UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC.,
Petitioner

v.

KONINKLIJKE KPN N.V.,
Patent Owner

Case No. IPR2023-00582
Patent No. 8,660,560

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

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Ex. 1005 U.S. Patent Publication No. 2009/0191862 ("Amirijoo")

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Ex. 1010 Cover Pleading to KPN's Infringement Contentions in Case No. 2:22-cv-282

Ex. 1011 KPN's Infringement Contentions for U.S. Patent No. 8,660,560 in Case No. 2:22-cv-282

Ex. 1012 Declaration of Craig Bishop

Ericsson Inc. ("Ericsson" or "Petitioner") requests *inter partes* review ("IPR") of claims 1 and 6–8 (the "Challenged Claims") of U.S. Patent No. 8,660,560 ("the '560 Patent") (Ex. 1001), which, according to PTO records, was assigned to Koninklijke KPN N.V. ("KPN" or "Patent Owner") on November 14, 2022. For the reasons set forth below, the Challenged Claims should be found unpatentable and canceled.

I. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

Real Parties-in-Interest: Petitioner identifies the following as the real parties-in-interest: Telefonaktiebolaget LM Ericsson and Ericsson Inc. Ericsson Inc. is a wholly-owned subsidiary of Telefonaktiebolaget LM Ericsson. No other parties have directed, funded, or controlled the filing of this petition.

Related Matters: The '560 Patent is asserted against Petitioner in *Koninklijke KPN N.V. v. Telefonaktiebolaget LM Ericsson, et al.*, No. 2:22-cv-00282-JRG (E.D. Tex. July 25, 2022).

Counsel and Service Information:

Petitioner identifies lead and backup counsel below. A Power of Attorney is filed concurrently herewith under 37 C.F.R. § 42.10(b). Petitioner consents to email service at: Ericsson_KPNII_IPRs@mckoolsmith.com.

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A copy of this entire Petition, including all Exhibits and a Power of Attorney, is being served by FEDERAL EXPRESS, costs prepaid, to the address of the attorney or agent of record for Patent Owner in the district court proceedings regarding the ’560 Patent: Lexie G. White, Susman Godfrey, L.L.P., 1000 Louisiana Street, Suite 5100, Houston, TX 77002; and to the address of the attorney or agent of record at the USPTO: 21005 – Hamilton, Brook, Smith & Reynolds, P.C., 530 Virginia Road, P.O. BOX 9133, Concord, MA 01742.

II. FEES

The Office is authorized to charge the fee in in 37 C.F.R. § 42.15(a) to Deposit Account No. DA-505723 and any additional fees that are due.

III. GROUNDS FOR STANDING

Petitioner certifies that the ’560 Patent is available for IPR and Petitioner is not barred or estopped from requesting IPR on the grounds identified herein.

IV. INTRODUCTION

Years before the filing date of the application that led to the '560 Patent, Petitioner developed a system for automatically updating a base station's list of neighboring cells based on measurement reports from mobile devices. Petitioner's delegates to the Third Generation Partnership Project (3GPP) contributed this technology to Fourth Generation (4G) cellular standards, laying the foundation for the "automatic neighbor relation" (ANR) technology used in contemporary wireless networks. Petitioner was awarded a number of patents for its work on ANR technology. As detailed herein, the published application for one such patent—US Patent Publication No. 2009/0191862A1 ("Amirijoo")—renders obvious the Challenged Claims.

V. OVERVIEW OF THE '560 PATENT

A. Background

Conventional wireless networks cover a geographic area divided into multiple cells. Ex. 1005, [0006]. 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. Ex. 1002, ¶¶42–47; Ex. 1006, 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. Ex. 1005, [0013]; Ex. 1006, 2:1–17. The network uses these measurement reports to determine whether a given mobile device should be transferred to a neighboring cell. Ex. 1005, [0013], [0017]–[0020]; Ex. 1002, ¶45.

It was well known in the prior art to the '560 Patent that base stations maintained a list of known neighbors called the "neighbor cell list." Ex. 1002, ¶¶48-49; Ex. 1006, 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." Ex. 1006, 2:5–10; Ex. 1002, ¶49; *see also* Ex. 1001, 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.").

The list of neighboring cells for a given base station was typically populated using planning tools before installing a new base station. Ex. 1005, [0013]. Because this process was costly and susceptible to prediction errors, engineers working for Ericsson recognized that new methods for automatically deriving and updating neighbor relation lists would benefit network operators. Ex. 1005, [0024]–[0025]; Ex. 1002, ¶¶50–51. Thus, Ericsson developed solutions for

automatically updating neighbor relation lists, including solutions for systems that support multiple types of radio access technology (*e.g.*, 4G LTE base stations with 2G and 3G neighbors). Ex. 1005, [0026]–[0031].

B. Purported Invention

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.” Ex. 1001, 1:56–58; *see also id*. at 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*. at 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”).

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*. at 7:37–52. But the ’560 Patent’s purported improvement over pre-existing systems was expressly disclosed in the prior art. Ex. 1002, ¶¶66, 86–93. As explained below, *Amirijoo* squarely teaches the alleged invention.

C. Exemplary Claim

Claim 1 is the sole independent claim challenged in this petition. As such, Claim 1 is representative of the other Challenged Claims and is reproduced below:

> 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:
>
> [1a] 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;
>
> [1b] a selector configured for selecting a part of the user terminals;
>
> [1c] 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;
>
> [1d] a receiver configured for receiving the cell information from the one or more of the selected user terminals;
>
> [1e] and 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.

Ex. 1001, Claim 1.

VI. CLAIM CONSTRUCTION

For IPR proceedings, the Board applies the claim construction standard set forth in *Phillips v. AWH Corp*., 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). Under *Phillips*, claim terms are typically given their ordinary and customary meanings, as would have been understood by a POSITA, at the time of the invention, having taken into consideration the language of the claims, the specification, and the prosecution history of record. *Phillips*, 415 F.3d at 1313; *see also id*. at 1312–16. The Board, however, only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Systems, Inc*., IPR2015-00633, Paper 11 at 16 (PTAB Aug. 14, 2015); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc*., 200 F.3d 795, 803 (Fed. Cir. 1999). Petitioner identifies the following terms for construction. Petitioner respectfully submits that the Board need not expressly construe any other term because the prior art invalidates the claims under any plausible construction. Ex. 1002, ¶¶54–55.

A. "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)

Claim 1 of the '560 Patent is directed to a system that includes an "*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." Ex. 1001, Claim 1 (emphasis added). Where, as here, 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) (formerly § 112, ¶ 6). *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). The presumption can be 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*. (citing *Greenberg v. Ethicon Endo–Surgery, Inc*., 91 F.3d 1580, 1583 (Fed. Cir. 1996)). Here, the claimed "updating means" lacks a sufficiently definite structure to overcome the presumption. Ex. 1002, ¶57. Accordingly, "updating means" is a means-plus-function term governed by 35 U.S.C. § 112(f).

Patent Owner will likely point to the "updater 14" disclosed in the '560 Patent as the corresponding structure for the claimed "updating means." *See* Ex. 1001, 9:58–59 ("Updater 14 may be used to update NCL-1A by adding wireless access node NodeB 2C, as illustrated."); *see also* Ex. 1002, ¶58 (identifying and summarizing the '560 Patent's disclosure concerning "updater 14"). To the extent

that the "updater" disclosed in the specification provides adequate structure for the means-plus-function limitation, and consistent with the Board's guidance that, "[w]here claim language may be construed according to 35 U.S.C. § 112(f), a petitioner must provide a construction that includes both the claimed function and the specific portions of the specification that describe the structure, material, or acts,".[1] Petitioner proposes the following construction:

Term	**Construction**
"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)	This is a means-plus-function term. **Function**: updating at least one of the first neighbour cell list and the second neighbour cell list using the received cell information. **Structure**: "updater 14" disclosed in the '560 Patent and equivalents thereof. *See* Ex. 1001, Fig. 2, 9:26–28, 9:58–59.[2]

B. "location information from one or more of the detected user terminals" (Claim 7)

Although the parties have not yet exchanged proposed claim constructions in the related district court proceeding, Patent Owner has served infringement

[1] Consolidated Trial Practice Guide (November 2019) at 43.

[2] "Updater 14" is depicted in Figure 2 of the '560 Patent and discussed in column 9 lines 26 through 28 and column 9 lines 58 through 59 of the specification. Ex. 1002, ¶58.

contentions evidencing its expected claim interpretations. *See generally* Ex. 1011. The Board may consider Patent Owner's statements in its infringement contentions about the scope of the challenged claims to determine the proper meaning of claim terms in IPR proceedings. *10X Genomics, Inc. v. Bio-Rad Laboratories, Inc.*, IPR2020-00087, Decision on Institution, 2020 WL 2026687, *7–9 (PTAB April 27, 2020) (collecting authority).

As reflected in its infringement contentions, Patent Owner argues that Ericsson's base stations are "configured for receiving location information from one or more of the detected user terminals" because "each Accused Product is configured by Ericsson to obtain information regarding at least the cell in which the terminal is operating, such cell corresponding to a particular geographic coverage area." Ex. 1011, 7–8. In view of its infringement contentions, Patent Owner's interpretation of the claimed "location information" must be broad enough to include information regarding the cell in which a terminal is operating.

Petitioner proposes Patent's Owner's interpretation of this term. Consistent with Patent's Owner's infringement contentions, the claimed "location information" includes information regarding the cell in which a terminal is operating. *See Vivid Techs.*, 200 F.3d at 803 ("[O]nly those terms need be construed that are in controversy, and *only to the extent necessary to resolve the controversy*.") (emphasis added); *see also 10X Genomics*, 2020 WL 2026687, *7

(construing "droplet receiving outlet" as "broad enough to include the opening at the top of an open outlet well" in view of Patent Owner's infringement contentions) (internal quotations omitted).

