

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NOKIA SOLUTIONS AND NETWORKS US LLC; AND
NOKIA SOLUTIONS AND NETWORKS OY,
Petitioners

v.

HUAWEI TECHNOLOGIES CO. LTD.,
Patent Owner

Case: IPR2017-00591
U.S. Patent No. 8,325,675

PETITIONERS' EXHIBIT NSN675-1004
DECLARATION OF BALAZS BERTENYI

1. I have been asked to provide this declaration to describe how documents that are drafted and adopted by the Third Generation Partnership project (“3GPP”) are made available to the general public.

2. 3GPP produces Technical Specifications to be transposed by relevant standardization bodies (Organizational Partners) into appropriate deliverables (e.g., standards). The seven 3GPP Organizational Partners - from Asia, Europe and North America - determine the general policy and strategy of 3GPP. There are over a hundred telecommunications industry participants that are members of the Organizational Partners and 3GPP that work together to produce proposals, reports and specifications that are developed to define 3GPP mobile telecommunication networks.

3. I have more than 15 years of experience working as a delegate, the head of a delegation, the chairman of working groups and the chairman of technical specification groups of 3GPP. Based on my experience, I can speak with authority as to how the 3GPP standards are developed across the working groups and how 3GPP documents are drafted, distributed, stored and made available to the public without restriction.

I. PROFESSIONAL BACKGROUND

4. I graduated from the Technical University of Budapest with a Masters in Telecommunications Engineering and Computer Science in 1998. Upon

graduation, I joined Nokia as a Systems Specification Engineer in the Budapest office, which had just been opened in 1997.

5. Since I joined Nokia, I have held a number of positions relating to the 3GPP standardization group. I am still employed by Nokia in Budapest as a Senior Standards Specialist.

A. 3GPP Experience

6. In the 2003–2008 time-frame, 3GPP consisted of four Technical Specifications Groups (“TSGs”), also called “plenary groups”: Service and System Aspects (“TSG-SA,” “SA,” or “SP”); GSM/Edge Radio Access Network (“TSG-GERAN,” “GERAN,” or “GP”)¹; Radio Access Network (“TSG-RAN,” “RAN,” or “RP”); and Core Network and Terminals (“TSG-CT,” “CT,” or “CP”).²

7. Each of the plenary groups, in turn, consisted of a number of working groups. For example, TSG-SA had five working groups: Working Group 1 – Services (“SA-1” or “S1”); Working Group 2 – Architecture (“SA-2” or “S2”);

¹ TSG-GERAN is now closed.

² TSG-CT was created in 2005. It assumed responsibilities and participants from two previous TSGs: Core Network (“TSG-CN,” “CN,” or “CP”) and Terminals (“TSG-T,” “T,” or “TP”).

Working Group 3 – Security (“SA-3” or “S3”); Working Group 4 – Codecs (“SA-4” or “S4”); and Working Group 5 – Management (“SA-5” or “S5”).

8. In my experience, the working groups met approximately every month and had primary responsibility for drafting and editing specifications and change requests. The specifications and change requests then had to be approved by the plenary group, which met roughly every three months. Meetings for each plenary and working group were numbered sequentially (*e.g.*, TSG-SA, Meeting #14 (“SP-14”); SA-2, Meeting #22 (“S2-22”)). The members of the plenary and working groups were typically employees of various companies in the telecommunications industry.

9. In 2001 I joined TSG-SA’s Working Group 2 as a delegate for Nokia. SA-2 was responsible for developing the logical architecture and main functions for 3GPP mobile telecommunications networks. By “logical architecture,” I mean that SA-2 defined the logical entities, their roles, their relationships with each other, and the information they exchanged.

10. In 2003 I became the head of Nokia’s SA-2 delegation, and in 2007 I was elected chairman of the SA-2 Working Group. In this capacity, I served two 2-year terms. Once I was elected and I began my objective chairman positions, I no longer performed work for Nokia with respect to Nokia’s proposals.

11. After serving as SA-2 chairman, I was elected chairman of the overall TSG-SA plenary group. TSG-SA was responsible for the overall architecture and service capabilities of systems based on 3GPP specifications and, as such, was responsible for coordinating with the other plenary groups. I served as the chairman of TSG-SA for two 2-year terms, the second of which ended in 2015.

