IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS AMERICA, INC.

Petitioner,

v.

KONINKLIJKE KPN N.V.

Patent Owner.

Case No. IPR2025-00503

U.S. Patent No. 8,660,560

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,660,560

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LIST OF CHALLENGED CLAIMS

Claim	Limitation
1[pre]	A system for updating a neighbour cell list in a telecommunications architecture comprising a first wireless access network having a first wireless access node for which at least one first neighbour cell list is defined and a second wireless access network having a second wireless access node for which at least one second neighbour cell list is defined, the system comprising:
1[a]	a detector configured for detecting user terminals to be transferred from the first wireless access node of the first wireless access network to the second wireless access node of the second wireless access network;
1[b]	a selector configured for selecting a part of the user terminals;
1[c]	a request generator configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of at least one of the first wireless access network and the second wireless access network;
1[d]	a receiver configured for receiving the cell information from the one or more of the selected user terminals; and
1[e]	updating means configured for updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information.
2[pre]	The system according to claim 1,
2[a]	wherein the request generator is configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the first wireless access network;

Claim	Limitation
2[b]	wherein the receiver is configured for receiving the cell information of the wireless nodes of the first wireless access network via the second wireless access node,
2[c]	the system further comprising a transfer system configured for transferring user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the first wireless access network via the second wireless access node.
3	The system according to claim 2, further comprising a data transfer system for transferring the cell information, or a derivative thereof, of the wireless access nodes of the first wireless access network to the first wireless access node.
4[pre]	The system according to claim 1,
4[a]	wherein the request generator is configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;
4[b]	wherein the receiver is configured for receiving the cell information of the wireless nodes of the second wireless access network via the second wireless access node,
4[c]	the system further comprising a transfer system configured for transferring user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the second wireless access network via the second wireless access node.

Claim	Limitation
5	The system according to claim 4, further comprising a data transfer system for transferring the cell information, or a derivative thereof, of the wireless access nodes of the second wireless access network to the first wireless access node.
6[pre]	The system according to claim 1,
6[a]	wherein the request generator is configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;
6[b]	wherein the receiver is configured for receiving the cell information of the wireless access nodes of the second wireless access network via the first wireless access node,
6[c]	further comprising a transfer system configured for transferring user terminals from the first wireless access network to the second wireless access network after receiving the one or more cell parameters of wireless access nodes of the second wireless access network via the first wireless access node.
7	The system according to claim 1, wherein the telecommunications system is further configured for receiving location information from one or more of the detected user terminals and wherein the location information is used as a selection parameter for selecting the part of the detected user terminals.
8	The system according to claim 1, wherein one or more thresholds, possibly service-dependent, are defined in the telecommunications system for transferring the user terminals between the first wireless access network and the second

Claim	Limitation
	wireless access network and wherein at least one of the thresholds is used as a selection parameter for selecting the part of the detected user terminals.
9[pre]	In a telecommunications architecture comprising a first wireless access network having a first wireless access node for which at least one first neighbour cell list is defined and a second wireless access network having a second wireless access node for which at least one second neighbour cell list is defined, a method for updating at least one of the first and second neighbour cell lists comprising the steps of:
9[a]	detecting user terminals to be transferred from the first wireless access node of the first wireless access network to the second wireless access node of the second wireless access network;
9[b]	selecting a part of the user terminals;
9[c]	requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of at least one of the first wireless access network and the second wireless access network;
9[d]	receiving the cell information from the one or more of the selected user terminals; and
9[e]	updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information.
10[pre]	The method according to claim 9, comprising the steps of:
10[a]	requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the first wireless access network;

Claim	Limitation
10[b]	receiving the cell information of the wireless nodes of the first wireless access network via the second wireless access node, and
10[c]	transferring the selected user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the first wireless access network via the second wireless access node.
11[pre]	The method according to claim 9, comprising the steps of:
11[a]	requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;
11[b]	receiving the cell information of the wireless nodes of the second wireless access network via the second wireless access node, and
11[c]	transferring user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the second wireless access network via the second wireless access node.
12[pre]	The method according to claim 9, comprising the steps of:
12[a]	requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;
12[b]	receiving the cell information of the wireless access nodes of the second wireless access network via the first wireless access node; and
12[c]	transferring user terminals from the first wireless access network to the second wireless access network after receiving the one or

Claim	Limitation
	more cell parameters of wireless access nodes of the second wireless access network via the first wireless access node.
13[pre]	A non-transitory computer-readable storage medium containing a set of instructions that, when executed by a processor in a telecommunications architecture comprising a first wireless access network having a first wireless access node for which at least one first neighbour cell list is defined and a second wireless access network having a second wireless access node for which at least one second neighbour cell list is defined, performs a method for updating at least one of the first and second neighbour cell lists, including the steps of:
13[a]	detecting user terminals to be transferred from the first wireless access node of the first wireless access network to the second wireless access node of the second wireless access network;
13[b]	selecting a part of the user terminals;
13[c]	requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of at least one of the first wireless access network and the second wireless access network;
13[d]	receiving the cell information from the one or more of the selected user terminals; and
13[e]	updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information.
14	The method according to claim 10, further comprising the step of transferring the cell information, or a derivative thereof, of the wireless access nodes of the first wireless access network to the first wireless access node.

Claim	Limitation
15[pre]	The method according to claim 10, comprising the steps of:
15[a]	requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;
15[b]	receiving the cell information of the wireless nodes of the second wireless access network via the second wireless access node, and
15[c]	transferring user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the second wireless access network via the second wireless access node.
16	The method according to claim 11, comprising the step of transferring the cell information, or a derivative thereof, of the wireless access nodes of the second wireless access network to the first wireless access node.
17	The method according to claim 15, comprising the step of transferring the cell information, or a derivative thereof, of the wireless access nodes of the second wireless access network to the first wireless access node.

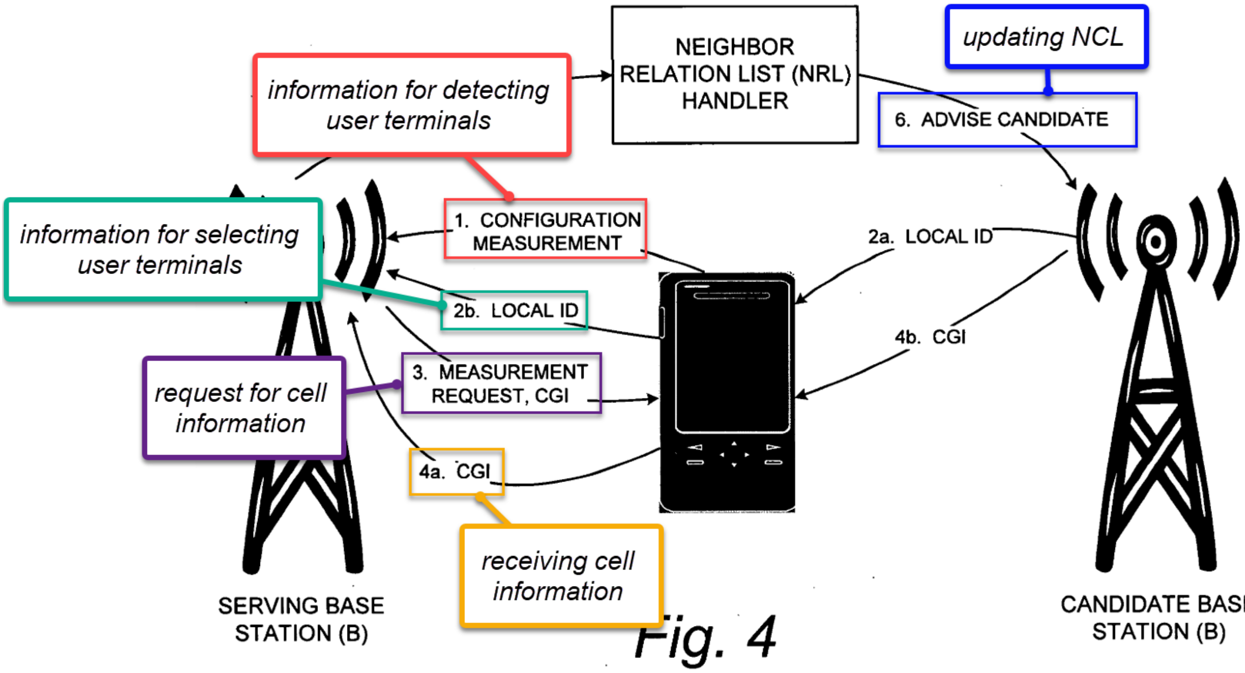
I. INTRODUCTION

U.S. Patent No. 8,660,560 (the "'560 patent") is directed to systems and methods for automatically updating a base station's Neighbor Cell List ("NCL"), such as adding new neighboring cells or removing neighboring cells that were shut down, using information about unknown neighboring cells gathered by user terminals. A cellular telecommunications network comprises a number of cells in geographic locations, with each cell providing service to user terminals (*e.g.* cell phones) via a base station. Each cell's base station contains an NCL which lists the identifiers of that cell's neighboring base stations and is transmitted to user terminals that the base station serves. These NCLs are used by the user terminal and base station to determine when and to where a user terminal should be handed off to a neighboring cell, called a "handover."

The '560 patent claims systems and methods where certain user terminals are detected to be in a state of handover, and selects a subset of those detected user terminals to gather and transmit further information about the unknown neighboring cell which is then used to update the NCL. During prosecution, the applicant claimed that the purported improvement was the step of selecting the subset of user terminals.

Yet years before the '560 patent was filed, Ericsson developed a system for automatically updating NCLs using measurement reports from a selected subset of user terminals. Ericsson's delegates to the Third Generation Partnership Project (3GPP) began contributing this technology to the Fourth Generation (4G) cellular standards. Ericsson was awarded a number of patents for its work. Indeed, several years ago, Ericsson used one of these patents, Amirijoo, to challenge the '560 patent in an earlier IPR proceeding that was instituted prior to settlement. This petition relies on Amirijoo as well as another of Ericsson's patents, Kazmi.

Amirijoo is directed to systems and methods for updating a serving base station's NCL by first determining if user terminals are in a state of handover. The serving base station examines whether any of these user terminals provided local identifiers of unknown neighbor base stations and selects them to gather further information. Because local identifiers are not globally unique, the serving base station will request from those selected user terminals that they obtain and transmit the unknown base stations' global identifiers. The serving base station will then update its NCL, and the network will also update the NCL of the unknown base station. This process by illustrated by the below annotated Figure 4 from Amirijoo:



Kazmi, another patent that Ericsson was awarded for its work directed to automatically updating NCLs, describes several other criteria for selecting which user terminals to request the global identifier of an unknown base station in order. Kazmi's goal is to determine which user terminals have a higher probability of being able to obtain the global identifier within a specified period of time. Accordingly, Kazmi uses criteria such as reported cell quality, statistics of handover failures, the speed of the user terminals, and reported propagation delay.

II. STANDING

Petitioners certify the '560 patent is available for *inter partes* review and they are not estopped.

III. GROUNDS

Petitioner presents the following grounds of invalidity:

Ground	Basis	Reference(s)	Claims
1	§103	Amirijoo, TR-32.816	1-6, 9-17
2	§103	Amirijoo, TR-32.816, Kazmi	1-17
2	§103	Amirijoo, TR-32.816, Kazmi, Han	2-5, 10, 11, 14-17
3	§103	Amirijoo, TR-32.816, Kazmi, Mach	7

IV. POSITA

A POSITA at the time of the ’560 patent had at least a bachelor’s in EE/CE/CS, physics, or equivalent, and two years of experience with computer networking technology. EX1003, ¶47. More education can supplement practical experience and vice versa. *Id.* Petitioners’ expert exceeded this by the priority date. *Id.*

V. BACKGROUND

A. Background of Technology

Conventional wireless networks cover a geographic area divided into multiple cells. EX1005, ¶6; EX1003, ¶¶48-51. Each cell provides radio coverage to a subset of the network via a base station. *Id.* In the ordinary course of operation, a mobile device can move around the network by transferring from one cell to another through a process called handover. EX1009, 1:13-31, Fig. 1. To facilitate this process, the base station to which a mobile device is currently connected (called the “serving base station”) receives measurement reports from the mobile device regarding the signal quality of neighboring cells (called the “candidate base station”). EX1005, ¶13, EX1009, 2:1-17; EX1003, ¶52. The network uses these measurement reports to determine whether a given mobile device should be transferred to a neighboring cell. EX1005, ¶¶13, 17-20. If the candidate neighbor was on a different carrier or type of wireless network, this was called an "inter-RAT [radio access technology] handover." *Id.*, ¶10.

