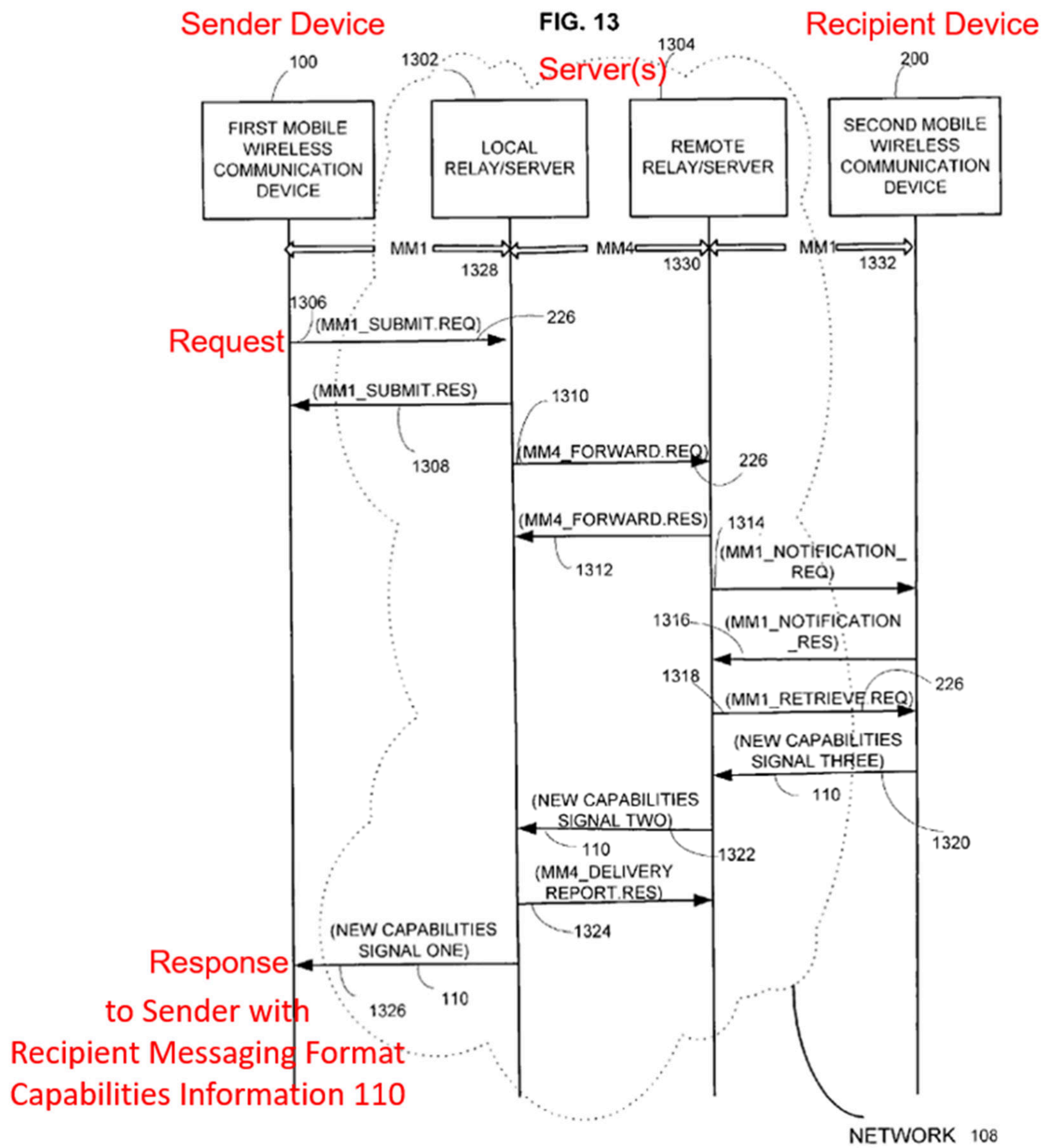


FIG. 6

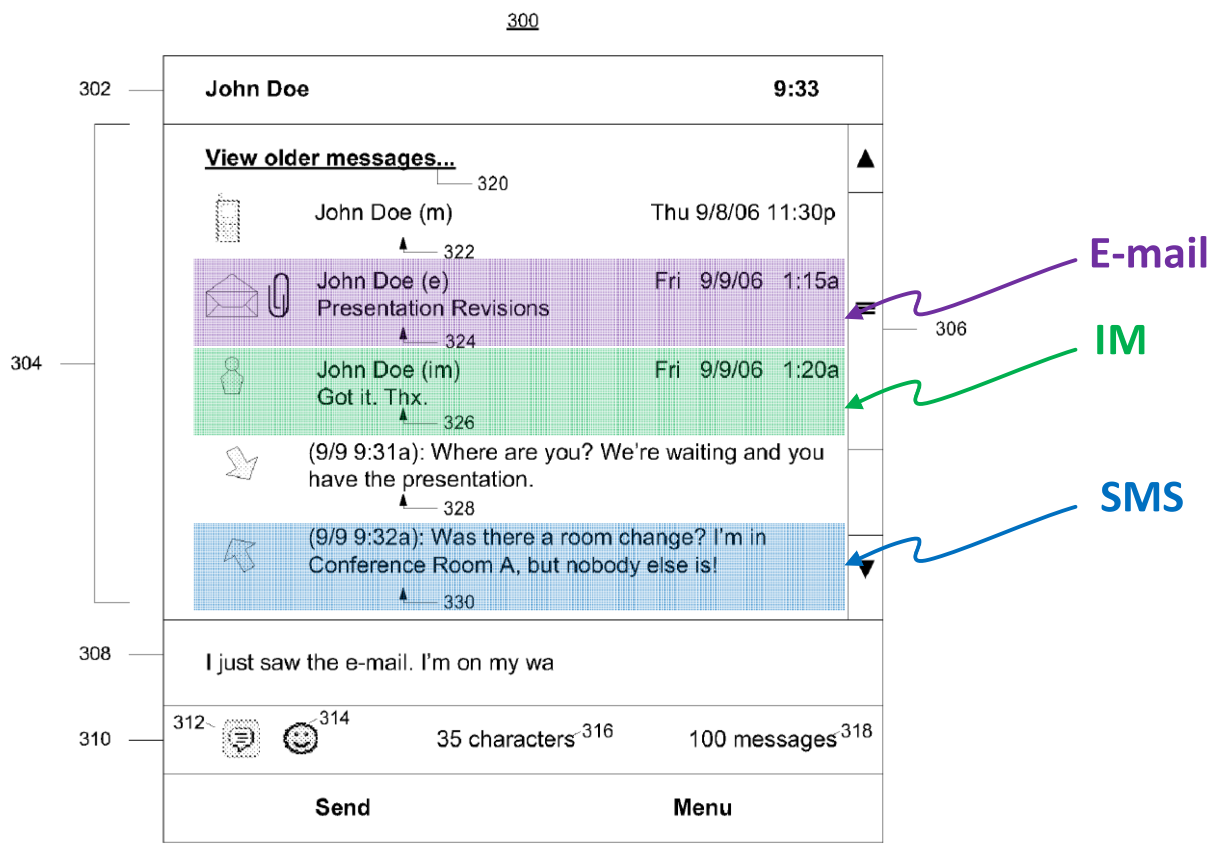
APPLE-1005, FIG. 6 (annotated)



APPLE-1005, FIG. 13, (annotated)

(c) Kansal (APPLE-1042)

Like Horvath and Tsampalis, Kansal describes mobile messaging services for sending and receiving messages of different formats. APPLE-1042, Abstract, [0009], [0035]. Kansal presents a tool for correlating and aggregating for display all messages received by a "particular recipient," including each of several message types/formats (*e.g.*, SMS, IM, MMS), without regard for the network over which the messages are received. APPLE-1042, [0009]; [0040]-[0043]; [0066]-[0069]. APPLE-1003, ¶¶35-36.



APPLE-1042, FIG. 3 (annotated)

As shown above, Kansal describes a "unified messaging UI" from which a user may view received messages of various messaging types and may select from a variety of types when composing and sending a response, demonstrating the utility and viability of integration. APPLE-1042, [0062], [0077]-[0078]. In particular, the unified messaging UI "display[s] a messaging thread comprising correlated messages of different message types," including "SMS messages, MMS messages, as well as, telephone messages, voicemail messages, fax messages, video conferencing messages, IM messages, and e-mail messages." APPLE-1042, [0009], [0045]-[0046], [0054]-[0056], [0062]-[0064], [0070], [0077]-[0078], FIGs. 2-3 (above).

(d) The Horvath-Tsampalis-Kansal Combination

Like the '600 Patent, Horvath describes techniques for selective transmission of wireless messages via different transmission bearers, including techniques for transmitting messages over either a packet-data network or a circuit-services network. APPLE-1001, 3:6-35; APPLE-1004, [0001], [0007], [0024]-[0026], [0050], [0061]-[0062], FIGS. 1, 4, 7; *supra*, §IV.A.2(a) (Horvath). In seeking to keep the circuit-services network from being "unnecessarily burdened with SMS traffic," Horvath proposes to default to a packet-data network for transmitting messages whenever the sending and receiving devices are registered with the packet-data network. *See e.g.*, APPLE-1004, [0004], [0006]-[0009], [0021], [0039], [0081]. Still, a POSITA would have recognized that Horvath's system was ripe for improvement. For example, although Horvath describes messaging services apart from SMS (*e.g.*, MMS, EMS, IM), Horvath leaves implementation details relating to these services to the discretion of a POSITA. APPLE-1005, [0025], [0039]. Additionally, a POSITA would have appreciated from Horvath that different users did not all subscribe to the same messaging services, leaving some users with relatively limited messaging capabilities that precluded them from receiving or processing richer media formats beyond SMS (*e.g.*, MMS, EMS, IM), despite other users sending messages in those richer media formats. APPLE-1003, ¶37. Without more, this leaves a Horvath sender device vulnerable to sending a message in a format that a Horvath recipient device would be incapable of processing or presenting to a user. *Id.*

(i) Tsampalis's Message-Format Determination

In a multi-modal messaging environment like Horvath's, in which different mobile-device users subscribed to different messaging services (*e.g.*, SMS, MMS, EMS, IM), a POSITA would have been led by Tsampalis to improve the user experience and better manage and coordinate messaging formats. *Supra*, §IV.A.2(a) (Horvath); §IV.A.2(b) (Tsampalis). In particular, Tsampalis describes an effective solution for improving messaging in such an environment by sharing the recipient's MFCI with the sender. *Supra*, §IV.A.2(b). For various reasons, a POSITA reviewing Horvath and Tsampalis would have found it obvious to implement Horvath's system in accordance with Tsampalis's suggestions for a sender device to obtain and use MFCI of a recipient device to determine how to format and transmit an outgoing message to the recipient. APPLE-1003, ¶38.

First, a POSITA would have combined Horvath and Tsampalis such that the sender would obtain and use a recipient's MFCI to enhance users' messaging experiences and ensure that the format of outgoing messages is compatible with the messaging format capability of the recipients' device before the message is sent. APPLE-1003, ¶39. Tsampalis expressly acknowledges the benefits flowing from these techniques, noting that "the determining of the message capabilities of a target mobile wireless communication device before sending a message to such target device[] … can enhance a user's experience by allowing a user to determine whether to attempt to send or modify a message based on the messaging capabilities of the intended recipient(s) of the message." APPLE-1005, [0065]. Horvath also already considers the challenge of encoding in different network standards, which would further prompt a POSITA to combine with Tsampalis for teachings on formatting compatibility. *See e.g.*, APPLE-1004, [0050] (describing message encoding using "IS-637" versus very different "ANSI-41" standard).

Second, a POSITA would have sought to leverage Tsampalis-like MFCI in Horvath's system to permit the sender to make more frequent and reliable use of enhanced messaging formats such as MMS and IM. Enhanced messaging formats such as MMS and IM generally offer richer messaging capabilities than SMS, such as the ability to support extended character counts for longer messages and the ability to attach/include multimedia files with the message. APPLE-1003, ¶40 (citing APPLE-1007, Page 8; APPLE-1025, Introduction). Tsampalis's proposal to share the recipients' MFCI with the sender would allow a sender to use these rich messaging features more frequently and reliably with confidence that the recipient can successfully receive them. *Id.*

Third, a POSITA would have been motivated to apply Tsampalis-like MFCI to Horvath's system to advance Horvath's express objectives of reducing "unnecessary overhead for the system" and "dynamic optimization of [] resources." APPLE-1004, [0004], [0081]; APPLE-1003, ¶41.

Fourth, a POSITA would have found it obvious to combine the teachings of Horvath with Tsampalis because the combination merely involves the application of a known technique to a known system to achieve predictable results. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); *see also Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380-81, (Fed. Cir. 2023). Here, Tsampalis recognized a known problem with dynamic messaging environments like Horvath's, and Tsampalis's teachings would help address this problem in a straightforward manner that was well within the skill of a POSITA. APPLE-1003, ¶42.

Likewise, a POSITA would have reasonably expected success implementing the combination, especially since the resulting system would be implemented with conventional software and hardware techniques (*e.g.*, general-purpose processors on mobile devices executing programmable instructions) with messaging formats that were well defined by the Critical Date. *KSR* at 401. Further, the techniques integrated from Tsampalis in the Horvath-Tsampalis combination are fully compatible with Horvath's and would not disturb the ability of Horvath's system to transmit or deliver SMS messages. APPLE-1003, ¶43.

(ii) Kansal's Unified Interface for Selection of Appropriate Messaging Format

The combination provides a wireless mobile device capable of messaging using different messaging services including, SMS, MMS, and IM. *Supra* IV.A.2.(d)(i). Kansal suggests using a unified messaging UI for precisely this kind of environment, with variously formatted messages unified within a single application interface. APPLE-1042, [0077]-[0078], [0086]. Multiple reasons would have prompted a POSITA to implement this combination. APPLE-1003, ¶44.

First, a POSITA would have been motivated to apply Kansal's suggested unified-messaging user interface to the wireless device in the combination to improve the user's experience with mobile messaging services involving messages of different types (*e.g.*, SMS, MMS, IM). This would have predictably achieved Kansal's stated goals to meet the "need for an improved apparatus and methods for providing enhanced mobile messaging services." APPLE-1042, [0002]. For example, correlating messages in a manner that allows a user to view all messages of various types involving a particular user in a single thread would advantageously mitigate the need to navigate to different messaging applications or interfaces for each different message type. APPLE-1003, ¶45 (APPLE-1045, 1-2 (a multi-protocol messaging application, Trillian, providing "a powerful and efficient user experience.")); APPLE-1042, [0009], [0045]-[0046], [0054]-[0056], [0062]-[0064], [0070], [0077]-[0078], FIGs. 2-3.