12. I am currently a member of the Nokia delegation for the TSG Radio Access Network (TSG RAN) group. In that role my work focuses on the 5G radio access specifications.

B. 3GPP Documents

13. The development of technical specifications and the documentation relevant to that development has always been a very structured process at 3GPP.

14. As explained earlier, each 3GPP working group met roughly every month and was responsible for drafting and editing specifications and proposing change requests. The drafts and proposed change requests were approved by the relevant plenary group, which met approximately every three months.

15. When there were new concepts to discuss, the working group would start a technical report (“TR”) (*e.g.*, “TR 23.825”) to further develop those ideas. Exhibit NSN675-1050 is a true and accurate copy of 3GPP TR 21.900 v6.0.0, which describes the procedures for naming and changing 3GPP documents, and for naming files on 3GPP’s publicly available servers. As noted at page 5, these procedures are

followed because it “is very important that the changes that are brought into the standard, from the past, at present and in the future, are well documented and controlled, so that technical consistency and backwards tracing are ensured.” As can be seen from this document, the title of a TR document follows a structured numbering system that provides details regarding the subject matter and technology to which the TR document pertains. The number system is **3GPP TR aa.bbb Vx.y.z** (yyyy-mm):

- **aa** is the “series” number to which the specification belongs (*e.g.*, “23 Series” corresponds to Technical realization (“stage 2”).
- **bbb** is the “report” number; if the number begins with an “8” that indicates that it is not intended to be transposed into publications by 3GPP’s Organizational Partners; if the number begins with a “9” that indicates that it is to be further disseminated by 3GPP’s Organizational Partners.
- **Vx.y.z** is Version *x.y.z* where *x* is 1 if the document is presented to TSG for information; *x* is 2 if the document is presented to TSG for approval; and *x* is 3 or greater to indicate that it is a TSG approved document under change control (at this stage the number corresponds to the 3GPP release number); *y* is incremented every time a change of substance occurs (*i.e.*, technical enhancements, corrections, updates, etc.) and

when the TSG approves one or more Change Requests (y is reset to zero every time the x field is incremented); and z is incremented when purely editorial changes have been incorporated in the document (z is also reset to zero every time the y field is incremented or reset to zero).

- **yyyy** is the year that the relevant TSG or Working Group approved the document.
- **mm** is the month that the relevant TSG or Working Group approved the document.

As described at page 21 of Exhibit NSN675-1050, the format for the filename of a TR document on the 3GPP server at least includes **aabbb_xyz**, which provides information regarding the contents and stage of development of the contents of the document.

16. When there was sufficient consensus on a TR, the working group moved the concepts of the TR into a normative or technical specification (TS) (*e.g.*, “TS 23.125”). As can be seen from Exhibit NSN675-1050, the title of a TS document follows the same structured numbering system to that of the TR documents that provides details regarding the subject matter and technology to which the TS document pertains. The number system is **3GPP TS aa.bbb Vx.y.z (yyyy-mm)**:

- **aa** is the “series” number to which the specification belongs (*e.g.*, “23 Series” corresponds to Technical realization (“stage 2”)).
- **bbb** is the “specification” number.
- **Vx.y.z** is Version *x.y.z* where *x* is 1 if the document is presented to TSG for information; *x* is 2 if the document is presented to TSG for approval; and *x* is 3 or greater to indicate that it is a TSG approved document under change control (at this stage the number corresponds to the 3GPP release number); *y* is incremented every time a change of substance occurs (*i.e.*, technical enhancements, corrections, updates, etc.) and when the TSG approves one or more Change Requests (*y* is reset to zero every time the *x* field is incremented); and *z* is incremented when purely editorial changes have been incorporated in the document (*z* is also reset to zero every time the *y* field is incremented or reset to zero).
- **yyyy** is the year that the relevant TSG or Working Group approved the document.
- **mm** is the month that the relevant TSG or Working Group approved the document.

Again, as described at page 21 of Exhibit NSN675-1050, the format for the filename of a TS document on the 3GPP server at least includes **aabbb_xyz**, which provides

information regarding the contents and stage of development of the contents of the document.