Before the '560 patent, it was well-known that base stations maintained a list of known neighbors called the "neighbor cell list." EX1009, 2:1-5. In GSM (*i.e.*, a 2G network) and WCDMA (*i.e.*, a 3G network), "the neighbour cell list is broadcasted from the base station to the mobile terminal" because "[t]he purpose of neighbour cell lists is to allow the base stations to give their connected mobile terminals a defined set of cells to measure on." EX1009, 2:5-10; EX1001, 1:37-41 ("The cell-specific list of surrounding cells that are considered for cell reselection or handover is called the neighbour cell list (NCL), which is stored in each base station and broadcast within the cell."); EX1003, ¶53.

The list of neighboring cells for a given base station was typically populated using planning tools before installing a new base station. EX1005, ¶13; EX1003, ¶54. This process was costly and susceptible to prediction errors, and may result in out-of-date lists as new cells were installed or old cells removed. EX1005, ¶¶24-25. Engineers working for Ericsson recognized that new methods for automatically deriving and updating neighbor relation lists would benefit network operators. *Id.* These methods involved automatically updating neighbor cell lists, including solutions for systems that support multiple types of radio access technology (*e.g.*, 4G LTE base stations with 2G or 3G neighbors). EX1005, ¶¶26-31. During this time, 3GPP was in the process of finalizing the LTE standard and introduced "automatic neighbor relation" to the standard, which updated "neighbor relation lists" or "neighbor relation tables" that, like neighbor cell lists, contained a list of neighboring cells. EX1015; EX1003, ¶54.

B. ’560 Patent

The ’560 patent admits that "3GPP TS 36.300, V8.9.0"—a prior art technical specification for the 4G LTE standard—"discloses an automatic neighbour relation (ANR) function to relieve an operator from the burden of manually managing neighbour relations." EX1001, 1:56–58; *see also id.*, 7:14-18 ("Currently, automated configuration and optimisation of intra-network NCLs and inter-network NCLs is based on e.g. actual measurement feedback from user terminals 3 as disclosed in 3GPP TS 36.300, V8.9.0."). Indeed, the ’560 Patent concedes that virtually every claim element was known in the prior art. *See id.*, 1:49–2:7 (admitting that the prior art teaches "automated configuration and optimisation of … inter-network NCLs" based on "actual measurement feedback from user terminals" and "handover statistics," including a selector configured to select "a user terminal from a serving cell to look for neighbour cells of other networks by scanning all cells," a request generator configured to request "the Cell Global Identifier (CGI) and further cell information from the neighbouring cells," and an updating means configured to update the "NRT [i.e., neighbor relation table] using the information reported from the user terminals"); EX1003, ¶57.

The '560 patent purports to improve upon the admitted prior art by selecting "a part" of the mobile devices to participate in the updating process, thus "filter[ing] an appropriate portion the user terminals for which cell reselection or handover is about [sic] in order to reduce unnecessary signalling over the first and/or second wireless access network." *Id*., 7:37–52. But, as explained below, the '560 Patent's purported improvement over pre-existing systems was expressly disclosed in the prior art. EX1002, ¶¶66, 86–93; EX1003, ¶58.

C. Prosecution History

During prosecution of the '560 patent, the examiner only issued a single rejection, finding that the independent claims were anticipated by WO 2009/119699 to Serravalle. EX1002, 91-93. The applicant's response did not amend the claims. The applicant instead acknowledged that Serraville is directed to "facilitating handover of a user device between a source base station … and a target base station" of a different network type, and that "[i]n order to facilitate such a handover between two different network types it is necessary that the first network obtains information about elements of the second network." EX1002, 71. The applicant further acknowledged that "Serraville discloses a method to update the NCL in the first network with information about elements in the second network" using "the Automatic Neighbour Relation (ANR) function." *Id.* In other words, the applicant acknowledged that the prior art discloses a system for automatically updating an NCL based on information from user terminals that are detected to be ready for handover. EX1003, ¶¶59-60.

The applicant, however, argued that Serraville does not disclose the "selector configured for selecting a part of the [detected] user terminals." *Id.*, 72. Specifically, the applicant stated that Serraville's "Identifier Management Module is operable for requesting information relating to identifiers of target gateway," but it was "not clear … how this module relates to the selector of the present application." *Id.* The applicant further distinguished Serraville by arguing that "[i]n the present application the updating of the NCL is performed independently of actual handover procedures, although the updating of the NCL is done based on information received from selected terminals about to be in a handover or reselection situation." *Id.*, 73. Importantly, the applicant noted that the present application "allows for the possibility that a terminal that is about to be handed over ***is not requested to report cell information***." *Id.*, 73. The applicant argued that by only selecting a part of the user terminals to be handed over, "the amount of cell information reporting can be tuned, which relates to a trade-off between the measurement overhead and the potential for neighbour cell list optimization." *Id.*, 73; EX1003, ¶61.

The applicant summarized their argument that "Serraville relates to a method of facilitating handovers based on the results of an ANR function based on information received from the terminal to be handed over, whereas the present application relates to updating (optimizing) an NCL based on information previously received selected terminals in a handover situation." *Id.*, 73; EX1003, ¶62.

Following this response, the examiner issued a notice of allowance, explaining that the reasons for allowance "are the same as those presented by the Applicant." *Id.*, 58; EX1003, ¶63.

D. IPR2023-00582

Claims 1 and 6-8 of the '560 Patent were previously challenged in an *inter partes* review proceeding brought by Ericsson Inc. ("Ericsson"), Case No. IPR2023-00582 on February 17, 2023. In that proceeding, Ericsson presented one ground of challenge against claims 1 and 6-8, arguing that they were rendered obvious by the combination of U.S. Pat. Pub. No. 2009/0191862 ("Amirijoo") and 3GPP TR 32.816 ("TR-32.816"). EX1003, ¶64.

The Board instituted review on September 7, 2023. IPR2023-00582, Paper 10. On December 4, 2023, Patent Owner filed a Response. IPR2023-00582, Paper 12. On January 23, 2024, the parties filed a joint motion to terminate, indicating that they had settled their dispute, and the Board terminated the proceeding. EX1003, ¶65.

E. Claim Construction

Except as otherwise discussed below, and for this proceeding only, the claim terms should be given their plain and ordinary meaning under *Phillips*. EX1003, ¶¶66-67.

1. "updating means configured for updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information" (Claim 1)

When a claim element uses the word "means," there is a "rebuttable presumption" that the claim element is subject to 35 U.S.C. §112(f). *Williamson v. Citrix Online, LLC*, 793 F.3d 1339, 1348 (Fed. Cir. 2015). The presumption is overcome if "the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Id*. Here, the claimed "updating means" lacks a sufficiently definite structure to overcome the presumption. EX1003, ¶¶68-69. Accordingly, "updating means" is a means-plus-function term.

Petitioner proposes that this term be construed as having a function of "updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information," and that it has a corresponding structure of "updater 14" disclosed in Figure 2, 9:26-28 and 9:58-59 of the '560 patent, and equivalents thereof. EX1003, ¶70.

In IPR2023-00582, Ericsson proposed the same construction. EX1010, 8-9. However, in its Institution Decision, the Board declined to construe the term because it was "not necessary." EX1012, 17.

In addition, the Court in *Koninklijke KPN N.V. v. Telefonaktiebolaget LM Ericsson et al.*, No. 2:22-cv-00282-JRG (E.D. Tex.) ("EDTX Action") held that this term is a means-plus-function term. EX1011, 40. The Court construed the term to have the same function proposed by Petitioner, and that its corresponding structure is "'updater 14' however it is described in the specification," and "equivalents thereof." *Id.*, 41. Notably, the specification only mentions the "updater 14" at 9:26-28, 9:58-59 and Figure 2. Thus, the Court's previous construction of this term is consistent with Petitioner's proposed construction. EX1003, ¶¶71-72.

2. "configured for" (Claim 1)

Petitioner proposes that this term be given its plain meaning. EX1003, ¶73.

In the EDTX Action, the Court also gave this term its "Plain and ordinary meaning." EX1011. However, in its Claim Construction Order, the Court discussed previous cases (including an earlier case between KPN and Ericsson that involved an unrelated patent) where it had remarked that "configured to" does not encompass structure that is merely "capable of" performing the claimed function. *Id.*, 36-37. The Court also noted that Patent Owner agreed that "configured for" "requires something more than merely being capable of." *Id.*, 33. But the Court declined to adopt Defendants' proposal of "includes the necessary hardware and software for performing the functionality recited in the claim without the need to rebuild, rewrite or recompile the code for, or redesign any of that hardware or software," because it "would introduce various limitations without adequate support in the intrinsic record and for apparent purpose of attempting to resolve an infringement dispute regarding particular accused instrumentalities." *Id.*, 37. Petitioner submits that the Court's construction does not implicate any argument with respect to the prior art and therefore the Board need not construe this term. EX1003, ¶74.

3. "location information" (Claim 7)

In IPR2023-00582, Petitioner proposed construing this term in view of Patent Owner's infringement contentions as "information regarding at least the cell in which the terminal is operating, such cell corresponding to a particular geographic coverage area." EX1011, 10. The Board rejected this construction as "presented without any consideration of the intrinsic record and is based solely on extrinsic evidence (PO's infringement contentions)." EX1012, 18. The Board instead noted that the specification describes the location information as "generated by GPS module 25 or 'by means of measurements using the first and/or the second wireless access network." *Id.* (quoting EX1001, 5:25-30, 9:59-62). The Board therefore construed "location" as "the actual location of the 'detected user terminals' within the cell in which the terminals are operating." *Id.*, 19.

Petitioner submits that this term need not be construed because the prior art renders it obvious under any reasonable interpretation. EX1003, ¶¶75-76.

VI. TR-32.816 IS PRIOR ART[1]

TR-32.816 was published by at least May 2007 and therefore qualifies as prior art under pre-AIA 35 U.S.C. §102(b). TR-32.816 is a Technical Report published by the 3rd Generation Partnership Project, *i.e.* 3GPP. As explained by Craig Bishop, who worked as a Rapporteur[2] for 3GPP from 1998 to 2003, and confirmed by Dr. Almeroth, 3GPP is a well-known standards organization tasked with developing protocols for mobile telecommunications. EX1013; EX1003, ¶¶77-78. A POSITA would have been well-aware of their documents and publication practices. *Id.*

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[1] The Petition's Grounds rely on TR-32.816 for one limitation: neighbor cell list. However, as discussed herein, Amirijoo's "neighbor relation list" is a neighbor cell list, and therefore the combination with TR-32.816 is an alternative argument. Accordingly, if the Board finds that TR-32.816 is not prior art, these Grounds still provide a basis for finding the claims unpatentable. EX1003, ¶77.

[2] A Rapporteur is the "prime contact point on technical matters and for information on progress throughout the drafting phases." https://www.3gpp.org/ftp/Information/Working_Procedures/3GPP_WP.htm. EX1003, ¶77.

As Mr. Bishop explains, 3GPP technical reports, including TR-32.816, are publicly accessible with reasonable diligence as of the date they were uploaded to 3GPP's FTP server. EX1013, ¶¶28-36, 50-57; EX1003, ¶79. Indeed, at least one PTAB panel has found that this is true of all 3GPP documents. *Samsung Electronics Co., Ltd. v. Huawei Technologies Co., Ltd.*, IPR2017-01487, Paper 45 (Dec. 10, 2018) ("[A]ll 3GPP documents[] were generated with intent to distribute them to interested members of the telecommunications industry. They were uploaded to 3GPP's FTP server without restriction or expectation of confidentiality, and were indefinitely maintained there. They have been available for downloading (copying) from the FTP server since being uploaded, and can be shared with others without restriction. Under such circumstances, the documents are publicly accessible.").

TR-32.816 was uploaded to 3GPP's file server on May 23, 2007. EX1013, ¶¶50-57. As a result, TR-32.816 became a "printed publication" on that date. Exhibit 1006 is also a true and correct copy of the document on the date it was uploaded. EX1003, ¶80.

VII. <u>GROUND 1:</u> CLAIMS 1-6 AND 9-17 ARE RENDERED OBVIOUS BY AMIRIJOO IN VIEW OF TR-32.816

Amirijoo describes a system and methods where a neighbor cell list of a serving base station (which are called "neighbor relation lists" in Amirijoo) is automatically updated. The serving base station, using measurements from the mobile stations it is serving, determines which devices it should handover to a neighboring base station. If the mobile station sends over an identifier of a neighboring base station which is not on the serving base station's NRL, under Patent Owner's apparent interpretation, the serving base station will select that mobile station to further request and send back the Cell Global Identity of the unknown neighboring base station. The serving base station's NRL can then add the new neighbor base station, and the core network can also inform the unknown base station's NRL to add the serving base station's identifier. EX1003, ¶81.

