- **UMTS**
  - RP-161259, Multi-Carrier Enhancements for UMTS WI (RAN2-led)
- **GERAN**
  - RP-160929, Perf. part: Extended Coverage GSM (EC-GSM) for support of Cellular Internet of Things WI (RAN6)
  - RP-161261, Study on Downlink MIMO for GERAN SI (RAN6)
  - RP-161029, Dedicated Core Networks for GERAN WI (RAN6)
  - RP-161260, Positioning Enhancements for GERAN WI (RAN6)
- **LTE - new bands**
  - RP-161221, LTE High Power UE for Band 41 WI
  - RP-161219, Citizens Broadband Radio Service (CBRS) 3.5GHz band for LTE in the United States WI
  - RP-161220, Feasibility study on global application of LTE Band 11 and of LTE Band 21 UEs WI
- **Multiple new CA band combinations and UE conformance tests WIs**

UE categories:

- Agreement on 256QAM support for UE categories 9/10 (RP-161326):
  - For a Rel-12 UE supporting all UE radio access capability parameters for both Cat.9/10 and Cat.13,
    - The UE can report both Cat.9/10 and Cat.13
      - The eNB may understand that the UE supports all UE radio access capability parameters of both Cat.9/10 and Cat.13
        - Therefore either category can be applied individually (but not a combination of parameters of different categories)
  - LS sent to RAN1/RAN2 to prepare the relevant CRs for RAN#73: RP-161327

Rel-13 items:

- NB-IOT WI was completed and the feature added to the Rel-13 specification
  - ASN.1 of NB-IOT feature considered frozen
  - LS to GSMA on completion of Cellular IoT related WIs (NB-IOT and eMTC) RP-161226
- Other IoT issues
  - eDRX Paging Hyper-frame Calculation
    - RAN was unable to conclude on the modification of PTW_start calculation and decided to postpone the topic together with the RAN2 agreed CR
    - LS to RAN2, RAN3 and SA2 (cc: CT1, CT4), RP-161156
  - Enhanced coverage impacts on NAS timers in eMTC
    - Agreement on NAS timer settings for Enhanced Coverage eMTC devices
    - LS to RAN3 and CT1 (CC:SA2), RP-161312
- LAA
  - Reply LS to Mayor of New York City on LAA developments, RP-161227
  - Reply LS to IEEE on Rel-13 LAA specifications, RP-161228

Rel-14 items:

- V2X
  - LS to ETSI TC ERM TG 37 and ETSI TC ITS on LTE-V2V coexistence with 802.11p, RP-161322
- FeD2D, UE to Network Relays for IoT and Wearables
  - Revised WID scope in line with RAN2 agreement (RP-161303)
    - Alignment with the corresponding requirements work in SA1
  - RAN1 parts on hold as no RAN1 budget was approved: this will be discussed at next meeting

Others:

- Juergen Hoffmann (Nokia) was appointed convener for RAN6
  - He will chair the first 2 RAN6 meetings; in the 2nd meeting an election for the new RAN6

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ITU-R related activities:

Topic	Actions
Reminder to OPs of the deadline for submission of Hyperlinks relevant to specs to be included in Rev13 of M.1457: 1 September 2017	
SG5 - RP-160720, the Circular Letter 5/LCCE/59 "Invitation for submission of proposals for candidate radio interface technologies for the terrestrial components of the radio interface(s) for IMT-2020 and invitation to participate in their subsequent evaluation"	Information on the process to submit and evaluate IMT-2020 technologies http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/imt-2020/Pages/submission-eval.aspx
WP5D – RP-151140 related to the revision of Recommendations for generic unwanted emission characteristics	Corrections required by ITU-R to previous submission RAN4 prepared an answer, approved by correspondence by RAN, SA and PCG → submitted to ITU-R (PCG37_08)
WP5D - RP-160511 Revision of Report ITU-R M.2291 (PPDR) Information of technical characteristics of 3GPP systems to support PPDR services	Answer approved by RAN, SA and PCG → submitted to ITU-R (PCG37_09)

ITU-R related activities - documents submitted directly from RAN to ITU-R:

Topic	Actions
WP5A – RP-160721 LS on Technical and operational characteristics of the land mobile service applications and their spectrum needs associated with work on WRC-19 agenda item 1.15 in the frequency range 275-450 GHz WP5C - RP-160722 LS on Technical and operational characteristics of the fixed service applications and their spectrum needs associated with work on WRC-19 agenda item 1.15	3GPP is not working on these frequency bands Answer directly from RAN to ITU-R stating 3GPP is not working on the topic (RP-161258)
WP5D - RP-160508 Characteristics of terrestrial IMT systems for frequency sharing/interference analysis in the frequency range between 24.25 GHz and 86 GHz	RAN provided an answer directly indicating RAN workplan to provide an answer by February 2017 as required (RP-161056)
LS on channel modeling (to: ITU-R WP5D)	RAN provided information on the current status of work on Study on channel model for frequency spectrum above 6 GHz (RP-161314)
WP1A – Liaison statement TO EXTERNAL ORGANIZATIONS - Report ITU-R SM.[SMART_GRID] on the Smart Grid project	RAN approved an answer back describing technical characteristics of 3GPP features that can be used to provide smart grid solutions (RP-161330) To be reviewed and approved by SA and then by PCG Submission deadline: September 27th , 2016
WP1A – LS on INCREASING LEVELS OF RF NOISE IN THE ENVIRONMENT AND CONSEQUENT INTERFERENCE TO RADIOCOMMUNICATION SERVICES	For information. Noted
WP5A - RP-160723 LS on Technical and operational characteristics of digital land mobile communication systems for specific applications	Requires information on systems able to provide support to specific applications (e.g. verticals like ehealth, public safety) RAN tasked ITU-R Ad Hoc to prepare a draft answer by RAN#73
WP5A - RP-160743 LS on Technical and operational characteristics and implementation of railway radiocommunication systems between train and trackside associated with work on WRC-19 agenda item 1.11	Requires information on systems able to provide support to railway radiocommunication systems RAN tasked ITU-R Ad Hoc to prepare a draft answer by RAN#73

Questions and comments:

Slide 3: The TSG SA Chairman commented that this is the RAN version of the time plan which was reviewed and revised in TSG SA.

Slide 3: ZTE asked for clarification between boxes 3 and 4 for the RAN freeze. It was clarified that box 3 is the checkpoint for the common SA and NSA parts where minimal divergence is aimed for.

Slide 4: It was clarified that '1253' refers to RP-161253.

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Slide 4: It was clarified that liaison between RAN WG2 and SA WG2 is expected to ensure good coordination of the work in the groups and with potentially joint sessions in the November co-located meetings. Nokia suggested that normal coordination mechanisms should be used between the groups for this. The SA WG2 Chairman commented that some alignment of the RAN terminology was expected and the WG Chairmen are already in communication about potential joint sessions in the November meeting.

The TSG RAN Chairman was thanked for this report, which was then noted.

TD SP-160483 (LS In) Draft reply letter to ITU-R WP5D in reply to ITU-R WP1A/TEMP/100 = RP-151138 on Report ITU-R SM.[SMART_GRID] on the Smart Grid project (TSG RAN).
Abstract: Overall description: In the input LS RP-151138, ITU-R Working Party 1A (WP 1A) asks for comments on the current version of their document on smart grids (which already contains references to 3GPP technologies). In particular they ask to indicate if there are new solutions enabling smart grids. 3GPP already contributed to the ITU-R document SM.2351. However during Release 13 several features were specified of interest to provide communication services for smart grids. This document provides an update to ITU-R on the new capabilities introduced by 3GPP, in particular (but not only) NB-IoT, EC-GSM-IoT and eMTC.
Actions: TSG RAN asks TSG SA to review the document, and provide its feedbacks to PCG for the final approval.