17. In the ordinary course of 3GPP's regularly conducted business activities and pursuant to its standard business practices, all members may make contributions for consideration by the Technical Specification Group or Working Group. Such documents are referred to as "temporary documents," and are commonly referred to as "Tdocs." Before, during, and after meetings, all Tdocs are distributed to all of the members of the TSG or WG to which they pertain, and all Tdocs are made publicly available on 3GPP's servers.

18. Each TSG or WG selects a structured numbering system for the documents associated with their meetings, and those systems typically follow a consistent numbering system as shown in the following example: *xminnzzzz*. This numbering system has six logical elements: (1) **x**: a single letter corresponding to the TSG; where x is one of **R** (Radio Access Network), **N** (Core Network), **S** (Service and System Aspects), **T** (Terminals), **G** (GSM/EDGE Radio Access Network), **C** (Core network and Terminals); (2) **m** A single character corresponding to the Working Group identity (typically 1, 2, 3, etc.) or, in the case of the TSG itself, the letter "**P**"; (3) **i**: Normally the hyphen character "-", although it may take on other values depending on the nature of the meeting at which the document is presented, e.g. the identity of a subgroup, or an "h" to indicate an ad hoc meeting; (4) **nn**: two

digits to indicate the year, i.e. 99, 00, 01, etc; and (5) **zzzz**: A unique number of the document.

19. In the 2003-2008 timeframe, if a 3GPP delegate wanted to make a contribution, for example a change request to a TR or TS document, the member first requested a document number from the secretary of the TSG or WG. A unique number was then created based on a format for that TSG or WG, like the example disclosed in the preceding paragraph, and assigned to that member. At that point, the number and title for that contribution is fixed, and the filename for the document that is stored on the publicly available 3GPP server is that fixed number.

20. In the ordinary course of 3GPP's regularly-conducted business activities and pursuant to its standard business practices, 3GPP published all proposals, technical reports, technical specifications and other documents related to the development of cellular telecommunications standards to the 3GPP's publicly-available, unrestricted, online ftp server: <http://www.3gpp.org/ftp/>. Draft proposals, technical reports, technical specifications, change requests, and other documents ("Tdocs") were assigned a document number ("Tdoc number") and uploaded to 3GPP's public ftp server before, during, and after meetings. Making the documents publicly available encouraged discussion and promoted establishment of industry standards for cellular telecommunications.

21. In the ordinary course of 3GPP's regularly conducted business activities and pursuant to its standard business practices, documents uploaded to the publicly-available, unrestricted, online ftp server would receive a date and time stamp. Take, for example, S2-032501. Any member of the public could navigate to this Tdoc as follows:

9/26/2012	4:02 PM	<dir> .Trash-root
5/18/2015	5:18 PM	<dir> aspnet_client
10/12/2016	7:16 AM	<dir> Inbox
4/11/2016	8:17 AM	<dir> Information
9/26/2012	4:03 PM	<dir> Invitation
11/8/2016	2:18 PM	<dir> Joint_Meetings
12/5/2016	4:03 AM	<dir> Meetings_3GPP_SYNC
9/26/2016	11:43 AM	<dir> Op
5/20/2016	12:21 PM	<dir> PCG
9/29/2016	8:52 AM	<dir> Specs
11/4/2008	6:53 PM	<dir> tsg_cn
2/17/2015	9:49 AM	<dir> tsg_ct
2/10/2016	2:55 PM	<dir> tsg_geran
3/1/2016	3:16 PM	<dir> tsg_ran
9/17/2014	11:00 AM	<dir> tsg_sa
11/4/2008	9:08 PM	<dir> tsg_t
2/23/2015	6:40 PM	597 web.config
11/7/2014	4:28 PM	<dir> webExtensions
8/26/2016	12:08 PM	<dir> WG3_Security
11/17/2016	9:22 AM	<dir> workshop

Available at <http://www.3gpp.org/ftp/> (highlighting added).