To the extent Patent Owner argues that Amirijoo's "neighbor relation list" is not a "neighbour cell list," TR-32.816 describes neighbor cell lists and it would have been obvious to combine Amirijoo and TR-32.816. EX1003, ¶82.

A. Motivation to Combine

A POSITA would have been motivated to combine Amirijoo with TR-32.816's teaching of updating neighbor cell lists. EX1003, ¶¶83-87. Amirijoo expressly cites TR-32.816, and describes the standard as part of a "vision" where "the new system shall be self-optimizing and self-configuring in as many aspects as possible," including automatic optimizing of neighboring cell lists. EX1005, ¶16. Thus, a POSITA would have understood that TR-32.816's teachings supplement Amirijoo's teachings. EX1003, ¶83. Where there is an explicit motivation to combine two references, there is "no question" that a POSITA would be led to combine the references. *Optivus Tech., Inc. v. Ion Beam Applications S.A.*, 469 F.3d

978, 990-91 (Fed. Cir. 2006); *see also Norian Corp. v. Stryker Corp.*, 363 F.3d 1321, 1328, (Fed. Cir. 2004) (finding obviousness where one reference explicitly cited the other).

A POSITA would further be motivated to combine Amirijoo and TR-32.816 in order to support backward compatibility with older 2G and 3G networks. EX1003, ¶84. Amirijoo itself discloses that 4G networks will initially rely upon existing 2G and 3G networks. EX1005, ¶15. Thus, a POSITA would have recognized that backwards compatibility with earlier generations of cellular technology would be crucial to the operation and commercial success of Amirijoo's system. Accordingly, a POSITA would have been motivated to combine the conventional neighbor cell lists used in 2G and 3G networks, as taught by TR-32.816, with the system taught by Amirijoo.

The combination of Amirijoo and TR-32.816 would have further involved a simple substitution of one known element (*i.e.* Amirijoo's NRLs) with another (*i.e.* TR-32.816's NCLs) to obtain predictable results: a system configured to update neighbor cell lists (as taught in TR-32.816) according to the "techniques for automatically managing relationships to neighbors in other RATS/frequencies" as disclosed in Amirijoo. EX1003, ¶85.

A POSITA would have had a reasonable expectation of success in combining Amirijoo at TR-32.816. EX1003, ¶86. Amirijoo itself cites to TR-32.816, which a

POSITA would understand indicates that the teachings of these references are combinable. *Id.* In addition, a POSITA would have known that the NCLs described in TR-32.816 were successfully implemented in existing 2G and 3G cellular networks, and would have been familiar with the details of said implementation. *Id.* Accordingly, implementing TR-32.816's NCLs into Amirijoo would have been well-within the skill of an ordinary artisan, and thus a POSITA would have anticipated success in such a combination. *Id.*

Finally, Amirijoo and TR-32.816 are analogous art to the '560 patent because all three are directed to managing wireless networks. EX1001, Abstract ("The invention relates to a system and method for updating a neighbour cell list of a wireless access node."); EX1005, Abstract ("[T]he technology concerns a method of operating a telecommunications system comprising a serving radio base station and a candidate radio base station."); EX1006, 1 ("Telecommunication management; Study on Management of LTE and SAE"); EX1003, ¶87.

B. Claim 1

1. 1[pre]: A system for updating a neighbour cell list in a telecom communications architecture comprising a first wireless access network having a first wireless access node for which at least one first neighbour cell list is defined and a second wireless access network having a second wireless access node for which at least one second neighbour cell list is defined, the system comprising

"a telecom communications architecture comprising a first wireless access network … and a second wireless access network …": Amirijoo is directed to methods for updating neighbor relation lists ("NRLs") within a telecommunications system comprising multiple types of wireless access networks, such as GERAN (2G network), UTRAN (3G network), and E-UTRAN (4G network). EX1003, ¶¶88-89. Specifically, Amirijoo's depicts in Figure 1 a "telecommunications system 10" (*i.e.* ***telecom communications architecture***) with "a first radio access network 12" (*i.e.* ***first wireless access network***) having a "first type radio access technology (RAT)" and a "second radio access network 14" (*i.e.* ***second wireless access network***") having a "second type radio access technology." EX1005, ¶66. Amirijoo provides an example where the first network uses E-UTRAN while the second network uses GERAN. *Id.*

"first wireless access network having a first wireless access node … and a second wireless access network having a second wireless access node": Amirijoo teaches that each of the two radio access networks (*i.e.* ***wireless access networks***) have one or more base stations (*i.e.* ***wireless access nodes***). EX1003, ¶90. Specifically, as depicted in Figure 1, "first radio access network 12" has one or more base stations (labeled $28_{G\text{-}1}$ and $28_{G\text{-}2}$) (*i.e.* ***first wireless access nodes***) and "second radio access network 12" has one or more base stations (labeled $28_{U\text{-}1}$ and $28_{U\text{-}2}$) (*i.e.* ***second wireless access nodes***). As discussed in the '560 patent, a "wireless access node" includes base stations. EX1001, 1:37-41 ("The cell-specific list of surrounding cells that are considered for cell reselection or handover is called the neighbour cell list (NCL), ***which is stored in each base station*** and broadcast within the cell.").

"a first wireless access node for which at least one first neighbour cell list is defined and … a second wireless access node for which at least one second neighbour cell list is defined": Amirijoo discloses that each base station has a "neighbor relation list" ("NRL") that lists the neighbor cells of the base station, *i.e.* ***first and second neighbour cell lists***. EX1003, ¶91. For example, Amirijoo notes that during a handoff of a mobile station from a "serving base station" to a "candidate base station," both the serving BS and the candidate BS each have an NRL to which the other BS can be added, thus teaching that each base station has an NRL for which it is defined. EX1005, ¶82 ("[T]he candidate base station (BS) can be added to the neighbor relation list (NRL) of the serving base station (BS). … [T]he candidate base station (BS) adds an entry corresponding to the serving base station (BS) in its NRL.").

Based on Amirijoo's teachings, a POSITA would understand that an NRL is a ***neighbour cell list***. EX1003, ¶92. The '560 patent describes that an NCL is the "cell-specific list of surrounding cells that are considered for cell reselection or handover," with a cell being a "base station." EX1001, 1:37-41. Amirijoo describes that an NRL is likewise a list of surrounding base stations that are candidates for mobile device handover. EX1003, ¶92. For example, Amirijoo teaches that when a serving base station "hand[s] off a mobile station (MS) to the neighbor the CGI [Cell Global Identity] of the neighbor must be known," with said CGI found in the NRL. EX1005, ¶14. Amirijoo also describes that NRLs "in E-UTRAN contain[] GERAN and UTRAN ***neighbors***" and that its methodologies are directed to "detect[ing] new inter-RAT/frequency ***neighbor base stations*** using mobile station (MS) measurements" to "updat[e] the NRL." *Id.*, ¶¶27-31; *see also* ¶¶79-82 (describing how mobile stations send "measurement request[s]" to candidate "surrounding inter-RAT/frequency base stations" which are added to the serving base station's NRL based on the measurements).

Indeed, a POSITA would have understood that the NRL disclosed in Amirijoo for use with E-UTRAN is the same as the known NCL used in GERAN and UTRAN networks. EX1003, ¶93. For example, Ericsson, the assignee of Amirijoo, proposed on May 2007 that LTE use "Automatic Neighbour Relation Lists," noting that "Neighbour Cell Lists will exist in LTE … but have a different role" and thus Ericsson proposed "giv[ing] it a new name: Neighbour Relation List," though still retaining its structure as a list containing neighboring cells. EX1015, 1. This document also describes how neighboring cells are added to the NRL *Id.*, 3.

To the extent PO argues that Amirijoo's NRLs are not "neighbour cell list[s]," methods for automatically updating NCLs are disclosed in TR-32.816 and, as discussed above, it would have been obvious to incorporate such teachings into Amirijoo, especially since Amirijoo expressly cites TR-32.816 as evidence of 3GPP's "vision" of a "self-optimizing and self-configuring" network. EX1005, ¶16; EX1003, ¶94.

In particular, TR-32.816 discloses that each cell has a "neighbour list" and provides a method for "further optimisation of … neighbour cell list," where new neighbors "can be included based on information about detected cells in UEs." EX1006, 11; EX1003, ¶94.

"system for updating a neighbour cell list": Amirijoo describes that NRLs "in E-UTRAN contain[] GERAN and UTRAN neighbors" and that its methodologies are directed to "detect[ing] new inter-RAT/frequency neighbor base stations using mobile station (MS) measurements" to "updat[e] the NRL," *i.e.* a ***system for updating a neighbour cell list***. *Id.*, ¶¶27-31; *see also* ¶¶79-82 (describing how mobile stations send "measurement request[s]" to candidate "surrounding inter-RAT/frequency base stations" which are added to the serving base station's NRL based on the measurements); EX1003, ¶95.

In its Institution Decision from IPR2023-00582, the Board held that the Petition there sufficiently established that Amirijoo alone discloses the preamble of claim 1. EX1012, 23, 30; EX1003, ¶96.

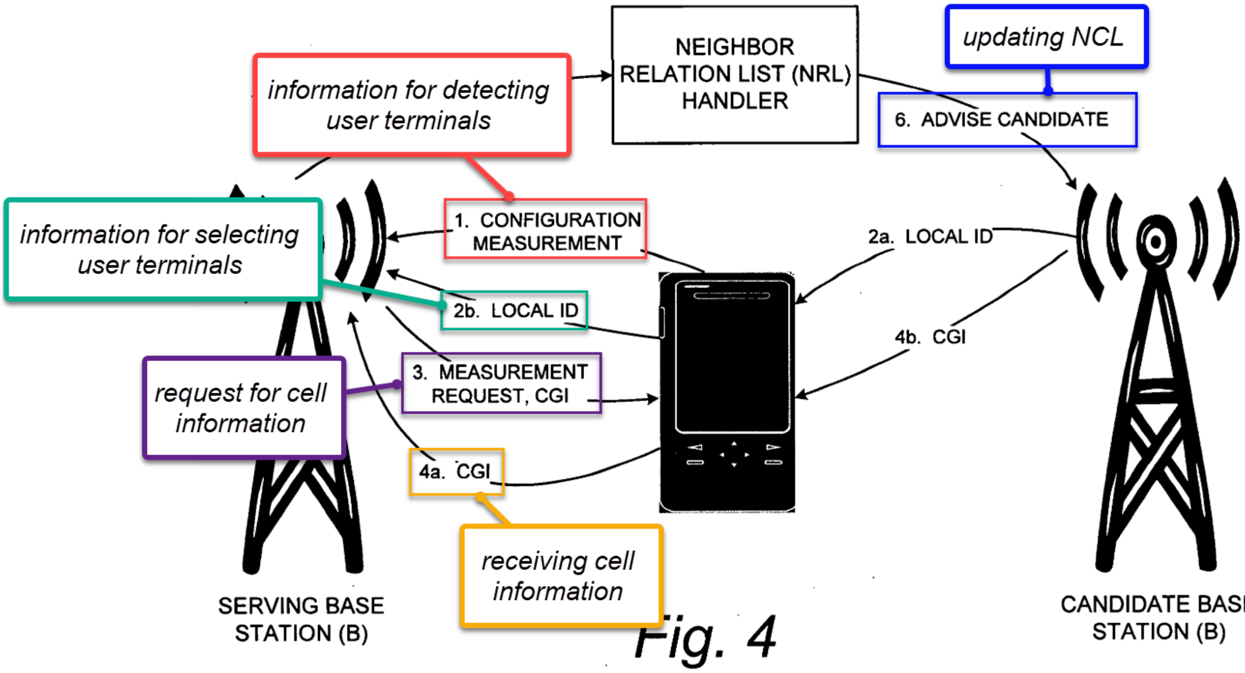
2. 1[a]: a detector configured for detecting user terminals to be transferred from the first wireless access node of the first wireless access network to the second wireless access node of the second wireless access network;

Amirijoo discloses that the "serving base station" will detect which mobile stations, *i.e.* ***user terminals***, to perform a handover (*i.e.* ***transfer***) from the serving base station, *i.e.* ***first wireless access node***, to a candidate base station, *i.e.* ***second wireless access node***. EX1003, ¶¶97-98. For example, Amirijoo teaches that for "inter-RAT[] HOs," that is, handovers/transfers of a mobile station from one network to another, "the serving base station (BS) needs to be able to trigger inter-RAT[] measurements, make a comparison between different RATs[], and make a HO decision." EX1005, ¶17.