Second, providing a single thread of messages would have predictably improved the user interface by providing additional contextual information for a user of the wireless device. For example, Kansal explains that the thread can be "sorted in various ways such as by time of receipt." APPLE-1042, [0049]; *see* FIGs. 2-3. As shown in FIG. 3 of Kansal, the chronologically ordered communication events (*e.g.*, missed call at 218 and urgent email request at 216) would beneficially provide additional context for the later received text message (*e.g.*, at 214). APPLE-1042, FIG. 3. A POSITA would have sought to implement Kansal's user interface to provide this additional contextual information to a user. APPLE-1003, ¶46.

Third, Kansal's techniques are fully compatible with the types of messaging formats disclosed in each of Horvath and Tsampalis (*e.g.*, SMS, MMS, IM), and these formats are expressly identified in Kansal as services that can be integrated within its messaging interface. *See supra* §§IV.A.2(a)-(d). Applying Kansal's suggestion for a unified messaging interface for each of these services in the context of references with the same services to obtain a substantially similar result would have been obvious as a matter of law. *KSR*, 550 U.S. at 417 (2007); *Intel*, 61 F.4th 1373, 1380-81 (Fed. Cir. 2023). A POSITA would have reasonably expected success implementing the combination as the messaging and communication protocols involved were all well known before the Critical Date. APPLE-1003, ¶47. And the combination with Kansal described above would not fundamentally change any of the other operations of the combination. APPLE-1003, ¶47.

3. Claim 1

[1pre1]

For example, Horvath discloses methods and systems for wireless communication, such as wireless messaging. *See e.g.*, APPLE-1004, Title ("Method And System For Delivery Of Short Message Service Messages"), [0011]; *see also* APPLE-1005, [0001], [0006].

[1pre2]

Horvath's FIG. 4 (below) shows an example "wireless device 106" (***a sending mobile phone***[2]) that transmits messages on "either the packet data network 102 or the circuit services network 104." APPLE-1004, [0014], [0060]-[0070]; *see also* APPLE-1042, [0028]. APPLE-1003, ¶49. "The SMS delivery network selector 124 selects a network 102, 104 for the wireless device 106 to transmit a SMS message on" (***transmits short message service (SMS) messages***). APPLE-1004, [0062].

[2] Bold and italicized text corresponds to claim language.

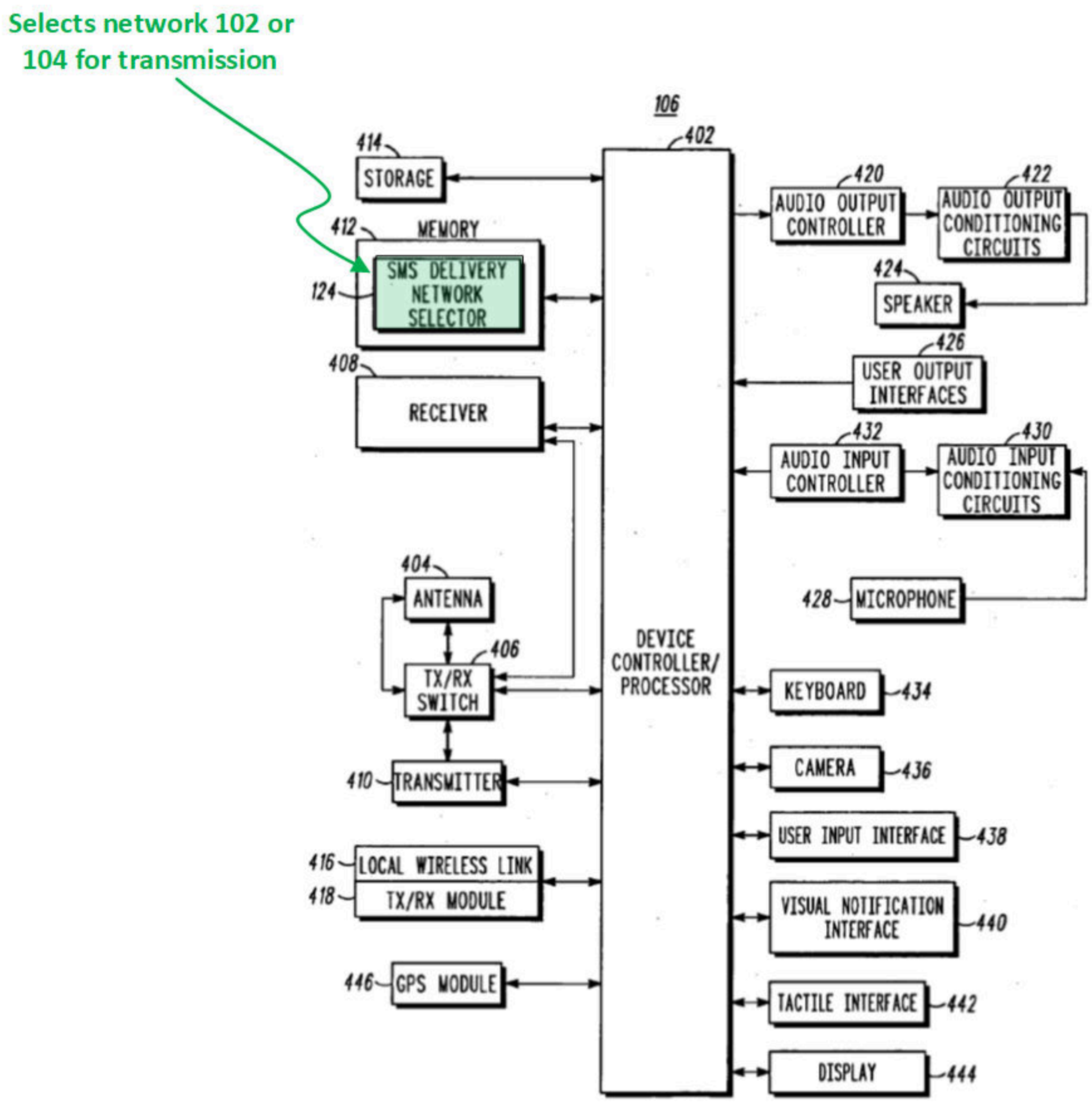
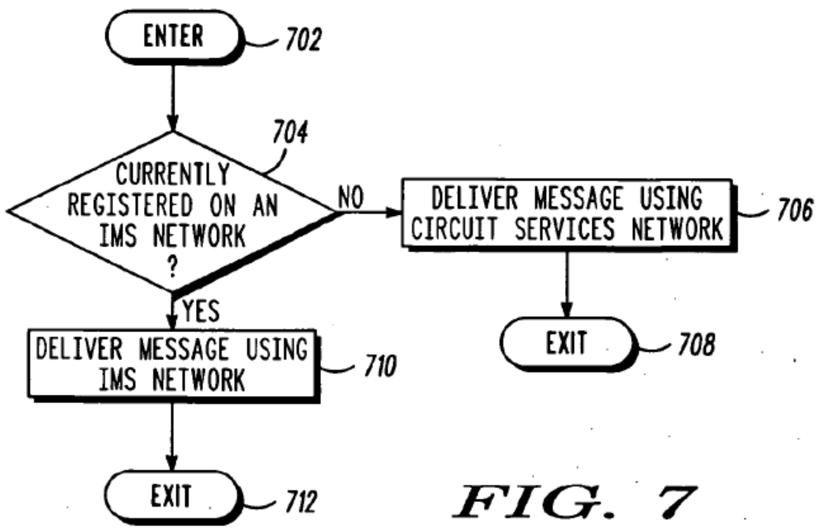


FIG. 4

APPLE-1004, FIG. 4 (annotated)

As shown in Horvath's FIG. 7 (below), the sending mobile phone "select[s] a network for transmitting a [] message based on what network the wireless device is registered with." APPLE-1004, [0078]; APPLE-1003, ¶50.

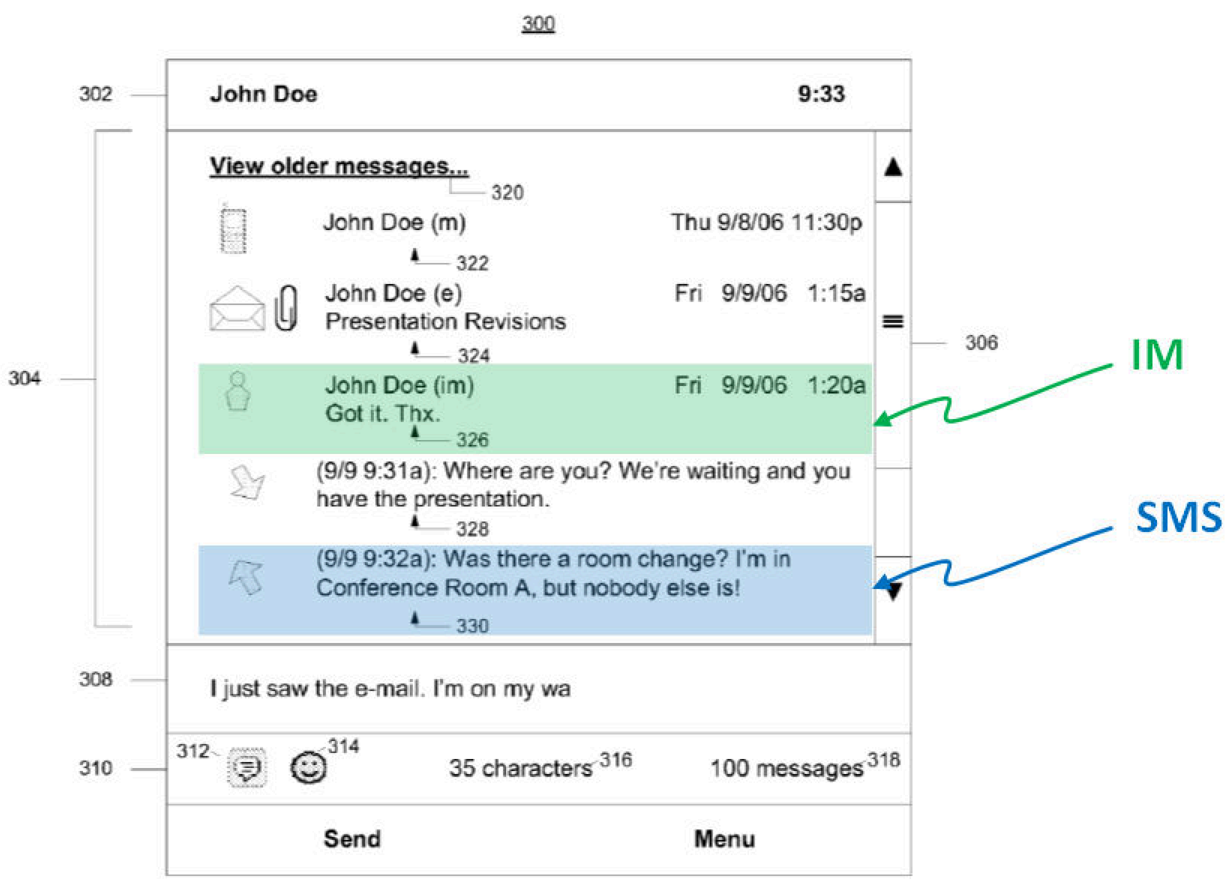


APPLE-1004, FIG. 7 (sender device perspective)

Wireless device 106 sends messages, *e.g.*, short message service (SMS) messages, "through a circuit services network" if wireless device 106 "is unregistered with" "a registrar associated with a session initiation protocol [SIP] network for communicating over a packet data network." APPLE-1004, [0002], [0006]-[0007]; APPLE-1003, ¶51.

On the other hand, when device 106 "[is] registered with the [SIP] registrar," device 106 sends "SIP message[s]" in "SIP packets" (***non-SMS based packet switched messages***) "through the [SIP] network communicating over the packet data network." APPLE-1004, [0002], [0006]-[0007], [0017], [0024], [0034], [0037], [0038], [0039], [0041], [0078], FIG. 7. One type of message service provided over the SIP network is an "instant messaging" service. APPLE-1004, [0033]; APPLE-1003, ¶52.

Moreover, as explained in §IV.A.1(e), *supra*, the combination includes a "messaging UI 500 [that] enable[s] a user to compose messages of different types of formats," including "**SMS**…, MMS, e-mail, **IM** [***non-SMS based packet switched messages***], etc." APPLE-1042, [0077]-[0078]; *see also id.*, [0002], [0062]-[0063]; APPLE-1003, ¶53.



APPLE-1042, FIG. 3 (annotated)

[1a]

Horvath explains that the sending mobile phone, *e.g.*, wireless device 106, sends messages to recipient wireless devices over one or more packet-data networks 102 and/or circuit-services networks 104. APPLE-1004, [0050], [0078], FIG. 7. Horvath discloses "information to identify" each wireless device registered to the remote server system, *e.g.*, a "destination address" (also referred to as "contact address" or "IMS contact address"), "such as a telephone uniform resource identifier ('tel-URI')," *e.g.*, "the telephone number assigned to the wireless device 106." APPLE-1004, [0035], [0045], [0050], [0073], [0076]; APPLE-1003, ¶54.

Horvath's functionality for receiving information associated with a destination address of a recipient is maintained in the combination with Tsampalis, which similarly describes conventional addressing techniques where the sending device receives phone numbers of intended messaging recipients while composing an active message. APPLE-1005, [0033]-[0034], [0061]. Tsampalis teaches that an "active message" being composed by a user of the sending mobile phone contains a "recipient ID" received from the user, *e.g.*, a phone number in the form of a MSISDN. *See* APPLE-1005, FIG. 4 (below), [0032]-[0033], [0046], [0061], [0064], FIGS. 3-4, 7, 10; APPLE-1052, 12:53-60; *see also* APPLE-1042, [0037]-[0038], [0066], [0072] ("the address bar 504 may comprise a 'To' field which may display the contact name…through reverse look up in the contact records or the telephone number of the recipient”); APPLE-1003, ¶55.