VII. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art at the time of the alleged invention of the '560 Patent ("POSITA"), which for purposes of this proceeding is on or around October 7, 2009, would have had a B.S. in Electrical Engineering or a related field with at least three years of experience designing, developing, and/or testing telecommunication systems. Ex. 1002, ¶¶31–37.[3] A POSITA would also have familiarity with the wireless standards and protocols related to data transmission and network management. *Id*., ¶33. More education may supplement practical experience or *vice versa*. *Id*.

VIII. PRECISE RELIEF REQUESTED AND GROUNDS RAISED

Claims 1 and 6–8 should be cancelled based on the following ground:

Ground 1: Claims 1 and 6 through 8 are unpatentable under pre-AIA 35 U.S.C. § 103 as being obvious in view of *Amirijoo* and *3GPP TR 32.816.*

[3] Petitioner submits the declaration of Dr. Mahon (Ex. 1002), an expert in the field of the '560 Patent. Ex. 1002, ¶¶3–18, 37–38; Ex. 1003.

A. 35 U.S.C. §325(d) is Inapplicable

The asserted references were not in an IDS filed during the prosecution of the ’560 Patent, and the Examiner never identified them or used them to reject claims during prosecution. *See generally* Ex. 1004. The Examiner also never considered the testimony of Petitioner’s expert, Dr. Mahon (Ex. 1002), regarding these references and the knowledge of a POSITA. The grounds in this petition are not substantially the same as prior art or arguments the Office previously considered. Thus, 35 U.S.C. §325(d) is inapplicable to this case.

B. Discretionary Denial Under 35 U.S.C. §314(a) is Unwarranted

The co-pending district court litigation does not warrant the exercise of discretion under 35 U.S.C. §314(a). *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 6 (PTAB. Mar. 20, 2020) (“*Fintiv-I*”) (precedential); *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (June 21, 2022) (“Interim Procedure”).

First factor. Petitioner intends to seek a stay in the Texas litigation upon institution of this petition. The Board has explained that it will not speculate as to the outcome of such unresolved issues before a district court, *Google LLC et al. v. Parus Holdings, Inc*., IPR2020-00847, Paper 9 at 12 (PTAB Oct. 21, 2020), and that this factor is neutral where a motion to stay has not yet been filed, *HP Inv., v.*

Slingshot Printing LLC, IPR2020-01084, Paper 13 at 9 (PTAB Jan. 14, 2021). Accordingly, this factor does not weigh in favor of discretionary denial.

Second factor. Regarding the Texas litigation, the court just recently held a scheduling conference on January 19, 2023. Trial is tentatively scheduled for April 1, 2024. Thus, this factor weighs against discretionary denial.

Third factor. The minimal investment by the court and the parties in the Texas litigation weighs against discretional denial. Fact discovery only recently opened, no depositions have occurred, and no efforts toward claim construction have begun. Patent owner has only recently served infringement contentions. Petitioner has not served invalidity contentions. In short, virtually nothing substantive has happened and the most resource intensive period in the district court case will occur after the institution decision in this proceeding. This alone strongly weighs against denial of institution. *See, e.g.*, *Hulu LLC v. SITO Mobile R&D IP, LLC*, IPR2021-00298, Paper 11 at 13 (PTAB May 19, 2021).

Fourth factor. Petitioner has not yet served invalidity contentions and thus ascertaining overlap of issues at this stage is purely speculative. Nonetheless, to mitigate any potential concerns, Petitioner stipulates that it will not pursue invalidity of the ’560 Patent in district court based on any instituted IPR grounds in this proceeding.

Fifth factor. Although Petitioner is a party to the Texas litigation, this factor does not outweigh the other factors that strongly weigh against discretionary denial.

Sixth factor. Petitioner filed this petition well before the statutory deadline for seeking *inter partes* review. In fact, Petitioner promptly filed this petition within seven weeks of receiving Patent Owner's infringement contentions. *See* Ex. 1010, 7 (evidencing that Patent Owner's infringement contentions were served on January 5, 2023). Petitioner's diligence in filing the petition favors institution. *Fintiv-I*, 11 ("[I]t is often reasonable for a petitioner to wait to file its petition until it learns which claims are being asserted against it in the parallel proceeding."); *see also Hulu,* IPR2021-00298, Paper 11 at 13 (finding that "Petitioner acted diligently" by filing the petition two months after receiving Patent Owner's preliminary infringement contentions). Further, institution is consistent with the significant public interest against "leaving bad patents enforceable." *Thryv, Inc. v. Click-To-Call Techs*., LP, 140 S. Ct. 1367, 1374 (2020). This Petition is the sole challenge to the '560 Patent before the Board, which also favors institution. *Google LLC v. Uniloc 2017 LLC*, IPR2020-00115, Paper 10 at 6 (PTAB May 12, 2020). Accordingly, based on a "holistic view of whether efficiency and integrity of the system are best served," the facts here weigh against exercising discretionary denial. *Samsung Elecs. Co. Ltd. v. Dynamics Inc.*, IPR2020-00505, Paper 11 at 15

(PTAB Aug. 12, 2020). At a minimum, factors 2, 3, 4, and 6 (or combinations thereof) outweigh factors 1 (which is neutral) and 5, thus favoring institution.

IX. Prior Art

A. *Amirijoo*

1. Overview of *Amirijoo*

Years before Patent Owner applied for the '560 Patent, Petitioner laid the foundation for the automatic neighbor relation (ANR) technology used in 4G cellular standards. In fact, Petitioner's delegates to the Third Generation Partnership Project (3GPP) coined the terms "automatic neighbor relation" and "neighbor relation list" to reflect the evolving role that conventional neighbor cell lists would fulfill in such standards:

3GPP TSG-SA5 (Telecom Management) **S5-070974**
Meeting SA5#53, 07 - 11 May 2007, Sophia Antipolis, FRANCE

Source:	Ericsson
Title:	Discussion on Automatic Neighbour Relation Lists for LTE
Document for:	Discussion and approval
Agenda Item:	6.8.4

. . .

One purpose of Neighbour Cell Lists in GSM and WCDMA is to allow the RBS to give their connected UEs a defined set of cells to measure. The need for the list to be short is that when GSM and WCDMA were standardized, it was not feasible to have the UE measure on all possible neighbours. For LTE, the situation is different. It is assumed that a LTE UE can decode any measurement cell identity on a frequency. For this reason, Neighbour Cell Lists as we know them from GSM or WCDMA will not be needed in LTE.

Neighbour Cell Lists will exist in LTE, though, but have a different role. In contrast to GSM and WCDMA, one purpose of Neighbour Cell Lists is to set up connections over the X2 interface between eNodeBs. This role is the reason for this contribution. As the role of the list has changed, we give it a new name: Neighbour Relation List.

Ex. 1008, 1; *see also* Ex. 1002, ¶¶50–51. Petitioner was awarded a number of patents for its work on ANR technology. The application for one such patent published on July 30, 2009 as U.S. Patent Publication No. 2009/0191862A1 ("*Amirijoo*"). *See generally* Ex. 1002, ¶¶61–66.

Amirijoo is directed to "apparatus, methods, and techniques for establishing and managing inter-RAT [*i.e.*, inter-radio access technology] measurements and information, such as that utilized by a neighbor relation list for inter-RAT/frequency mobility." Ex. 1005, [0026]. *Amirijoo* explains that "[p]reviously in 2G (e.g., GERAN) and 3G (e.g., UTRAN) systems NRL lists have been populated using planning tools by means of coverage predictions before the installation of a base station (BS)." Ex. 1005, [0024]. Basing neighbor lists on coverage predictions was undesirable because "[p]rediction errors, due to inaccuracies in topography data and wave propagation models, have forced the operators to resort to drive/walk tests to completely exhaust the coverage region and identify all handover regions and as such the neighbors." Ex. 1005, [0024]. Thus, *Amirijoo* teaches that "it is essential to make use of automatic in-service approaches for generating and updating NRLs." Ex. 1005, [0024].

To overcome shortcomings of conventional systems for managing neighbor lists, *Amirijoo* discloses "apparatus, methods, and techniques for automatically managing relationships to neighbors in other RATS/frequencies, for example

neighbor relation lists (NRLs) in E-UTRAN [*i.e.*, 4G/LTE] containing GERAN and UTRAN neighbors." Ex. 1005, [0027]. *Amirijoo* thus teaches that a system configured for "[a]utomatic inter-RAT/frequency NRL management as described herein leads to lower costs for the operators in planning and maintaining neighbor relation lists (NRLs), which are needed for seamless inter-RAT/frequency mobility." Ex. 1005, [0115]; *see also* Ex. 1002, ¶62 (explaining that, in this context, "mobility" is another term for handover).

Amirijoo's system comprises a serving base station and a candidate base station that use a different radio access technology and/or frequency (abbreviated "RAT/frequency" in *Amirijoo*). Ex. 1005, [0032]. To enable inter-RAT/frequency handover to a cell of the candidate base station, the serving base station must have the cell's "unique identity"—the "Cell Global Identity (CGI)"—stored in its neighbor relation list. *Id*. at [0013]–[0015]. Accordingly, when a mobile device identifies an inter-RAT/frequency cell that is not on the serving base station's neighbor relation list, the serving base station sends a "CGI measurement request" to the mobile device. *Id.* at [0079]–[0081], Fig. 4. The serving base station includes a "measurement communication function" configured to issue such requests. *See id.* at [0077], Fig. 3 (teaching that "measurement communication function 52 controls communications with mobile station 30 or requesting or obtaining . . . measurements or information for potential handover purposes").

Once the mobile device responds with the CGI for the newly-discovered inter-RAT/frequency cell, the serving base station updates its neighbor relation list. *Id*. at [0082]; Ex. 1002, ¶65.