As shown in Figure 3, Amirijoo discloses that a serving base station's "data processing and control unit" (labeled 36_S), *i.e.* ***a detector***, "comprise[s] inter-RAT/frequency handover function 50 and measurement communication function 52." *Id.*, ¶77. Amirijoo discloses that this unit requests measurements from mobile stations to determine whether they should be handed over to a candidate base station. *Id*. ("[Measurement communication function 52 controls communications with mobile station (MS) 30 for requesting or obtaining measurements or information (e.g., measurements or information ***for potential handover purposes***); the respective inter-RAT/frequency handover function 50 is invoked when it is ***determined that a handover is to occur***."). Thus, the data processing and control unit, *i.e.* ***a detector***, detects which mobile stations will be transferred from the serving base station to a candidate base station. EX1003, ¶99.

Amirijoo provides several examples of triggering conditions for detecting which mobile stations to perform a handover. EX1003, ¶100. For example, one triggering condition is based on the amount of data being consumed by a mobile device (¶¶84, 86), another triggering condition is the quality of the connection between the mobile device and the serving base station (¶85), and a third triggering condition involve the characteristics of the subscriber or mobile device (¶89).

As annotated below, Figure 4 of Amirijoo depicts this process, wherein the mobile device sends "configuration measurement[s]" to the serving base station for the base station to determine whether a triggering condition has been met. EX1005, ¶79 ("[T]he base station (BS) receives measurements from the mobile station (MS) and evaluates the triggering conditions."). EX1003, ¶101. This information is annotated in **red**.



In the Board's Institution Decision for IPR2023-00582, the Board held that similar disclosures in Amirijoo disclosed this limitation. EX1012, 24; EX1003, ¶102.

3. 1[b]: a selector configured for selecting a part of the user terminals;

Under Patent Owner's apparent construction,[3] Amirijoo teaches a ***selector that selects a subset of the detected mobile devices to perform subsequent***

[3] In the Ericsson case, Patent Owner accused Ericsson's devices of practicing the '560 patent because of their implementation of the standardized "Automatic Neighbor Relation (ANR) Function." EX1014, 4. Petitioner believes that the scope of the term "selecting a part of the user terminals" does not include ANR based on

measurements. EX1003, ¶104. Specifically, when a mobile device triggers one of the conditions discussed above, it will "measure[] the signal quality of surrounding inter-RAT/frequency base stations" and, along with the local ID's of the surrounding base stations, send that information to the serving base station. EX1005, ¶80. Amirijoo further discloses that the serving base station will select those mobile stations where the serving base station "has no prior knowledge of a neighbor base station (BS) with the reported local ID," upon which the serving base station "may send a CGI measurement request to the mobile station (MS)." *Id.*, ¶81. In other words, Amirijoo discloses ***selecting*** among mobile stations chosen for handoff those that detected unknown base stations. EX1003, ¶104. This step is depicted in Figure 4, as annotated below in **green**, where the mobile station receives the local IDs of surrounding base stations and sends them to the serving base station.

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the specification of the '560 patent and Patent Owner's statements during prosecution. Amirijoo describes ANR, and so meets this limitation under Patent Owner's apparent construction. EX1003, ¶103. In addition, as explained in Ground 2, Kazmi discloses this limitation consistent with applicant's prosecution statements and it would have been obvious to combine it with Amirijoo.

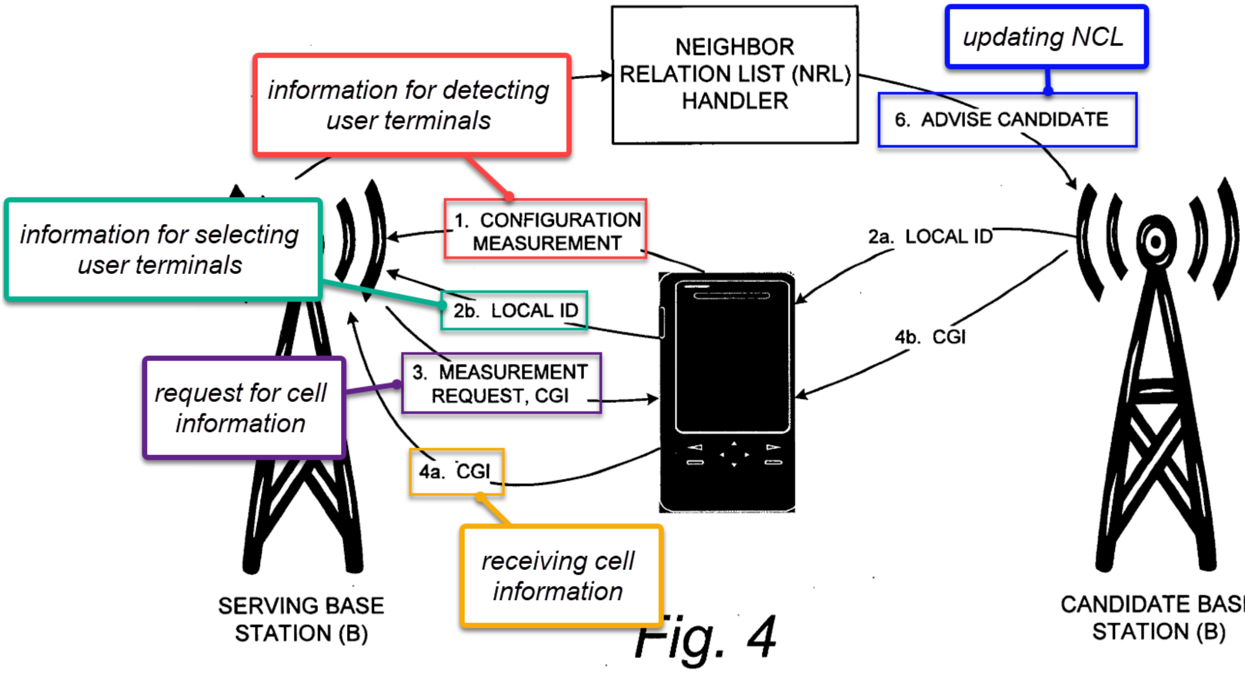


Fig. 4

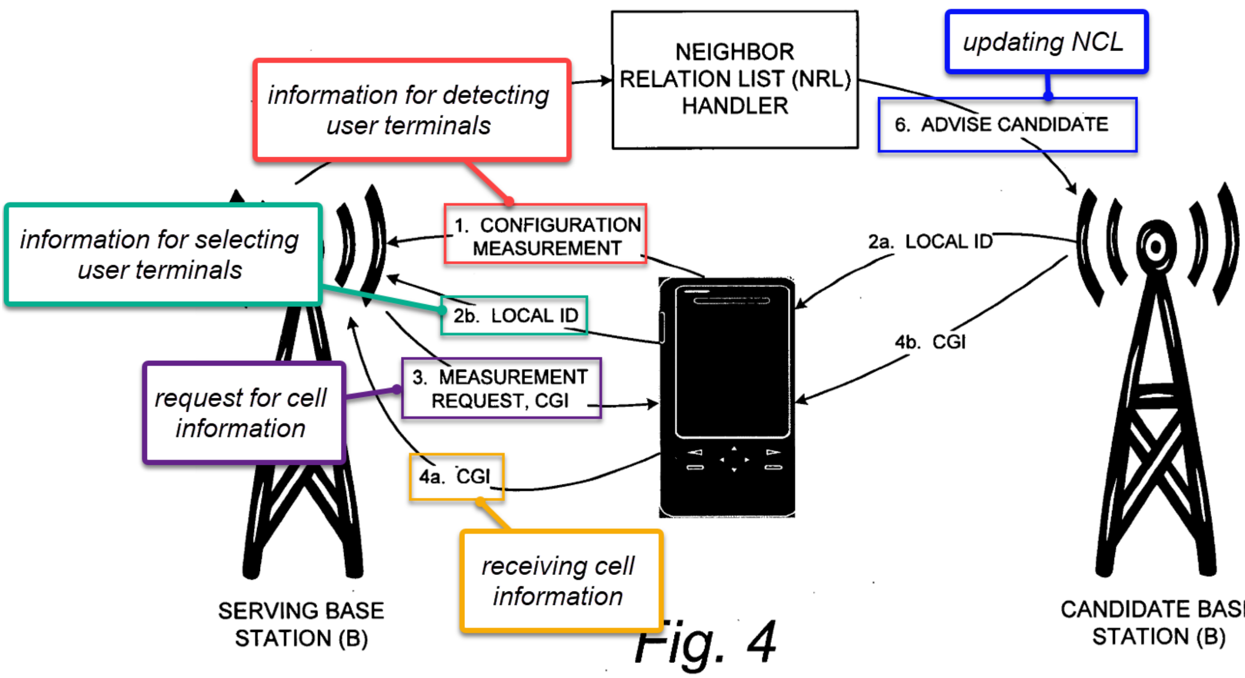
Amirijoo discloses that such functionality is "executed by a … processor," in other words, either a special-purpose processor or software executed by a general-purpose processor, either of which is ***a selector***. EX1005, ¶64; EX1003, ¶105. Indeed, this is consistent with the '560 patent's description that its invention "may be implemented as a program product for use with a computer system." EX1001, 11:33-34. A POSITA would therefore understand that the claimed "selector" need not be physically separate from the claimed "detector." EX1003, ¶105.

4. 1[c]: a request generator configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of at least one of the first wireless access network and the second wireless access network;

Amirijoo discloses that, to the mobile stations which measured unknown candidate base stations (*i.e.* ***selected user terminals***), the serving base station (*i.e.*

first wireless access node) sends a request for the Cell Global Identity (CGI) of the unknown candidate base stations (*i.e.* ***requesting … to report cell information of a plurality of wireless access nodes of the first or second wireless access network***). EX1003, ¶106.

Specifically, Amirijoo discloses that "[i]f the serving base station (BS) has no prior knowledge of a neighbor base station (BS) with the reported local ID, the serving base station (BS) may send a CGI measurement [*i.e.* ***cell information***] request to the mobile station (MS), as illustrated by act (3) in FIG. 4." EX1005, ¶81. This step is annotated in **purple** in the below annotated Figure 4. EX1003, ¶107.



The ’560 patent explains that “cell information” includes the CGI of a base station. EX1001, 2:4 (“Cell Global Identifier (CGI) and ***further cell information***”); EX1003, ¶108.

Amirijoo further teaches that the mobile station performs measurements of a ***plurality of surrounding candidate base stations***. EX1005, ¶80 (“The mobile station (MS) measures the signal quality of surrounding inter-RAT/frequency ***base stations***”). In addition, Amirijoo discloses that “measurements from certain ***mobile stations*** … are used to detect inter-RAT/frequency ***neighbors***.” EX1005, ¶79. A POSITA would therefore understand that different mobile stations, *i.e.* ***user terminals***, may report local IDs of different unknown candidate base stations to the base station. EX1003, ¶¶109-10. A POSITA would further understand that, in such a scenario, the serving base station’s “CGI measurement request to the mobile station (MS)” would request the CGI measurement to multiple mobile stations for a ***plurality of base stations***, *i.e.* ***a plurality of wireless access nodes***. *Id.*