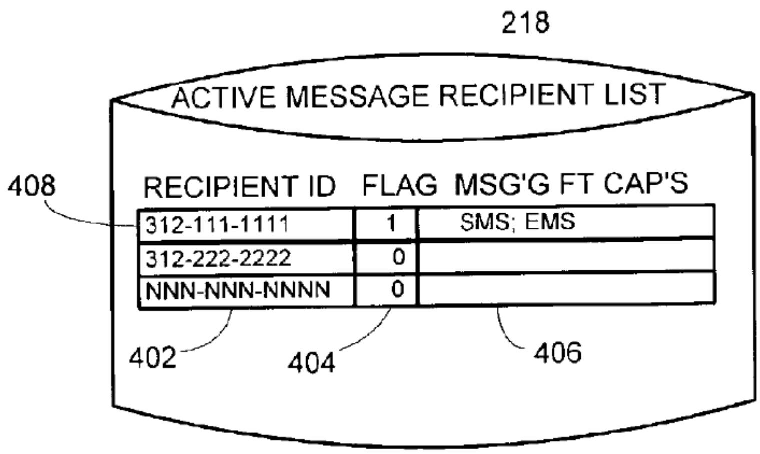
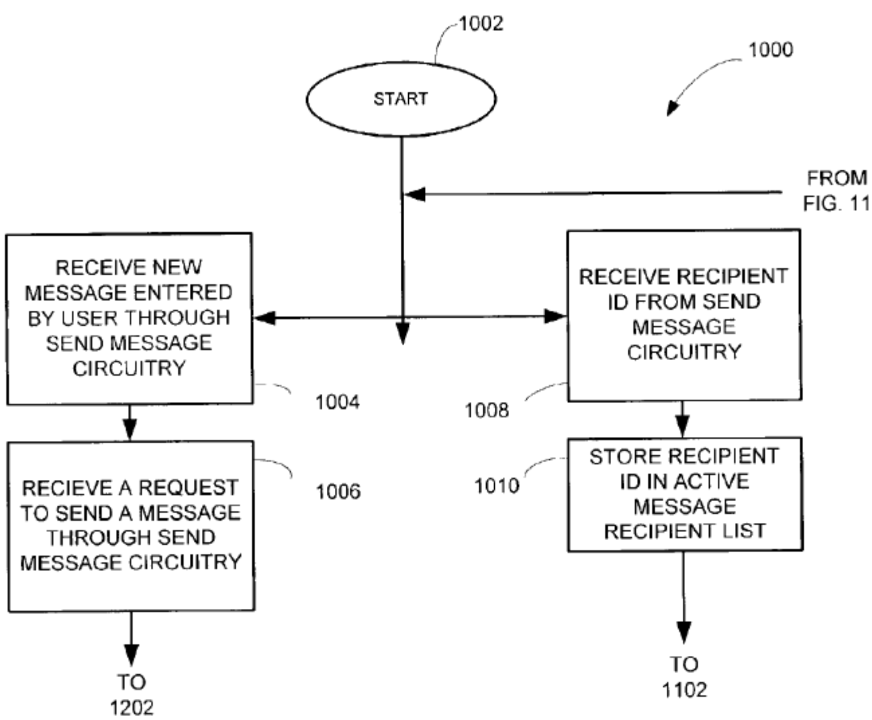


FIG. 4

APPLE-1005, FIG. 4

Referring to FIG. 10 (below), Tsampalis explains, “[a]s shown in Block 1004, the method includes [] receiving a new unformatted message 110 entered by a user” and “[b]lock 1008 demonstrates the method including the receiving of a next recipient ID 402 as the recipient ID is entered in the send message circuitry 106.” APPLE-1005, [0046], FIG. 10; APPLE-1003, ¶56. Tsampalis describes that as a user enters message text and an active message recipient list into the sending mobile phone’s user interface, “the mobile wireless communication device messaging format capabilities determinator circuitry 104…retrieve[s] the [receiving] mobile wireless communication device [MFCI] 110 associated with the" recipient ID of a receiving mobile phone entered into the active message recipient list. APPLE-1005, [0033]; *see also id.*, [0046].

FIG. 10



APPLE-1005, FIG. 10

Accordingly, Horvath-Tsampalis-Kansal's sending mobile phone (*e.g.*, wireless device 106) ***retriev[es] a destination address of a message from the message*** (*e.g.*, the send message circuitry 106 retrieving a "destination address" or "recipient ID" from an active message being composed by the user of the sending mobile phone), ***wherein the destination address is a phone number of a receiving mobile phone*** (*e.g.*, the "recipient ID" is a telephone number, in the form of a tel-URI or MSISDN). APPLE-1003, ¶57.

[1b]

As discussed for [1a], *supra*, the combination's sending mobile phone "retrieve[s] the [receiving] mobile wireless communication device [MFCI] 110 associated with the" recipient ID of a receiving mobile phone entered into the active message recipient list. APPLE-1005, [0033]; *see also id.*, [0046]. As discussed for [1a], *supra*, Tsampalis describes that the recipient ID may be the phone's MSISDN, which was known to be "the standard international telephone number used to identify a given subscriber." *See* APPLE-1005, [0061], FIGS. 3, 4; APPLE-1052, 12:53-60; APPLE-1003, ¶58. If the MFCI is not available in the sending mobile phone's local phonebook, "the remote message format capabilities determinator circuitry 208 [of the sending mobile phone] is then invoked and generates a second mobile wireless communication device messaging format capabilities information **request** 226." APPLE-1005, [0033]-[0034].

The requested MFCI 110 for the receiving mobile phone may be "stored in a location other than within the second mobile wireless communication device 200, for example, such as a network element within the network 108" (*e.g.*, a "web server"), and the sending mobile phone directs the request to the network element. APPLE-1005, [0039], [0056]-[0057]. For example, Tsampalis teaches that, "while inputting the active message 216, the first mobile wireless communication device 100 will transparently contact the network talking to the address(es), (e.g., the MSISDN(s)), of the recipients(s), and try to talk with their home location register (HLR) to find out if they are capable of receiving" certain types of messages. APPLE-1005, [0061]; APPLE-1003, ¶59.

As noted above, Horvath and Tsampalis teach that the HLR and HSS "include[] information to identify each registered wireless device 106 such as…the telephone number assigned to the wireless device." *See* APPLE-1004, [0031], [0035], [0047]; APPLE-1005, [0061]. Thus, to obtain the MFCI, it would have been obvious for the combination's sending mobile phone to send a request that included the telephone number of the receiving mobile phone to the "network element within the network" (*e.g.*, HLR 202 and/or HSS 210), so that the network element was able to look up the profile of the receiving phone. *See* APPLE-1004, [0035], [0044]; APPLE-1005, [0033], [0039], [0046], [0056]-[0057], [0061]; *see also* APPLE-1042, [0068]; APPLE-1003, ¶60.

Thus, Horvath-Tsampalis-Kansal's sending mobile phone ***send[s] information representing at least the phone number of the receiving mobile***

phone (*e.g.*, sending a request to the HLR and/or HSS including the receiving mobile phone's telephone number to determine the receiving mobile phone's MFCI). APPLE-1003, ¶61.

[1c]

As explained for [1b], *supra*, to obtain the MFCI, the combination's sending mobile phone sends a request to a network element within the network (*e.g.*, HLR 202 and/or HSS 210) to look up the profile of the receiving mobile phone based on the telephone number of the receiving phone. APPLE-1003, ¶62. Tsampalis goes on to teach that "the method includes receiving <u>a response</u> to the request where the response contains the second mobile wireless communication device [MFCI] 110, as shown in step 604." APPLE-1005, [0042]; *see also id.*, [0057].

In Horvath-Tsampalis-Kansal, the response from the network element (*e.g.*, HLR and/or HSS) with the MFCI would also include information about the services to which the wireless device 106 is subscribed (*e.g.*, an IM service hosted on the IMS network, which together is a ***PSMS***). Horvath's HSS "comprises a database including profiles associated with each wireless device 106 registered with the IMS," and these profiles "include[] subscription[3] related information," as well as capability information indicating whether each wireless phone is configured to receive messages through the packet-data network. APPLE-1004, [0035], [0044]. And Tsampalis describes that one problem its system seeks to overcome is "[b]eing unable to process the message due to the incompatibility of its messaging service capabilities with that of the format of the received message." APPLE-1005, [0003]. In other words, Tsampalis recognizes that MFCI is related to the messaging services to which a mobile phone is subscribed, and therefore at least suggests that the MFCI itself indicates subscription information. *Id.*; APPLE-1003, ¶63.

Providing such subscription information along with format information to a sending mobile phone was well known. *See, e.g.*, APPLE-1053, 1:24-50, 5:29-33, 7:28-8:45 (describing one service provided by cellular operators is "Instant

[3] In the context of IMS networks, a "subscription" is a persistent characteristic of a user indicating service capability (*e.g.*, whether a user has signed up for and/or is paying for a service), whereas "registration" is a session specific "sign-in" through which a wireless device provides its location to the network and is assigned a corresponding S-CSCF that provides it with services. *See, e.g.*, APPLE-1051, [0002]-[0026]; APPLE-1003, ¶63.

Messaging (IMing)," and describing a sending mobile phone requesting and receiving from a presence server a "resource file," which includes "information, such as the protocols and connectivity bearers supported by, the capabilities of, and/or the security associations relating to respective devices operated by, or otherwise associated with, the" receiving mobile phone), 12:25-36; APPLE-1063, [0103], [0107], [0115], [0122], [0127]. Thus, for similar reasons to those described in §IV.A.2(d)(i), *supra*, providing a sending mobile phone with more detailed information about the recipient, including their subscriber information, would help the sending user determine how and where to send a message and what content should be included. APPLE-1003, ¶64.

Thus, Horvath-Tsampalis-Kansal's sending mobile phone ***receiv[es] a response to the sending of the information*** (*e.g.*, the response with the MFCI). APPLE-1003, ¶65.

[1d1]

For context, it was well known that "various bearers in the mobile network technology" include, for example, "SMS, USSD (Unstructured Supplementary Services Data), CSD (Circuit Switched Data) and packet-switched bearers, such as e.g., GPRS (General Packet Radio Service) etc." *See* APPLE-1055, [0014]; *see also* APPLE-1054, 4:42-46. The '600 Patent describes that a "conventional SMS bearer" may be used on a circuit-switched network (*e.g.*, GSM), whereas a "packet-switched bearer may be a HSDPA, WCDMA, CDMA2000, GPRS or similar data bearer." APPLE-1001, 3:26-35. In general, messages sent over a circuit-switched network are sent via a circuit-switched bearer and messages sent over a packet-switched network are sent via a packet-switched bearer. Thus, when an SMS message is sent over a circuit-switched network[4], it is utilizing an SMS bearer, which is a type of circuit-switched bearer. *See* APPLE-1001, 3:26-35, APPLE-1054, 4:42-46. On the other hand, for messages sent over the packet-switched network, such as the SIP messages taught by Horvath, the bearer (*e.g.*, GPRS) is a packet-switched bearer. *See* APPLE-1004, [0024], [0040]-[0041], [0050]; APPLE-1003, ¶66.

As discussed in §IV.A.2(a), *supra*, Horvath describes that the sending mobile phone will send its message over the packet-switched network whenever it (the sending mobile device) is registered on the packet-switched network. *See* APPLE-1004, [0021], [0039]-[0042], [0078]; APPLE-1003, ¶67. Only when

[4] Some packet-switched networks support SMS messages, and in those cases, an SMS bearer would also be a packet-switched bearer. *See, e.g.*, APPLE-1056, [0091]. However, in other cases, SMS sent over a packet-switched network is encapsulated in a packet-switched bearer. *See, e.g.*, APPLE-1004, [0050]; APPLE-1056, [0166]; APPLE-1003, ¶66.

"delivery of the SMS message is not possible on the packet data network" (*e.g.*, the sending mobile phone is not registered) will the sending mobile phone "select the circuit services network for SMS delivery." *Id.*

Tsampalis describes "sending of a message in a message format compatible with at least one of the messaging formats identified in the second mobile wireless communication device [MFCI]." APPLE-1005, [0041]. That is, after the network element (*e.g.*, HLR and/or HSS) sends the receiving mobile phone's MFCI to the sending mobile phone, the sending mobile phone utilizes the information to determine how to send the message to the receiving mobile phone. *See id.*; APPLE-1003, ¶68.

Taken together and as described in IV.A.2(d), *supra*, Horvath-Tsampalis-Kansal's sending mobile phone utilizes both sets of information when determining how to format and deliver a message to a receiving mobile phone. First, the sending mobile phone checks if it is registered on the packet-data network. *See* APPLE-1004, [0021], [0039]-[0042], [0078]. If it is, it will utilize the packet-data network, and otherwise it will utilize the circuit-services network. *Id.* Second, the sending mobile phone will check the receiving mobile phone's MFCI and service-subscription information to determine the best way to send a message that is compatible with the capabilities and subscriptions of the receiving mobile phone. APPLE-1005, [0041], [0049], [0052]-[0054], [0062]; APPLE-1003, ¶69.

Tsampalis describes that, where "the default messaging format" of the sending mobile phone "is not found in the" receiving mobile phone's "messaging format capabilities list," the sender mobile phone performs a "transformation of the message into a compatible format as found in the recipient list messaging format capabilities." APPLE-1005, [0049], [0052]-[0054]. While Tsampalis describes some embodiments where a user is "prompted" to select a "compatible format" into which the message may be transformed, Tsampalis also describes "yet other embodiments [that] include no user prompts whatsoever." APPLE-1005, [0052]-[0055]. Indeed, Kansal describes that its unified messaging UI is configured to automatically select a bearer for the message. *See* APPLE-1042, [0077]-[0078]; APPLE-1003, ¶70. For example, "after a media object has been added to the message, the messaging UI 500 may undergo an <u>automatic</u> or seamless conversion…from an SMS messaging UI to an MMS messaging UI, <u>and the message will be sent as an MMS message</u>." APPLE-1042, [0077]. "In some cases, the conversion of a message from one format to a particular sending format may be <u>based on programmed and/or detected</u> preferences, constraints, and/or availability of a recipient to receive messages of a certain format." APPLE-1042, [0078].

Accordingly, Horvath-Tsampalis-Kansal's sending mobile phone, ***based at least in part on the response, automatically select[s] a bearer for the message*** (*e.g.*, the sending mobile phone selects between the circuit-services network and the packet-data network based on its own registration status, and selects the format of the message, such as SMS, MMS, or IM, based on the received MFCI). APPLE-1003, ¶71.

[1d2]

As discussed for [1d1], *supra*, Horvath-Tsampalis-Kansal's sending mobile phone utilizes both (1) its own registration status with the packet-data network and (2) the MFCI and service-subscription information received from the network element (*e.g.*, HLR and/or HSS) when determining how to format and deliver a message to a receiving mobile phone. Where, for example, both the sending mobile phone is not currently registered with the packet-switched network and the receiving mobile phone's MFCI indicates that the receiving mobile phone can only receive SMS messages (*e.g.*, because one or both lost their connection "due to roaming or the like"), Horvath-Tsampalis-Kansal's sending mobile phone will send an SMS over the circuit-switched network and it will be received as an SMS at the receiving mobile phone.[5] *See* APPLE-1006, [0020] (describing a wireless

[5] The sending mobile phone could lose connection at any time, including between when it requested the receiving mobile phone's MFCI and service-subscription

device losing connection), [0028], [0030]. Even where the sending mobile phone is registered with the packet-data network, the receiving mobile phone's MFCI may indicate it is only capable of receiving SMS, so the sending mobile phone would send an SMS message to the receiving mobile phone, given its limited capabilities. *See* APPLE-1005, [0062]; APPLE-1056, [0091]. This is consistent with the unified messaging UI described by Kansal, which determines sending format "based on programmed and/or detected preferences, <u>constraints</u> [*e.g.*, the sending mobile phone's registration or connection status with the circuit-switch and packet-switched networks], and/or <u>availability of a recipient to receive messages of a certain format</u>." APPLE-1042, [0078]. APPLE-1003, ¶72.