Discussion and conclusion:

For review in TSG SA and output to be sent to PCG for approval. This was used as a basis for an outgoing LS to PCG which was provided in TD SP-160507. This was then noted.

The TSG SA Chairman will provide the details for e-mail approval of TD SP-160507 over the e-mail list.

TD SP-160507 (LS OUT) [DRAFT] LS to PCG: Reply letter to ITU-R WP5D in reply to ITU-R WP1A/TEMP/100 = RP-151138 on Report ITU-R SM.[SMART_GRID] on the Smart Grid project. Overall description: In the input LS RP-151138, ITU-R Working Party 1A (WP 1A) asks for comments on the current version of their document on smart grids (which already contains references to 3GPP technologies). In particular they ask to indicate if there are new solutions enabling smart grids. 3GPP already contributed to the ITU-R document SM.2351. However during Release 13 several features were specified of interest to provide communication services for smart grids. This document provides an update to ITU-R on the new capabilities introduced by 3GPP, in particular (but not only) NB-IoT, EC-GSM-IoT and eMTC. Actions: TSG RAN asks TSG SA to review the document, and provide its feedbacks to PCG for the final approval.

Discussion and conclusion:

This was left for e-mail approval. Approved and forwarded to the PCG.

7.8 TSG CT report and Questions for Advice

TD SP-160444 (REPORT) Status report of TSG CT#72. (Source: TSG CT Chairman).
Abstract: 3GPP TSG CT Status Report to TSG SA#72.
TSG CT #72 statistics:
- 749 Change Requests approved
  - 459 from WG1
  - 096 from WG3
  - 173 from WG4
  - 021 from WG6
- Rel-13 Work Items / Study Items approved
  - 1 revised - Work Item
- Rel-14 Work Items / Study Items approved
  - 6 new - Work Items / Study items
  - 2 revised - Work Items / Study items
- 1 Rel-13 TS/TR for approval
- 131 Registered participants / 94 Attending participants

Rel-8 to Rel-10 overview:
- Rel-8 CRs (Category F) are fewer than in last plenary
  - 2 (3) - IMS-CCR-IWCS, TEI8
  - Rel-9 CRs (Category F) no CRs
  - 0 (1) -
- Rel-10 CRs (Category F) are same than in last plenary
  - 2 (2) - aSRVCC, PEST-CT3

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Rel-11 overview:
- Rel-11 CRs (Category F) are more than in last plenary
  - 12 (2) IMSProtoc5, TEI11, IMS-CCR-IWCS, USSI

Rel-12 overview:
- Rel-12 CRs (Category F) are more than in last plenary
  - 20 (12) CNO_ULI-CT, DOCME, DOCME-PCC, eDRVCC, IMS_Corp2, IMS_WebRTC-CT, PCC, TEI12, PCSCF_RES, ProSe-CT, SMSMI-CT, UMONC-CT3, UP6665

Rel-13 overview:
- Rel-13 CRs (Category B, C, D & F) are fewer than in last plenary
  - 574 (409)
  - 1 Work items revised
- General Progress
  - Rel-13 work in CT WGs is done
    - CIoT issues are marked as 100% done, but based on RAN2 aspects and SA2 enhancements some alignments are needed in future CT WG meetings. The most of enhancements work is expected to be done in September plenary.

Rel-14 overview:
- Rel-14 CRs (Category B, C & F) are more than in last plenary
  - 62 (1)
  - 6 New Work items / Study items approved
  - 2 Revised Work items / Study items approved

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Approved revised Rel-13 WIs / SIs:

Tdoc	Title	WG Resp.
CP-160292	Revised WID on core network aspects of CIoT	CT1

Approved new Rel-14 WIs / SIs:

Tdoc	Title	WG Resp.
CP-160243	New WID on Shared Subscription Data Update	CT4
CP-160244	New WID on CT aspects of EIR check for WLAN access to EPC	CT4
CP-160294	New WID on IMS Stage-3 IETF Protocol Alignment	CT1
CP-160295	New WID Password based service activation for IMS Multimedia Telephony service (PWDIMS-CT)	CT1
CP-160374	Combined CT1 and CT6 new work item on improved operator control using new UE configuration parameters	CT1
CP-160375	Study Item on technical requirements for a new secure platform for 3GPP applications	CT6

Approved revised Rel-14 WIs / SIs:

Tdoc	Title	WG Resp.
CP-160293	Revised WID on CT aspects for Non-IP for Cellular Internet of Things for 2G/3G-GPRS	CT1
CP-160376	Updated WID on CT aspects of Enhancements to Multi-stream Multiparty Conferencing Media Handling	CT4

Rel-13 Specifications for Approval:

Tdoc	Title	WG Resp.
CP-160242	3GPP TS 29.810, Version 1.0.0: Study on Diameter load control mechanisms	CT4

CRs for conditional approval (CT1):

CP-#	Title	Spec/CR#	Depends on
CP-160309	Addition of APN rate control parameters	24.008 2964R2	TS/TR 23.401 CR 2999 (SA2)
CP-160309	Clean up of CIoT terms	24.301 2354R2	TS 23.401 CR#3017 (SA2)
CP-160309	Enabling to switch from CP to UP CIoT EPS optimization	24.301 2410R2	TS 23.401 CR2995(SA2)
CP-160309	EPS attach with CIoT EPS Optimisation based on System information	24.301 2435R3	TS/TR 23.401 CR 3015 (SA2)
CP-160309	Extend search cycle for higher priority PLMN	23.122 292R7	TS 22.011 CR 0235(SA1)
CP-160309	Header Compression Configuration status in the TAU Accept message	24.301 2371R6	TS 23.401 CR#2994 (SA2)
CP-160309	Link MTU for non-IP connection	24.008 2961R4	TS/TR 23.682 CR 0182 TS/TR 23.060 CR 1999 (SA2)
CP-160309	Network features per TAI list	24.301 2400R1	TS 23.401 CR 3014 (SA2)
CP-160309	PLMN selection when the network and UE capabilities for CIoT do not match	23.122 298R3	TS 23.401 CR#3015 (SA2)
CP-160309	Procedures for APN Rate Control	24.301 2398R	TS 23.060 CR 1999 (SA2)
CP-160309	Serving PLMN rate control	24.301 2397R7	TS 23.401 CR#2999 (SA2)
CP-160309	SMS transfer using Control Plane CIoT EPS optimization	24.301 2408R2	TS/TR 23.401 CR 2997 (SA2)
CP-160309	Support of PCO signalling for SCEF PDN connection	24.301 2460	TS/TR 23.682 CR 0182 TS/TR 23.060 CR 1999 (SA2)
CP-160309	Signalling of link MTU during non-IP connection establishment	24.301 2409R6	TS/TR 23.682 CR 0182 TS/TR 23.060 CR 1999 (SA2)
CP-160310	Addition of integrity protection to LLC	44.064 32R3	TS 43.020 CR 0041 (SA3)
CP-160311	Clarification for inter-PLMN discovery support	24.334 286R1	TS 23.303 CR#0312 (SA2)
CP-160318	Addition of EC-GSM-IoT access to PLMN selection	23.122 297R2	TS 43.064 CR 0104 (GERAN1)
CP-160322	24.379 rel-13 Off-network mandatory floor control in private calls	24.379 23R2	TS 23.179 0055 (SA6)
CP-160322	Add validations for <on-network-maximum-duration>	24.381 14	TS 23.179 CR 0099 (SA6)
CP-160322	Adding security configuration to the group document	24.381 9r2	TS 23.179 CR 0099 (SA6)
CP-160322	Adding security parameters to the Service Configuration document.	24.384 12r1	TS 23.179 CR 0099 (SA6)
CP-160322	Aligning User Profile terminology with TS 23.179	24.384 22r2	TS 23.179 CR 0079 (SA6)
CP-160322	Correction for MCPTT group configuration	24.383 5r2	TS/TR 23.179 CR 0099