Amirijoo further teaches 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)." Ex. 1005, [0082]; *see also id*. at [0066] (noting that the "NRL handler" is part of the core network). Following this "optional act," the "NRL handler informs the candidate base station (BS) regarding the new neighbor relation," and "the candidate base station (BS) adds an entry corresponding to the serving base station (BS) in its NRL." *Id*. at [0082]. Thus, *Amirijoo* teaches a system for updating the neighbor relation lists of base stations in different wireless networks based on measurement reports received from mobile devices undergoing inter-RAT/frequency handover. Ex. 1002, ¶65.

2. *Amirijoo* Qualifies as Prior Art to the '560 Patent Under at least Pre-AIA 35 U.S.C. §§ 102(a), 102(b), and/or 102(e).

The '560 Patent was filed in the United States as Application No. 13/499,924 on October 5, 2010, and claims priority to European Patent Application No. EP09172399, filed October 7, 2009. Petitioner assumes without conceding that the date of the first priority application filed "in the United States" was October 5, 2010, under pre-AIA § 102(b).

Amirijoo was filed on December 10, 2008, and published on July 30, 2009. Ex. 1005, Cover. Accordingly, *Amirijoo* qualifies as prior art to the '560 Patent under at least pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e).

B. *3GPP TR 32.816*

1. Overview of *3GPP TR 32.816*

3GPP TR 32.816 is a 3GPP technical report (TR) expressly cited in *Amirijoo*. *See* Ex. 1005, 0016; *see also* Ex. 1002, ¶¶68–69. This particular technical report describes various improvements to network management that 3GPP investigated during the development of the LTE standard, including "neighbour cell list optimization." Ex. 1007, 4, 11; *see also* Ex. 1005, [0016] ("One focus area in E-UTRAN standardization work is to ensure that the new network is simple to deploy and cost efficient to operate. The vision is that the new system shall be self-optimizing and self-configuring in as many aspects as possible.") (citing *3GPP TR 32.816*).

3GPP TR 32.816 teaches that "[b]ased on the assumed initial neighbour set further optimisation of neighbour list (including 2G/3G) is needed considering e.g. radio measurements of eNodeBs and UEs or call events like call drops, handover problems etc." Ex. 1007, 11. To that end, *3GPP TR 32.816* teaches that "RRC connections (calls, signalling procedures) and their accompanying measurements can be used to gather the needed information about neighbours," thus enabling the

network to add new neighbors "based on information in UEs about detected cells" and check whether known neighbors "are really appropriate concerning real RF conditions." Ex. 1007, 11; Ex. 1002, ¶69. *3GPP TR 32.816* further teaches that an algorithm optimizes the neighbor cell list based on various types of "input information," including "Location of the neighbours (distance)," "UE measurement reporting or eNodeB radio scanning for neighbours," "Field strength information," and "Event measurements like cell specific call drops or handover failures." Ex. 1007, 11.

2. *3GPP TR 32.816* Qualifies as Prior Art to the '560 Patent Under at least Pre-AIA 35 U.S.C. §§ 102(a) and/or 102(b)

As explained in detail by Craig Bishop, who worked as a rapporteur for 3GPP from 1998 to 2003, 3GPP technical reports (TRs), including *3GPP TR 32.816*, are publically accessible as of the date they were uploaded to 3GPP's FTP server. Ex. 1012, ¶¶28–36, 50–57. Indeed, at least one PTAB panel has found that this is true of all 3GPP documents:

> TR 33.821 and TS 23.401,[4] **like all 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**.

Samsung Electronics Co., Ltd. v. Huawei Technologies Co., Ltd., IPR2017-01487, Decision on Institution, 2018 WL 6519544, *5 (PTAB Dec. 10, 2018) (emphasis added).

3GPP TR 32.816 was uploaded to 3GPP's file server on May 23, 2007. Ex. 1012, ¶¶50–57. As a result, *3GPP TR 32.816* became a "printed publication" under pre-AIA 35 U.S.C. §§ 102(a) and 102(b) on May 23, 2007. *See, e.g.*, *Samsung Electronics Co.*, 2018 WL 6519544, *3–5 (concluding that technical reports and

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[4] Like *3GPP TR 32.816*, "TR 33.821" is a technical report that was prepared and published by 3GPP. "TS 23.401" is another type of 3GPP document called a technical specification (TS). *See, e.g.*, https://www.3gpp.org/specifications; *see also* Ex. 1012, ¶¶ 18–49 (describing the various categories of documents published by 3GPP as part of standard development, including technical reports and specifications).

specifications uploaded to 3GPP's file server before a challenged patent's priority date qualify as prior art under 35 U.S.C. § 102). *3GPP TR 32.816* thus qualifies as prior art to the '560 Patent at least under pre-AIA 35 U.S.C. §§ 102(a) and 102(b).[5]

X. ASSERTED GROUNDS OF UNPATENTABILITY

A. Motivation to Combine *Amirijoo* with *3GPP TR 32.816*

A POSITA would have been motivated to combine *Amirijoo* with *3GPP TR 32.816* because *Amirijoo* expressly cites *3GPP TR 32.816*. Ex. 1005, [0016]; Ex. 1002, ¶70. Where, as here, 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); *GC Corporation v. Ardent, Inc.*, IPR2016–01733, Final Written Decision, 2018 WL 5880929, at *6 (PTAB Feb. 2, 2018) (same).

Moreover, both *Amirijoo* and *3GPP TR 32.816* are in the same field of endeavor and are directed to the same problem: ensuring that 4G wireless networks are cost-efficient to deploy and operate by incorporating technology for self-optimizing and self-configuring the network. Ex. 1002, ¶71; Ex. 1005, [0024]–

[5] The other 3GPP documents cited in this petition—Exs. 1008 and 1009—were also uploaded to 3GPP's file server before October 2009. Ex. 1012, ¶¶58–73.

[0026]; Ex. 1007, 4. A POSITA would have been motivated to combine *Amirijoo* with the interrelated teachings of similar references, such as *3GPP TR 32.816*, to achieve this goal. Ex. 1002, ¶71. In particular, a POSITA had ample reason to supplement *Amirijoo's* system for "automatically managing relationships to neighbors in other RATS/frequencies" with the implementation details of the "[n]eighbour cell list[s]" disclosed in *3GPP TR 32.816* and would have had a reasonable expectation of success in doing so. *Id*. at ¶¶71–72; Ex. 1005, [0027]; Ex. 1007, 11; *see infra* Sections X(B)(1)(a) and X(B)(1)(f) (detailing the motivation to combine *Amirijoo's* system with the neighbor cell lists taught in *3GPP TR 32.816*).

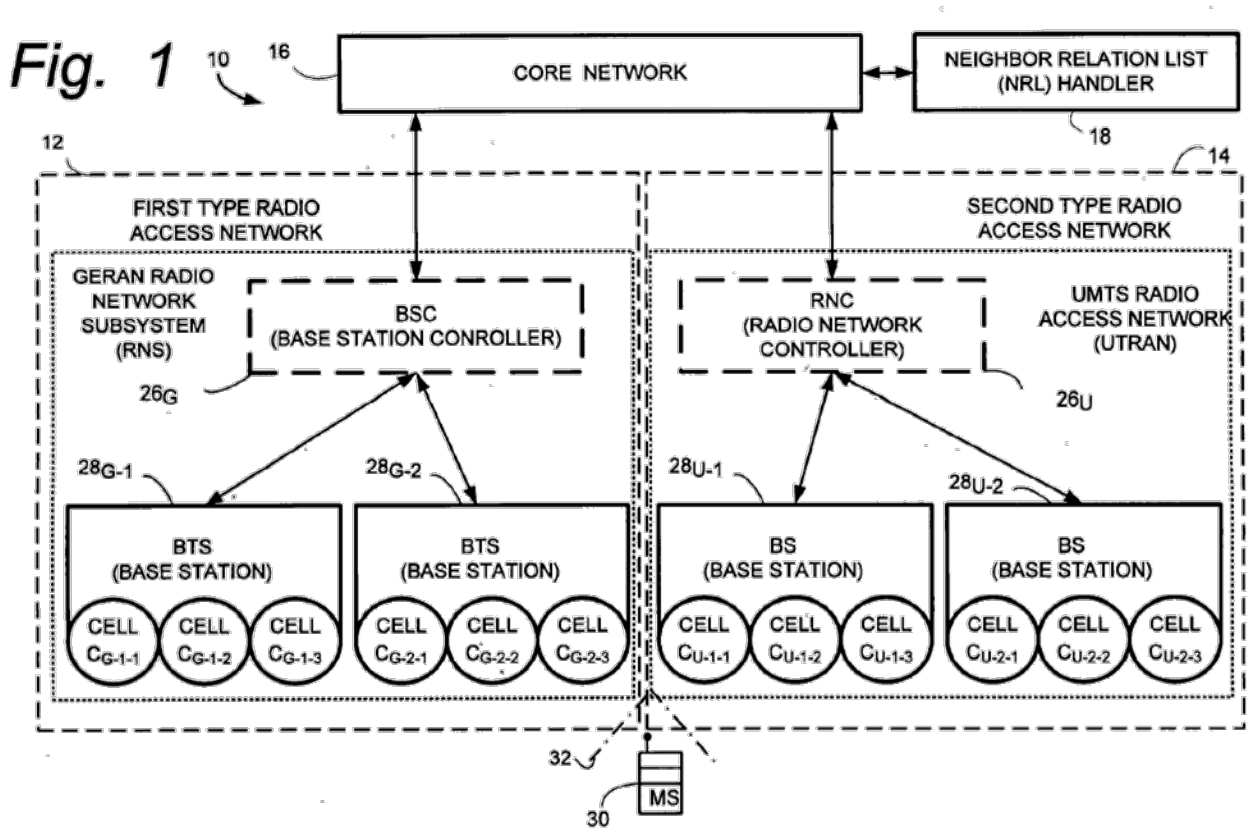
B. The Challenged Claims Are Obvious in View of *Amirijoo* Combined with *3GPP TR 32.816*

1. Claim 1

a) [1pre] 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

The combination of *Amirijoo* and *3GPP TR 32.816* (hereafter, *Amirijoo-3GPP TR 32.816*) discloses a system for updating neighbor cell lists in a telecom communications architecture comprising different wireless access networks. Ex.