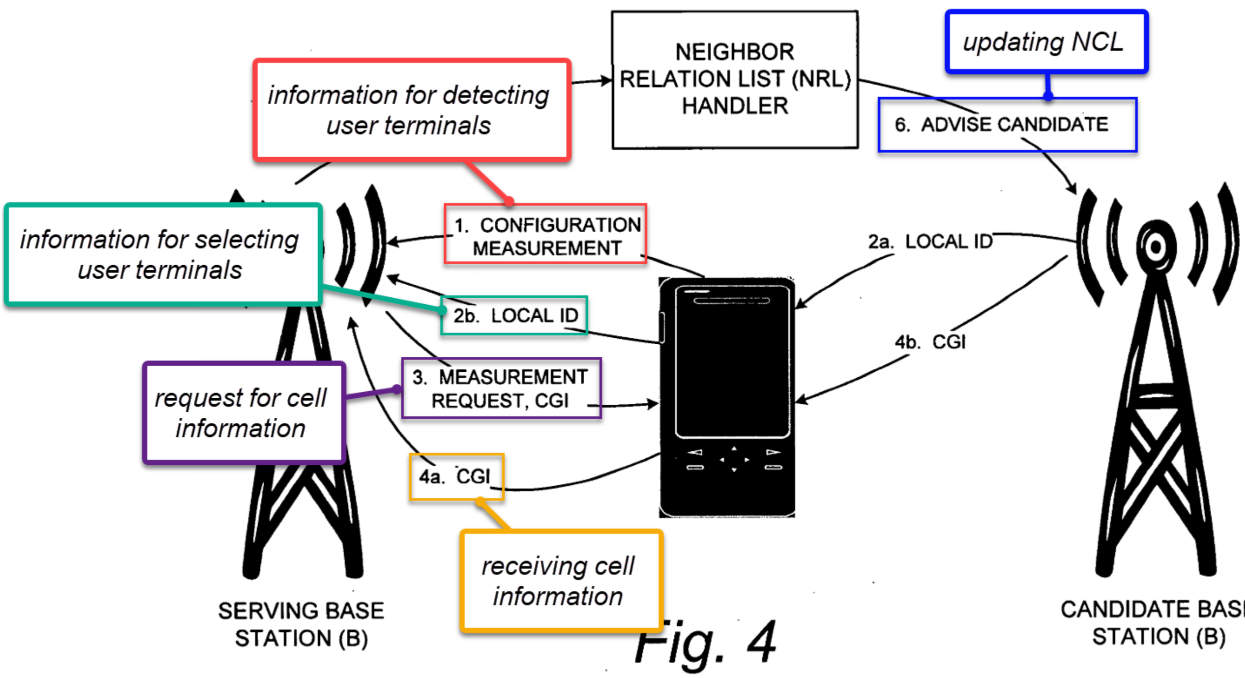
Amirijoo discloses requesting information of surrounding base stations for either the same network as the serving base station (*e.g.*, E-UTRAN) (*i.e.* ***first wireless access network***) or a different network (*e.g.*, GERAN) (*i.e.* ***second wireless access network***). EX1003, ¶111. Specifically, Amirijoo discloses that the surrounding candidate base stations (for which CGI measurements will be requested) could be either inter-RAT (base stations of a different network) or inter-frequency (base stations of the same network). *Id.* As Amirijoo explains, inter-RAT refers to a "process wherein a mobile terminal switches from using a first radio access system having a first radio access technology (such as GSM) to a second radio access system having a second radio access technology (such as UTRA)." EX1005, ¶10. By contrast, inter-frequency refers to a handover within the same radio access technology. *Id.*, ¶15. ("[I]t is projected that LTE will operate in multiple frequency bands. [L]oad balancing between different frequency bands … require[s] inter-frequency handovers").

Amirijoo discloses that such functionality is "executed by a … processor," in other words, either a special-purpose processor or software executed by a general-purpose processor, either of which is ***a request generator***. EX1005, ¶64; EX1003, ¶112. Indeed, this is consistent with the '560 patents description that its invention "may be implemented as a program product for use with a computer system." EX1001, 11:33-34. A POSITA would therefore understand that the claimed "request generator" need not be physically separate from the claimed "selector" or claimed "detector." EX1003, ¶112.

5. 1[d]: a receiver configured for receiving the cell information from the one or more of the selected user terminals; and

Amirijoo discloses that the serving base station has an antenna or transceiver (*i.e.* ***a receiver***) which receives the CGI of an unknown neighboring base station (*i.e.* ***cell information***) from the mobile station (*i.e.* ***selected user terminal***). EX1005, ¶81

("[T]he mobile station (MS) measures the Cell Global Identity (CGI) of the candidate base station (BS) … and (as illustrated by act (4a)) reports the Cell Global Identity (CGI) to the serving base station (BS)."); EX1003, ¶¶113-14. Amirijoo expressly teaches that the base station receives communications from the mobile station via an "antenna 39 … which communicates over an air interface with mobile station (MS)." EX1005, ¶76. Amirijoo also discloses that the antenna is connected to a "transceiver (TX/RX)" which a POSITA would understand is a ***receiver*** (as well as a transmitter, hence the term "transceiver"). *Id.* This step of receiving cell information is annotated in **orange** in the below annotated Figure 4.



In the alternative, Amirijoo also discloses that "the serving base station (BS) can inform an NRL handler, such as an Operation and Support System (OSS) or any other management node, about the newly detected candidate base station (BS)," in order for the NRL handler to at least "inform[] the candidate base station (BS)" so that it can add the serving base station to its NRL. EX1005, ¶82. A POSITA would understand that the NRL handler receives the CGI of the new candidate base stations, *i.e.* ***cell information***, because such information is necessary to know which candidate base station to inform. EX1003, ¶115. This step is reflected in **blue** in the above figure.

A POSITA would also understand that the OSS has a ***receiver*** for receiving the cell information. EX1003, ¶116. As depicted in Figure 2, the base stations are "connected to an external core network 16 which can comprise, or otherwise have access to, neighbor relation list (NRL) handler 18." EX1005, ¶71. The external core network "may be (for example) the Public Switched Telephone Network (PSTN) and/or the Integrated Services Digital Network (ISDN)." *Id.*, ¶66. Thus, a POSITA would understand that the OSS within the external core network has a receiver for receiving any information from the base stations.

6. 1[e]: updating means configured for updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information.

Amirijoo discloses means for updating the NRL of either the serving base station (*i.e.* ***first neighbour cell list***) or the candidate base station (*i.e.* ***second neighbour cell list***) using the received CGI (*i.e.* ***cell information***). EX1003, ¶117.

As discussed above, Petitioner proposes that the "updating means" be construed as having a function of "updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information," and that it has a corresponding structure of "updater 14" disclosed in Figure 2, 9:26-28 and 9:58-59 of the '560 patent, and equivalents thereof. EX1003, ¶118. In the EDTX Action, the Court construed this term as having corresponding structure of "'updater 14' however it is described in the specification." EX1011, 41. Notably, the specification only describes the "updater 14" at 9:26-28, 9:58-59 and Figure 2.

The specification describes that an updater 14 is "configured for updating (including verification) of the NCL-2A using the cell information CI" and that an updater 14 "may be used to update NCL-1A by adding wireless access node NodeB 2C, as illustrated." EX1001, 9:26-28, 9:58-59; EX1003, ¶119. Figure 2 depicts these "updater[s] 14" as separate components in separate base stations:

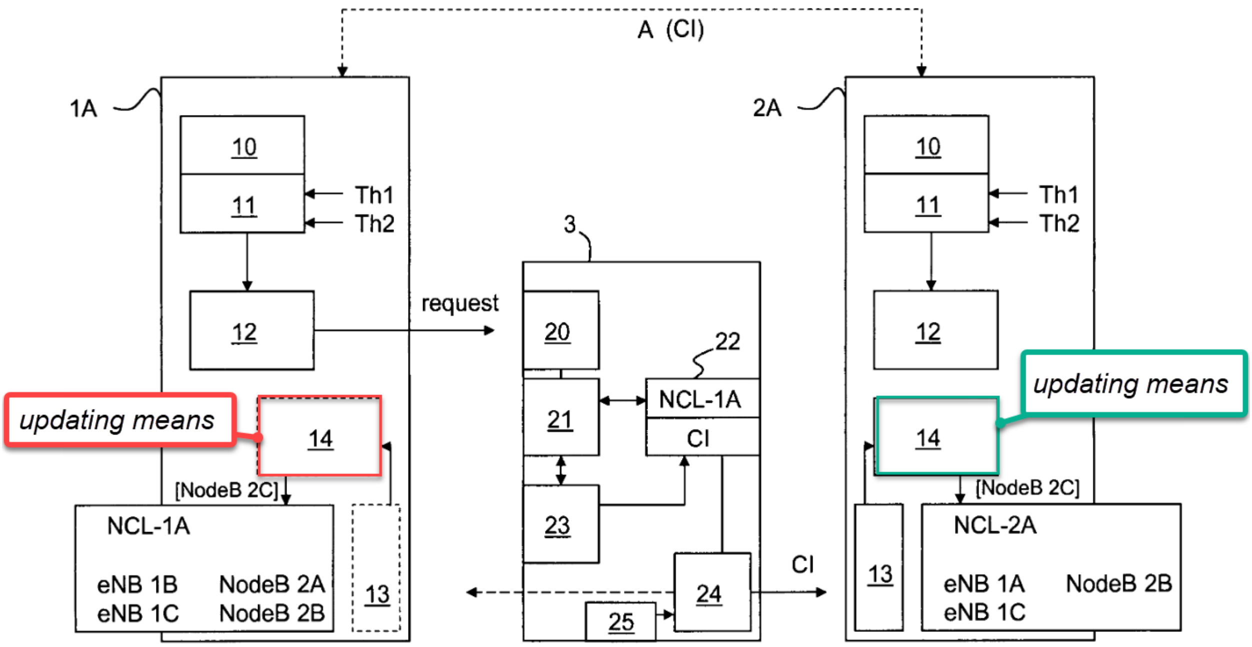


FIG. 2

Amirijoo discloses an "updating means" as construed. Amirijoo teaches that it is "essential to make use of automatic in-service approaches for generating and updating NRLs." EX1005, ¶24. Amirijoo discloses that the NRLs of both the serving base station and candidate base station can be updated based on the received CGI, *i.e.* ***cell information***. EX1003, ¶120.

For example, with respect to updating the NRL of the serving base station, Amirijoo discloses that after the candidate base station's CGI is reported to the serving base station, "the candidate base station (BS) can be added to the neighbor relation list (NRL) of the serving base station (BS)." EX1005, ¶82. A POSITA would understand that such functionality is performed by the "data processing and control unit 31" (*i.e.* ***updating means***) which is connected to the transceiver that receives the CGI. *Id.*, ¶¶76-77. Thus, Amirijoo discloses an updating means which has the same structure as disclosed in the '560 patent, that is, a function block used to update an NCL. EX1003, ¶121.

With respect to updating the NRL of the candidate base station, Amirijoo discloses that "the serving base station (BS) can inform an NRL handler" (*i.e.* ***updating means***) "about the newly detected candidate base station (BS)." EX1005, ¶82. The NRL handler then "informs the candidate base station" which "adds an entry corresponding to the serving base station (BS) in its NRL." *Id.* Alternatively, the candidate base station also has a "data processing and control unit 31" (*i.e.* ***updating means***) which is connected to the transceiver that receives the command to update its NRL. *Id.*, ¶¶76-77. Thus, Amirijoo discloses an updating means which has the same structure as disclosed in the '560 patent, that is, a function block used to update an NCL. EX1003, ¶122.

To the extent Patent Owner distinguishes updating "neighbor relation lists" disclosed in Amirijoo from the updating means configured for updating "neighbour cell lists" recited in the Challenged Claims, the updating of neighbor cell lists is expressly taught by TR-32.816. EX1003, ¶123. It would have been obvious for a POSITA to supplement Amirijoo's system for "automatically managing relationships to neighbors in other RATs/frequencies" with TR-32.816's "neighbour cell list optimization." *Id.* TR-32.816 teaches an algorithm configured to update neighbor cell lists "based on information in UEs about detected cells." EX1007, 11. And, like the means for updating the neighbor relation list taught in Amirijoo, the algorithm disclosed in TR-32.816 uses "UE measurement reporting" to identify missing neighbors and add them to the neighbor cell list(s) of the relevant eNodeB(s) (i.e., base stations). EX1007, 11.

C. Claim 2

1. 2[pre]/2[a]: The system according to claim 1, wherein the request generator is configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the first wireless access network;

Claims 2 and 4 recite the receipt of cell information for updating an NCL from a device ***after*** a device has transferred from an old serving base station to a new serving base station, wherein the old serving base station receives the cell information ***via*** the new serving base station. For example, after transfer, the device provides the cell information to the new serving base station, which then delivers the information to the old serving base station using, for example, a backbone network. EX1003, ¶124.

This limitation is identical to limitation 1[c] except that it requires reporting cell information of wireless access nodes of the ***first*** wireless access network, whereas limitation 1[c] allows for reporting cell information from either the first or

second wireless access network. Regardless, as discussed above in limitation 1[c], Amirijoo discloses requesting cell information for base stations from the same network as the serving base station, *i.e.* ***first wireless access network***. *See* EX1005, ¶15; EX1003, ¶125.

2. 2[b]: wherein the receiver is configured for receiving the cell information of the wireless nodes of the first wireless access network via the second wireless access node,

Amirijoo discloses a system for the ***receiver*** of a base station to receive identifying information, *i.e.* ***cell information***, about unknown base stations of the same and different networks, *i.e.* ***wireless nodes***, via another base station, *i.e.* ***via the second wireless access node***. EX1003, ¶126.

Specifically, Amirijoo discloses that when the NRL of a base station (such as the ***second wireless access node***) is updated to include new neighboring cells, that base station "can inform an NRL handler, such as an Operation and Support System …, about the newly detected candidate base station[s]." EX1005, ¶82. The NRL handler then informs other base stations about the new base stations, which can then add them to their respective NRL. *Id.*; EX1003, ¶127.