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	management object (MO)		(SA6)
CP-160322	Correction for MCPTT user profile management object (MO)		TS/TR 23.179 CR 0099 (SA6)
CP-160322	Correction for security configuration parameters in MCPTT management object (MO)		TS/TR 23.179 CR 0099 (SA6)
CP-160322	Update user configuration document with private call security authorisation	24.384 11r1	TS 23.179 CR 0099 (SA2)
CP-160325	UE feedback over GERAN or UTRAN	24.161 21r2	TS 23.161 CR 0019 (SA2)
CP-160326	MSD transfer for eCall over IMS	24.229 5631r4	TS 23.167 CR 0287 (SA2)
CP-160330	Addition of support for Non-IP data for EC-EGPRS	24.008 2950r3	TS 23.060 CR 2000, TS 23.682 CR 0170 (SA2)
CP-160332	Rendering call progress information	24.628 60r4	TS 22.173 CR 0114 (SA1)

CRs for conditional approval (CT3):

CP-#	Title	Spec/CR#	Depends on
CP-160277	Support for rate control of CIoT data	29.061 0472R1	TS 23.401 CR 2999, TS 29.274 CR 1737 and CR 1739, TS 24.008 CR 2415 and CR 2964, TS 24.301 CR 2398 (SA2)
CP-160278	Priority sharing for concurrent sessions	29.212 0662R2	TS 23.203 CR 1013, TS 23.228 CR 1142 (SA2)
CP-160278	Priority sharing for concurrent sessions	29.213 1435R3	TS 23.203 CR 1013, TS 23.228 CR 1142 (SA2)
CP-160278	Priority sharing for concurrent sessions	29.214 0451R3	TS 23.203 CR 1013, TS 23.228 CR 1142 (SA2)
CP-160279	Clarification of network-initiated removal of access	29.212 1446	TS 23.161 CR 0021 (SA2)
CP-160279	Correction on the PCRF procedures	29.212 1439R1	TS 23.161 CR 0018 and CR0021 (SA2)
CP-160279	Removal of access due to NBIFOM support change	29.212 1445R1	TS 23.161 CR 0021 (SA2)
CP-160280	Adding ENODEB_CHANGE event trigger	29.212 1401R4	TS 23.203 CR 0999 TS 23.401 CR 2904 (SA2)
CP-160281	Support of Non-IP delivery data	29.061 0468R1	TS 23.060 CR 2000, TS 23.682 CR 0170 (SA2)
CP-160282	Support of IP version as part of the enhanced bandwidth mechanisms for MTSI sessions	29.214 0450R2	TS 26.114 CR 0371(SA4)

CRs for conditional approval (CT4):
See slides (graphic used here)
For Information to TSG SA:
The scheduled completion date for Stage-2 in Rel-14 is in three months, and the amount of Rel-14 WIs for CT WG1 is much less than normal in this point in the release cycle. For several Work Items, MCPTT and IoT, Stage-2 has used significantly longer time than normal. Can it be expected that this delay also will cause a delay for completion of Stage-2 in Rel-14, or will Stage-2 catch up an complete their Rel-14 WIs by September-
MCPTT and CIoT are seen as an exceptional Work Item. The future release planning needs to make sure that TSG CT has the usual 6 months for completion of Work Items after stage 2 completed (!) the related work. If stage 2 is not reliable in such a timeframe then the release freezing date would need to be shifted again.

Questions and comments:

General: The SA WG6 Chairman reported that they were likely to have some slippage in the Rel-14 timescales for completion of work for CT WGs to take on. The TSG CT Chairman clarified that their main concern was for the new 5G work and the SA WG6 input was not critical for their timescales.

Slide 19: Morpho Cards reported that a dependency of CT WG6 CRs in TD SP-160352 on SA WG1 CRs was not mentioned in this report.

The TSG CT Chairman was thanked for this report, which was then noted.

TD SP-160445 (REPORT) Draft meeting report of TSG CT#72. (Source: MCC).
Abstract: Draft report of TSG CT meeting #72.

Discussion and conclusion:

This was provided for information and was noted.

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TD SP-160446 (REPORT) IETF Status report. (Source: TSG CT Chairman).
Abstract: IETF dependencies Status report.
Overall summary:
- These slides are based on the internet-drafts as outlined in the (attached) WP at start-of-CT#72.
- New drafts for Rel-11 and Rel-14 have been added
- Several dependencies were resolved by either dropping related requirements in 3GPP or publishing RFCs in IETF

Details:
- Releases for which all drafts are completed
  - Rel-8, Rel-9, Rel-11
- Rel-10 dependencies
  - 1 draft still unfinished.
- Rel-11 dependencies
  - 1 new draft added.
- Rel-12 dependencies
  - 12 (-1) drafts still unfinished.
- Rel-13 dependencies
  - 11 (-1) drafts reported.
- Rel-14 dependencies
  - 4 (+3) draft reported

Since the previous TSGs:
- New RFCs:
  - RFC 7798: RTP Payload Format for High Efficiency Video Coding (HEVC) (was: draft-ietf-payload-rtp-h265)
  - RFC 7728: RTP Stream Pause and Resume (was: draft-ietf-avtext-rtp-stream-pause)
- Drafts in RFC editors queue:
  - draft-ietf-clue-framework
  - draft-ietf-rtcweb-datachannel
  - draft-ietf-tsvwg-sctp-dtls-encaps
- Dependency removed from our specifications:
  - 1 due to to moving parts of MMCMH to Rel-14 (will be added again most likely)
- New dependencies:
  - Rel-11: draft-mohali-dispatch-originating-cdiv-parameter
  - Rel-14: draft-ietf-mmusic-dtls-sdp
  - Rel-14: draft-ietf-mmusic-4572-update
  - Rel-14: draft-ietf-ecrit-ecall-07

Some IETF WGs - Subscribe & Support:
- DISPATCH https://www.ietf.org/mailman/listinfo/dispatch
- SIPCORE https://www.ietf.org/mailman/listinfo/sipcore
- INSIPID https://www.ietf.org/mailman/listinfo/insipid
- SOC https://www.ietf.org/mailman/listinfo/sip-overload
- MMUSIC mmusic-request@ietf.org (need to send an email request to join)
- CLUE https://www.ietf.org/mailman/listinfo/clue
- RTCWEB https://www.ietf.org/mailman/listinfo/rtcweb
- 3GPP_TSG_CT_IETF-COORD list http://list.etsi.org/scripts/wa.exe-SUBED1=3gpp_tsg_ct_ietf-coord&A=1

Questions and comments:

There were no questions or comments. The TSG CT Chairman was thanked for this report, which was then noted.