9/13/2016	2:35 PM	<dir> TSG_SA
11/21/2016	8:16 AM	<dir> WG1_Serv
11/18/2016	12:42 AM	<dir> WG2_Arch
11/15/2016	1:15 AM	<dir> WG3_Security
11/14/2016	11:08 AM	<dir> WG4_CODEC
9/13/2016	9:13 AM	<dir> WG5_TM
9/12/2016	12:49 PM	<dir> WG6_MissionCritical

Available at http://www.3gpp.org/ftp/tsg_sa/ (highlighting added).

11/4/2008	8:25 PM	<dir> TSGS2_32_San_Diego
11/4/2008	8:25 PM	<dir> TSGS2_33_Sophia_Antipolis
11/4/2008	8:26 PM	<dir> TSGS2_34_Brussels

Available at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/ (highlighting added).

11/4/2008	8:25 PM	<dir>	Agenda
11/4/2008	8:25 PM	<dir>	approved CR list
11/4/2008	8:25 PM	<dir>	Invitation
11/4/2008	8:25 PM	<dir>	Report
11/4/2008	8:25 PM	<dir>	tdocs

Available at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_33_Sophia_Antipolis/ (highlighting added).

7/12/2003	6:15 PM	13477	S2-032499.zip
7/12/2003	6:15 PM	441525	S2-032500.zip
7/12/2003	6:15 PM	64132	S2-032501.zip
7/12/2003	6:15 PM	6096	S2-032502.zip
7/12/2003	6:15 PM	113821	s2-032503.zip

Available at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_33_Sophia_Antipolis/tdocs/ (highlighting added). Documents uploaded to the publicly-available, unrestricted, 3GPP ftp server would receive a date and time stamp. In my experience, all documents are retained on the public 3GPP server indefinitely, and the date and time stamp can be relied upon to indicate when the upload occurred.

22. In the ordinary course of 3GPP's regularly conducted business activities and pursuant to its standard business practices, the TSGs would formally approve incremental versions of the standards (*e.g.*, V1.0.0, V1.1.0, *etc.*). These formally-approved versions were made available on the 3GPP specifications page: <http://www.3gpp.org/specifications/79-specification-numbering>. Take, for example, TS 23.060 V5.9.0. Any member of the public could navigate to the relevant page as follows:

Specification Numbering

All 3GPP specifications have a specification number consisting of 4 or 5 digits. (e.g. 09.02 c

The first two digits define the series, followed by 2 further digits for the 01 to 13 series or 3 f

The full title, specification number and latest version number for every specification can be f
(warning: large file!).

An automated [list of Specification numbers](#) - with the Title and details of the Specification G

Subject of specification series	3G and beyond / GSM (R99 and later)
General information (long defunct)	
Requirements	21 series
Service aspects ("stage 1")	22 series
Technical realization ("stage 2")	23 series
Signalling protocols ("stage 3") - user equipment to network	24 series
Radio aspects	25 series
CODECs	26 series

Available at <http://www.3gpp.org/specifications/79-specification-numbering>
(highlighting added).

TS 23.057	Mobile Execution Environment (MExE); Functional description; Stage 2
TS 23.05U	UMTS Network principles
TS 23.060	General Packet Radio Service (GPRS); Service description; Stage 2
TS 23.066	Support of Mobile Number Portability (MNP); Technical realization; Stage 2

Available at <http://www.3gpp.org/DynaReport/23-series.htm> (highlighting added).

General

Responsibility

Related

Releases

History

Specification #: 23.060

Release 14(Spec is UCC for this Release)

Latest Remark:

Release 13(Spec is UCC for this Release)

Latest Remark: (2015-01-22) .

Release 12(Spec is UCC for this Release)

Latest Remark: (2015-01-22) .

Release 11(Spec is UCC for this Release)

Latest Remark: (2015-01-22) .

Release 10(Spec is UCC for this Release)

Latest Remark: (2015-01-22) .