1002, ¶¶73–82. For example, *Amirijoo* teaches "apparatus, methods, and techniques for automatically managing relationships to neighbors in other RATS/frequencies, for example neighbor relation lists (NRLs) in E-UTRAN [*i.e.*, a 4G network] containing GERAN [*i.e.*, a 2G network] and UTRAN [*i.e.*, a 3G network] neighbors." Ex. 1005, [0027]; *see also* Ex. 1002, ¶74 (explaining the relationship between E-UTRAN, GERAN, and UTRAN). *Amirijoo's* system is depicted in Figure 1, which is reproduced below:



Ex. 1005, Fig. 1.

As shown above, *Amirijoo* teaches "a telecommunications system operating in conjunction with both a *first radio access network* having a first type radio

access technology and a *second radio access network* having a second type radio access technology." *Id*. at [0048], [0066] (emphasis added). The first radio access network includes a plurality of base stations (labeled 28_{G-1} and 28_{G-2}), and each base station serves three cells (labeled C_{G-1-1} to C_{G-2-3}). *Id*. at [0067]–[0068]. Likewise, the second radio access network includes a plurality of base stations (labeled 28_{U-1} and 28_{U-2}), each of which also serves three cells (labeled C_{U-1-1} to C_{U-2-3}). *Id*. at [0069]. The base stations of the first and second wireless networks are first and second wireless access nodes, respectively, that communicate with mobile devices over the air interface. Ex. 1002, ¶¶76–77; Ex. 1005, [0070].

To transfer a mobile device to a neighboring cell served by a base station of a different wireless network, *Amirijoo* teaches that the base station currently connected to the mobile device (*i.e*., the serving base station)[6] must know the Cell Global Identity (CGI) of the neighbor. Ex. 1005, [0013]–[0014], [0110]–[0115]. Accordingly, each base station in *Amirijoo's* system maintains a neighbor relation list that includes, at the very least, the CGIs of surrounding cells that are candidates

[6] As explained in *Amirijoo*, the base station to which the mobile device is currently connected is called the "serving base station," while the base station to which the mobile device will be transferred in called the "target or candidate base station." Ex. 1005, [0013]; *see also* Ex. 1002, ¶42.

for inter-RAT/frequency handover. *Id*. at [0014]–[0015], [0082]; Ex. 1002, ¶77. *Amirijoo* further teaches that the system is configured to automatically update these lists based on measurement reports received from mobile devices. Ex. 1005, [0027]–[0031], [0079]–[0082]; Ex. 1002, ¶¶63–65, 77. *Amirijoo,* therefore, discloses a system for updating a neighbor relation list in a telecom communications architecture comprising a first wireless access network having a first wireless access node for which at least one first neighbor relation list is defined and a second wireless access network having a second wireless access node for which at least one second neighbor relation list is defined.

Patent Owner may attempt to distinguish *Amirijoo* by arguing that the Challenged Claims are directed to a system for updating "neighbor *cell* lists," while *Amirijoo* is directed to a system for updating "neighbor *relation* lists." It would have been obvious, however, to modify *Amirijoo's* system to update neighbor cell lists, like those disclosed in *3GPP TR 32.816*. Ex. 1002, ¶¶78–82. Indeed, *Amirijoo* expressly cites *3GPP TR 32.816* as evidence of 3GPP's "vision" of a "self-optimizing and self-configuring" network that is "simple to deploy and cost efficient to operate." Ex. 1005, [0016]. And, echoing *Amirjoo's* description, *3GPP TR 32.816* discloses that "neighbour cell list optimization" is a specific use case for such a network. Ex. 1007, 11–12. Thus, the references themselves provide express motivation for a POSITA to combine *Amirjoo* and *3GPP TR 32.816*.

A POSITA would have been further motivated to combine *Amirijoo* with *3GPP TR 32.816* to enable backward compatibility with pre-existing 2G and 3G systems that relied upon neighbor cell lists. Ex. 1002, ¶¶71–72, 79–82. *Amirijoo* explains that "E-UTRAN [*i.e.*, LTE] will initially have limited radio coverage," which necessitates the ability to "Hand Over (HO) mobile stations (MSs) in E-UTRAN to an alternative Radio Access Technology (RAT) such as GSM EDGE Radio Access Network (GERAN) or UTRAN with better coverage." Ex. 1005, [0015]. In a similar vein, *Amirijoo* explains that handovers in the opposite direction (*i.e.*, from a 2G or 3G network to an LTE network) are also "desired since higher data rates are offered by E-UTRAN, enabling services with greater bandwidth requirements." *Id.* at [0015]. In light of *Amirijoo's* teaching that backward compatibility with pre-existing 2G and 3G networks would be necessary, a POSITA had ample motivation to combine the neighbor cell lists implemented in the very same networks with *Amirijoo's* system for "automatically managing relationships to neighbors in other RATs/frequencies." Ex. 1002, ¶¶71–72, 79; Ex. 1005, [0027]; Ex. 1007, 11.

The benefits of reusing existing cellular technology, such as neighbor cell lists, were well known to POSITAs. Ex. 1002, ¶80. In fact, *3GPP TR 32.816* expressly discloses several of these benefits:

The LTE and SAE systems need to be managed. As LTE and SAE are evolvements of UMTS, the management should also evolve from UMTS.

A reuse of the existing UMTS management standard solutions will have the following benefits:

- It is proven in operation;
- It will minimise both the standardisation and product development efforts (i.e. the cost and time);
- It provides a base for on which more functionality can be developed (compared with making everything new from the start);
- It will shorten the time to market for LTE and SAE systems;
- It will facilitate a seamless coexistence with UMTS management systems.

Ex. 1007, 4; *see also* Ex. 1002, ¶80 n.2 (explaining that "UMTS" is another term for 3G communication systems). Any of these art-recognized benefits provides sufficient motivation for a POSITA to supplement *Amirijoo* with the neighbor cell lists disclosed in *3GPP TR 32.816.* Ex. 1002, ¶¶80–81.

Amirijoo-3GPP TR 32.816, therefore, teaches a system for updating a neighbor cell list comprising a first wireless access network having a first wireless access node for which at least one first neighbor cell list is defined and a second wireless access network having a second wireless access node for which at least one second neighbor cell list is defined.

b) **[1a] 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-3GPP TR 32.816 discloses 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. Ex. 1002, ¶¶83–85. For example, Figure 3 of *Amirijoo* (reproduced

below) depicts a "representative mobile terminal and radio access network nodes [*i.e.*, base stations] which are *involved in an example inter-RAT/frequency handover*." Ex. 1005, [0050] (emphasis added).

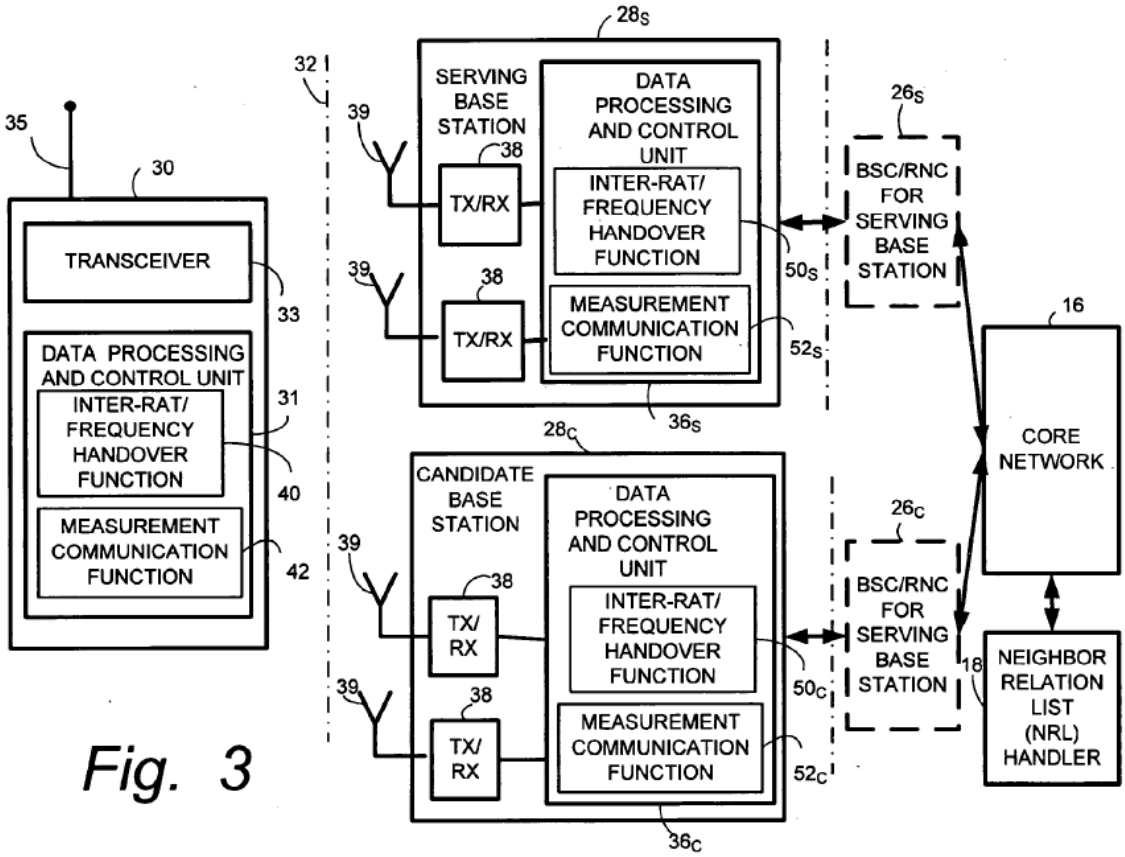


Fig. 3

Id. at Fig. 3.