Accordingly, in Horvath-Tsampalis-Kansal, ***the bearer is selected from a group including an SMS bearer*** (*e.g.*, when either the sending mobile phone is not registered with the packet-data network or the receiving mobile phone's MFCI indicates it has "limited messaging capabilities," an SMS bearer would be selected). APPLE-1003, ¶73.

[1d3]

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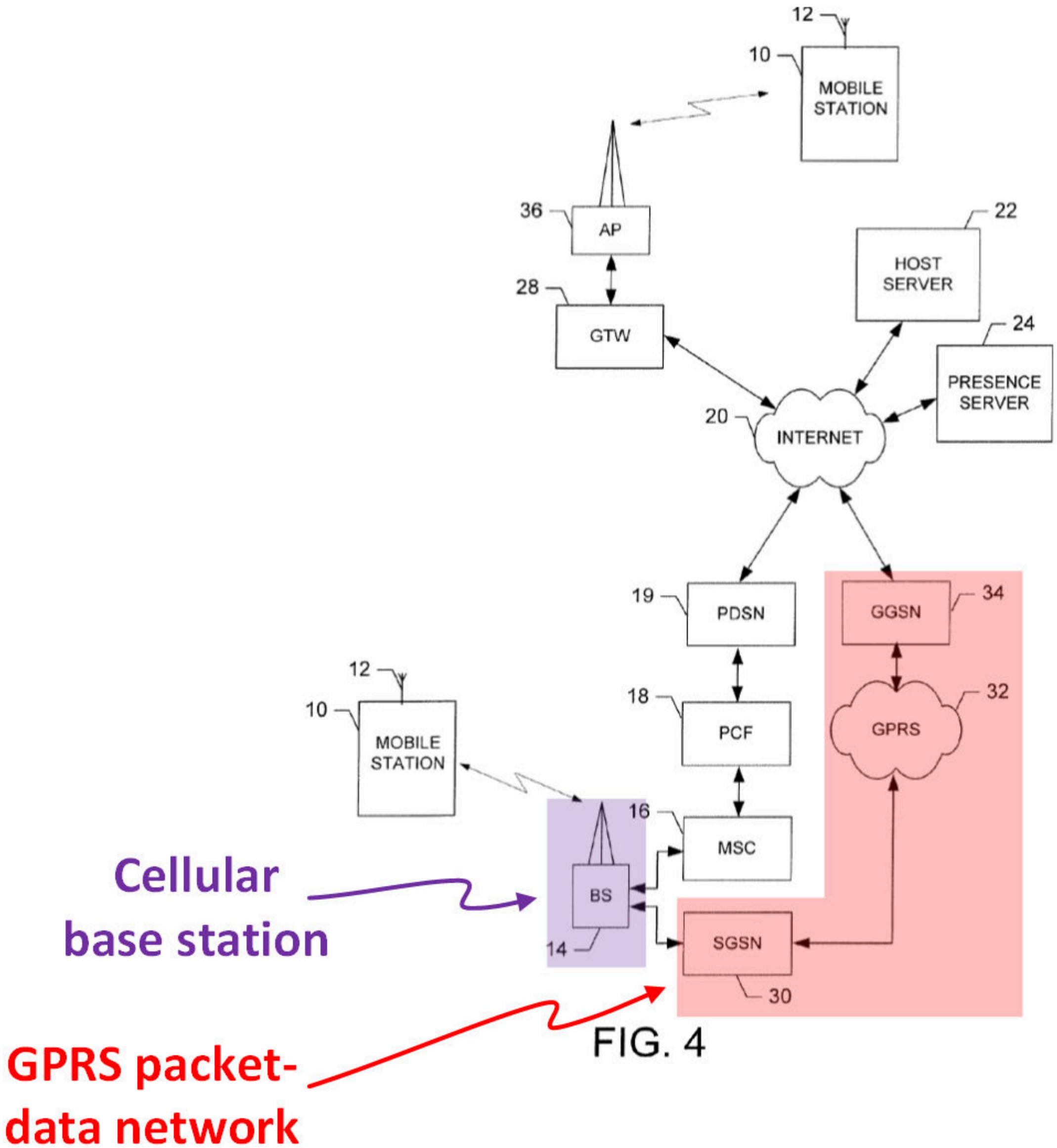
information and when it sends a message, which would limit how the sending mobile phone would be able to communicate. *See* APPLE-1006, [0020], [0028], [0030]; APPLE-1003, ¶72.

As discussed for [1d1], *supra*, "various bearers in the mobile network technology" include, for example, "packet-switched bearers, such as e.g., GPRS (General Packet Radio Service) etc." *See* APPLE-1055, [0014]; *see also* APPLE-1054, 4:42-46. Similarly, the '600 Patent describes a "packet-switched bearer may be a HSDPA, WCDMA, CDMA2000, GPRS or similar data bearer." APPLE-1001, 3:26-35; APPLE-1003, ¶74.

Horvath explains that the "packet data network 102, in one embodiment, comprises an Evolution Data Only ('EV-DO') network, a General Packet Radio Service ('GPRS') network, a Universal Mobile Telecommunications System ('UMTS') network, an 802.11 network, an 802.16 (WiMax) network, Ethernet connectivity, dial-up modem connectivity, or the like." *See e.g.*, APPLE-1004, [0024]. As shown in the following diagram, a mobile device communicating via GPRS communicates with a base station of a cellular network. APPLE-1053, FIG. 4, 12:54-13:60; APPLE-1003, ¶75.



APPLE-1053, FIG. 4 (annotated)

As discussed for [1d1], *supra*, Horvath-Tsampalis-Kansal's sending mobile phone utilizes both (1) its own registration status with the packet-data network and (2) the MFCI and service-subscription information received from the network element (*e.g.*, HLR and/or HSS) when determining how to format and deliver a message to a receiving mobile phone. Where, for example, the sending mobile phone is registered with the packet-switched network and the packet-switched network to which the sending mobile phone is registered is a GPRS network, Horvath-Tsampalis-Kansal's sending mobile phone will send a message via a GPRS bearer. *See* APPLE-1004, [0024], [0050]; APPLE-1003, ¶76.

GPRS is ***a packet-switched message bearer supported by a cellular connection between the sending mobile phone and a cellular base station***. *See* APPLE-1055, [0014]; APPLE-1054, 4:42-46; APPLE-1003, ¶77.

[1d4]

As discussed for [1d3], *supra*, in general, messages sent over a circuit-switched network are sent via a circuit-switched bearer and messages sent over a packet-switched network are sent via a packet-switched bearer. APPLE-1003, ¶78.

Horvath explains that the "packet data network 102, in one embodiment, comprises an Evolution Data Only ('EV-DO') network, a General Packet Radio Service ('GPRS') network, a Universal Mobile Telecommunications System ('UMTS') network, <u>an 802.11 network</u>, an 802.16 (WiMax) network, Ethernet connectivity, dial-up modem connectivity, or the like." *See e.g.*, APPLE-1004, [0024]. As shown in the following diagram, a mobile device communicating via an 802.11 network communicates with a WLAN access point, which is a type of base station. APPLE-1053, FIG. 4, 13:61-14:19; APPLE-1003, ¶79 (citing APPLE-1011, 5:1-33, 6:27-32, FIG. 5B; APPLE-1009, 1, 3, 4; APPLE-1037).

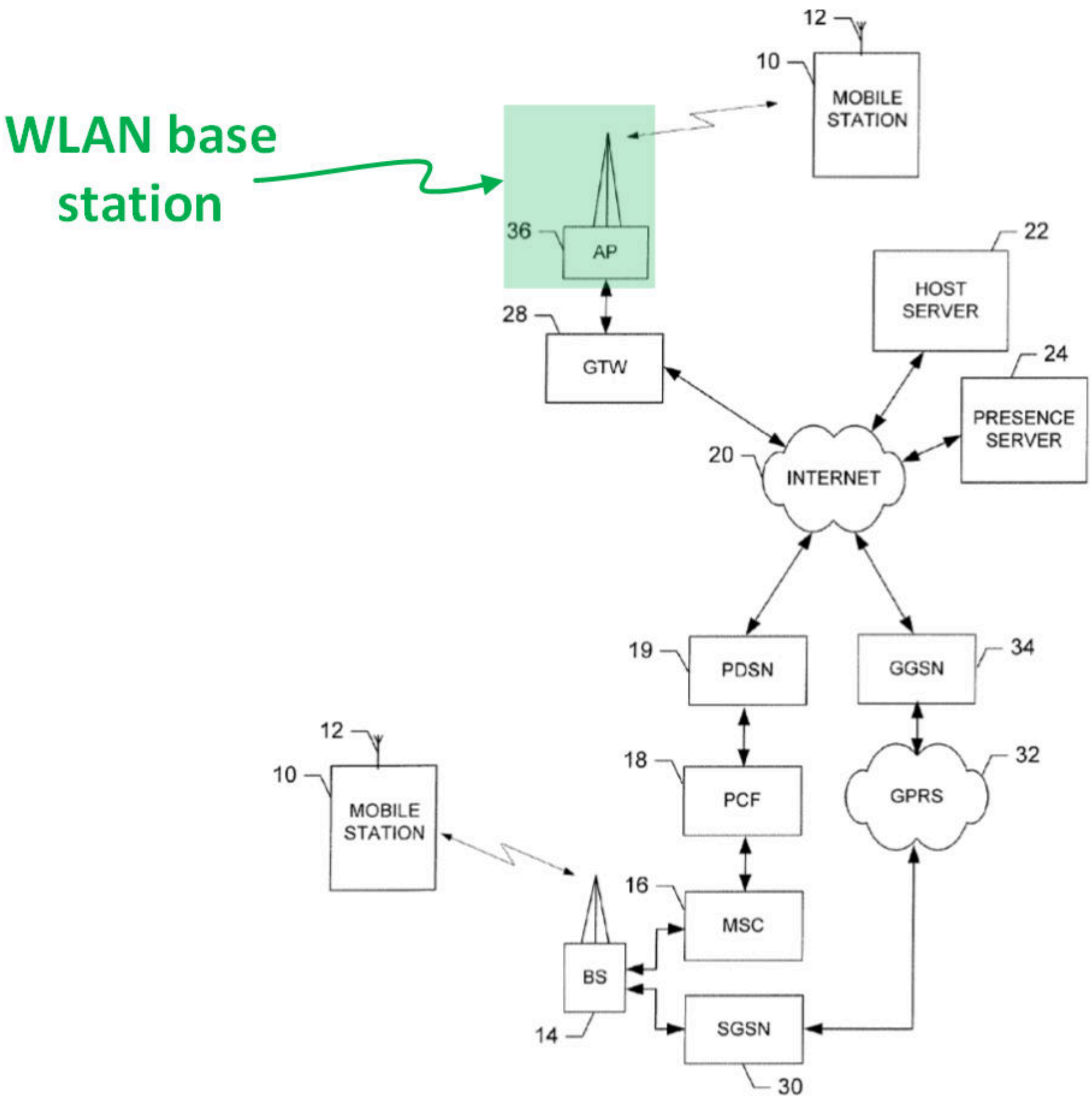


FIG. 4

APPLE-1053, FIG. 4 (annotated)

As discussed for [1d1], *supra*, Horvath-Tsampalis-Kansal's sending mobile phone utilizes both (1) its own registration status with the packet-data network and (2) the MFCI and service-subscription information received from the network element (*e.g.*, HLR and/or HSS) when determining how to format and deliver a message to a receiving mobile phone. Where, for example, the sending mobile phone is registered with the packet-switched network and the packet-switched network to which the sending mobile phone is registered is an 802.11 network, Horvath-Tsampalis-Kansal's sending mobile phone will send a message via an 802.11 bearer. *See* APPLE-1004, [0024] (packet-data network comprises "an 802.11 network"), [0050]; APPLE-1003, ¶80.

An 802.11 network provides ***a wireless local area network (WLAN) connection between the sending mobile phone and a WLAN base station***, and that in order to utilize the 802.11 network, the message would have to be formatted consistent with ***a packet-switched message bearer supported by*** the 802.11 network. *See* APPLE-1055, [0014]; APPLE-1054, 4:42-46; APPLE-1003, ¶81.

[1e]

As discussed for [1d1], *supra*, Tsampalis describes "sending of a message <u>in a message format compatible with at least one of the messaging formats identified</u> in the second mobile wireless communication device [MFCI]." APPLE-1005, [0041]. That is, after the network element (*e.g.*, HLR and/or HSS) sends the receiving mobile phone's MFCI to the sending mobile phone, the sending mobile phone utilizes the information to determine how to send the message to the receiving mobile phone. *See id.*; APPLE-1003, ¶82.

Tsampalis describes that, where "the default messaging format" of the sending mobile phone "is not found in the" receiving mobile phone's "messaging format capabilities list," the sender mobile phone performs a "transformation of the message into a compatible format as found in the recipient list messaging format capabilities." APPLE-1005, [0049], [0052]-[0054]. Furthermore, Kansal describes that its unified messaging UI is configured to automatically select a bearer for the message. *See* APPLE-1042, [0077]-[0078]; APPLE-1003, ¶83. For example, "after a media object has been added to the message, the messaging UI 500 may undergo an automatic or seamless conversion…from an SMS messaging UI to an MMS messaging UI, and the message will be sent as an MMS message." APPLE-1042, [0077]. "In some cases, the conversion of a message from one format to a particular sending format may be based on programmed and/or detected preferences, constraints, and/or availability of a recipient to receive messages of a certain format." APPLE-1042, [0078].

Accordingly, Horvath-Tsampalis-Kansal's sending mobile phone, ***after the automatically selecting, format[s] the message for transmission via the selected bearer*** (*e.g.*, converting a message "to a particular sending format" based on the MFCI of the receiving mobile phone). APPLE-1003, ¶84.