7.9 TSG GERAN report and Questions for Advice

TD SP-160331 (REPORT) TSG GERAN#70 Status report. (Source: Ericsson LM).
Abstract: TSG GERAN#70 meeting report.
GERAN#70 OVERVIEW:
- In total 284 documents were dealt with.
  - 7 incoming & 5 outgoing liaisons.
  - 63 Change Requests approved
    - 20 from WG1
    - 14 from WG2
    - 29 from WG3new

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- 6 open work items dealt with during meeting;
  - 5 Features/Building blocks/Work tasks
  - 1 study item
  - In addition a number of corrections to the already closed eDRX_GSM WI was dealt with.
- At closing plenary 25 delegates participated.
- WG reports (chairman & MCC reports)
  - WG1 in GP-160501 & 0502
  - WG2 in 0480 & 0489.
  - WG3new in 0348 & 0346.

WORK ITEM STATUS AT CLOSE OF GERAN#70:

- The testing and performance part of Rel-13 CIoT_EC_GSM WI and the FS_DOMIMO SI will be transferred to TSG RAN.

Study items		
Downlink MIMO [FS_DOMIMO]	WG1	75%
Features/Building Blocks/Work Tasks		
RAN aspects for improvements to CS/PS coordination in GERAN Shared Networks [CSPS_Coord_GERAN]	WG2	100%
Extended Coverage GSM (EC-GSM) for support of Cellular Internet of Things [CIoT_EC_GSM]	WG1	100%
Extended DRX (eDRX) for GSM – MS conformance testing [eDRX_GSM_GERAN3new]	WG3	100%
Extended Coverage GSM (EC-GSM) for support of Cellular Internet of Things – MS conformance testing [CIoT_EC_GSM_GERAN3new]	WG3	40%
UE Power Consumptions Optimizations – MS conformance testing part [MTCe-UEPCOP_GERAN3new]	WG3	100%

APPROVED CHANGE REQUESTS:

- Release 13
  - eDRX_GSM: 22 CRs approved.
  - CIoT_EC_GSM: 33 CRs approved.
  - CSPS_Coord_GERAN: 2 CRs approved.
  - MTCe-UEPCOP_GERAN3new: 6 CRs approved.

LIAISONS:

- Incoming
  - Liaison Statement - Request for comments on ISO/IEC WD 30141, Information technology - Internet of Things Reference Architecture (IoT RA), source ISO/IEC JTC 1/WG 10 (0251)
  - Liaison Statement on IoT Use cases, source ISO/IEC JTC 1/WG 10 (0252)
  - LS on CS/PS coordination in GERAN Shared Networks, source SA2 (0413)
  - LS on Test Case Optimisation - optimising LTE Inter-RAT protocol, source GCF CAG (0227)
  - LS on Test Case Optimisation - optimising of extreme testing - 2G, source GCF CAG (0236)
  - LS on Test Case Optimisation - optimising of extreme testing - 3G, source GCF CAG (0379)
  - LS on Clarification of GERAN3/RAN5 Test Cases and Timelines for LPWA IoT Solutions (0357), source CLP MIoT Initiative
- Outgoing
  - Reply LS on Clarification of GERAN3/RAN5 Test Cases and Timelines for LPWA IoT Solutions, to GSMA Mobile IoT Initiative (0433)
  - LS on update of MS Radio Access Capability IE, to CT1 (0495)
  - LS on Corrections of 3GPP vocabulary due to renaming to EC-GSM-IoT, to TSG SA (0409)
  - LS on update of definition of BSIC to include Radio frequency Colour Code, to CT4 (0488)
  - LS on completion of the EC-GSM-IoT Work Item, to GSMA (0436)

GENERAL INFORMATION:

GERAN WG1 / GERAN WG2:

- EC-GSM-IoT (CIoT_EC_GSM)
- Stage 2 CRs to 43.022, 43.059 and 43.064 approved.
- Stage 3 CRs to 44.004, 44.018, 44.060, 45.001, 45.002, 45.003, 45.004, 45.005, 45.008, 45.010, 45.050, 48.018 and 51.021 were approved and introducing e.g.:
  - Clarifications and miscellaneous corrections.
  - SINR based CC selection.
  - Energy Efficient EC-CCCH/D Operation.
  - The Radio frequency Colour Code (RCC).
  - The findings from the study on support for EC-GSM-IoT and GPRS/EGPRS in a reduced BCCH frequency allocation.
- A draft CR to 21.905 on corrections of 3GPP vocabulary and a draft CR to 24.008 on introduction of EC-GSM-IoT capability signalling were endorsed.

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- The core part of the specification is 100% complete.
- The MS and BTS performance specification needs to be transferred to TSG RAN.
- CS/PS Coordination (CSPS_Coord_GERAN)
  - CRs to 48.008 and 48.018 approved.
  - The work is 100% completed.
- eDRX (eDRX_GSM)
- Correction CRs approved to 43.064, 44.018, 44.060, 45001, 45002 and 45.008.
  - The Radio frequency Colour Code (RCC) was introduced.
- The work was declared 100% completed already at GERAN#68.
- DL MIMO (FS_DOMIMO)
  - TR 45.871 v1.0.1 was presented for information at the closing plenary.
  - The SI is not complete and the remaining work needs to be transferred to TSG RAN.

GERAN3new:

- G3new performed work on three features:
  - eDRX (eDRX_GSM_GERAN3new)
  - EC-GSM-IoT (CIoT_EC_GSM_GERAN3new)
  - PSM (MTCe-UEPCOP_GERAN3new)
- In total 29 CRs were approved and the work on eDRX_GSM_GERAN3new and MTCe-UEPCOP_GERAN3new was declared 100% complete.
- CIoT_EC_GSM_GERAN3new reached 40% completion level and the remaining work will be transferred to TSG RAN.
- Four incoming letters were dealt with and one outgoing letter was agreed to be sent. See slide 7 for details.

GUIDANCE & INFORMATION:

- Guidance
  - None
- Information
  - TSG GERAN#70 was the final TSG GERAN meeting and the GSM/EDGE specification work will now continue in TSG RAN, RAN5 and RAN6.
  - As decided by PCG#35 (see TD PCG#35(15)27, Decision PCG35/2, and TD PCG#35(15)8r1) the ongoing work should be transferred to TSG RAN. As a result the following WIs/SIs needs to be transferred to TSG RAN:
    - The performance part of the CIoT_EC_GSM WI.
    - The testing part of the CIoT_EC_GSM WI, i.e. the CIoT_EC_GSM_GERAN3new building block.
    - The FS_DOMIMO SI.

The report was presented by the TSG SA Chairman in the absence of the TSG GERAN Chairman at this meeting.

Questions and comments:

There were no questions or comments. The TSG GERAN Chairman was thanked for this report, which was then noted.

8 Rel-8 CRs (Need to be very well justified!)

TD SP-160410 (CR PACK) Rel-8 CRs on IMS Charging (CH8_IMS). (Source: SA WG5).
Abstract: 32.298 CR0577R1; 32.298 CR0578R1; 32.298 CR0579R1; 32.298 CR0580R1; 32.298 CR0581R1; 32.298 CR0582R1.

Discussion and conclusion:

This CR pack was block approved.