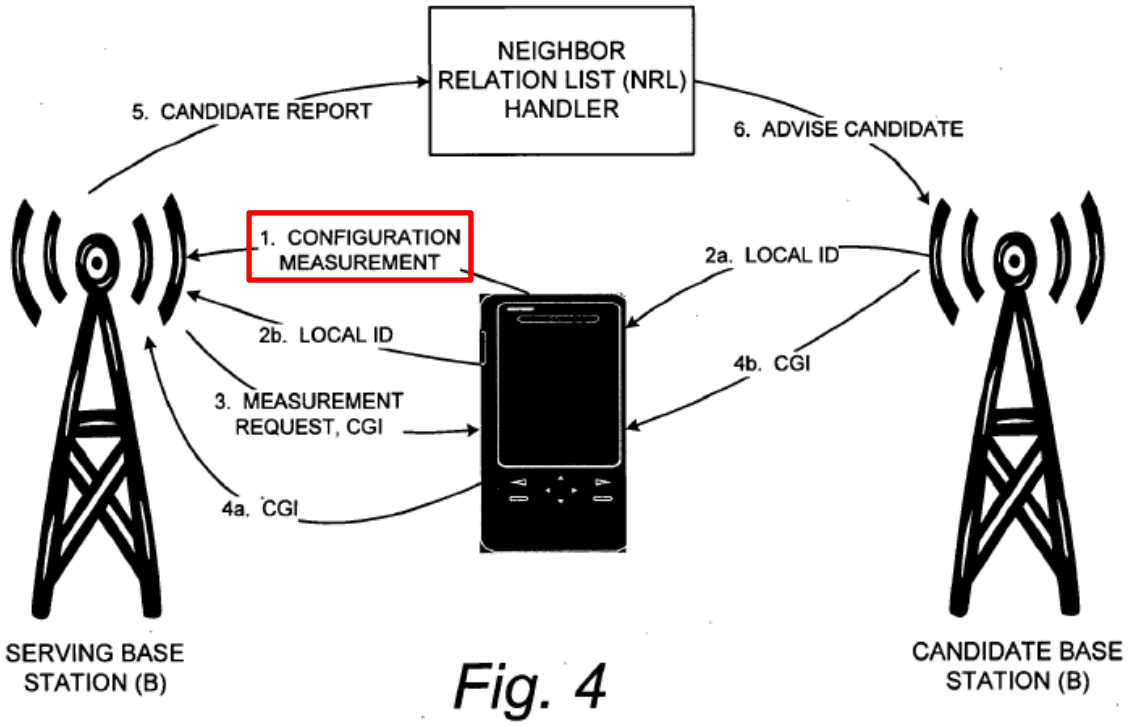
As reflected in Figure 3, *Amirijoo*'s system includes a serving base station (labeled 28_S) that is connected to one or more mobile devices (labeled 30) to be transferred from the serving base station to a candidate base station in a different wireless network (labeled 28_C). Ex. 1005, [0050], [0074]; Ex. 1002, ¶84. "For inter-RAT/frequency HOs [*i.e.*, handovers]," *Amirijoo* explains that "the serving

base station (BS) needs to be able to trigger inter-RAT/frequency measurements, make a comparison between different RATs/frequencies, and make a HO decision." Ex. 1005, [0017]; *see also id*. at Fig. 13, [0018]–[0020]. To that end, *Amirijoo* teaches that the serving base station's "data processing and control unit" (labeled 36_S) "comprise[s] inter-RAT/frequency handover function 50 and measurement communication function 52." *Id*. at [0077]. *Amirijoo* further teaches that "the 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)," while the "inter-RAT/frequency handover function 50 is invoked when it is determined that a handover is to occur." *Id*. at [0077]. *Amirijoo-3GPP TR 32.816*, therefore, teaches that the data processing and control unit of the serving base station comprises a detector configured to detect user terminals to be transferred from the serving base station (*i.e*., a first wireless access node) to a cell of the candidate base station (*i.e*., a second wireless access node). Ex. 1002, ¶85.

c) **[1b] a selector configured for selecting a part of the user terminals;**

Amirijoo-3GPP TR 32.816 discloses a selector configured for selecting a part of the user terminals to provide cell information regarding nodes in the second wireless network. Ex. 1002, ¶86–93. Specifically, *Amirijoo* teaches that "Inter-RAT/frequency measurements from *certain mobile stations* chosen using the

triggering condition(s) described in Section 2.0 are used to detect new inter-RAT/frequency neighbors, as illustrated in FIG. 4, act (1).” Ex. 1005, [0079] (emphasis added).



Id. at Fig. 4, [0051] (annotations added).

In one embodiment, *Amirijoo* discloses that “the base station (BS) receives measurements from the mobile station (MS) and evaluates the triggering conditions.” *Id*. at [0079]. In an alternative embodiment, *Amirijoo* discloses that “the base station (BS) informs the mobile station (MS) regarding the triggering conditions and the mobile station (MS) evaluates the conditions and starts inter-RAT/frequency measurements once they are triggered.” *Id*. at [0079]. In either case, *Amirijoo* teaches a selector configured to select one or more mobile devices

to participate in the process of updating the neighbor relation list. Ex. 1002, ¶¶86–87; *see also* Ex. 1005, [0080] ("The mobile station (MS) measures the signal quality of surrounding inter-RAT/frequency base stations once the condition(s) . . . are triggered.").

Amirijoo teaches that "[d]ifferent triggering criteria for inter-RAT/frequency measurements are possible." Ex. 1005, [0083]. As "[s]uggested criteria," *Amirijoo* discloses the following conditions:

> a) Mobile stations with low data rates perform inter-RAT/frequency measurements. Retransmissions due to poor channel quality may result in a greater actual transmitted data than required by the services in the mobile station (MS). Therefore, the criterion for choosing mobile stations for measurements must be based on the actual transmitted UL and DL data rates to the mobile station (MS).
>
> b) Mobile stations with an estimated signal quality of the serving base station (BS) below a given threshold (see threshold C in FIG. 6) perform inter-RAT/frequency measurements.

Id. at [0083]–[0085]. In other words, the first triggering condition taught in *Amirijoo* uses a selector configured to select "mobile stations with a low average number of scheduled scheduling blocks (SBs)"—*i.e*., mobile devices with relatively low data demands—to perform inter-RAT/frequency measurements. Ex. 1002, ¶89; Ex. 1005, [0086]. By contrast, the second triggering condition disclosed

in *Amirijoo* uses a selector configured to select mobile devices whose signal quality has fallen below a predetermined threshold to perform inter-RAT/frequency measurements. Ex. 1002, ¶90; Ex. 1005, [0085], [0087].

Amirijoo further teaches that the threshold used to trigger inter-RAT/frequency measurements "can depend on the service, subscription type, UE type, etc." Ex. 1005, [0089]. To illustrate the operation of a service-dependent threshold, *Amirijoo* discloses that "Gold Subscription users are assigned lower threshold C than ordinary subscription users to avoid bulk measurements to a larger extent." *Id*. Here, too, *Amirijoo* teaches a selector[7] configured to select a part of the mobile devices—"Gold Subscription users"—to conduct the inter-RAT/frequency measurements used to update the neighbor relation list. Ex. 1002, ¶91.

The triggering conditions disclosed in *Amirijoo* map to the claimed "selector configured for selecting a part of the user terminals." Ex. 1005, [0079], [0083]–

[7] As explained in greater detail in Section X(B)(4), this triggering condition maps directly to Claim 8 of the '560 Patent, which specifies that a "one or more thresholds, *possibly service-dependent*, are defined in the telecommunications system for transferring the user terminals between [wireless networks] and wherein at least one of the thresholds is used as a selection parameter for selecting the part of the detected user terminals." Ex. 1001, Claim 8 (emphasis added).

[0089]; Ex. 1002, ¶92. Specifically, the first triggering condition selects a part of the mobile devices based on the amount of data being consumed by the mobile devices (Ex. 1005, [0084], [0086]), the second triggering condition selects a part of the mobile devices based on the quality of the connection between the mobile devices and the serving base station (Ex. 1005, [0085]), and the third triggering condition selects a part of the mobile devices based, at least in part, on characteristics of the subscriber or the mobile device itself (Ex. 1005, [0089]). *See also* Ex. 1002, ¶¶92–93. Thus, *Amirijoo-3GPP TR 32.816* discloses a selector configured for selecting a part of the user terminals.

d) **[1c] 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-3GPP TR 32.816 discloses a request generator configured for requesting from the first wireless access node (*i.e.*, the serving base station) the selected user terminals to report cell information of a plurality of wireless access nodes of at least the second wireless access network. Ex. 1002, ¶¶94–98. For example, *Amirijoo* teaches that the data processing and control unit (labeled 36_S) of the serving base station is connected to "one or more base station transceivers (TX/RX) 38" that enable communications over the air interface with selected

mobile device(s). Ex. 1005, [0076]; *see also* Ex. 1002, ¶94 (explaining that "TX" and "RX" are well-known abbreviations for transmitter and receiver, respectively).