[1f]

As discussed for [1d1], *supra*, Tsampalis describes "sending of a message in a message format compatible with at least one of the messaging formats identified in the second mobile wireless communication device [MFCI]." APPLE-1005, [0041]; *see also id.* [0025]. Specifically, "[w]hen the user interface 202 detects a request to send the active message 216 (unformatted), the user interface 202 communicates this information to the send message circuitry 106. Upon detection of a request to send the message 112, a process begins which includes the looping through of the recipient IDs 402 in the active message recipient list 218 to send messages to each designated recipient." APPLE-1005, [0036]. The "send message circuitry 106 formats the message <u>prior to</u> sending the message." APPLE-1005, [0037].

Accordingly, Horvath-Tsampalis-Kansal's sending mobile phone, ***after the formatting, transmit[s], by the sending mobile phone using the selected bearer, the message, to the receiving mobile phone***. APPLE-1003, ¶86.

[1g1]

The Horvath-Tsampalis-Kansal sending mobile phone would follow the procedures described with respect to [1a] through [1f], *supra*, every time that a user creates a new message, enters a corresponding recipient ID for the message, and requests to send the active message. *See* APPLE-1005, [0033], [0036], [0046]. In fact, Tsampalis describes an example where a user enters multiple recipients for a single message, and "for each recipient 402 entered in the active message recipient list 218, the same remote message format capabilities determinator circuitry 208 is then invoked to generate a second mobile wireless communication device messaging format capabilities information request 226." APPLE-1005, [0034]. This process would be followed for each "new unformatted message 110 entered by a user through the send message circuitry 106." *See* APPLE-1005, [0046]; APPLE-1003, ¶87.

Accordingly, Horvath-Tsampalis-Kansal's sending mobile phone ***perform[s] the retrieving, the sending, the receiving, the automatically selecting, the formatting and the transmitting for at least first, second and third iterations***. APPLE-1003, ¶88.

[1g2]

From the teachings of Horvath, Tsampalis, and Kansal, a first scenario (***first iteration***), when the first receiving phone MFCI contained in the first response indicates that the first receiving phone is not capable of either MMS or IM (*e.g.*, because the first receiving phone is not subscribed or not currently signed into the associated messaging service) and is only capable of SMS, is obvious. *Supra*, [1b]-[1d2]; APPLE-1042, [0077]-[0078] (describing a unified messaging UI configured to automatically convert between different message formats, including

SMS, MMS, e-mail, and IM, based on availability of a recipient to receive messages of a certain format); APPLE-1003, ¶89. In this first scenario, the sending mobile phone formats and sends a first message to the first receiving mobile phone as an SMS message (an ***SMS bearer***) over the packet-data network by default or over the circuit-services network if it is not possible to send over the packet-data network. *Id.*

[1g3]

From the teachings of Horvath, Tsampalis, and Kansal, a second scenario (***second iteration***), where the available packet-data network to which the sending mobile phone is registered is, for example, a GPRS packet-data network, and when the second receiving phone is capable of MMS (and/or IM), is obvious. *Supra*, [1b]-[1d2]; APPLE-1042, [0077]-[0078] (describing a unified messaging UI configured to automatically convert between different message formats, including SMS, MMS, e-mail, and IM, based on availability of a recipient to receive messages of a certain format); APPLE-1003, ¶90. In the second scenario, the sending phone obtains this MFCI about the second receiving phone through a second request to and a second response from the remote server(s), then formats and sends the second message as MMS (or IM) using the GPRS packet-data network (***packet switched message bearer supported by the cellular connection***). *Id.*

[1g4]

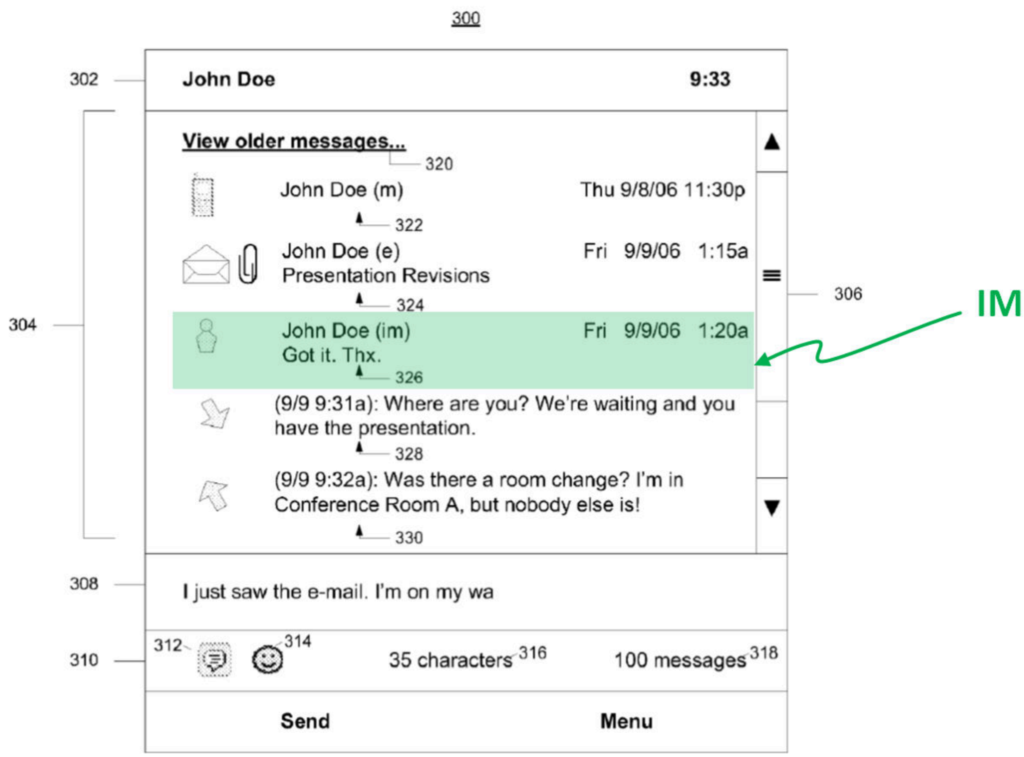
From the teachings of Horvath, Tsampalis, and Kansal, a third scenario (***third iteration***), where the available packet-data network to which the sending mobile phone is registered is "an 802.11 network" as discussed above, and when the third receiving phone is capable of MMS (and/or IM), is obvious. *Supra*, [1b]-[1d4]. In the third scenario, the sending phone obtains this MFCI about the third receiving phone through a third request to and a third response from the remote server(s), then formats and sends the third message as MMS (or IM) using the 802.11 network (***packet-switched message bearer supported by the WLAN connection***). *Id.*

[1h]

Horvath describes that when device 106 "[is] registered with the [SIP] registrar," device 106 sends SIP messages in SIP packets "through the [SIP] network communicating over the packet data network." APPLE-1004, Abstract, [0002], [0006]-[0007], [0017], [0024], [0034], [0037], [0038], [0039], [0041], [0078], FIG. 7. One type of message service provided by the SIP/IMS network is an "instant messaging" service, such that the IMS network and its IM service are a

PSMS. APPLE-1004, [0033]; APPLE-1003, ¶92. And Kansal describes an example in which one of the conversations displayed in the unified messaging UI is an instant messaging conversation. *See* APPLE-1042, [0062] ("The message thread 304 includes a message 326 comprising a sent IM message that displays linked IM screen name information of the contact, the text of the IM message, and the date sent"), FIG. 3.

Based on these teachings, when a receiving mobile phone is registered with the IM service and is thus capable of communicating via IM, an MFCI response communicates to the sending mobile phone that the receiving mobile phone is subscribed to an IM service and has IM capabilities. *See* APPLE-1004, [0033]; APPLE-1042, [0034], [0042], [0062], [0078] ("the user may compose a message in one format (e.g., SMS) and then convert or send the message in another format (e.g., MMS, e-mail, IM, etc.)"); APPLE-1003, ¶93. In that case, the send message circuitry of the sending mobile device would have formatted the message for delivery by an IM service over the 802.11 network where: (1) the available packet-data network to which the sending mobile phone is registered is an 802.11 network; (2) the sending mobile phone is a subscriber of the IM service; and (3) the receiving mobile phone's MFCI indicates it is also a subscriber of the IM service and capable of receiving IMs. *Id.* Indeed, Kansal illustrates and describes a "message thread 304 includes a message 326 comprising a sent IM message that displays linked IM screen name information of the contact, the text of the IM message, and the date sent…" APPLE-1042, [0062].



APPLE-1042, FIG. 3 (annotated)

Accordingly, in Horvath-Tsampalis-Kansal, ***a packet switched message service (PSMS) is used to send the third message to the third receiving mobile phone*** (*e.g.*, where the sending mobile phone subscribes to an IM service and the MFCI indicates that the receiving mobile phone subscribes to an IM service, and both the sending mobile phone and the receiving mobile phone are connected to a packet-data network such as an 802.11 network, the send message circuitry of the sending mobile phone would have selected the IM service of the IMS network for delivery of a message to the receiving mobile phone). APPLE-1003, ¶94.

[1i]

As discussed for [1h], *supra*, Horvath-Tsampalis-Kansal's IM service provided by the IMS network is a packet-switched message service (***the PSMS***) that is for sending and receiving packet-switched messages other than SMS, EMS, and MMS messages, over the packet-data network (*e.g.*, the 802.11 network). APPLE-1004, [0033]. It was well known that IM messages were formatted using, among others, the SIP/SIMPLE or Jabber/XXMP standards. APPLE-1007, 8 (Box 1, Box 2). Each of SIP/SIMPLE and Jabber/XXMP are different formats from the SMS/MMS/EMS message formats. APPLE-1003, ¶95. Accordingly, Horvath's IM service and IMS network (***PSMS***) would have been ***for sending and receiving packet switched messages other than SMS, enhanced message service (EMS) and multimedia message service (MMS) messages***. APPLE-1003, ¶95.

[1j]

As discussed for [1a] through [1g4], *supra*, the sending mobile phone ***performs at least the retrieving, the sending, the receiving, the automatically selecting, the formatting and the transmitting for each of the first, second and third iterations***. In Horvath-Tsampalis-Kansal, these functions would have been performed by ***a same messaging client*** on the sending mobile phone. APPLE-

1003, ¶96.

For example, Horvath teaches that "[t]he wireless device 106 operates under the control of a device controller/processor 402, that controls the sending and receiving of wireless communication signals." APPLE-1004, [0061]. "The wireless device 106 also includes non-volatile storage memory 414 for storing, for example, an application waiting to be executed (not shown) on the wireless device 106." APPLE-1004, [0064]. In at least some implementations, the "application" would have performed any one or all of the functions of [1a] through [1g4]. APPLE-1003, ¶97.

As discussed in §IV.A.2(c) and for [1pre2] and [1h], *supra*, Kansal describes a "messaging UI 500 [that] may enable a user to compose messages of different types of formats [*e.g.*, SMS, MMS, IM] using the same unified messaging UI." APPLE-1042, [0077]-[0078]. Underlying the unified messaging UI, Kansal describes "several messaging applications 130 arranged to communicate [the] various types of messages in a variety of formats." APPLE-1042, [0035]. However, Kansal further teaches that the "components and modules [described throughout its disclosure] may be combined," which would have at least suggested to a POSITA that a single application could be used for the same purpose. *See* APPLE-1042, [0086]. And it was well known that a unified messaging client would have been configured to retrieve, send, receive, automatically select, format and transmit of [1a] through [1g4]. *See, e.g.*, APPLE-1045, 1-3 (describing "Trillian Pro v1.0" as a multi-protocol messaging application, which incorporated various IM protocols and SMS on mobile phones), 1-2; APPLE-1061, FIG. 4, [0048]-[0054]; APPLE-1003, ¶98.

4. Claim 3

As discussed for [1g2], *supra*, the sending phone learns from the first response that the first receiving phone is not capable of IM (*e.g.*, because the first receiving phone is not subscribed to the IM service), the sending phone then formats and sends the first message as an SMS. APPLE-1003, ¶99. When the MFCI indicates that the first receiving phone is not capable of IM, ***no phone number corresponding to the first receiving phone is associated with a subscriber of*** the IM service of the IMS network (***the PSMS***). APPLE-1003, ¶99; APPLE-1004, [0038] ("services subscribed to by the device 106"); *see also id.*, [0031], [0033], [0039], [0041], [0050], [0071]-[0073], FIG. 5.

5. Claim 4

For example, Tsampalis teaches that an MMS may include "attached/inserted multimedia files," which would be lost in the event that the MMS is transformed into an SMS. APPLE-1005, [0062]. Similarly, Kansal describes that, "after a media object has been added to the message, the [unified] messaging UI 500 may undergo an automatic or seamless conversion" from SMS to MMS. APPLE-1042, [0077]. "In the event that the user adds a media object and then removes the media object, the messaging UI 500 may automatically or seamless convert back from an MMS messaging UI to an SMS messaging UI." *Id.*; APPLE-1003, ¶100.

It was well known that IM (***the third message***) supported the addition (*e.g.*, attachment) of media objects (*see, e.g.*, APPLE-1007, 7; APPLE-1008, [0046]-[0047]), and that SMS (***the first message***) does not support attachment of media objects (*see e.g.*, APPLE-1005, [0062]; APPLE-1042, [0075]-[0077]). The attachment of a media object is type of modification to a message. APPLE-1003, ¶101.

When Kansal describes "<u>automatically</u> or seamless[ly] convert[ing] back from an SMS messaging UI to an MMS messaging UI" when, for example, a user adds a media object to the composed message, Kansal's unified message UI is necessarily making the sending of the media object and thus the associated modification to the message ***not available*** for SMS and ***available*** for other message types (*e.g.*, MMS). *See* APPLE-1042, [0075]-[0077]. Indeed, it was well known to "grey out" options that are not available to the user, which is a visual indication to a user of options that are available and unavailable. *See, e.g.*, APPLE-1070, [0060]; APPLE-1003, ¶102.

Accordingly, Horvath-Tsampalis-Kansal's ***messaging client provides an option to modify the third message*** (*e.g.*, providing the user an option to attach a media object to an IM)***, wherein the option is not available to modify the first message*** (*e.g.*, not providing the user an option to attach a media object to an SMS by, for example, greying out the option). APPLE-1003, ¶103.

6. Claim 5

For example, as discussed for [1b], *supra*, the HSS is a network element that would have stored MFCI. *See* APPLE-1004, [0035]; APPLE-1005, [0039]. The HSS is "part of an Internet Protocol multimedia subsystem ('IMS') core that supports the SIP network." *See* APPLE-1004, [0033]. The IMS core is distinct from the cellular core network, and therefore the HSS ***is located outside of a cellular core network***. *See* APPLE-1004, [0033]; APPLE-1003, ¶¶104-105 (citing APPLE-1072, FIG. 3 (illustrating the HSS 330 outside of the core network 310), [0059]-[0061]; APPLE-1071, [0006]; APPLE-1014, [0006], [0047]). Accordingly, in Horvath-Tsampalis-Kansal, ***the response originates from a server which is located outside of a cellular core network*** (*e.g.*, the response with the MFCI originates from the HSS, which stores the MFCI and is located outside of the cellular core network).