Alternatively, it would have been obvious to use the NRL handler in the above manner. A POSITA would have been motivated to centrally manage the NRLs of the various base stations within cellular networks. EX1003, ¶128. A POSITA would have understood the well-known benefits of having the NRL handler inform other base stations of new base stations, because it would minimize the amount of traffic dedicated to mobile stations requesting global identifiers of new base stations. *Id.* Central management of NRLs would provide a mechanism for base stations to update their NRLs via other base stations, thereby foregoing the need to always rely on mobile devices to provide the cell information. *Id.*

Similarly, a POSITA would have been motivated to allow a serving base station to receive the global identifiers of unknown neighboring base stations within the same or different networks from mobile stations via the NRL handler ***after*** the mobile stations have been transferred to a candidate base station. A POSITA would understand that this would allow the mobile stations to be more quickly transferred to the desired candidate base station, while still allowing the (former) serving base station to receive the global identifiers it had requested the mobile stations obtain. EX1003, ¶129. By performing an early handoff, this improves the service quality of the network, as a POSITA would understand handoffs are performed in order to allow the mobile station to be served by base station with a stronger signal or better service. *Id.*

A POSITA would have reasonably expected the use of the NRL handler in this manner to succeed because the NRL handler already provides a mechanism for updating a base station's NRL via a different base station. EX1003, ¶130. Thus, the proposals would simply require the trivial change of the new serving base station to submit the list of unknown neighboring base stations intended for the old serving base station to the NRL handler for the NRL handler to send to the old serving base station. *Id.* Such functionality would be reasonably expected to succeed since it merely uses the NRL handler in a manner that it is designed for.

3. 2[c]: the system further comprising a transfer system configured for transferring user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the first wireless access network via the second wireless access node.

Amirijoo discloses performing handovers, *i.e.* ***transfers***, of mobile stations, *i.e.* ***user terminals***, from the serving base station, *i.e.* ***first wireless access node***, to the candidate base station, *i.e.* ***second wireless access node***. EX1003, ¶131.

In particular, Amirijoo teaches that for "inter-RAT[] HOs," that is, handovers of a mobile station from a base station in one network to a base station in a different network, "the serving base station (BS) needs to be able to trigger inter-RAT[] measurements, make a comparison between different RATs[], and make a HO decision." EX1005, ¶17. Amirijoo also discloses that the serving base station and mobile station have an "inter-RAT[] handover function." *Id.*, ¶¶75, 77, Figure 3; EX1003, ¶132.

As discussed in limitation 2[b], it would have been obvious to perform the handover ***prior*** to the mobile stations transmitting the global identifiers, *i.e.* ***cell information***, of the unknown neighbor base stations, as earlier handovers would allow the mobile stations to more quickly be served by a base station with a stronger signal or better service. EX1003, ¶133. A POSITA would further reasonably expect this to succeed as it would simply involve performing the handover immediately after the mobile stations receive the global identifiers. *Id.*

D. Claim 3: The system according to claim 2, further comprising a data transfer system for transferring the cell information, or a derivative thereof, of the wireless access nodes of the first wireless access network to the first wireless access node.

As discussed above in limitation 2[b], Amirijoo discloses an NRL handler, *i.e. **a data transfer system***, which transfers identifying information, *i.e.* ***cell information***, of unknown neighboring base stations from one base station to another base station. EX1003, ¶134.

E. Claim 4

1. 4[pre]/4[a]: The system according to claim 1, wherein the request generator is configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;

As discussed above in limitation 1[c], Amirijoo discloses a request generator that requests from mobile stations the CGI information of a plurality of unknown candidate base stations. EX1003, ¶¶135-36. As also discussed in that limitation, the unknown candidate base stations can be on a different network as the serving base station and therefore are a ***plurality of wireless access nodes of the second wireless access network***. *Id.*

2. **4[b]: wherein the receiver is configured for receiving the cell information of the wireless nodes of the second wireless access network via the second wireless access node,**

See limitation 2[b]. EX1003, ¶137.

3. **4[c]: the system further comprising a transfer system configured for transferring user terminals from the first wireless access network to the second wireless access network prior to receiving the cell information of the plurality of wireless access nodes of the second wireless access network via the second wireless access node.**

See limitation 2[c]. EX1003, ¶138.

F. Claim 5: The system according to claim 4, further comprising a data transfer system for transferring the cell information, or a derivative thereof, of the wireless access nodes of the second wireless access network to the first wireless access node.

See Claim 3. EX1003, ¶139.

G. Claim 6

1. **6[pre]/6[a]: The system according to claim 1, wherein the request generator is configured for requesting from the first wireless access node one or more of the selected user terminals to report cell information of a plurality of wireless access nodes of the second wireless access network;**

As discussed above in limitation 1[c], Amirijoo discloses a request generator that requests from mobile stations the CGI information of a plurality of unknown candidate base stations. EX1003, ¶140. As also discussed in that limitation, the unknown candidate base stations can be on a different network as the serving base station and therefore are a ***plurality of wireless access nodes of the second wireless access network***. *Id.*

2. 6[b]: wherein the receiver is configured for receiving the cell information of the wireless access nodes of the second wireless access network via the first wireless access node,

As discussed above in limitation 1[d], Amirijoo discloses that the OSS receives cell information about "newly detected candidate base station[s]," *i.e.* ***cell information of the wireless access nodes of the second wireless access network***. EX1005, ¶82; EX1003, ¶141. The OSS receives such information from the serving base station, *i.e.* ***via the first wireless access node***. *Id*.

3. 6[c]: further comprising a transfer system configured for transferring user terminals from the first wireless access network to the second wireless access network after receiving the one or more cell parameters of wireless access nodes of the second wireless access network via the first wireless access node.

Amirijoo discloses performing handovers, *i.e.* ***transfers***, of mobile stations, *i.e.* ***user terminals***, from the serving base station, *i.e.* ***first wireless access node***, to the candidate base station, *i.e.* ***second wireless access node***. Amirijoo further discloses that the handover occurs ***after*** the serving base station receives the CGI information of new candidate base stations. EX1003, ¶¶142-43.

In particular, Amirijoo teaches that for "inter-RAT[] HOs," that is, handovers of a mobile station from a base station in one network to a base station in a different network, "the serving base station (BS) needs to be able to trigger inter-RAT[] measurements, make a comparison between different RATs[], and make a HO decision." EX1005, ¶17; EX1003, ¶144. Amirijoo also discloses that the serving base station and mobile station have an "inter-RAT[] handover function." EX1005, ¶¶75, 77, Figure 3.

Amirijoo discloses that the handover from serving base station to candidate base station occurs ***after*** the serving base station receives the CGI information, *i.e.* ***cell parameters***, of the new candidate base stations. EX1003, ¶145. For example, Amirijoo explains that "the serving base station (BS) needs to forward user plane data to the target base station (BS), meaning that the target base station (BS) must be known and its unique identity, so-called Cell Global Identity (CGI), must be established before executing the HO." EX1005, ¶13; *see also* ¶14 ("[W]hen handing off a mobile station (MS) to the neighbor the CGI of the neighbor must be known."). Thus, when the serving base station performs a handover to a new, previously-unknown candidate base station, it must have already received the CGI information about the new candidate base station. EX1003, ¶145.

In addition, Amirijoo discloses that the mobile stations request and receive CGI information about the candidate base station during a "transmission gap" with the serving base station, which begins and ends after a specified length of time. EX1005, ¶¶91-92 ("[T]he serving base station (BS) issues a transmission gap of length T, where T is the worst case time to obtain the desired information from the candidate base station (BS)."). As shown in Figure 14, following the end of the transmission gap, the mobile station continues being served by the serving base station. EX1003, ¶146. Thus, a POSITA would understand that handover does not occur until after the CGI information is transmitted to the serving base station.

H. Claim 9

1. 9[pre]

See 1[pre]. EX1003, ¶147.

2. 9[a]

See 1[a]. EX1003, ¶148.

3. 9[b]

See 1[b]. EX1003, ¶149.

4. 9[c]

See 1[c]. EX1003, ¶150.

5. 9[d]

See 1[d]. EX1003, ¶151.

6. 9[e]

See 1[e]. EX1003, ¶152.

I. Claim 10

1. 10[pre]/10[a]

See 2[pre] and 2[a]. EX1003, ¶153.

2. 10[b]

See 2[b]. EX1003, ¶154.

3. 10[c]

See 2[c]. EX1003, ¶155.

J. Claim 11

1. 11[pre]/11[a]

See 4[pre] and 4[a]. EX1003, ¶156.

2. 11[b]

See 4[b]. EX1003, ¶157.

3. 11[c]

See 4[c]. EX1003, ¶158.

K. Claim 12

1. 12[pre]/12[a]

See 6[pre] and 6[a]. EX1003, ¶159.

2. 12[b]

See 6[b]. EX1003, ¶160.

3. 12[c]

See 6[c]. EX1003, ¶161.

L. Claim 13

1. 13[pre]

See 1[pre]. Amirijoo further discloses that disclosed systems and methods are "represented in computer readable medium and so executed by a computer or processor," which includes "a single dedicated processor," "a single shared processor," or "a plurality of individual processors." EX1005, ¶¶64-65; EX1003, ¶162.

2. 13[a]

See 1[a]. EX1003, ¶163.

3. 13[b]

See 1[b]. EX1003, ¶164.

4. 13[c]

See 1[c]. EX1003, ¶165.

5. 13[d]

See 1[d]. EX1003, ¶166.

6. 13[e]

See 1[e]. EX1003, ¶167.

M. Claim 14

See Claim 3. EX1003, ¶168.

N. Claim 15

1. 15[pre]/15[a]

See 4[pre] and 4[a]. EX1003, ¶169.

2. 15[b]

See 4[b]. EX1003, ¶170.

3. 15[c]

See 4[c]. EX1003, ¶171.

O. Claim 16

See Claim 5. EX1003, ¶172.

P. Claim 17

See Claim 5. EX1003, ¶173.

VIII. GROUND 2: CLAIMS 1-17 ARE RENDERED OBVIOUS BY AMIRIJOO AND TR-32.816 IN FURTHER VIEW OF KAZMI

As discussed in Ground 1, Amirijoo discloses limitations 1[b], 9[b] and 13[b]'s "selecting a part of the user terminals" by selecting mobile stations that returned local IDs of unknown base stations.

To the extent Patent Owner argues that Amirijoo does not disclose "selecting a part of the user terminals," Kazmi also discloses using other factors to select which user terminals to request CGI information from candidate neighbor base stations. As discussed herein, it would have been obvious to incorporate such teachings into Amirijoo and TR-32.816, thereby providing an alternative reason why claims 1, 9, and 13 are obvious. EX1003, ¶¶174-75.

The combination of these references also renders obvious claims 7 and 8. EX1003, ¶176.

A. Motivation to Combine

A POSITA would have been motivated to combine Amirijoo and TR-32.816 with Kazmi's teachings of using selection criteria to select user terminals for requesting the global identifier of unknown neighboring cells. EX1003, ¶¶177-82.

Like Amirijoo, Kazmi is directed to "systems and methods for automatically adding a unique identifier associated with a cell to a neighbor cell list associated with another cell." EX1007, Abstract. Like Amirijoo, Kazmi performs this process by requesting the CGI[4] of the unknown neighboring cell from mobile terminals. *Id.* But Kazmi also describes various criteria for "selecting a particular mobile terminal from a set of mobile terminals." *Id.*

A POSITA would be motivated to incorporate Kazmi's teachings because they would improve Amirijoo's teachings of optimizing the NCLs of its base stations. EX1003, ¶179. Indeed, Kazmi itself teaches that by using such criteria, the selected user terminal "has a relatively high probability of being able to obtain the GCI within a given period of time." EX1007, ¶31. Kazmi further notes that by using such selection criteria, "[t]his means radio conditions experienced by the selected UE with respect to cell 103b are expected to be good, ***thereby ensuring that the UE can obtain the GCI*** of cell 103b relatively quickly and thereby enabling base station 102s to schedule a small gap for GCI decoding so as to minimize data interruption." *Id.*, ¶37. Kazmi notes that "it is preferable that the gap be kept as small as possible." *Id.*, ¶47. In other words, a POSITA would be motivated to use Kazmi's selection criteria in order to select those user terminals which have the best

[4] Kazmi uses the term "global cell identifier (GCI)," which like Amirijoo's CGI, is a globally unique identifier for the cell. EX1007, ¶3; EX1005, ¶13; EX1003, ¶178.

chance of obtaining the unknown cell's global identifier in a short time period, which minimizes data interruption and increases the efficiency of the network.