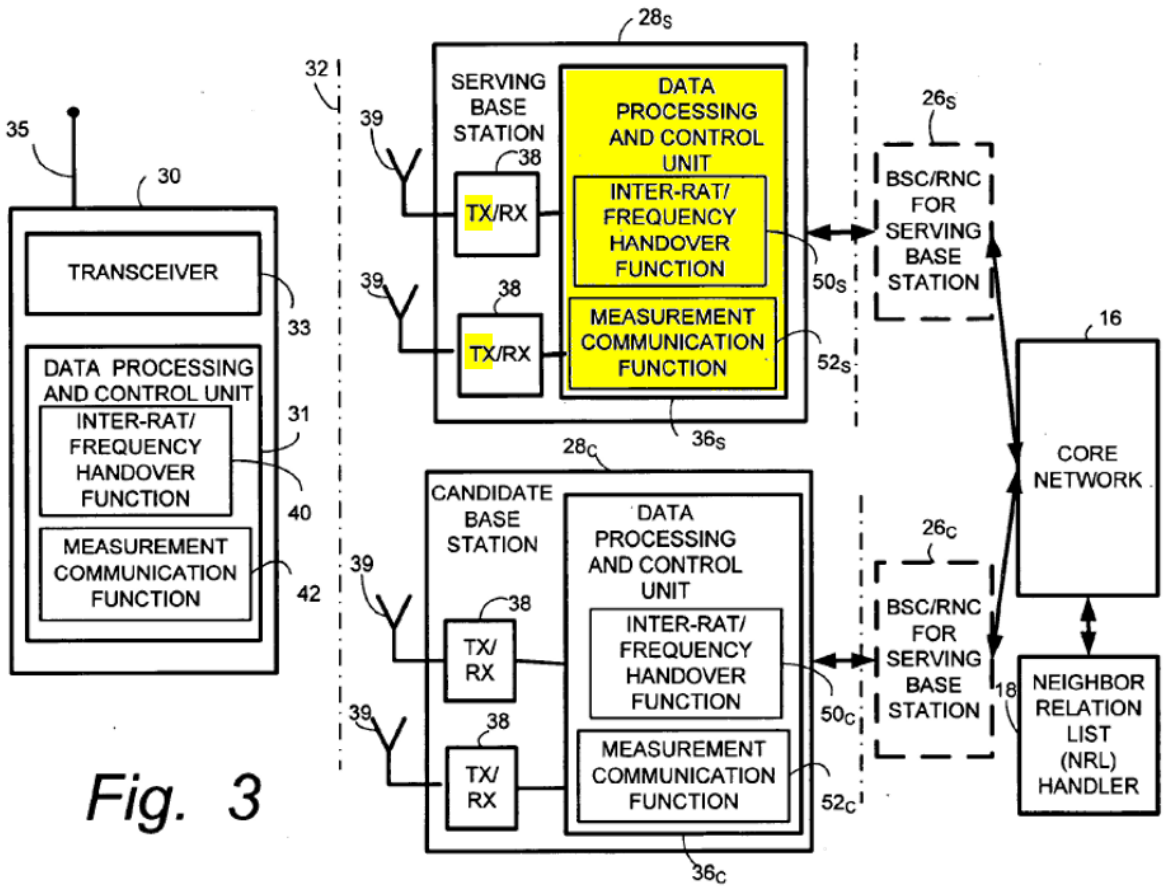


Fig. 3

Ex. 1005, Fig. 3 (annotations added). The data processing and control unit discloses a request generator because it includes a "measurement communication function" that "controls communications with mobile station (MS) 30 for *requesting* or obtaining measurements or information . . . for potential handover purposes." Ex. 1005, [0077] (emphasis added).

Moreover, *Amirijoo* teaches that the serving base station's data processing and control unit is configured to request local IDs and CGIs (*i.e.*, cell information)

from selected mobile terminals. Ex. 1005, [0081], Fig. 4; Ex. 1002, ¶¶94–98. For example, *Amirijoo* teaches that "[t]he mobile station (MS) measures the signal quality of surrounding inter-RAT/frequency base stations once the condition(s) in Section 2.0 are triggered." Ex. 1005, [0080]. After measuring the signal quality of "surrounding inter-RAT/frequency base stations" (*i.e.*, "a plurality of wireless access nodes"), the mobile device reports the results together with the "local ID" of each detected neighbor. Ex. 1005, [0080]. *Amirijoo* discloses that "local IDs" of neighboring cells "can take the form, for example, of the Base Station Identity Code (BSIC) for GERAN [*i.e.*, a 2G/GSM network] or the scrambling code for UTRAN [*i.e.*, a 3G/WCDMA network]." *Id*. The "local IDs" disclosed in *Amirijoo* are "cell information" of wireless access nodes in different wireless networks. Ex. 1002, ¶¶95–96; *see also* Ex. 1005, [0006] ("Each cell is identified by a[n] identity within the local radio area, which is broadcast in the cell.")

In addition to the local IDs of neighboring cells, *Amirijoo* teaches that the serving base station's data processing and control unit is configured to request one or more of the selected mobile devices to report the Cell Global Identities (CGIs)[8] of cells that are not on the serving base station's neighbor relation list. *See* Ex. 1005, [0081] ("If the serving base station (BS) has no prior knowledge of a

[8] The '560 Patent concedes that a "Cell Global Identifier (CGI)" is cell information. Ex. 1001, 2:2–5, 9:52–62.

neighbor base station (BS) with the reported local ID, the serving base station (BS) may send a CGI measurement request to the mobile station (MS), as illustrated by act (3) in FIG. 4."); *see also id*. at [0090]–[0109] (detailing "different embodiments and modes" for obtaining the "[CGI] of a base station (BS) in another RAT/frequency"). As shown below, *Amirijoo* teaches that the serving base station requests unknown CGIs by transmitting a "measurement request, CGI" message to the mobile device.

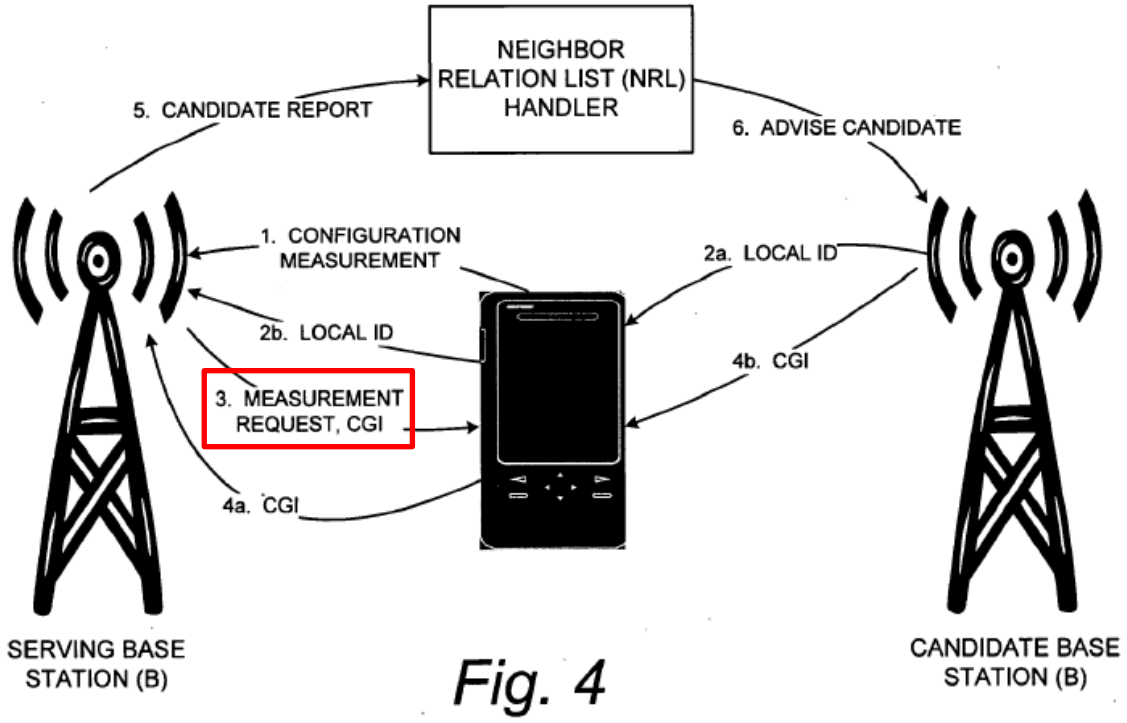


Fig. 4

Ex. 1005, Fig. 4 (annotations added). Accordingly, *Amirijoo* teaches that the serving base station comprises a request generator configured to request at least two types of cell information—local IDs and CGIs—of candidate base stations in a second wireless access network. Ex. 1002, ¶¶97–98.

e) **[1d] a receiver configured for receiving the cell information from the one or more of the selected user terminals; and**

Amirijoo-3GPP TR 32.816 discloses a receiver configured for receiving cell information from one or more of the selected user terminals. Ex. 1002, ¶¶99–100. As reflected in Figure 3 of *Amirijoo*, the data processing and control unit (labeled 36_S) of the serving base station is connected to "one or more base station transceivers (TX/RX) 38." Ex. 1005, [0076]. *Amirijoo* teaches that the serving base station's receiver (*i.e.*, the "RX" component of the transceiver) is configured to receive inter-RAT/frequency local IDs and CGIs (*i.e.*, cell information) responsive to requests for such information from the selected mobile devices. Ex. 1002, ¶99; Ex. 1005, [0081], [0107]–[0108].