Furthermore, Horvath describes authenticating its sending wireless device (wireless devices 106) both during registration with the SIP/IMS network and for transmitting subsequent messages, through the S-CSCF and HSS. APPLE-1004, FIG. 5, [0035], [0036], [0040]. Horvath details the SIP registration process for the wireless device 106 with the S-CSCF component of the remote server(s), during which "authentication and authorization" of the wireless device 106 is performed using "profiles associated with each wireless device 106" stored on the HSS 210. APPLE-1004, [0035]-[0036], [0038], [0040], [0041], [0072]-[0073], [0076], FIGS. 2, 5. Once registration is complete, the P-CSCF "authenticate[s] subsequent messages allowing the other network entities such as the I, S-CSCF 208 to trust the messages." APPLE-1004, [0036]; APPLE-1003, ¶106.

As part of authentication through a S-CSCF and HSS, the mobile phone would provide its International Mobile Equipment Identity (IMEI) for verification. *See, e.g.*, APPLE-1073, [0005]-[0017] ("Existing mobile networks provide a security service according to a three-step process" including "checking whether mobile equipment of the user is illegal mobile equipment through an Equipment Identity Register (EIR)" based on whether the mobile equipment's IMEI is "include[d on] a white list, a black list, and a gray list"); APPLE-1003, ¶107. Accordingly, part of authentication through a S-CSCF and HSS included ***the sending mobile phone being authenticated via a hardware identifier of the sending mobile phone***. *See id.*

Through authentication with the S-CSCF and HSS, wireless device 106 is also authenticated to the IM service provided by the IMS network (***authenticated to the PSMS***). APPLE-1004, [0033], [0038]-[0039] ("[a]n application server [providing, e.g., messaging service(s) such as instant messaging] interfaces with the S-CSCF component of the I, S-CSCF 20S using SIP"), [0041] ("[a] subscriber profile sent to the S-CSCF includes the filter criteria which are used by the S-CSCF to determine the application servers that are to be notified that they are to provide services for the wireless device 106."), [0073]; APPLE-1003, ¶108.

As noted above, the mobile phone is authenticated whenever transmitting subsequent messages. APPLE-1003, ¶109. Specifically, Horvath describes that, "after successful registration of a wireless device 106 with the S-CSCF component of the I,S-CSCF 208, security keys are sent to the P-CSCF 206, which allows it to setup a security association with the wireless device 106." APPLE-1004, [0036]. "The P-CSCF 206 can authenticate subsequent messages allowing the other network entities such as the I,S-CSCF 208 to trust the messages." *Id.* That is, after registration, the mobile phone utilizes the security keys (*e.g.*, session keys CK and IK) to encrypt and/or integrity protect all subsequent messages, including SMS messages. *Id.*; *see also* APPLE-1087, [0007]-[0014]; APPLE-1088, [0019], [0035]; APPLE-1072, [0055]; APPLE-1003, ¶109. An element of the IMS network (*e.g.*, the P-CSCF) will utilize the security key(s) provided during registration to verify the authenticity of, *e.g.*, a sent SMS message (***the sending mobile phone is authenticated to the PSMS via SMS***). *Id.* Where authentication is successful, the message is sent further into the IMS network implemented by Horvath's IMS network that includes the IM service (***PSMS***) and the identity of the source of the message is believed due to this authentication process. APPLE-1003, ¶109.

Accordingly, in Horvath-Tsampalis-Kansal, ***the sending mobile phone is authenticated to the PSMS via SMS*** (*e.g.*, authenticating the sending mobile phone with the IMS network—which includes the IM application server—by authenticating all messages sent by the sending mobile phone, including SMS messages, utilizing session keys) ***and the sending mobile phone is authenticated to the PSMS via a hardware identifier of the sending mobile phone*** (*e.g.*, authenticating a mobile phone with the S-CSCF and the EIR based on the IMEI of the mobile phone). APPLE-1003, ¶110.

7. Claim 6

Horvath describes that the "SMS delivery network selector 116, <u>based on the registration status of the wireless device 106</u>, selects either the packet data network 102 or the circuit services network 104 for delivery of a SMS message." APPLE-1004, [0053]. The registration status of the wireless device 106 is stored in the profiles included in the HSS's database. APPLE-1004, [0035]. As discussed for [1b] and [5], *supra*, the HSS is one network element that would store MFCI. *See* APPLE-1004, [0035]. Accordingly, in Horvath-Tsampalis-Kansal, the MFCI ***response*** from the HSS would include (and therefore be ***correlated with***) registration status of the receiving mobile device with a packet-data network (***a status of the receiving mobile phone***), at least because access to certain messaging services including the IM service of the IMS network (***PSMS***) is available through a packet-data network, and even when the user of the receiving mobile device is a subscriber to the IM service (***the receiving mobile phone is associated with a subscriber of the PSMS***), the receiving mobile device would need to be registered with a packet-data network in order to access the IM service. APPLE-1003, ¶111. Indeed, Kansal teaches that "the conversion of a message from one format to a particular sending format may be based on programmed and/or detected preferences, constraints, and/or <u>availability of a recipient to receive messages of a certain format</u>," which would have included ***a status of the receiving mobile phone***, such as whether the receiving mobile device is connected to the IM service. *See* APPLE-1042, [0078]; APPLE-1003, ¶111.

8. Claim 7

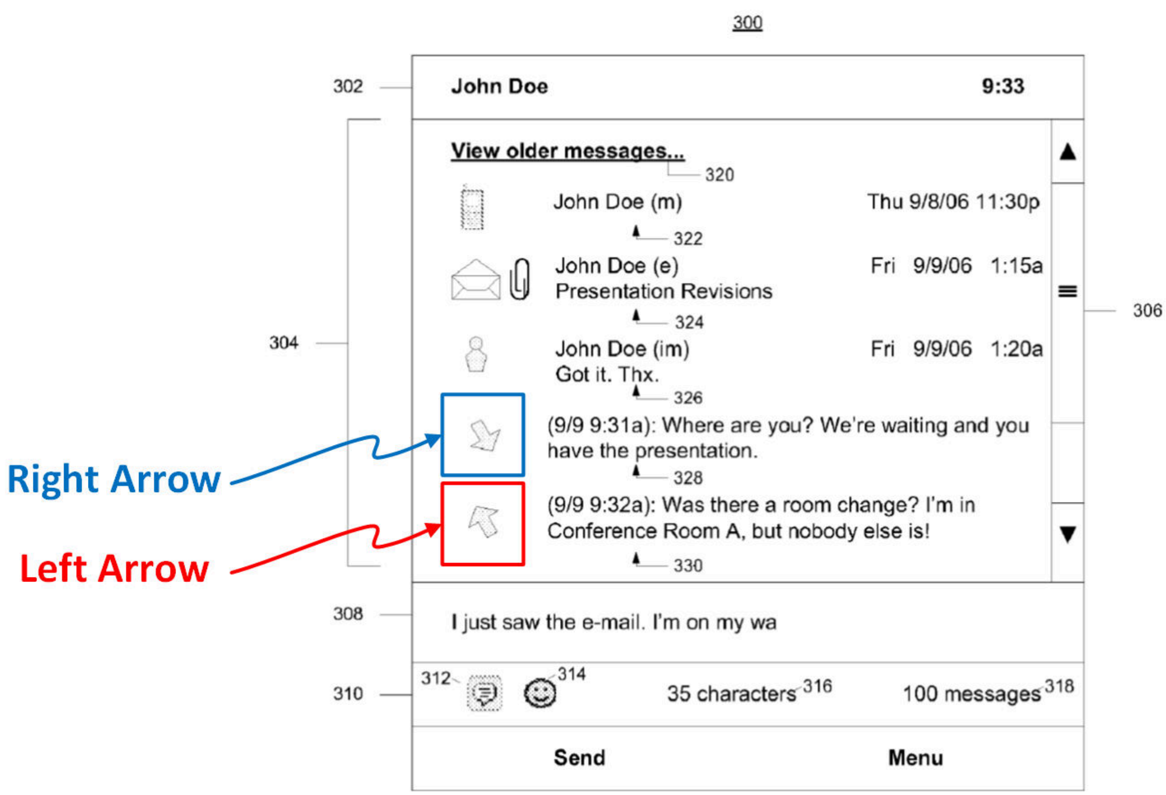
As discussed for [5], *supra*, in Horvath-Tsampalis-Kansal, ***the sending mobile phone is authenticated to the PSMS via SMS***. APPLE-1003, ¶112.

According to the signaling procedures set forth in 3GPP TS33.203, a mobile phone authenticating with an S-CSCF receives a RAND parameter used as part of an authentication vector and is stored in the S-CSCF for use in future re-authentication. *See, e.g.*, APPLE-1085, [0064]; APPLE-1086, [0013]-[0018]; APPLE-1003, ¶113. Because the RAND parameter is associated with the mobile phone in the HSS, it is a ***randomly generated authentication identifier***. *Id.*

Additionally or alternatively, Horvath-Tsampalis-Kansal's IM service of the IMS network (***PSMS***) would authenticate users with a password, which in at least some cases would have been ***a randomly generated authentication identifier***. *See, e.g.,* APPLE-1028, 1; APPLE-1058, 12:15-13:8; APPLE-1067, [0016], [0032], [0044]; APPLE-1048, [0043]; APPLE-1032, [0021], [0028]; APPLE-1003, ¶114.

9. Claim 8

For example, in FIG. 3, Kansal illustrates a "message thread 304 includes a message 328 comprising <u>a **received and read** SMS message</u>…" APPLE-1042, [0063]. The message thread 304 also includes "a message 330 comprising <u>a **sent** SMS message</u>…" APPLE-1042, [0063]. As shown in FIG. 3 (below), the received and read SMS message 328 is illustrated with an arrow pointing to the right and down (***a right arrow***) and the sent SMS message 330 is illustrated with an arrow pointing to the left and up (***a left arrow***). *See* APPLE-1042, FIG. 3; APPLE-1003, ¶115. Accordingly, in Horvath-Tsampalis-Kansal, the unified messaging UI would have utilized similar arrows to illustrate IM messages sent to and received from ***the third receiving mobile phone***. *See id.*



APPLE-1042, FIG. 3 (annotated)

10. Claim 9

Both Horvath and Tsampalis describe messaging among a plurality of mobile phones. *See e.g.*, APPLE-1004, [0002], [0027]; APPLE-1005, [0032], [0036], [0055] ("groups of recipients"), [0062]. Thus, in at least some circumstances, the first, second, and third receiving mobile phones are different mobile phones. APPLE-1003, ¶116.

11. Claim 10

As discussed for [1b], *supra*, the response from the network element (HLR and/or HSS) with the MFCI would also include information about the services to which the wireless device 106 is subscribed. In at least some cases, the first, second and third receiving phones are the same phone that varies over time in its registration and/or subscription status with respect to the various messaging services (*e.g.*, SMS, MMS, and IM), such that the same mobile phone has an unregistered/unsubscribed status with the MMS and/or IM services in the first iteration, and an registered/subscribed status with IM in both the second and the third iterations. APPLE-1003, ¶117.

12. Claim 11

Supra, [4] (describing the availability of attaching multimedia objects to an IM and not to an SMS in Horvath-Tsampalis-Kansal).

13. Claim 12

For example, both Horvath and Tsampalis disclose messaging text as well as multimedia messages, which were well known to include images, audio (*e.g.*,

voice) and video messages. APPLE-1004, [0025], [0029], [0033]-[0034], [0068]-[0069]; APPLE-1005, [0062]; APPLE-1042, [0075]-[0077] (describing ability to add "media objects such as pictures, video, and/or sounds to a message"); APPLE-1007, page 8, page 11 ("integrated voice, video, and data services in IM systems"); *supra*, [4]; APPLE-1003, ¶119.

14. Claim 13

[13pre]

Supra, [1pre1].

[13a]

Supra, [1a], [1j].

[13b1]

As discussed for [1h], *supra*, Horvath describes that when device 106 "[is] registered with the [SIP] registrar," device 106 sends SIP messages in SIP packets "through the [SIP] network communicating over the packet data network." APPLE-1004, Abstract, [0002], [0006]-[0007], [0017], [0024], [0034], [0037], [0038], [0039], [0041], [0078], FIG. 7. One type of message service provided over the SIP network is an IM service (***PSMS***). APPLE-1004, [0033]. In an IMS network like the one taught by Horvath, the IM service would be administered by an application server within the IMS domain of the SIP network, as was well known. *See, e.g.*, APPLE-1074, [0069] ("The IMS domain includes standard network elements such as HSS (Home Subscriber Server) 608,…IMM (Instant Multimedia Messaging) application server 626, and Presence application server 628.”); APPLE-1075, [0005]-[0010]; APPLE-1004, [0039]; APPLE-1003, ¶122.

Horvath teaches that, “[a]lthough only the SMSC 114 is shown as residing in the main memory 306 [of the information processing system 108], any combination of IMS components…can also reside in the main memory 306.” APPLE-1004, [0052]. In other words, the IM application server—a part of the IMS system, as described above—may be part of the same information processing system 108 as the P-CSCF 206, I,S-CSCF 208, and HSS 210. *See* APPLE-1004, [0039], [0052]; APPLE-1003, ¶123. Accordingly, Horvath teaches that the IM application service of the IMS network (***PSMS***) and HSS may be part of the same ***server***.

Accordingly, Horvath-Tsampalis-Kansal includes ***a server of a packet switched message service (PSMS)*** (*e.g.*, information processing system 108 that hosts any combination of IMS components, including, for example, the IM service and the HSS). APPLE-1003, ¶124.

[13b2]

Supra, [1b] (explaining that a network element—*e.g.*, the HLR and/or HSS—stores the MFCI and receives the requests for MFCI from sending mobile phones).

[13c]

Supra, [1c] (explaining the network element—*e.g.*, the HLR and/or HSS—responds to requests for MFCI), [13b1] (explaining that the HSS may be hosted on the same information processing system 108 as the IM service).

[13d1]

Supra, [1d1].

[13d2]

Supra, [1d2].

[13d3]

Supra, [1d3].

[13d4]

Supra, [1d4].

[13e]

Supra, [1e].

[13f]

Supra, [1f].

[13g]

Supra, [1g2].

[13h]

Supra, [1g3].

[13i]

Supra, [1g4].

[13j]

Supra, [1b], [13b1] (explaining that the HSS may be hosted on the same information processing system 108 as the IM service).

[13k]

Supra, [1i].

[13l]

Supra, [1j].