Release 9(Spec is UCC for this Release)

Latest Remark:

Release 8(Spec is UCC for this Release)

Latest Remark:

Release 7(Spec is UCC for this Release)





























Latest Remark:

Release 6(Spec is UCC for this Release)

Latest Remark:

Release 5(Spec is UCC for this Release)

Latest Remark:

Meetings	Version	Upload date	Comment				
SA#34	5.13.0	2006-12-11					
SA#30	5.12.0	2005-12-15					
SA#29	5.11.0	2005-10-05					
SA#27	5.10.0	2005-03-24					
SA#25	5.9.0	2004-09-27					
SA#23	5.8.0	2004-04-01					
SA#22	5.7.0	2004-01-06					

Available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=758> (highlighting added). Documents uploaded to the publicly-available, unrestricted, online 3GPP specifications page would receive a date stamp. In my experience, all standards are retained on the 3GPP specifications page indefinitely, and the date stamp for each standard can be relied upon to indicate when the upload occurred.

23. In the ordinary course of 3GPP's regularly conducted business activities and pursuant to its standard business practices, Tdocs and discussion documents were also sometimes distributed using 3GPP's public email exploders.

In my experience, when an email was sent to the exploder list, the email and any attachments were immediately available to (1) any members of the public who subscribed to the list; and (2) any members of the public who navigated to the email exploder's online archive that is maintained by one of 3GPP's Organizational Partners, the European Telecommunications Standards Institute (ETSI): <http://list.etsi.org/scripts/wa.exe?INDEX>. Emails and documents uploaded to 3GPP's publicly-available, unrestricted, online email exploder archive would receive a time and date stamp. In my experience, all emails and documents are retained on the 3GPP's email exploder archive indefinitely, and the date and time stamp for each email and document can be relied upon to indicate when the upload occurred.

24. In addition to the logical document storage mechanism offered by 3GPP and ETSI, because each of the (1) 3GPP ftp server, (2) 3GPP Specifications Page, and (3) email exploder's online archive are freely available on the internet, the documents stored on each of those servers are fully searchable and available to users via conventional search engines like, for example, the Google search engine.

II. SPECIFIC REFERENCES

25. In the following paragraphs I identify specific 3GPP documents.

26. For each document available on the public 3GPP ftp server, I navigated to the relevant file, as described above. I reviewed the publicly-available file in

order to confirm that it had been correctly uploaded to the public 3GPP ftp server. In my experience, the date and time stamp for each file can be relied upon to indicate when the upload occurred.

27. For each standard available on the 3GPP specifications page, I navigated to the relevant standard and version number, as described above. I reviewed the publicly-available standard in order to confirm that it had been correctly uploaded to 3GPP's specifications page. In my experience, the date stamp for each standard can be relied upon to indicate when the upload occurred.

28. For each email and document available on 3GPP's email exploder archive, I navigated to the relevant email, as described above. I reviewed the publicly-available email and its attachments in order to confirm that they had been correctly uploaded to 3GPP's email exploder archive. In my experience, the date and time stamp for each email and document available on 3GPP's email exploder archive can be relied upon to indicate when the upload occurred.

A. Tdoc S2-060177 (Exhibit NSN675-1005)

29. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1005 as a true and correct copy of 3GPP TSG-SA WG2 Meeting #50, Tdoc S2-060177, *Paging Initiation from UPE or from eNodeB?* (January 16–20, 2006), available as "S2-060177.zip" at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_50_Budapest/Docs/. This

document was published and freely available on 3GPP's public ftp server as of January 10, 2006 at 12:50 PM.

B. TS 43.129 V6.8.0 (Exhibit NSN675-1007)

30. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1007 as a true and correct copy of 3GPP TS 43.129 V6.8.0 (2006-06), *3rd Generation Partnership Project; Technical Specification Group GERAN; Packet-switched handover for GERAN A/Gb mode; Stage 2 (Release 6)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=493>. This document was published and freely available on 3GPP's specifications page as of July 17, 2006.

C. TS 25.413 V7.2.0 (Exhibit NSN675-1008)

31. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1008 as a true and correct copy of 3GPP TS 25.413 V7.2.0 (2006-06), *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; UTRAN Iu interface RANAP signaling (Release 7)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=1190>. This document was published and freely available on 3GPP's specifications page as of June 16, 2006.