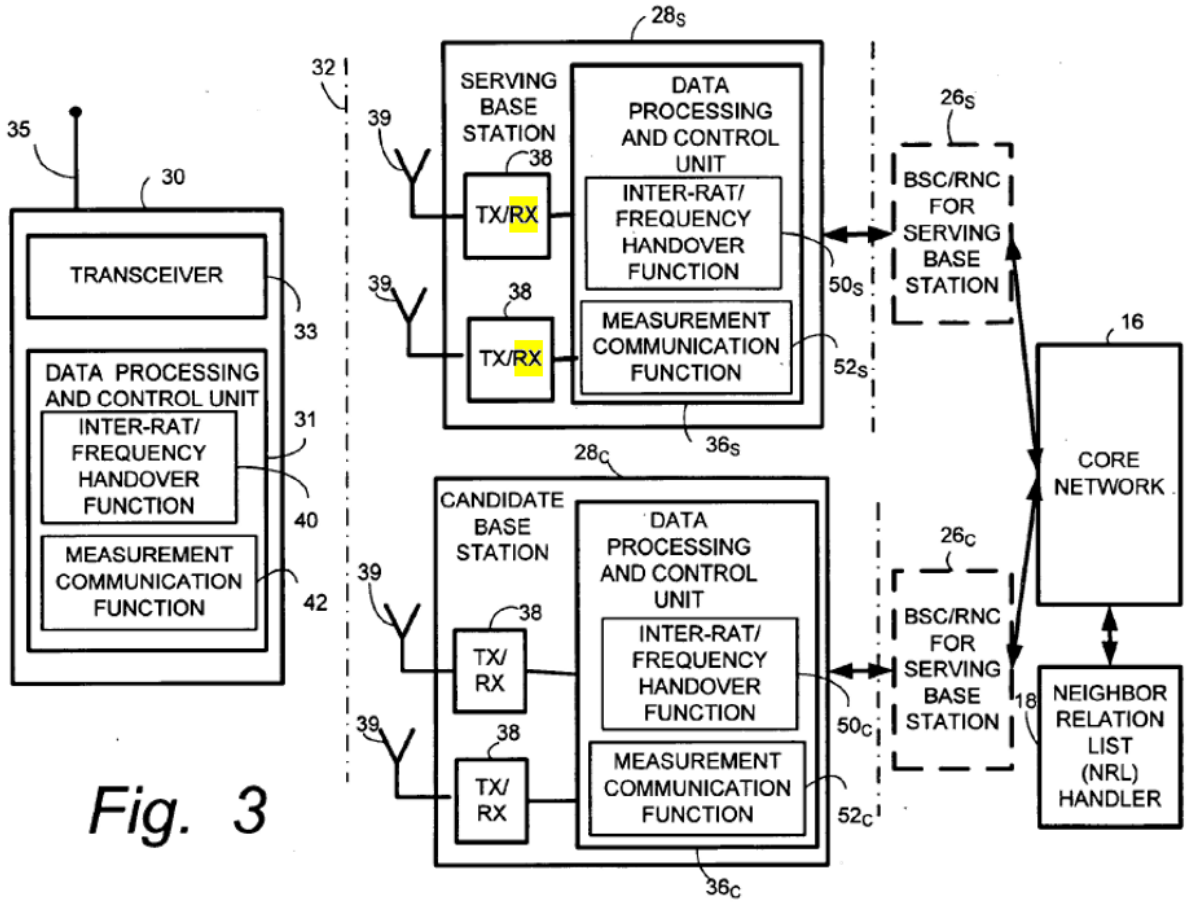


Fig. 3

Ex. 1005, Fig. 3 (annotations added); *see also id*. at Fig. 4 (showing that the serving base station receives "LOCAL ID" and "CGI" in steps 2b and 4a, respectively). *Amirijoo*, therefore, teaches a receiver configured for receiving the cell information from the one or more of the selected user terminals.

f) **[1e] 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-3GPP TR 32.816 discloses the claimed "updating means" configured for updating at least one the first and second neighbor cell lists using cell information received from mobile devices. Ex. 1002, ¶¶101–105. For example,

Amirijoo teaches that it is "essential to make use of automatic in-service approaches for generating and updating NRLs." Ex. 1005, [0024]. However, *Amirijoo* indicates that "the problem of establishing NRLs for different RATS/frequencies has not been solved before." *Id*. at [0025]. *Amirijoo's* solution to this problem includes "Methods & apparatus to detect new inter-RAT/frequency neighbor base stations using mobile station (MS) measurements," "retrieve the neighbor base station (BS) CGIs" from the mobile devices, and "*update[] the NRL*" using the received cell information. *Id*. at [0028]–[0030] (emphasis added); *see also id*. at [0115] ("Automatic inter-RAT/frequency NRL management as described herein leads to lower costs for the operators in planning and maintaining neighbor relation lists (NRLs), which are needed for seamless inter-RAT/frequency mobility.").

For example, *Amirijoo* discloses that the serving base station is configured to update its neighbor relation list based on received cell information for new inter-RAT/frequency neighbors. *See id*. at [0082] ("Based on the inter-RAT/frequency measurement reports and the information retrieved from the lookup, the candidate base station (BS) can be added to the neighbor relation list (NRL) of the serving base station (BS)."). In addition, *Amirijoo* teaches an "optional act" wherein "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)." *Id*. at [0082]. The "NRL handler" is configured to "inform[] the candidate base station (BS) regarding the new neighbor relation," which enables the candidate base station to update its neighbor relation list (NRL) with cell information of the serving base station. Ex. 1005, [0082]. *Amirijoo* thus teaches means for updating the neighbor relation list (NRL) of both the serving base station (*i.e*., a "first" NRL) and the candidate base station (*i.e*., a "second" NRL). Ex. 1002, ¶¶102–103.

Patent Owner may attempt to distinguish the updating means configured for updating "neighbor relation lists" disclosed in *Amirijoo* from the updating means configured for updating "neighbour cell lists" recited in the Challenged Claims, but this argument is unavailing because *3GPP TR 32.816* expressly teaches means for updating neighbor cell lists. Ex. 1007, 11; Ex. 1002, ¶104. As detailed in Section X(B)(1), it would have been obvious for a POSITA to supplement *Amirijoo's* system for "automatically managing relationships to neighbors in other RATs/frequencies" with *3GPP TR 32.816's* "neighbour cell list optimization." Ex. 1002, ¶104. *3GPP TR 32.816* teaches an algorithm configured to update neighbor cell lists "based on information in UEs about detected cells." Ex. 1007, 11. And, like the means for updating the neighbor relation list taught in *Amirijoo*, the algorithm disclosed in *3GPP 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). *Compare* Ex. 1007, 11 *to* Ex. 1005, [0079]–[0082], Fig. 4.

As noted above, Patent Owner will likely argue that the structure corresponding to the claimed "updating means" is "updater 14" disclosed in the '560 Patent's specification. As reflected in Figure 2 of the '560 Patent, the relevant structure is a box labeled "14" that is connected to a receiver (labeled 13) and configured to add new neighbors to the base station's neighbor cell list using cell information received by the receiver. 1002, ¶58, Ex. 1002, Fig. 2. A POSITA would understand that *Amirijoo-3GPP TR 32.816* teaches an analogous function block (*i.e.*, an "updater") that is connected to a receiver and configured to add new neighbors to the base station's neighbor cell list using cell information received by the receiver. 1002, ¶105; Ex. 1005, [0082]; Ex. 1007, 11. Thus, *Amirijoo-3GPP TR 32.816* discloses an "updating means" that is, at the very least, equivalent to the structure disclosed in the '560 Patent for this claim element. Ex. 1002, ¶¶58, 105.

For the foregoing reasons, Claim 1 of the '560 Patent should be canceled because it is unpatentable in view of *Amirijoo-3GPP TR 32.816*.

2. Claim 6

a) **[6a] 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;**

Amirijoo-3GPP TR 32.816 discloses the system of 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. Ex. 1002, ¶106. As explained in Section X(B)(1)(a), *Amirijoo* teaches a serving base station (*i.e.*, "first wireless access node") comprising a request generator configured for requesting one or more selected user terminals to report the local IDs and GCIs (*i.e.*, "cell information") of neighboring inter-RAT/frequency base stations (*i.e.*, "a plurality of wireless access nodes of the second wireless access network").

b) **[6b] 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,**

Amirijoo-3GPP TR 32.816 discloses the system of Claim 1 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. Ex. 1002, ¶107. As explained in Sections X(B)(1)(d) and X(B)(1)(e), *Amirijoo* teaches that the receiver of the serving base station (*i.e.*, the "first wireless access node") is

configured for receiving, among other things, the local IDs and GCIs (*i.e.*, "cell information") of neighboring inter-RAT/frequency base stations.

c) **[6c] 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-3GPP TR 32.816 discloses the system of Claim 1 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. Ex. 1002, ¶¶108–110. For example, Figure 3 of *Amirijoo* depicts "a representative mobile terminal and radio access network nodes which are involved in an example inter-RAT/frequency handover." Ex. 1005, [0050]. As reflected in Figure 3 (reproduced below), the user terminal (labeled 30), the serving base station (labeled 28_S), and the candidate base station (labeled 28_C) have a data processing and control unit including an "inter-RAT/frequency handover function" (labeled 40, 50_S, and 50_C, respectively). Ex. 1005, [0075], [0077].