15. Claim 14

As discussed for [1b], *supra*, the MFCI is stored in a "network element" (*e.g.*, the HLS and/or HSS). Horvath's HSS "comprises a database including profiles associated with each wireless device 106 registered with the IMS," where the "profile, for example, includes subscription related information." APPLE-1004, [0035]. As discussed for [13b1], *supra*, the HSS and IM service (***PSMS***) are part of the same information processing system 108 (***server***). Accordingly, the information processing system 108 includes the HSS and its database of profiles (***a subscriber data store***). APPLE-1003, ¶139.

Horvath explains how a wireless device can "deregister" from the IMS core, which as explained below, occurs when the device transmits a deregistration message, thereby leaving the device unable to receive messages on the packet-data network. APPLE-1004, [0047], [0053], [0075]. For example, one obvious scenario in which a mobile phone would deregister from the IMS core is when a user of the mobile phone changes to a new mobile phone. APPLE-1003, ¶140. Users often registered with the IMS core using a phone number, *e.g.*, a phone number associated with the mobile phone, and the user would have deregistered the phone number of an old mobile phone in favor of registration for a new number associated with a new mobile phone when the mobile phone is changed. *Id.*

Specifically, IMS users are assigned IMS Public User Identities (IMPUs) that "are used by any user to request communications to other users," and an IMPU can use "telecom numbering" in "the form of a SIP URI … or the 'tel:'-URI format." APPLE-1003, ¶141 (quoting APPLE-1051, [0017]-[0019]); *see also* APPLE-1004, [0035]; APPLE-1051, [0006]-[0030], FIG. 2. When a user's IMPU is defined according to his/her phone number ("telecom numbering"), the user would seek to update his/her IMPU upon obtaining a new mobile phone associated with a new phone number so that the IMPU would correspond to the new phone number of the new mobile phone rather than the old phone number of the old mobile phone. APPLE-1003, ¶141.

Updating an IMPU involved registering the new IMPU defined by the new phone number and deregistering (also referred to as "unregistering") the IMPU defined by the old phone number. APPLE-1004, [0007], [0053]. De/unregistering from an IMS network conventionally involves transmission of an unregister message from the user's device (*e.g.*, the mobile phone) to the IMS core. APPLE-1003, ¶142 (citing APPLE-1066; APPLE-1065, 9). The transmitted message to de/unregister the phone number of the old mobile phone from the IMS and the transmitted message to register the phone number of the new mobile phone with the IMS represent an indication that a subscriber of the PSMS has become associated with a mobile phone which has capabilities different than those reflected in the subscriber data store. And Horvath teaches that all of this registration information is stored in the profile database of the HSS. APPLE-1005, [0035], [0044].

Accordingly, Horvath-Tsampalis-Kansal's ***server of the PSMS*** (*e.g.*, information processing system 108, hosting the IM service and including the HSS) ***receives an indication that a subscriber of the PSMS has become associated with a mobile phone which has capabilities different than those reflected in the subscriber data store*** (*e.g.*, the information processing system 108 receives an SIP "deregister" message for a subscriber's old mobile phone and an SIP "register" message for the subscriber's new mobile phone); ***wherein the server updates the subscriber data store to reflect a change of mobile phone*** (*e.g.*, the information processing system 108 updates the HSS's profile database with the new registration information). APPLE-1003, ¶143.

16. Claim 15

As discussed for [14], *supra*, the database HSS 210 (***subscriber data store***) is updated to reflect a deregistration of the IMPU of an old mobile phone, and a registration of the IMPU of a new mobile phone (***is updated to reflect that the subscriber is no longer associated with a mobile phone which is identified by the subscriber data store***). APPLE-1003, ¶144.

17. Claim 16

Supra, [5].

18. Claim 17

Supra, [8].

19. Claim 18

As discussed for [1b], *supra*, the HSS is a network element that would have stored MFCI. *See* APPLE-1004, [0035]; APPLE-1005, [0039]; APPLE-1003, ¶147. The HSS is "part of a session initiation protocol ('SIP') network" and more specifically "part of an Internet Protocol multimedia subsystem ('IMS') core that supports the SIP network." *See* APPLE-1004, [0033]. "An IMS network usually implements private and public subscriber identities, known as an IP multimedia private identity (IMPI) and an IP multimedia public identity (IMPU)." APPLE-1076, [0004]. "An IMPI is unique to a subscriber terminal (e.g., a telephone), which may have multiple <u>IMPU</u>s (e.g., a <u>telephone URI</u> and an SIP URI) per IMPI." *Id.* "<u>An IMPU can be shared between telephones</u>, so both telephones can be reached with the same identity (e.g., <u>a single telephone number for an entire family</u>)." *Id.*; *see also* APPLE-1077, [0015].

Because Horvath's HSS stores subscriber and device profiles, the HSS would have stored information about all of the devices associated with a given IMPU (*e.g.*, telephone number) along with the capabilities of those devices. *See, e.g.*, APPLE-1084, [0068]. Indeed, it was well known to store profiles that identify multiple devices associated with a given subscriber and the addressing information at which those devices can be contacted. *See, e.g.*, APPLE-1053, 5:30-33, 9:34-41; APPLE-1003, ¶148.

When a sending mobile phone requests MFCI associated with a telephone number from the "network element" (*e.g.*, HSS), the profile returned by the HSS would have included information about all of the devices associated with the telephone number, along with their capabilities. *See* APPLE-1005, [0061]; APPLE-1003, ¶149.

Accordingly, in Horvath-Tsampalis-Kansal, ***a phone number associated with a plurality of receiving mobile wireless devices is received by the server of the PSMS*** (*e.g.*, the HSS of the information processing system 108 receives information—through, for example, SIP registrations—about multiple devices associated with the same IMPU and stores the information a profile of the associated subscriber)***; and the server of the PSMS sends a response in response to receipt of the phone number associated with the plurality of receiving mobile wireless devices*** (*e.g.*, when a sending mobiles phone sends an MFCI request to the HSS for a receiving mobile phone's telephone number, and the HSS provides a response based on the information contained in the profile associated with the telephone number) ***indicating that each one of the plurality of receiving mobile wireless devices corresponds to a subscriber of the service*** (*e.g.*, because the profile contains information about multiple devices associated with the telephone number, the response from the HSS would include MFCI for each of the devices, as well as subscriber information). APPLE-1003, ¶150.

20. Claim 19

Supra, [18] (the MFCI returned by the HSS would have included capability and subscription, including those services that should not be used to send a message—because, for example, the user does not subscribe to a particular service). APPLE-1003, ¶151.

21. Claim 20

Supra, [18].

Horvath describes that the HSS stores information about the registration status of wireless devices. *See* APPLE-1004, [0041], [0073]. Specifically, Horvath describes that "[t]he S-CSCF, at step 510, receives filter criteria from the HSS 210 to notify specific application servers that the wireless device 106 has registered with the packet data network 102." APPLE-1004, [0073]. Accordingly, the profiles stored in the HSS would store information regarding whether certain mobile devices are registered with the packet-data network. *See id.* It was well known that, in IMS networks, a mobile device that has been deregistered is considered "inactive." *See, e.g.*, APPLE-1078, [0045]; APPLE-1003, ¶153.

Accordingly, in Horvath-Tsampalis-Kansal, ***prior to the response sent in response to receipt of the phone number associated with the plurality of receiving mobile wireless devices being sent*** (*e.g.*, prior to the HSS responding to a request for MFCI for a telephone number associated with a number of mobile devices)***, the server of the PSMS determines that at least one of the plurality of receiving mobile wireless devices has an inactive status with the PSMS*** (*e.g.*, to create a response to a request for MFCI, the HSS accesses a profile containing, in part, registration information for the mobile devices associated with the telephone number, including where a mobile device has been deregistered—a type of inactive status—from the packet-data network). APPLE-1003, ¶154.

22. Claim 21

[21pre1]

Supra, [1pre1].

[21pre2]

Supra, [1pre2].

[21a]

Supra, [1a]-[1b], [5].

[21b]

Supra, [1c].

[21c]

Supra, [1d1], [1d2], [1g2].

[21d]

Supra, [1d2], [1e], [1g2].

[21e]

Supra, [1f], [1g2].

[21f]

Supra, [1a], [1g1], [1g3].

[21g

Supra, [1b], [1g3].

[21h]

Supra, [1c], [1g3].

[21i]

Supra, [1d1], [1d3], [1g3].

[21j]

Supra, [1d3], [1e], [1g3].

[21k]

Supra, [1f], [1g3].

[21l]

Supra, [1a], [1g1], [1g4].

[21m]

Supra, [1b], [1g4].

[21n]

Supra, [1c], [1g4], [18].

[21o]

Supra, [1d1], [1d4], [1g4], [18].

[21p]

Supra, [1e], [1d4], [1g4].

[21q]

Supra, [1f], [1g4], [18].

[21r]

Supra, [1i].

23. Claim 22

Supra, [5], [21].

24. Claim 23

For example, Tsampalis teaches "the use of an active message recipient list" having a plurality of recipients in a single active message, each recipient having a "recipient ID" that the user enters in the form of phone numbers for the same active message that the use composes. *See e.g.*, APPLE-1005, [0004], [0009], [0032], [0055], FIG. 4 (below); APPLE-1003, ¶176.

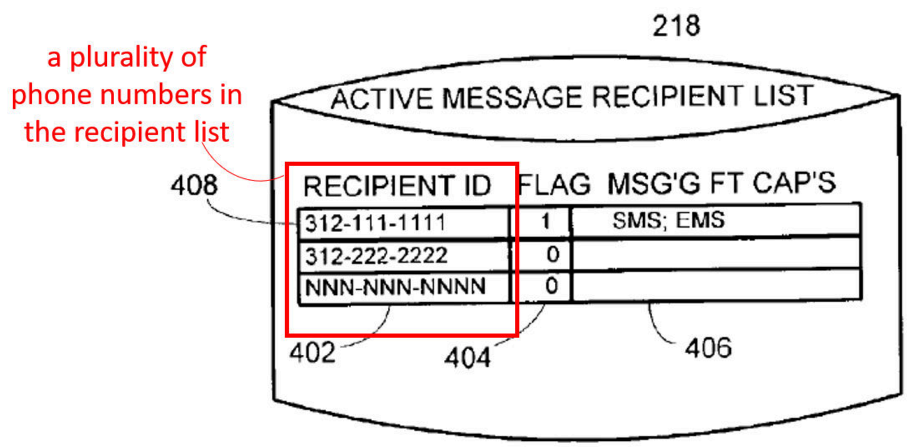


FIG. 4

APPLE-1005, FIG. 4 (annotated)

Horvath-Tsampalis-Kansal's method would have comprised sending a group based message to the third receiving mobile device and to a fourth receiving mobile device, in accordance with at least Tsampalis; when the third and fourth receiving devices are both subscribers of IM and both have an active status, the group based message is sent to the two receiving mobile devices via IM and the "802.11 network" (***via the PSMS and the WLAN***). *Supra*, [1d4], [1e], [1f], [1g4], and Claim [22]; APPLE-1003, ¶177.

Moreover, as discussed for [4], *supra*, IM has the option of attaching multimedia files, such as video, such that the group based IM comprises ***video information***. *See* APPLE-1004, [0029], [0033]-[0034], [0068]-[0069]; APPLE-1007, page 8, page 11; APPLE-1003, ¶178.

25. Claim 24

Supra, [3].

26. Claim 25

As discussed for [5], *supra*, in Horvath-Tsampalis-Kansal, ***the sending mobile phone is authenticated to the PSMS via SMS***. In a case where the second receiving mobile device is similarly registered and authenticated with the IMS network and has previously sent an SMS vis the IMS network, the second receiving mobile device would have similarly been ***authenticated to the PSMS via SMS***. *See* APPLE-1004, [0036]; *see also* APPLE-1087, [0007]-[0014]; APPLE-1088, [0019], [0035]; APPLE-1072, [0055]; APPLE-1003, ¶180. On the other hand, to the extent that the first receiving mobile device is not registered and authenticated with the IMS network, it would ***not [be] authenticated to the PSMS, via SMS protocol, prior to receiving at least one SMS message from one of the plurality of receiving mobile devices***. *Id.*

27. Claim 27

Supra, [1], [21].

Horvath describes that the "S-CSCF also handles SIP registrations which allows the S-CSCF to bind the location of the wireless device 106 (for example, <u>the IP address of the device</u>) and the SIP address." APPLE-1004, [0038]. In other words, when the wireless device is registered with the packet-data network, it has an IP address that identifies its "location" (***destination address***). An IP address is ***a sequence of decimal numbers***. APPLE-1003, ¶182.

28. Claim 28

Supra, [8].

29. Claim 29

[29pre1]

Supra, [1pre1].

[29pre2]

Supra, [1pre2].

[29a]

Supra, [1a]-[1b], [5].

[29b]

Supra, [1c], [1g1], [1g2].

[29c]

Supra, [1d1], [1d2], [1g2].

[29d]

Supra, [1e], [1g2].

[29e]

Supra, [1f], [1g2].

[29f]

Supra, [1a], [1g1], [1g3].

[29g]

Supra, [1b], [1g3].

[29h]

Supra, [1c], [6], [19].

[29i]

Supra, [1d1]-[1d2], [1g2], [19]-[20].

[29j]

Supra, [1d2]-[1d3], [1e], [5]. Both the traditional CDMA/GSM type of circuit-services network and the EV-DO/GPRS/UMTS type of packet-data network have a cellular connection between the sending mobile device and a cellular base station, and both networks can be SMS bearers used to transmit SMS messages, although the packet-data network is the default bearer to unburden the circuit-services network. *See, e.g.*, APPLE-1053, FIG. 4, 12:54-13:60; APPLE-1003, ¶195.

[29k]

Supra, [1f].

[29l]

Supra, [1a].

[29m]

Supra, [1b].

[29n]

Supra, [1c], [18].

[29o]

Supra, [1d1], [18].

[29p]

Supra, [1d4], [1e].

[29q]

Supra, [1f], [1g4], [18].

30. Claim 30

Supra, [8].

B. GROUND 1B – Horvath-Tsampalis-Kansal-Dorenbosch Renders Obvious Claims 2, 26

1. Proposed Combination

(a) Dorenbosch (APPLE-1006)

Dorenbosch explains that then-conventional "IM systems typically rel[ied] on a best-effort delivery mechanism in which a message intended for a target buddy is delivered if the IM login server determines that the target buddy is available." APPLE-1006, [0005]. "If the IM login server determine[d] that the target buddy is not available, the message [was] dropped." *Id.* As illustrated in FIG. 1 (below), Dorenbosch mitigates these issues with "an instant message proxy that is capable of maintaining the availability status of a mobile subscriber when the communicati[on] to the subscriber is temporarily broken." APPLE-1006, [0002]. APPLE-1003, ¶¶204-205.