9 Rel-9 CRs (Need to be very well justified!)

TD SP-160418 (CR PACK) Rel-9 CRs on 3G HNB and LTE HeNB OAM&P Type 1 Interface (HNB_eHNB-OAM_Type1). (Source: SA WG5).
Abstract: 32.592 CR0033; 32.592 CR0034; 32.592 CR0035; 32.592 CR0036; 32.592 CR0037.

Discussion and conclusion:

This CR pack was block approved.

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10 Rel-10 CRs (Need to be very well justified!)

TD SP-160409 (CR PACK) Rel-10 CRs on OAM Maintenance and small Enhancements (OAM10). (Source: SA WG5).
Abstract: 32.792 CR0002R1; 32.792 CR0003R1.

Discussion and conclusion:

This CR pack was block approved.

11 Rel-11 CRs (Need to be very well justified!)

TD SP-160408 (CR PACK) Rel-11 CRs on OAM Maintenance and small Enhancements (OAM11). (Source: SA WG5).
Abstract: 28.663 CR0010; 28.663 CR0011; 28.663 CR0012; 28.655 CR0006; 28.655 CR0007; 28.655 CR0008; 28.656 CR0013R1; 28.656 CR0014R1; 28.656 CR0015R1; 28.656 CR0009R1; 28.656 CR0010R1; 28.656 CR0011R1.

Discussion and conclusion:

This CR pack was block approved.

12 Rel-12 CRs

TD SP-160284 (CR PACK) 2 CRs to 23.204: SMSMI (Rel-12, Rel-13). (Source: SA WG2).
Abstract: 23.204 CR0107; 23.204 CR0108.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160285 (CR PACK) 3 CRs to 23.402, 23.216: TEI12 (Rel-12, Rel-13). (Source: SA WG2).
Abstract: 23.402 CR2927R2; 23.402 CR2928R2; 23.216 CR0334R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160257 (CR PACK) CRs to TS 26.114, TS 26.442, TS 26.443, TS 26.444, TS 26.445, TS 26.447 and TR 26.952 on 'Codec for Enhanced Voice Services (EVS_codec)' (Release 12 & Release 13). (Source: SA WG4).
Abstract: 26.114 CR0338R6; 26.442 CR0014; 26.442 CR0015; 26.443 CR0010; 26.443 CR0011; 26.444 CR0009; 26.444 CR0010; 26.445 CR0014; 26.445 CR0015; 26.445 CR0016R1; 26.445 CR0017R1; 26.445 CR0018R2; 26.445 CR0019R2; 26.447 CR0006; 26.447 CR0007; 26.952 CR0006; 26.952 CR0007.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160258 (CR PACK) CRs to TS 26.346 on 'MBMS Improvements (MI)' (Release 12 & Release 13). (Source: SA WG4).
Abstract: 26.346 CR0536R2; 26.346 CR0537R2; 26.346 CR0538R2.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160259 (CR PACK) CRs to TS 26.114, TS 26.223, TS 26.234 and TS 26.346 on '(IETF) High Efficiency Video Coding (HEVC-SA4IETF)' (Release 12 & Release 13). (Source: SA WG4).
Abstract: 26.114 CR0366R1; 26.114 CR0367R1; 26.223 CR0001R1; 26.234 CR0224R1; 26.234 CR0225R1; 26.346 CR0534R1; 26.346 CR0535R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160440 (CR PACK) Rel-12 CRs for Security for Proximity-based Services. (Source: SA WG3).
Abstract: 33.303 CR0131.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160415 (CR PACK) Rel-12 CRs on Charging Management (CH12). (Source: SA WG5).
Abstract: 32.251 CR0461R1; 32.251 CR0462R1.

Discussion and conclusion:

This CR pack was block approved.

13 Rel-13 CRs

NOTE: Cat-F CRs only are expected except for highlighted items below and NBIOT_CH (and NBIOT_OAM) if submitted, see Agenda Item 16).

13A SA WG1-related Work Items

(SEES) - Service Exposure and Enablement Support (SRMMTC) - Service Requirements Maintenance for Machine-Type Communications (SRM_GCSE_LTE) - Service Requirements Maintenance for Group Communication System Enablers for LTE (ACDC) - Application specific Congestion control for Data Communication (including FS phase) (ECIP) - Enhanced Calling Information Presentation (GUSH) - RAN Sharing Enhancements on GERAN and UTRAN (RSE) - RAN Sharing Enhancements.

TD SP-160347 LS from TSG GERAN: LS on Corrections of 3GPP vocabulary due to renaming to EC-GSM-IoT. (TSG GERAN)
Abstract: In the ongoing work on CIoT_EC_GSM in TSG GERAN it was agreed at the GERAN#69 meeting in Malta to change the name from EC-EGPRS to EC-GSM-IoT.
However, it has been observed that the corresponding change to the abbreviation in TR 21.905 Vocabulary for 3GPP specifications has not been made. TSG GERAN would therefore kindly ask TSG SA to review the attached draft CR endorsed by GERAN and if found acceptable update TR 21.905 accordingly.
Finally, please note that GERAN#70 is the final and last GERAN meeting. The responsibility will be taken over by RAN WG6 and any further correspondence should therefore be addressed to RAN WG6.
Action: TSG GERAN kindly asks TSG SA to review the attached draft CR endorsed by GERAN and if found acceptable update the TR 21.905 accordingly.

Discussion and conclusion:

The attached draft CR was used as a basis for the CR in TD SP-160466 and this LS was then noted.

TD SP-160466 (CR) 21.905 CR0113: Correction of 3GPP vocabulary due to renaming to EC-GSM-IoT. (TSG SA).
Abstract: Summary of change: The abbreviation EC-EGPRS has been updated to EC-GSM-IoT.

Discussion and conclusion:

This CR was reviewed and approved.

TD SP-160353 (CR PACK) SEES Agreed CRs. (Source: SA WG1).
Abstract: 22.101 CR0517R2; 22.101 CR0518R1.

Discussion and conclusion:

This CR pack was block approved.

13B SA WG2-related Work Items

(FMSS) - Flexible Mobile Service Steering (UPCON) - UserPlane Congestion Management (IOPS) - Isolated E-UTRAN Operation for Public Safety (eWebRTCi) - Enhancements to WebRTC interoperability (CSPS_coord) - Improvements to CS/PS coordination in UTRAN/GERAN Shared Networks (ePRoSe) - Enhancements to Proximity-based Services (VoE-UTRAN_PPD) - Voice over E-UTRAN Paging Policy Differentiation (DÉCOR) - Dedicated Core Networks (NBIFOM) - IP Flow Mobility support for S2a and S2b Interfaces (AESE) - Architecture Enhancements for Service Capability Exposure (MONTE) - Monitoring Enhancements (GROUPE) - Group based Enhancements (DRuMS) - Double Resource Reuse for Multiple Media Sessions (eUMONC and FS_UMONC_sas) - Usage Monitoring Control PCC Extension (eDRX) - Stage 2 for Extended DRX cycle for Power Consumption (HLCom) Optimizations to Support High Latency Communications (SEW1) Support of Emergency services over WLAN - Phase 1 (CIoT) - Stage 2 of CIoT.