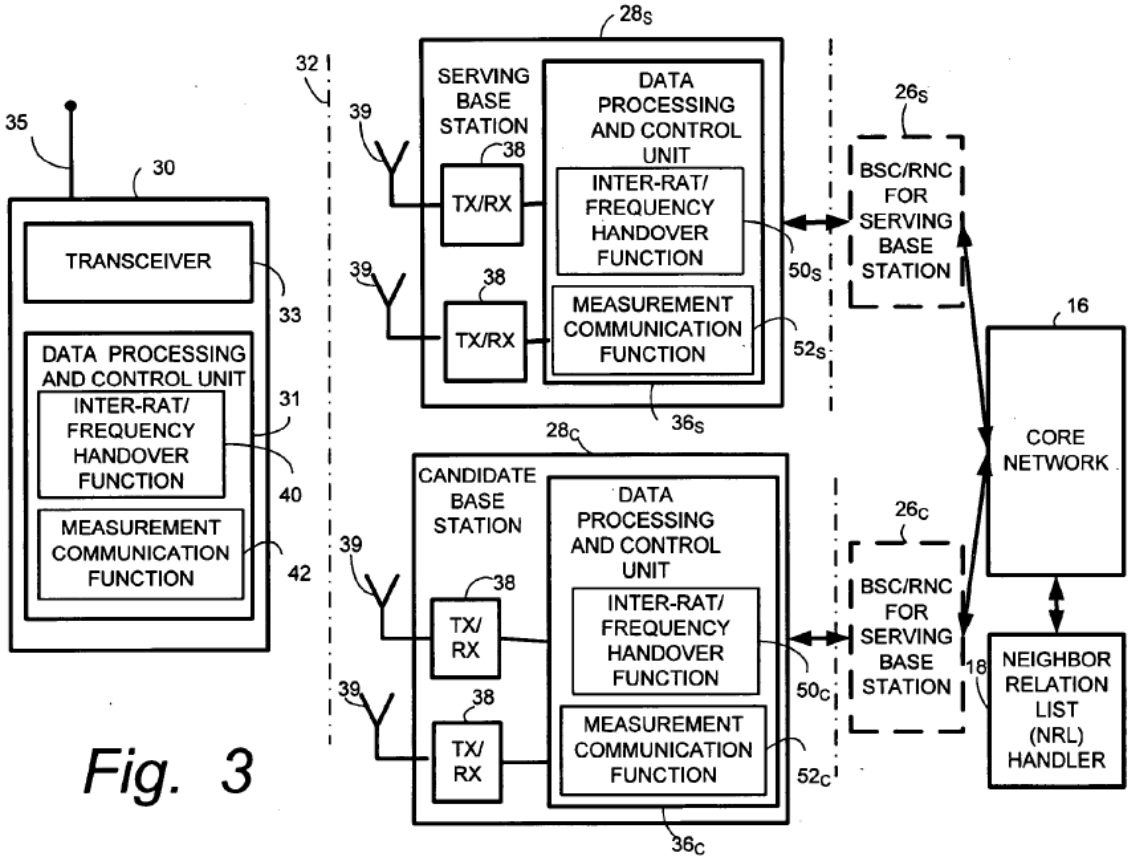


Fig. 3

Ex. 1005, Fig 3.

Amirijoo teaches that the "inter-RAT/frequency handover function" in both the user terminal and base stations "is invoked when it is determined that a handover is to occur." Ex. 1005, [0075], [0077]. A skilled artisan would know that the inter-RAT/frequency handover functions disclosed in *Amirijoo* interoperate with one another during handover, collectively forming a transfer system configured for transferring a user terminal from the first wireless access network to the second wireless access network. Ex. 1002, ¶109; *see also* Ex. 1005, [0013] (explaining that 2G, 3G, and 4G networks "make use of Mobile Assisted handover

(MAHO)," which is a process that generally involves coordination between the mobile device to be handed off, the base station currently serving the mobile device, and the candidate base station to which the mobile device will be transferred).

Moreover, *Amirijoo* teaches that the actual handover occurs after receiving Local IDs and CGIs (*i.e.*, cell parameters) of wireless access nodes of the second wireless access network via the first wireless access node. Ex. 1002, ¶110. 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." Ex. 1005, [0013]; *see also id.* at [0014] ("[W]hen handing off a mobile station (MS) to the neighbor the CGI of the neighbor must be known."). Thus, *Amirijoo-3GPP TR 32.816* teaches a transfer system configured for transferring user terminals to a candidate base station in a second wireless network after receiving cell parameters of wireless access nodes of the second wireless access network via the serving base station. Ex. 1002, ¶110.

3. Claim 7

a) **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.**

Amirijoo-3GPP TR 32.816 discloses the system of Claim 1 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. Ex. 1002, ¶¶111–115. As explained in Section VI(B), Petitioner proposes Patent Owner's apparent interpretation of "location information from one or more of the detected user terminals." As shown below, the claimed "location information" is satisfied by "information regarding at least the cell in which the terminal is operating, such cell corresponding to a particular geographic coverage area."

Claim 7	
7. [Pre] The system according to claim 1,	Each Accused Product comprises the system according to claim **1**, detailed above.
[7.1] wherein the telecommunications system is further	Each Accused Product comprises the system according to claim **1**, detailed above, "wherein the telecommunications system is further configured for receiving location information from one or more of the detected user terminals."
configured for receiving location information from one or more of the detected user terminals and	For example, each NB, eNB, or gNB is configured by Ericsson to receive location information from at least one terminal. For example, each Accused Product is configured by Ericsson to obtain information regarding at least the cell in which the terminal is operating, such cell corresponding to a particular geographic coverage area.

Ex. 1011, 7–8 (annotations added).

Amirijoo teaches that "[a] cell is a geographical area where radio coverage is provided by the radio base station equipment at a base station site." Ex. 1005, [0006]. *Amirijoo* further teaches that "[e]ach cell is identified by a[n] identity within the local radio area, which is broadcast in the cell." *Id*. at [0006]. Under Patent Owner's interpretation, a cell's identity is "location information" because it

is information regarding the geographic coverage area in which a mobile device is operating. Ex. 1011, 7–8. *Amirijoo* discloses selecting a part of the mobile devices to participate in the process of updating the neighbor relation list based, at least in part, on information regarding the cell in which the mobile device(s) are currently operating. Ex. 1005, [0083]–[0088]; Ex. 1002, ¶113.

To the extent that the Board adopts a narrower construction than Patent Owner's interpretation of Claim 7, *Amirijoo-3GPP TR 32.816* nevertheless teaches receiving location information from one or more of the detected user terminals and using the location information as a selection parameter for selecting the part of the detected user terminals. Ex. 1002, ¶114. For example, *3GPP TR 32.816* teaches an algorithm for updating neighbor cell lists using information regarding "location of the neighbours." Ex. 1007, 11. In a similar vein, *3GPP TR 32.816* teaches that, in the "ideal" case, "all measurements can be linked with correct location information" when optimizing handover parameters, including the "HO neighbor list, neighbor specific thresholds, margins and hysteretic parameter." Ex. 1007, 13–14.

In view of *3GPP TR 32.816's* suggestion to use location information as an input to update the neighbor cell list, it would have been obvious for a POSITA to use location information as a selection parameter for selecting a part of the user terminals in the context of *Amirijoo's* system. Ex. 1002, ¶115. Indeed, *Amirijoo*

teaches that the triggering criteria disclosed therein is intended, in at least some embodiments, "to make sure that an inter-RAT/frequency neighbor is found before the mobile station (MS) falls out of coverage." Ex. 1005, [0087]. A skilled artisan would know that selecting a subset of mobile devices based on their location information would help ensure that an inter-RAT/frequency neighbor is found before the mobile station (MS) falls out of coverage. Ex. 1002, ¶115. For example, it would have been obvious to a POSITA to configure the serving base station to instruct mobile devices close to the coverage boundary to initiate inter-RAT/frequency measurements, thus facilitating the identification of a suitable inter-RAT/frequency candidate for handover before the mobile devices exit the coverage area. Ex. 1005, [0087]; Ex. 1002, ¶115. Claim 7 is, therefore, obvious in view of *Amirijoo-3GPP TR 32.816*.

4. Claim 8

a) **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.**

Amirijoo-3GPP TR 32.816 discloses 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. Ex. 1002, ¶116–118. As detailed in Section X(B)(1)(c), *Amirijoo* teaches that various "triggering conditions" are used to select a part of the mobile devices. *See supra* Section X(B)(1)(c); Ex. 1002, ¶¶86–98. *Amirijoo* further teaches "[t]he actual triggering condition(s) compris[e], e.g., rules and thresholds," which "may be evaluated at the base station (BS) or the mobile station (MS)." Ex. 1005, [0079].

Amirijoo teaches that "[m]obile stations with an estimated signal quality of the serving base station (BS) below a given threshold (see threshold C in FIG. 6) perform inter-RAT/frequency measurements." *Id*. at [0085]; *see also id*. at [0087]–[0088], Fig. 6 (explaining that the threshold "can either be the same threshold as is used for inter-RAT/frequency handover measurements (e.g., threshold A in FIG. 6), or it can be set higher than the handover threshold"). Echoing Claim 8 of the '560 Patent, *Amirijoo* even teaches that the threshold used to select user terminals is "possibly service-dependent." *Compare* Ex. 1001, Claim 8 (claiming "one or more thresholds, possibly service-dependent . . . used as a selection parameter") *with* Ex. 1005, [0089] ("[T]he threshold C can depend on the service, subscription type, UE type etc. For example, Gold Subscription users are assigned lower threshold C than ordinary subscription users to avoid bulk measurements to a

larger extent."). Thus, *Amirijoo-3GPP TR 32.816* teaches Claim 8 of the '560 Patent.

XI. CONCLUSION

For the reasons given above, Petitioner requests institution of *inter partes* review and cancellation claims of the Challenged Claims of the '560 patent based on each of the grounds specified in this petition.

Respectfully submitted,

Dated: 2/17/2023

By: /*Matthew Cameron*/
Matthew Cameron (Reg. No. 74,179)
Counsel for Petitioner

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 8,660,560 contains, as measured by the word processing system used to prepare this paper, 9,809 words. This word count does not include the items excluded by 37 C.F.R. § 42.24 as not counting towards the word limit.

Respectfully submitted,

Dated: 2/17/2023

By: */Matthew Cameron/*
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Counsel for Petitioner

CERTIFICATE OF SERVICE

I hereby certify that on February 17, 2023, I caused a true and correct copy of the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 8,660,560 and supporting exhibits was served on the following parties via Federal Express or Express Mail:

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