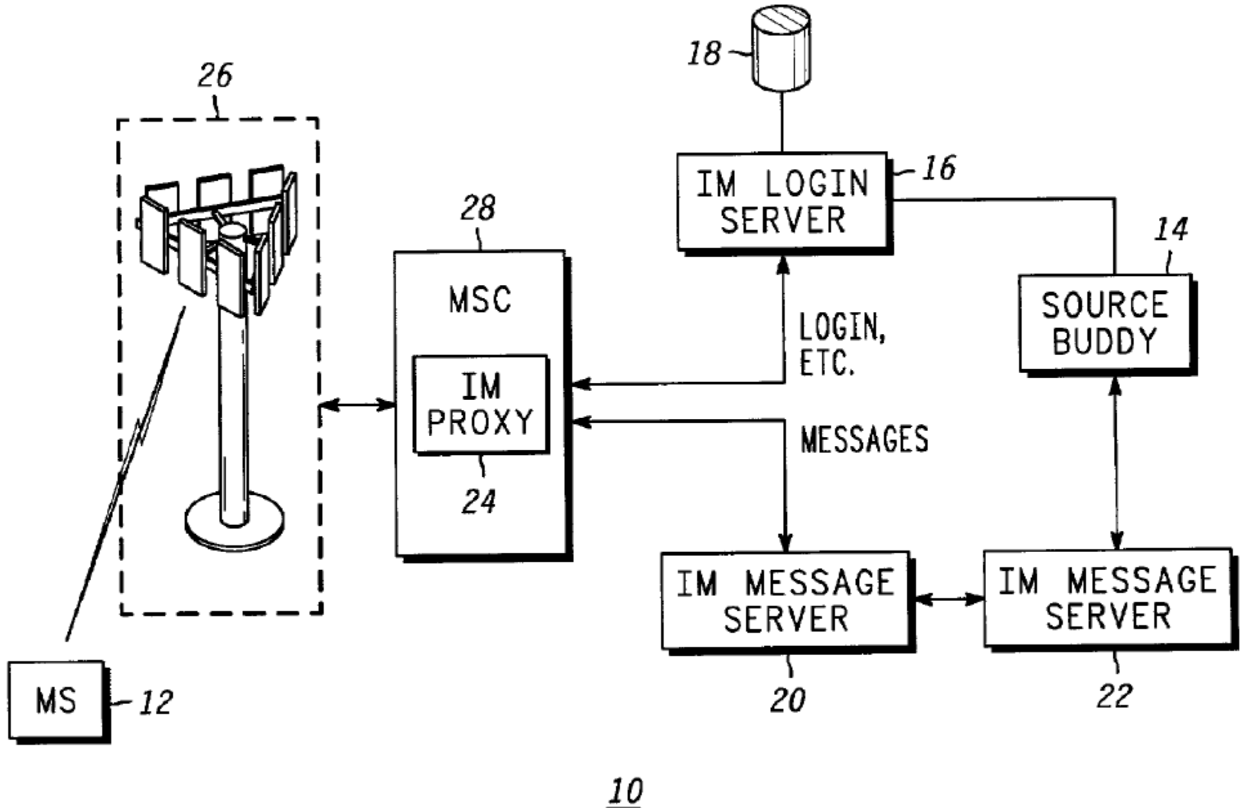


FIG. 1

APPLE-1006, FIG. 1

In Dorenbosch, if a mobile IM subscriber temporarily loses network coverage and is therefore unavailable to receive messages, the IM proxy will continue to store messages in the message buffer and retry sending the message(s) (*e.g.*, a predetermined number of times within a predetermined time period) before dropping the message(s) from the buffer. APPLE-1006, [0020], [0024]. Dorenbosch describes a retry counter and timer that "enable the IM proxy 24 to maintain its IP connection with the IM login server 16, and therefore maintain the mobile subscriber's registered status with the IM login server 16, when the mobile subscriber 12 becomes temporarily unavailable due to roaming or the like." APPLE-1006, [0020]. In this way, even when a mobile subscriber has poor network coverage, the Dorenbosch interface reflects availability of the mobile subscribers. APPLE-1006, [0024]; *see also id.* [0030]. Only after the mobile subscriber "becomes unavailable for receiving instant messages for a period of time that exceeds the number of retries allotted by and programmed into the retry counter and/or the predetermined time period allotted by the timer" will the IM proxy drop "its connection with the IM login server 16" and "indicat[e] to the IM server 16 that the mobile subscriber 12 is unavailable." APPLE-1006, [0028]-[0029].

(b) The Horvath-Tsampalis-Kansal-Dorenbosch Combination

A POSITA would have expected the known problems of wireless network disruption and general unreliability to have been exasperated when operating real-time IM services using wireless devices, as contemplated by Horvath, Tsampalis and Kansal, and their combination. APPLE-1004, [0033]; APPLE-1047, [0007] (describing that when networks are unreliable "messages sent by real-time messaging clients often fail to get delivered to the recipient"); APPLE-1003, ¶206. Dorenbosch provides techniques that mitigate the impact of unreliable wireless networks on IM services. APPLE-1006, [0005] (by moving "in and out of service during an IM session, it may not be possible for the mobile station to maintain a reliable connection with the login server"), [0021].

As discussed in §IV.B.1, Dorenbosch teaches an IM proxy caching IM messages for maintaining presence status for IM subscribers, attempting redelivery of messages that are directed to IM subscribers who lose network coverage, and adjusting recipient IM subscriber presence status when the cached messages cannot be delivered after a number of retries. APPLE-1006, [0020], [0024], [0029], [0030], [0039]-[0040]. It would have been obvious to integrate Dorenbosch's techniques into the combination to enhance Horvath's IM communications over packet-data networks. APPLE-1003, ¶207. Multiple reasons would have prompted a POSITA to implement this combination. APPLE-1003, ¶207.

<u>First</u>, a POSITA would have been motivated to apply Dorenbosch's delivery retry techniques to the combination to reduce the number of dropped messages when communicating through IM. APPLE-1006, [0021], [0024], [0026], [0030]. Dorenbosch's IM proxy maintains a consistent connection with the IM server so that it can cache messages and retry delivering them when a mobile device temporarily loses network connection, which "minimizes the occurrence of instant messages intended for the mobile subscriber being dropped." APPLE-1006, [0021], [0024], [0026], [0030]; APPLE-1003, ¶208.

Second, a POSITA would have found obvious that maintaining a connection to the IM system on behalf of the mobile device, *e.g.*, with an IM proxy, would have allowed the "the mobile subscriber [to] continue[] to appear available to IM buddies when the mobile subscriber is roaming or temporarily out of service even after the IM proxy unsuccessfully attempts to send an instant message to the mobile subscriber." APPLE-1006, [0030]. This would have created a more pleasing experience for users of both the sending and receiving devices. *See* APPLE-1047, [0007]; APPLE-1003, ¶209.

Likewise, a POSITA would have reasonably expected success implementing the combination, especially since the resulting system could be implemented with conventional software and hardware techniques (*e.g.*, general-purpose processors on mobile devices executing programmable instructions) and with known IM protocols. *See* APPLE-1006, [0017]-[0020]. Because the combination interfaces with conventional IM services, as taught by Horvath, the combination with Dorenbosch described above would not fundamentally change any of the other operations of the combination. APPLE-1003, ¶210.

2. Claim 2

[2a]

As discussed for [1b], *supra*, the response from the network element (HLR and/or HSS) with the MFCI would also include information about the services to which the wireless device 106 is subscribed (*e.g.*, an IM service, which is a ***PSMS***). In Horvath-Tsampalis-Kansal-Dorenbosch, it would have been obvious the response with the MFCI would have further included the user's communication preferences amongst the services identified in the MFCI. APPLE-1003, ¶211.

For example, Kansal teaches that "the conversion of a message from one format to a particular sending format may be based on programmed and/or detected preferences, constraints, and/or availability of a recipient to receive messages of a certain format." APPLE-1042, [0078]. Kansal leaves to a POSITA the implementation details regarding how the sending mobile phone detects these preferences. *See generally*, APPLE-1042. However, because the preference information is used to determine the "sending format," at least one obvious implementation would have been for the preference information to be included with the MFCI. APPLE-1003, ¶212.

Horvath's HSS already "comprises a database including profiles associated with each wireless device 106 registered with the IMS," where the "profile, for example, includes subscription related information." APPLE-1004, [0035]. And it was known that preference and capability information would have been stored together as part of the same profile. *See, e.g.*, APPLE-1063, [0015], [0083], [0110] (describing a "contacts manager 222 [that] is configured to manage a list of the subscriber's contacts (including groups)," which "includes one or more communication devices assigned to said contact persons, capabilities of said devices, sender's and/or receivers' preferences, if any, related to destination device, message layout and/or format, etc."), [0112]; APPLE-1069, 3:8-21; APPLE-1068, claim 8; APPLE-1064, 3:26-32, 4:49-54, 9:41-65; APPLE-1003, ¶213.

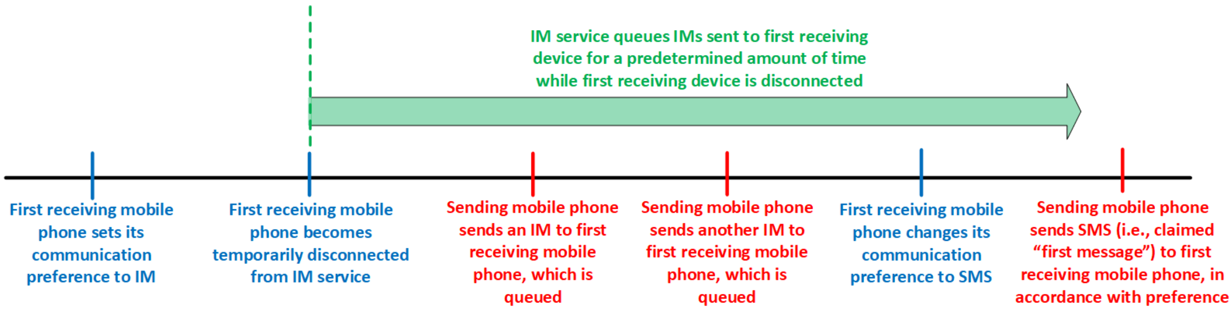
When the MFCI indicates that the first receiving mobile phone prefers communication via SMS, Kansal teaches that the sending mobile phone would be configured to utilize an SMS bearer, even though the first receiving mobile phone is a subscriber of other services (*e.g.*, MMS and/or IM). *See* APPLE-1042, [0078]. In these instances in Horvath-Tsampalis-Kansal-Dorenbosch, ***at the time the first message is sent to the first receiving mobile phone*** (*e.g.*, when the sending mobile phone sends a first message to a first receiving mobile phone using the SMS bearer)***: a phone number corresponding to the first receiving mobile phone is on a list of subscribing addresses which is stored on a server of the PSMS*** (*e.g.*, the MFCI indicates that the first receiving mobile phone is subscribed to an IM service—which would also store the subscription information—but the MFCI indicates that the first receiving mobile phone currently prefers to receive communications via SMS). APPLE-1003, ¶214.

[2b]

As discussed in §IV.B.1(B), *supra*, Horvath-Tsampalis-Kansal-Dorenbosch includes an IM proxy (***a server of the PSMS***) that queues messages when a receiving mobile phone becomes temporarily disconnected from the network. *See* APPLE-1006, [0020], [0024], [0028]-[0030]; APPLE-1003, ¶215.

As discussed for [2a], *supra*, a POSITA would have further found it obvious that the response with the MFCI would have included the user's communication preferences amongst the services identified in the MFCI. A POSITA would have recognized that this information would have changed at any time a user updated the preference (*e.g.*, when they entered a meeting). *See, e.g.*, APPLE-1064, 8:43-9:20 ("For example, during a meeting,...User A may configure the presence management module 700 to indicate to Users B and C that the only communication channels available during the meeting are instant messaging, SMS and/or email."); APPLE-1070, 11:4-9 ("These are preferences relating to the users activity at a particular time. For example, the user may designate that audio messages are not to be sent while in a meeting, when sleeping, or at any time in which an audio message would be disruptive or otherwise undesirable."); APPLE-1061, [0024]; APPLE-1003, ¶216.

From the above teachings, one example scenario would have been shown in the below diagram. APPLE-1003, ¶217.



In this example scenario, a receiving mobile phone would have temporarily lost connection to an IM service, received a plurality of instant messages that were queued by the IM service for a predefined amount of time in case the receiving mobile phone was able to reestablish connection, and during the temporary connection loss, changed its communication preference to SMS (*e.g.*, because the user walked into a meeting). APPLE-1003, ¶218. Thus, in this obvious scenario, ***a plurality of messages sent by the sending mobile phone, to the first receiving mobile phone, via the PSMS, are queued on a server of the PSMS***. APPLE-1003, ¶218.

3. Claim 26

As discussed for [2b], *supra*, the IM proxy queues the IMs, in at least one case until the first receiving mobile phone reconnects to the IM proxy. APPLE-1003, ¶219.

Accordingly, in Horvath-Tsampalis-Kansal-Dorenbosch, ***the second receiving mobile device is not connected to the PSMS during the entire time***

between which the destination address of the second message is sent and the second response is received (*e.g.*, the second receiving mobile device is temporarily disconnected from the IM service as a result of poor network coverage)***, wherein the second message is routed via the PSMS*** (*e.g.*, the IM proxy utilizes a message queue or buffer to accept and store messages while the second receiving mobile device is temporarily disconnected). APPLE-1003, ¶220.

V. CONCLUSION AND FEES

The Challenged Claims are unpatentable. Petitioner authorizes the USPTO to charge any fees to Deposit Account No. 06-1050.

VI. MANDATORY NOTICES UNDER 37 C.F.R § 42.8(a)(1)

A. Real Party-In-Interest Under 37 C.F.R. § 42.8(b)(1)

Apple Inc. is the petitioner and the real party-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

Petitioner is not aware of any disclaimers, reexamination certificates or petitions for inter partes review for the ’600 Patent. The ’600 Patent is the subject of a number of civil actions including: *HBCU Messaging US LP v. Apple, Inc. et al.*, 1-24-cv-01199 (WDTX), filed October 7, 2024.

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above. Petitioner consents to electronic service by email at IPR50095-0263IP1@fr.com.

Respectfully submitted,

Dated: October 31, 2025

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,987 words, which is less than the 14,000 allowed under 37 CFR § 42.24.

Dated: October 31, 2025

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on October 31, 2025, a complete and entire copy of this Petition for *Inter partes* Review, Power of Attorney, and all supporting exhibits were provided via Federal Express, to the Patent Owner by serving the correspondence address of record as follows:

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