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TD SP-160286 (CR PACK) 24 CRs to 23.060, 23.401: CIoT (Rel-13). (Source: SA WG2).
Abstract: 23.401 CR3000R1; 23.401 CR3013R1; 23.401 CR3014R1; 23.401 CR2996R1; 23.401 CR3012R1; 23.401 CR3008R1; 23.401 CR3017R2; 23.401 CR2992R3; 23.401 CR3015R4; 23.401 CR2997R3; 23.060 CR1999R4; 23.401 CR3022; 23.401 CR3042; 23.401 CR3051; 23.401 CR2998R4; 23.401 CR2999R8; 23.401 CR2994R4; 23.401 CR3046R1; 23.401 CR3049R1; 23.401 CR3041R1; 23.401 CR2993R3; 23.401 CR3035R2; 23.401 CR2995R8; 23.401 CR3026R3.

Discussion and conclusion:

Update to 23.401 CR2997R3 proposed in TD SP-160433. All other CRs were approved.

TD SP-160433 23.401 CR2997R4 (Rel-13, 'F'): Support for SMS using CP optimisation. (Source: Qualcomm Incorporated, Intel, Ericsson).
Abstract: Summary of change: Clarifies that a UE and MME that support Control Plane CIoT EPS optimisation use the procedures defined in clauses 5.3.4B to send/receive SMS.

Discussion and conclusion:

Revision of S2-162053. Proposed update to 23.401 CR2997R3 in TD SP-160286. This CR was approved.

TD SP-160287 (CR PACK) 10 CRs to 23.203, 23.272, 23.682: CIoT (Rel-13). (Source: SA WG2).
Abstract: 23.682 CR0169R1; 23.682 CR0173R1; 23.682 CR0175R1; 23.682 CR0182R2; 23.682 CR0172R3; 23.682 CR0171R5; 23.272 CR0964R1; 23.682 CR0174R6; 23.682 CR0183R2; 23.203 CR1029R2.

Discussion and conclusion:

Update to 23.272 CR0964R1 proposed in TD SP-160435. All other CRs were approved.

TD SP-160435 23.272 CR0964R2 (Rel-13, 'F'): Support for SMS using CP optimisation for CIOT. (Source: Qualcomm Incorporated, Intel, Ericsson).
Abstract: Clarifies that a UE and MME that support Control Plane CIoT EPS optimisation use Data Transport in Control Plane CIoT EPS Optimisation and do not need Service request procedures.

Discussion and conclusion:

Revision of S2-162874. Proposed update to 23.272 CR0964R1 in TD SP-160287. This CR was approved.

TD SP-160288 (CR PACK) 1 CR to 23.251: CSPS_Coord_GERAN (Rel-13). (Source: SA WG2).
Abstract: 23.251 CR0106R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160289 (CR PACK) 6 CRs to 23.272, 23.682, 23.060, 23.401: eDRX (Rel-13). (Source: SA WG2).
Abstract: 23.682 CR0181; 23.401 CR3023R2; 23.060 CR2003R2; 23.272 CR0956R4; 23.272 CR0957R4; 23.272 CR0960R4.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160290 (CR PACK) 1 CR to 23.303: eProSe-Ext-SA2 (Rel-13). (Source: SA WG2).
Abstract: 23.303 CR0312.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160291 (CR PACK) 2 CRs to 23.203: FMSS (Rel-13). (Source: SA WG2).
Abstract: 23.203 CR1023R1; 23.203 CR1026.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160292 (CR PACK) 1 CR to 23.402: LTE_dualC_ext-Core (Rel-13). (Source: SA WG2).
Abstract: 23.401 CR2956R7.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160293 (CR PACK) 2 CRs to 23.682: MONTE (Rel-13). (Source: SA WG2).
Abstract: 23.682 CR0167; 23.682 CR0168R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160294 (CR PACK) 6 CRs to 23.161, 23.203: NBIFOM (Rel-13). (Source: SA WG2).
Abstract: 23.161 CR0018R1; 23.203 CR1021R1; 23.161 CR0021R1; 23.161 CR0019R1; 23.161 CR0020R2; 23.203 CR1030R2.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160295 (CR PACK) 2 CRs to 23.060, 23.682: NonIP_GPRS (Rel-13). (Source: SA WG2).
Abstract: 23.060 CR2000R2; 23.682 CR0170R2.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160296 (CR PACK) 1 CR to 23.002: ProSe (Rel-13). (Source: SA WG2).
Abstract: 23.002 CR0291R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160297 (CR PACK) 1 CR to 23.228: SEW1 (Rel-13). (Source: SA WG2).
Abstract: 23.228 CR1147R2.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160298 (CR PACK) 9 CRs to 23.402, 23.060, 23.401, 23.203, 23.228: TEI13 (Rel-13). (Source: SA WG2).
Abstract: 23.402 CR2941R1; 23.402 CR2943R1; 23.401 CR2964R2; 23.401 CR3002R1; 23.060 CR2001R1; 23.402 CR2942R2; 23.203 CR1013R7; 23.228 CR1142R7; 23.682 CR0162R5.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160305 (WID REVISED) Updated work item on Architecture enhancements for cellular Internet of Things (Cellular IoT). (Source: SA WG2).
Abstract: Justification: Machine type communication (MTC) represents a significant growth opportunity for the 3GPP ecosystem.
To support the so called 'Internet of Things' (IoT), 3GPP operators have to address usage scenarios with devices that are power efficient (with battery life of several years), can be reached in challenging coverage conditions e.g. indoor and basements and, more importantly, are cheap enough so that they can be deployed on a mass scale and even be disposable.
There are competing technologies for supporting MTC that claim to provide devices at a much lower cost than GSM with better coverage and power efficiency than the cheapest GSM devices.
In that competition, legacy GPRS CN and/or EPC may also fall out unfavourably when considering MTC/IoT use cases that may require higher upper layer efficiency and security level than provided by legacy GPRS CN / EPC.
As part of FS_AE_CIoT study item, SA WG2 has studied architecture requirements for 'Internet of Things', specifically for ultra low complexity / low data rate devices which may also be power constrained.
SA WG2 has completed the study and conclusions agreed are captured in TR 23.720.
It is required to provide the normative specifications based on the conclusion from study phase as documented in TR 23.720.

Discussion and conclusion:

This New WID was approved.

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TD SP-160326 (DRAFT TR) TR 23.771: 'Study on system impacts of IMS emergency sessions over WLAN' Version 2.0.0. (Source: SA WG2).
Abstract:
Abstract of document:
TR 23.771 studies the support of Emergency services over WLAN (FS_SEW1 / FS_SEW2 Study Items).
Changes since last presentation to TSG SA Meeting #71:
Solutions have been introduced that correspond to:
- ePDG selection
- IMEI check
- Mobility with 3GPP access especially in the case of CS domain

Evaluations of all solutions has been made and it has been decided which solutions are endorsed for normative work TR 23.771 is 100% complete
Outstanding Issues:
None
Contentious Issues:
None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Rel-13).

13C SA WG3-related Work Items

(SCAS) - Security Assurance Specification for 3GPP network products (EASE_EC_GSM) - EGPRS Access Security Enhancements in relation to Cellular IoT (LI13) - Lawful Interception in the 3GPP Rel-13 (SEC13) - Security Enhancements and Improvements for Rel-13 (eProSe-Ext-SA WG3) - Security for Enhancement to Proximity-based Services - Extensions (MCPTT) - Security of MCPTT (CIoT) - Security Aspects of CIoT (SCAS) - Security Assurance Specification for 3GPP network products.