A POSITA would also be motivated to use Kazmi's selection criteria as it would minimize the amount of network traffic dedicated to optimizing the NCLs. In particular, by using Kazmi's selection criteria that optimizes the probability that the global identifiers of unknown neighboring cells can be obtained, this reduces the number of user terminals that are needed to obtain the global identifiers. EX1003, ¶180. Accordingly, the amount of traffic needed between the base stations and user terminals is further minimized, which improves the network's efficiency. *Id.*

A POSITA would have reasonably expected the combination to succeed. Indeed, as discussed above, both Amirijoo and Kazmi have similar disclosures, with Kazmi further describing additional selection criteria for selecting user terminals. EX1003, ¶181. Kazmi provides sufficient details regarding the implementation of its selection criteria that would have been well-within the skill of an ordinary artisan. *Id.* A POSITA would also reasonably expect success because both Amirijoo and Kazmi are Ericsson patents directed to cellular technologies, including updating of NCLs. *Id.* Moreover, a POSITA would have expected that the combination of Amirijoo and TR-32.816 further combined with Kazmi would have also succeeded, as the use of TR-32.816's NCLs would not have posed any hurdle with implementing Kazmi's selection criteria. *Id.*

Finally, Kazmi is analogous art to Amirijoo, TR-32.816, and the ’560 patent because Kazmi is also directed to the field of managing wireless networks. EX1007, ¶2 (“The present invention relates to the field of mobile networks. More specifically, the present invention relates to systems and methods for automatically determining the global cell identifier (GCI) of a neighboring cell.”); EX1003, ¶182.

B. 1[b]: a selector configured for selecting a part of the user terminals / 9[b] and 13[b]: selecting a part of the user terminals;

Kazmi discloses various criteria for “selecting a particular mobile terminal from a set of mobile terminals.” EX1007, Abstract; EX1003, ¶¶183-834. In particular, Kazmi discloses that after the serving base station receives identifiers of unknown neighboring base stations from the served “UE[s]” (user equipment), *i.e.* ***user terminal***, the serving base stations will “determine[] whether it should instruct [that] UE 104 to obtain the GCI for” the unknown cell by “select[ing] from a set of UEs a UE 104 that has a relatively high probability of being able to obtain the GCI within a given period of time,” *i.e.* ***select a part of the user terminals***. EX1007, ¶¶29-30. Kazmi further discloses that “the selection may be based on one or more of: statistics regarding reported PCIs, statistics regarding reported cell quality, statistics of handover failures, statistics regarding the speed of the UEs in the set, statistics regarding propagation delay.” *Id.*, ¶30.

Kazmi provides further details regarding the criteria for “selecting from a candidate set of UEs a particular UE to instruct to obtain the GCI of a neighbor cell.”

Id., ¶41. Kazmi describes a number of factors which are included in a "P value" that determines whether the UE is selected. *Id.*, ¶¶42-46; EX1003, ¶185.

One of those factors is whether the UE "is in a discontinuous transmission mode (DRX) mode." *Id.*, ¶42. Being in such a mode will increase the chance that the UE is selected. *Id.* Another factor is the "downlink data rate for the selected UE," with the "P value" increasing "by an amount that is a function of the data rate value." *Id.* Still another factor is "the speed at which the selected UE is moving." *Id.*, ¶43. If the "speed value is less than a speed threshold, then the P value for the selected UE may be increased by a predetermined amount." *Id.* The process also includes the UE's reported "cell quality value pertaining to" the unknown cell and the "propagation delay value" between the UE and the unknown cell. *Id.*, ¶¶44-45.

Once a UE is selected, the serving base station "instructs the selected UE to obtain the GCI of" the unknown cell. EX1007, ¶32. When the UE obtains the GCI, the serving base station "receives from the selected UE a message containing the GCI of" the unknown cell and "adds the GCI to the neighbor cell list." *Id.*

Thus, Kazmi discloses ***selecting a part of the user terminals***. EX1003, ¶¶185-87. As discussed above, it would have been obvious to combine these teachings with Amirijoo and TS-32.816.

C. Claim 7: The system according to claim 1, wherein the telecommunications system is further configured for receiving location information from one or more of the detected user terminals and wherein the location information is used as a

selection parameter for selecting the part of the detected user terminals.

Kazmi discloses that location information is used as a ***parameter for selecting the part of the detected user terminals***. EX1003, ¶¶189-90. Specifically, Kazmi discloses that the selected user terminal "is expected to ***be close to***" the unknown cell. EX1007, ¶37. Kazmi also discloses that it uses as a selection criteria the "speed at which the selected UE is moving." *Id.*, ¶43. A POSITA would understand that a base station or user terminal typically does not include any mechanism for directly calculating a user terminal's speed, and that speed is instead calculated by determining the location of the user terminal at two different points in time to calculate how far the user terminal traveled in that elapsed time. EX1003, ¶190. Thus, in order for the base station in Kazmi to calculate and use the "speed at which the selected UE is moving" as a parameter for selection, the base station would need to know and use the user terminal's location. EX1007, ¶43.

Thus, a POSITA would have understood that the specific location of the user terminal is received from the user terminal and used (among other factors) to select the user terminal. EX1003, ¶191.

It also would have been obvious to a POSITA that the selection process in Kazmi requests location information from the user terminal and uses it to calculate the "speed at which the selected UE is moving" to be used as a ***selection parameter***. EX1007, ¶43. A POSITA would have been motivated by the fact that a base station does not have a mechanism for calculating the user terminal's speed or location. EX1003, ¶192. A POSITA would have also understood that a user terminal has various mechanisms for determining its own location, including using a GPS receiver, which provides a precise location of the user terminal. EX1008, ¶41. Thus, a POSITA would have been motivated to request a GPS location from the user terminal in order to receive a precise location of the user terminal in order to calculate a precise speed of the user terminal. EX1003, ¶192. A POSITA would understand the well-known benefits of precision with respect to calculating speed of a user terminal as selection criteria. *Id.* Precise data would improve the data as a criterion used in selection. *Id.* Precise data would allow the system to select user terminals that are more likely to obtain the CGI information from the candidate base station. *Id.*

In the alternative, as explained below in Ground 3, this claim would have been obvious in view of Mach. EX1003, ¶193.

D. Claim 8: The system according to claim 1, wherein one or more thresholds, possibly service-dependent, are defined in the telecommunications system for transferring the user terminals between the first wireless access network and the second wireless access network and wherein at least one of the thresholds is used as a selection parameter for selecting the part of the detected user terminals.

As discussed above in Ground 1, limitation 1[a], Amirijoo uses several "triggering condition" for a serving base station to perform a handover of a mobile station to a candidate base station of a different network, *i.e.* ***one or more thresholds … for transferring the user terminals between the first wireless and the second wireless access network***. EX1003, ¶¶194-95. For example, Amirijoo describes that a handover can be initiated "[i]f the estimated signal quality of the candidate base station (BS) is above a ***threshold***." EX1005, ¶20.

As discussed in this ground for limitation 1[b], Kazmi discloses that the selection process also uses signal quality between the candidate base station and user terminal. EX1003. For example, Kazmi discloses using "cell quality value[s] pertaining to" the unknown cell "that was reported by the selected UE to" the serving base station. EX1007, ¶44. Kazmi also describes using "downlink data rate" and "propagation delay." *Id.*, ¶¶42, 45. A POSITA would understand that such factors are measures of ***signal quality*** between the user terminal and the unknown base station. EX1003, ¶196.

A POSITA would have understood that the use of cell quality value, downlink data rate, and propagation delay for selecting user terminals also involves using the same ***threshold*** described by Amirijoo for determining whether to perform a handover. EX1003, ¶197. Kazmi teaches that such "cell quality information" is used to determine handover. EX1007, ¶29. Thus, a POSITA would understand that, when the selection step described in Kazmi is incorporated into Amirijoo, it would likewise use the same thresholds for determining handover. EX1003, ¶197.

Alternatively, a POSITA would have considered it obvious in the Amirijoo-Kazmi combination to use the same thresholds for determining handover and selecting which user terminals to request CGI information. EX1003, ¶198. As Kazmi explains, the selected user terminals should "ha[ve] a relatively high probability of being able to obtain the GCI within a given period of time," which is why it uses cell quality to make that determination. EX1007, ¶31; *see also* ¶37 ("[R]adio conditions experienced by the selected UE with respect to cell 103b are expected to be good"). A POSITA would have understood that cell or signal quality of the candidate base station is similarly used to determine whether to initiate a handover. *See, e.g.*, EX1005, ¶20. Thus, a POSITA would have considered it obvious to use the same threshold for both selecting user terminals and for initiating handover, since a POSITA would understand that the concern for signal quality is generally the same. EX1003, ¶198. A POSITA would have been motivated by the fact that the optimal threshold for initiating a handover will meet the same goals and address the same concerns as the threshold for selecting the user terminals. *Id.* A POSITA would have further been motivated because this would allow the telecommunications operator to calculate an optimal threshold only once, after which it can be used by both the selection of user terminals and determining handovers. *Id.* This would improve the efficiency and cost of the system. *Id.* Indeed, Amirijoo itself teaches that thresholds for determining which user terminals will collect measurements can "be the same threshold as is used for inter-RAT/frequency handover measurements." EX1005, ¶87.

A POSITA would have had a reasonable expectation of success in using the same threshold. Doing so would have been a trivial implementation well-within the skill of an ordinary artisan. EX1003, ¶199.

E. Remaining Limitations and Claims

The remaining limitations of independent claims 1, 9, and 13, and Claims 2-6 and 10-12, are rendered obvious by this ground for the same reasons discussed above for Ground 1. EX1003, ¶200.

IX. GROUND 3: CLAIMS 2-5, 10, 11, AND 15 ARE RENDERED OBVIOUS BY AMIRIJOO, TR-32.816, AND KAZMI IN FURTHER VIEW OF HAN

As discussed in Grounds 1 and 2, the combination of Amirijoo and TR-32.816 (with or without Kazmi) render obvious claims 2-5, 10, 11, and 15's recitation of receiving cell information via the second wireless access node, from devices that were transferred before the information was received. EX1003, ¶201.

Han provides further support that claims 2-5 are obvious, as it discloses a mechanism for a new serving base station to provide an updated NCL to a device's previous serving base station following the device's transfer. EX1003, ¶202.

In particular, Hans teaches that after a mobile station is transferred to a new serving base station, the new base station "detects a neighbor list error of the previous BS [base station] 101 … on the basis of log information reported from a corresponding MS [mobile station],” and then “updates a neighbor list of a previous BS 101.” EX1016, ¶¶43-45. The detection of a neighbor list error could be done by detecting “a service coverage hole in the middle with a previous BS.” *Id.*, ¶48. The new base station updates the previous base station’s neighbor list by “transmit[tin]g updated neighbor list information directly to the [previous base station] through a backbone network, or transmit the updated neighbor list information … through the WSM [Wireless System Manager] server.” *Id.*, ¶49. Alternatively, the MS can determine whether a neighbor list update is needed. *Id.*, ¶51.

A POSITA would have found it obvious to combine these teachings with the combination of Amirijoo, TR-32.816, and Kazmi. EX1003, ¶¶203-04. The combination would initially proceed as taught in Amirijoo where, as discussed in limitations 1[c], 1[b], and 1[c], a serving base station selects a handoff-ready mobile device to request CGI information (*i.e.* ***cell information***) from unknown neighboring cells, whether belonging to the serving base station’s network (*i.e.* ***first wireless access network***) or the candidate base station’s network (*i.e.* ***second wireless access network***). *Id.* As taught in Han, the mobile device would be handed off prior to transmitting the cell information to the serving base station. When the mobile device has been transferred to the new base station, it will provide the CGI information to the new base station where such information is transferred to the old base station through the backbone network, as taught in Han. *Id.*

Thus, in the combination, Amirijoo's "serving base station" ***receives cell information*** of unknown neighboring cells (whether belonging to a ***first or second wireless access network***) via the new base station (*i.e.* ***second wireless access node***), and such information is received ***after*** the mobile device is transferred. EX1003, ¶205. This combination therefore renders obvious limitations 2[b], 2[c], 4[b] and 4[c], and their corresponding limitations in claims 10, 11, and 15. *Id*. The remaining limitations of those claims, as well as claims 3, 5, 14, 16, and 17 (which depend on claims 2, 4, 10, 11, and 15), are rendered obvious for the same reasons discussed in Ground 1. *Id.*

A POSITA would be motivated to incorporate Han's teachings because of the benefits of centrally managing the NCLs of various base stations within cellular networks. EX1003, ¶206. Central management would minimize the amount of traffic dedicated to mobile stations requesting global identifiers of new base stations. *Id*. A POSITA would further be motivated because Han's teachings allow mobile devices to be transferred before transmitting cell information, which allows for quicker transfer while still allowing the (former) serving base station to receive the global identifiers it had requested the mobile stations obtain. *Id.* By performing an early handoff, this improves the service quality of the network, as a POSITA would understand handoffs are performed in order to allow the mobile station to be served by base station with a stronger signal or better service. *Id.*

A POSITA would have reasonably expected the combination to succeed. Amirijoo itself provides a mechanism for base stations to provide updated NCLs to other base stations, specifically the NRL handler discussed in Ground 1, claim 2. EX1003, ¶207. Moreover, Han itself provides sufficiently detailed explanations for its teachings that was within the capabilities of a POSITA to implement. *Id.*

Finally, Han is analogous art to Amirijoo, TR-32.816, Kazmi and the ’560 patent because Han is also directed to the field of managing wireless networks. EX1016, Abstract (“An apparatus and method for updating a neighbor list in a mobile communication system are provided.”); EX1003, ¶208.