D. Tdoc S2-062190 (Exhibit NSN675-1009)

32. Based on my personal knowledge and my review of 3GPP's business records, I recognize NSN675-1009 as a true and correct copy of 3GPP TSG-SA WG2 Meeting #53, Tdoc S2-062190, *New section for data handling during inter-access mobility* (June 26–30, 2006), available as "S2-062190.zip" at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_53_Lisbon/Docs/. This document was published and freely available on 3GPP's public ftp server as of June 20, 2006 at 12:09 PM.

E. TS 29.060 V7.2.0 (Exhibit NSN675-1012)

33. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1012 as a true and correct copy of 3GPP TS 29.060 V7.2.0 (2006-06), *3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface (Release 7)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=1595>. This document was published and freely available on 3GPP's specifications page as of June 13, 2006.

F. TS 23.060 V7.1.0 (Exhibit NSN675-1013)

34. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1013 as a true and correct copy of 3GPP TS 23.060 V7.1.0 (2006-06), *3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General Packet Radio Service (GPRS); Service description; Stage 2 (Release 7)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=758>. This document was published and freely available on 3GPP's specifications page as of June 13, 2006.

G. Tdoc S2-061117 (Exhibit NSN675-1015)

35. Based on my personal knowledge and my review of 3GPP's business records, I recognize NSN675-1015 as a true and correct copy of 3GPP TSG-SA WG2 Meeting #51, Tdoc S2-061117, *Impact of Inter 3GPP Access System Mobility in Idle State* (February 13–17, 2006), available as "S2-061117.zip" at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_51_Denver/Docs/. This document was published and freely available on 3GPP's public ftp server as of February 16, 2006 at 1:46 AM.

H. TS 23.882 V1.3.0 (Exhibit NSN675-1016)

36. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1016 as a true and correct copy of 3GPP TS 23.882 V1.3.0 (2006-07), *3rd Generation Partnership Project; Technical*

Specification Group Services and System Aspects; 3GPP System Architecture Evolution: Report on Technical Options and Conclusions (Release 7), available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=962>. This document was published and freely available on 3GPP's specifications page as of July 19, 2006.

I. Tdoc S2-061357 (Exhibit NSN675-1017)

37. Based on my personal knowledge and my review of 3GPP's business records, I recognize NSN675-1017 as a true and correct copy of 3GPP TSG-SA WG2 Meeting #52, Tdoc S2-061357, *Clarification of the soft working assumption on the solution to the active mode inter access mobility between E-UTRA and UTRA/GSM* (May 8–12, 2006), available as "S2-061357.zip" at http://www.3gpp.org/ftp/tsg_sa/WG2_Arch/TSGS2_52_Shanghai/Docs/. This document was published and freely available on 3GPP's public ftp server as of May 9, 2006 at 10:12 AM.

J. TS 23.809 V0.3.0 (Exhibit NSN675-1018)

38. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1018 as a true and correct copy of 3GPP TS 23.809 V0.3.0 (2006-07), *3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; One Tunnel Functional description; (Release 7)*, available at

<https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=889>. This document was published and freely available on 3GPP's specifications page as of July 10, 2006.

K. TS 23.002 V7.1.0 (Exhibit NSN675-1024)

39. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1024 as a true and correct copy of 3GPP TS 23.002 V7.1.0 (2006-03), *3rd Generation Partnership Project; Technical Specification Group Services and Systems Aspects; Network architecture (Release 7)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=728>. This document was published and freely available on 3GPP's specifications page as of March 28, 2006.

L. TS 23.002 V8.3.0 (Exhibit NSN675-1025)

40. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1025 as a true and correct copy of 3GPP TS 23.002 V7.1.0 (2006-03), *3rd Generation Partnership Project; Technical Specification Group Services and Systems Aspects; Network architecture (Release 8)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=728>.

pecificationId=728. This document was published and freely available on 3GPP's specifications page as of September 24, 2008.

M. TR 21.900 V6.0.0 (Exhibit NSN675-1050)

41. Based on my personal knowledge and my review of 3GPP's business records, I recognize Exhibit NSN675-1050 as a true and correct copy of 3GPP TR 21.900 V6.0.0 (2003-09), *3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Technical Specification Group working methods (Release 6)*, available at <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=555>. This document was published and freely available on 3GPP's specifications page as of September 26, 2003.

Executed January 10, 2017



Balazs Bertenyi