TD SP-160383 (CR PACK) Rel-13 CRs on Mission Critical Push to Talk (MCPTT). (Source: SA WG3).
Abstract: 33.879 CR0002; 33.879 CR0003; 33.879 CR0004; 33.879 CR0005; 33.879 CR0006; 33.179 CR0007; 33.879 CR0008; 33.879 CR0009; 33.879 CR0010; 33.879 CR0012; 33.179 CR0010; 33.879 CR0014R1; 33.179 CR0005R1; 33.179 CR0004R1; 33.179 CR0001R2; 33.179 CR0002R2; 33.179 CR0006R1; 33.879 CR0007R1; 33.879 CR0013R1; 33.879 CR0011R1; 33.879 CR0001R1; 33.179 CR0011R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160384 (CR PACK) Rel-13 CRs on Lawful Interception (LI13). (Source: SA WG3).
Abstract: 33.108 CR0309; 33.108 CR0312; 33.108 CR0314; 33.108 CR0315; 33.108 CR0316; 33.106 CR0161; 33.108 CR0321; 33.107 CR0198R1; 33.108 CR0308R1; 33.108 CR0310R1; 33.108 CR0311R1; 33.108 CR0313R1; 33.106 CR0162R2; 33.106 CR0159R2; 33.107 CR0215R2; 33.106 CR0160R3.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160385 (CR PACK) Rel-13 CRs on enhancements of Proximity Based Services (eProSe-ext-SA3). (SA WG3).
Abstract: 33.303 CR0131; 33.303 CR0130R1; 33.224 CR0007R1; 33.303 CR0129R2; 33.303 CR0128R2; 33.303 CR0132R1.

Discussion and conclusion:

33.303 CR0131 reissued in TD SP-160440 (agenda item 12). Other CRs reissued in TD SP-160451. Revised in TD SP-160451.

TD SP-160451 (CR PACK) Rel-13 CRs on enhancements of Proximity Based Services (eProSe-ext-SA3). (Source: SA WG3). (Revision of TD SP-160385).
Abstract: 33.224 CR0007R1; 33.303 CR0128R2; 33.303 CR0129R2; 33.303 CR0130R1; 33.303 CR0132R1.

Discussion and conclusion:

Revision of TD SP-160385. This CR pack was block approved.

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TD SP-160386 (CR PACK) Rel-13 CRs on Security Aspects of CIoT (aka NB-IoT). (Source: SA WG3).
Abstract: 33.401 CR0588R1; 33.401 CR0580R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160388 (CR PACK) Rel-13 CRs on EGPRS Access Security Enhancements in relation to Cellular IoT(EASE_EC_GSM). (Source: SA WG3).
Abstract: 43.020 CR0037; 43.020 CR0042; 43.020 CR0038R1; 43.020 CR0044; 43.020 CR0040R1; 43.020 CR0041R1.

Discussion and conclusion:

This CR pack was block approved.

13D SA WG4-related Work Items

(ATeMPO_SPINE) - Acoustic Test methods and Performance Objectives for Speakerphone Performance in Noisy Environments (MEPRO) MBMS Extensions and Profiling (IMS_TELEP_S4) - Media Handling Aspects of IMS-based Telepresence (ROI) - Video Enhancements by Region-of-Interest Information Signaling (TVProf) - TV video profile (E_LTE_UED) - Enhanced LTE UE delay test methods and requirements (HTML5) - HTML5 Presentation Layer (EVSoCS) - Support of EVS in 3G Circuit-Switched Networks (eDASH) - Enhanced DASH (QOSE2EMTSI) - QoS End-to-end Multimedia Telephony Service for IMS (MTSI) extensions (Stage 3) (MMCMH) - MTSI Extension on Multi-stream Multiparty Conferencing Media Handling (VTRI_EXT) - Video Telephony Robustness Improvements Extensions.

TD SP-160260 (CR PACK) CRs to TS 26.131 and TS 26.132 on 'Enhanced LTE UE delay test methods and requirements (E_LTE_UED)' (Release 13). (Source: SA WG4).
Abstract: 26.131 CR0071R1; 26.132 CR0091R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160261 (CR PACK) CRs to TS 26.103 and 26.454 on 'Support of EVS in 3G Circuit-Switched Networks (EVSoCS)' (Release 13). (Source: SA WG4).
Abstract: 26.103 CR0045; 26.454 CR0002; 26.346 CR0003R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160262 (CR PACK) CR to TS 26.247 on 'eDASH: $Time$ needs to go (eDASH)' (Release 13). (Source: SA WG4).
Abstract: 26.247 CR0088R2.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160263 (CR PACK) CRs to TS 26.114 on 'QoS End-to-end Multimedia Telephony Service for IMS (MTSI) extensions (Stage 3) (QOSE2EMTSI)' (Release 13). (Source: SA WG4).
Abstract: 26.114 CR0370; 26.114 CR0371.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160264 (CR PACK) CRs to TS 26.114 on 'MTSI Extension on Multi-stream Multiparty Conferencing Media Handling (MMCMH)' (Release 13). (Source: SA WG4).
Abstract: 26.114 CR0369; 26.114 CR0375.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160265 (CR PACK) CRs to TS 26.179 and TR 26.879 on 'Mission Critical Push-to-Talk over LTE (MCPTT)' (Release 13). (Source: SA WG4).
Abstract: 26.179 CR0001R1; 26.879 CR0004R2; 26.879 CR0006; 26.879 CR0007R1; 26.879 CR0008R2; 26.879 CR0009R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160266 (CR PACK) CR to TS 26.114 on 'Correction to Speech Media Flow Information (TEI13)' (Release 13). (Source: SA WG4).
Abstract: 26.114 CR0368R2.

Discussion and conclusion:

This CR pack was block approved.

13E SA WG5-related Work Items

(OAM13) - OAM&P Rel-13 (including all building blocks and work tasks) (SON-NM-CCO) - Enhanced Network Management (NM) centralized Coverage and Capacity Optimization (OAM-NGMN_OPE) - Compliance of SA WG5 specifications to the NGMN Top Operational Efficiency (OPE) Recommendations (OAM-PMID) - Converged management Performance Management Interface Definitions (WLAN-OAM) - WLAN Management (OAM-PM_EE) - Energy Efficiency related Performance Measurements (MBSFN_MDT) - Multi-Broadcast Single Frequency Network (MBSFN) Minimization of Drive Tests (MDT) enhancement (CH13) - Charging Management Rel-13 (including all building blocks and work tasks) (iPLMN-PS-OCH) - Inter-PLMN PS domain online charging (ULRELC-CH) - ULI and release causes for charging enhancement for VoLTE (CHeISC) Charging on ehancements for IMS Service Continuity (ANIMO) Announcements for IMS Online Charging (eSaMOG-CH) Enhanced S2a Mobility Over Trusted WLAN access to EPC - Charging (MONTE-CH) - Charging Aspects of MONTE (NBIFOM-CH) - Charging Aspects of IP Flow Mobility support for S2a and S2b Interfaces (NBIFOM).