X. GROUND 4: CLAIM 7 IS RENDERED OBVIOUS BY AMIRIJOO, TR-32.816, AND KAZMI IN FURTHER VIEW OF MACH

As discussed in Ground 2, the combination of Amirijoo, TR-32.816 and Kazmi renders obvious claim 7’s recitation of receiving and using location information as a parameter for selecting user terminals.

In the alternative, Mach teaches receiving and using location information, including GPS information, to perform a handover process. As discussed herein, it would have been obvious to incorporate such teachings into Amirijoo, TR-32.816 and Kazmi. EX1003, ¶¶209-10.

A. Motivation to Combine

A POSITA would have been motivated to combine Amirijoo, TR-32.816, and Kazmi with Mach's teachings of receiving and using GPS location information to improve a network's algorithms. EX1003, ¶¶211-18.

Mach teaches that user terminals can use a GPS network to obtain its position. EX1008, ¶41. Mach further teaches that a base station serving the user terminal can request the GPS location information, which is used to improve the network's operations and management functions." *Id.*

A POSITA would have been motivated to incorporate those teachings in the combined Amirijoo-TR-32.816-Kazmi system because of the well-known benefits of using GPS location information to improve network operations. EX1003, ¶¶212-13. Indeed, Mach itself teaches that network operation algorithms, including algorithms for determining handover, "can be improved using the UE's positional data (position, speed) obtained from the" GPS network. EX1008, ¶43; *see also* EX1008, ¶2 ("using position information from a first network (e.g., GPS) for improving performance in or of a second network (e.g., terrestrial cellular)."); ¶40 (GPS location information "can be used as an additional input or as a replacement input to estimated position/speed in many existing L1-L3 (and other) radio protocols and algorithms used in mobile phones to improve their performance, particularly when operating in a mobile network operating on protocols developed many years ago such as for example UMTS, though these teachings may also be used in other radio access technology systems such as LTE, WIMAX etc.").

In addition, Kazmi itself discloses that its selection criteria is used to determine whether a user terminal is "close to" the unknown cell. EX1007, ¶37. A POSITA would understand that the GPS location information disclosed in Mach would provide a precise location of the user terminal that would allow Kazmi's selection criteria to determine whether it is "close to" the unknown cell. EX1003, ¶214. Moreover, a POSITA would be motivated to use the GPS location information of the user terminal as a selection criteria because a POSITA would understand that the signal strength of the user terminal to the serving base station or unknown neighboring base station is highly dependent on the precise location of the user terminal. EX1003, ¶215. Specifically, a POSITA would understand that the proximity of a user terminal to a base station correlates with the strength of the signal between the user terminal and a base station—which is precisely why Kazmi uses selection criteria to determine whether a user terminal is "close to" the unknown cell. EX1007, ¶37. Thus, a POSITA would understand that using Mach's GPS location information as a selection criteria would improve Kazmi's selection of user terminals because it is more likely to result in user terminals that have a stronger signal with the unknown neighboring base station. EX1003, ¶215. This is especially since GPS location information was known to generally be more precise than other location methods, and a POSITA would be motivated to use GPS location information because it would provide a more accurate determination of whether a user terminal is close to a neighboring cell. *Id.*

In addition, Kazmi also teaches using the "speed at which the selected UE is moving" as a selection criteria. Indeed, Mach teaches that the speed of the user terminal can be calculated by "obtain[ing] multiple ***positions*** over a window of time and comput[ing] its speed from the elapsed distance over the elapsed time window." EX1008, ¶39. Thus, a POSITA would be motivated to give effect to Kazmi's teachings of using the user terminal's speed by using Mach's GPS location information to calculate said speed. EX1003, ¶216. In addition, a POSITA would be motivated by the fact that the GPS location information will be more precise than alternative methods of locating a user terminal and therefore provide a more accurate determination of speed. *Id.* A POSITA would understand that this combination would therefore improve the accuracy of Kazmi's selection criteria. *Id.*

A POSITA would have reasonably expected the combination to succeed. EX1003, ¶217. Mach provides sufficient disclosure for a POSITA to implement its teachings into the Amirijoo-TR-32.816-Kazmi combination, including teachings regarding how mobile station obtains GPS location information and provides such information to the serving base station. Using such information as selection criteria would further be within the skill of an ordinary artisan, as calculating distances and speed using GPS location information (*i.e.* longitude and latitude) would simply use rudimentary mathematics. *Id.*

Finally, Mach is analogous art to Amirijoo, TR-32.816, Kazmi and the ’560 patent because Mach is also directed to the field of managing wireless networks. EX1008, ¶2 (“[T]his invention relate[s] generally to wireless communication systems, methods, devices and computer programs ….”); EX1003, ¶218.

B. Claim 7: The system according to claim 1, wherein the telecommunications system is further configured for receiving location information from one or more of the detected user terminals and wherein the location information is used as a selection parameter for selecting the part of the detected user terminals.

Mach describes a base station that ***receives GPS location information*** from a mobile station, *i.e.* ***user terminal***, to be used for improving the algorithms used by the base station. EX1003, ¶¶219-20. As discussed above, these teachings would have been obvious to incorporate into the Amirijoo-TR-32.816-Kazmi combination such that the system would receive the GPS location information and use it as ***a parameter for selecting which user terminals to request CGI information***.

Mach discloses that a “mobile/portable UE 10,” *i.e.* ***user terminal***, “has access to a first wireless network 100” such as “a non-terrestrial positioning network (e.g., GPS).” EX1008, ¶41. The GPS receiver in the user terminal “***fixes its position*** from signals received from multiple GSP [sic] satellites,” *i.e.* ***obtains location information***. *Id.* Mach further discloses that the user terminal is connected to a base station of a "second wireless network 200," which is a cellular telephony network like "UMTS, E-UTRAN and GSM." *Id.* This cellular network may "put the UE's positional data which the UE obtains … to use, for example in its O&M [operations and management] functions." *Id.*, ¶46.

Mach specifically describes that the user terminal will "report to the second network … the UE's position," *i.e.* ***the telecommunications system is configured for receiving location information from the user terminal***. *Id.*, ¶47. Mach teaches that the location information "can significantly improve the operator's knowledge of his network coverage and be very useful for network maintenance or troubleshooting network problems." *Id.*, ¶48. Mach also teaches that the cellular network's "algorithms can be improved using the UE's positional data (position, speed)." *Id.*

As discussed above, it would have been obvious to incorporate these teachings into Amirijoo in view of Kazmi. EX1003, ¶¶221-23. In particular, as discussed in Ground 2, Kazmi describes ***selecting certain user terminals*** to request CGI information of an unknown neighbor cell based on certain ***selection parameters***, such as whether the user terminal is "close to" the unknown cell or the "speed at which the selected UE is moving." EX1007, ¶¶37, 43. In view of Mach, it would be obvious to use the GPS ***location information*** transmitted by the user terminal for these selection parameters. EX1003, ¶223. For example, it would be obvious to use the location information as taught in Mach to determine whether a user terminal is "close to" an unknown cell, *i.e.* ***using the location information as a selection parameter***. EX1007, ¶37. Similarly, it would be obvious to use the location information to determine the speed of the user terminal, *i.e.* ***using the location information as a selection parameter***. EX1007, ¶43. Indeed, Mach teaches that the speed of the user terminal can be calculated by "obtain[ing] multiple ***positions*** over a window of time and comput[ing] its speed from the elapsed distance over the elapsed time window." EX1008, ¶39.

XI. THE BOARD SHOULD NOT EXERCISE ITS DISCRETION TO DENY INSTITUTION

A. *Fintiv*

Fintiv Factors 1-5—concerning effects on (and of) parallel district court litigation—all favor institution because ***there is no parallel litigation*** concerning the validity of the '560 patent between Petitioner and Patent Owner. Petitioner has filed a separate action concerning non-infringement of the '560 patent but Petitioner did not challenge the validity of the '560 Patent. Further, the Petition's merits are compelling (Factor 6), which alone demonstrates that the PTAB should not discretionarily deny institution under Fintiv.

B. §314(a)

The '560 patent was previously subject to an earlier IPR proceeding that was filed on February 17, 2023 and instituted on September 7, 2023, but voluntarily dismissed following the parties' settlement. *General Plastic* governs when the Board may exercise its discretion to deny a follow-on petition against the same patent. Here, the *General Plastic* factors do not favor denial.

Discretionary denial "is not justified" where, as here, the Petitioners "do not have a significant relationship." *Videndum Production Sols., Inc. v. Rotolight Ltd.*, IPR2023-01218, Paper 12 at 7 (Apr. 19, 2024) (director review). "Petitioner's reliance on [an] earlier-filed" IPR, "even as a menu and roadmap, is not sufficient to create a significant relationship that favors denial." *Id.* at 5 (internal quotation marks and citations omitted). Here, "the instant Petition is the first filed by Petitioner[s] against the" '560 patent. *Id.* Petitioners have "different allegedly infringing products and in different district court proceedings" than Ericsson, have not coordinated with Ericsson regarding the '560 patent, and thus have no "significant relationship" with Ericsson. *Ford Motor Co. v. Neo Wireless LLC*, IPR2023-00763, Paper 28 at 7 & 10 (Mar. 22, 2024) (director review).

Moreover, while Petitioner is aware of Patent Owner's preliminary response and the Board's institution decision from the earlier proceeding, this factor favors institution since the Board ***granted*** institution. And because the earlier proceeding was instituted but not completed, the Board's finite resources would not be wasted by instituting this Petition.

Thus, the *General Plastic* factors weigh against discretionary denial.

C. §325(d)

The same or substsantially the same prior art or arguments were ***not*** previously were presented to the Office. None of the references relied upon in this Petition were considered or discussed by the examiner. Nor are any of them substantially the same as the art considered by the examiner.

As for the previous IPR, because it "was terminated after institution but before a final written decision was issued," "the concerns underlying § 325(d) are not implicated," and the references in that IPR are not considered "presented to the Office pursuant to § 325(d)." *BMW of N.A., LLC v. Michigan Motor Techs., LLC*, IPR2023-01032, Paper 14 at 16 (Jan. 29, 2024).

XII. MANDATORY NOTICES AND FEES

A. Real Party-In-Interest

The real parties-in-interest for Petitioners are Samsung Electronics America, Inc. and Samsung Electronics Co., Ltd.

B. Related Matters

Petitioner filed a declaratory judgment of non-infringement against the '560 patent in related district court litigation captioned *Samsung Electronics Co. Ltd et al, v. Koninklijke KPN N.V. et al*, 1:24-cv-01433-UNA (D. Del.).

C. Counsel and Service Information

Petitioner provides the following counsel and service information.

Petitioner consents to electronic service the email addresses listed in the table below. Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney accompanies this Petition.

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D. Payment of Fees

The undersigned authorizes the Office to charge the fee required for this Petition for *Inter Partes* Review to Deposit Account No. 50-5708. Any additional fees that might be due are also authorized.

XIII. CONCLUSION

For the reasons above, *inter partes* review is requested.

Date: January 17, 2025

Respectfully submitted,

By: */s/ James M. Glass*

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION, TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS

1. This Petition complies with the type-volume limitation of 14,000 words, comprising 13,939 words, as counted using the Microsoft Word software that was used to prepare this paper, excluding the parts exempted by 37 C.F.R. § 42.24(a).

2. This Petition complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared usin4g Microsoft® Word 2016 in 14-point Times New Roman.

Date: January 17, 2025

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on January 17, 2025, true and correct copies of the foregoing document and supporting materials were served in its entirety on the Patent Owner at the following address of record as listed on PAIR via Priority Mail Express® or Express Mail:

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Re: U.S. Pat. No. 8,660,560
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UNITED STATES

Date: January 17, 2025

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