TD SP-160407 (CR PACK) Rel-13 CRs on OAM Maintenance and small Enhancements (OAM13). (Source: SA WG5).
Abstract: 28.703 CR0007; 28.706 CR0004; 28.709 CR0004; 28.733 CR0005; 28.736 CR0004; 28.753 CR0004; 32.111-6 CR0008; 32.126 CR0009; 32.306 CR0004; 32.316 CR0002; 32.326 CR0003; 32.336 CR0002; 32.346 CR0002; 32.356 CR0002; 32.366 CR0002; 32.376 CR0003; 32.386 CR0003; 32.396 CR0004; 32.416 CR0005; 32.506 CR0002; 32.536 CR0011; 32.606 CR0004; 32.616 CR0005; 32.666 CR0004; 28.616 CR0004; 28.623 CR0008; 28.626 CR0004; 28.629 CR0012; 28.633 CR0004; 28.653 CR0012; 28.656 CR0012; 28.659 CR0017; 28.663 CR0013; 28.669 CR0011; 28.673 CR0004; 28.676 CR0004.

Discussion and conclusion:

This CR pack was block approved.

MCC Comment: Due to a CR number duplication error, 28.706 CR0004 was renumbered to 28.706 CR0007, 28.733 CR0005 was renumbered to 28.733 CR0007, 28.623 CR0008 was renumbered to 28.623 CR0011, 28.653 CR0012 was renumbered to28.653 CR0015 and 28.633 CR0004 was renumbered to 28.633 CR0007 in the CR database.

TD SP-160412 (CR PACK) Rel-13 CRs on Charging aspects of MONTE (MONTE-CH). (Source: SA WG5).
Abstract: 32.298 CR0576R1; 32.299 CR0721R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160413 (CR PACK) Rel-13 CRs on Compliance of 3GPP SA5 specifications to the NGMN Top Operational Efficiency (OPE) Recommendations (OAM-NGMN-OPE). (Source: SA WG5).
Abstract: 32.838 CR0006R1; 32.838 CR0010.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160416 (CR PACK) Rel-13 CRs on Charging Management (CH13). (Source: SA WG5).
Abstract: 32.251 CR0459; 32.260 CR0362; 32.260 CR0363; 32.298 CR0575; 32.298 CR0584R1; 32.299 CR0719R1; 32.299 CR0720.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160420 (CR PACK) Rel-13 CRs on Charging Aspects of IP Flow Mobility support for S2a and S2b Interfaces (NBIFOM-CH). (Source: SA WG5).
Abstract: 32.298 CR0586; 32.299 CR0724; 32.251 CR0469; 32.251 CR0467R1; 32.251 CR0468R1; 32.298 CR0587R1; 32.299 CR0725R1.

Discussion and conclusion:

This CR pack was block approved.

13F SA WG6-related Work Items

(MCPTT) - Mission Critical Push-to-Talk over LTE.

TD SP-160339 (CR PACK) Rel-13 CRs to TS 23.179 for MCPTT. (Source: SA WG6).
Abstract: 23.179 CR0063; 23.179 CR0071; 23.179 CR0076R1; 23.179 CR0053R2; 23.179 CR0067R1; 23.179 CR0070R1; 23.179 CR0078R1; 23.179 CR0088R1; 23.179 CR0094R1; 23.179 CR0080R1; 23.179 CR0055R2; 23.179 CR0090R2; 23.179 CR0057R2; 23.179 CR0069R3; 23.179 CR0075R2; 23.179 CR0081R2; 23.179 CR0062R2; 23.179 CR0072R3; 23.179 CR0060R2; 23.179 CR0095R2; 23.179 CR0092R2; 23.179 CR0089R5; 23.179 CR0068R2; 23.179 CR0079R4; 23.179 CR0085R2; 23.179 CR0065R3; 23.179 CR0058R2; 23.179 CR0061R2; 23.179 CR0099R4; 23.179 CR0038R7; 23.179 CR0102R1; 23.179 CR0059R4; 23.179 CR0093R2; 23.179 CR0105R1; 23.179 CR0108; 23.179 CR0100R2; 23.179 CR0104R2; 23.179 CR0084R3; 23.179 CR0106R2.

Discussion and conclusion:

This CR pack was block approved.

13G Other Work Items and Documents

(TEI13) - Technical Enhancements and Improvements for Rel-13 Any other Release 13 documents.

TD SP-160467 (Discussion) Discussion on Extended HPLMN Search period. (Source: Morpho Cards).
Abstract: Question: Is it sufficient to only have one file for defining the value for 'normal' and 'IoT' MEs and thus the fixed link for the related Higher priority PLMN search period- (Increasing the HPLMN search period for IoT automatically increases the HPLMN search period also for normal ME) Or Is there a need to have the possibility to define the Higher priority PLMN search period for 'normal' MEs and 'IoT' MEs independently?

Discussion and conclusion:

Vodafone commented that this was an issue that should be handled using Liaison between SA WG1 and CT WG6. Ericsson commented that the contributor was present in the SA WG1 discussions on this and was surprised that issues are raised now. Morpho Cards clarified that their question is whether it makes sense to define the values independently for IoT and non-IoT devices. Blackberry commented that this was a request to cover other scenarios and should be discussed in SA WG1 and supported approving the CR. Ericsson commented that configuration of IoT USIM data would be different to Smart phone USIM configuration and they do not agree that this scenario is valid as a non-IoT device (e.g. smart phone) which supports IoT would not have the power limitations and battery-saving requirements of a pure IoT device. Morpho Cards commented that an operator may wish to issue USIMs without needing to whether they will be inserted in IoT devices or not and this is not covered by the current CR. There was no support for this and such issues should be taken to the relevant WGs for discussion. This was then noted.

TD SP-160352 (CR PACK) TEI13 Agreed CRs. (Source: SA WG1).
Abstract: 22.011 CR0236; 22.011 CR0235R1; 22.278 CR0228R1; 22.115 CR0083R2; 22.278 CR0227R4; 22.278 CR0225R7.

Discussion and conclusion:

This CR Pack was approved.

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TD SP-160390 (CR PACK) Rel-13 CRs on Core part: LTE-WLAN Radio Level Integration and Interworking Enhancement (LTE_WLAN_Radio-Core). (Source: SA WG3).
Abstract: 33.401 CR0574R1; 33.401 CR0579R1; 33.401 CR0585R1.

Discussion and conclusion:

A proposed replacement for 33.401 CR0579R2 was provided in TD SP-160441. All other CRs were approved.

TD SP-160441 33.401 CR0579R3 (Rel-13, 'F'): LWIP security solution. (Source: Nokia, Ericsson, Broadcom Corporation, AT&T, Deutsche Telekom, Juniper Networks). (Revision of TD SP-160439).
Abstract: Summary of change:

a) Make clause 16 void.
b) Move LWIP text to new annex, update references within the clause.
c) IPSec to IPsec
d) MeNB to eNB
e) Storing and deletion of LWIP-PSK is clarified.
f) Change LWIP-SEGW to LWIP-SeGW in section 16.2.2
g) down bullet 16.2.3
h) Remove a redundant space character from section 16.4.2
i) Introduce a counter to LWIP-PSK derivation, similar to the counter in LWA. In this CR version to TSG SA plenary the following changes have been done:
j) Clarification of the security protocol architecture in X.1
k) Specification of IPsec tunnel mode usage in X.1 and X.2.2
l) Reference to IKE and IPsec profile is corrected to be 33.310 instead of 33.210.

Discussion and conclusion:

Proposed replacement of 23.401 CR 0579R2 in TD SP-160390. Intel asked to clarify Note 2. The Home Office asked whether this replaced an agreed SA WG3 CR. This should be clarified also. Other corrections were also needed and this was left for off-line discussion and revised in TD S2-160456 which was reviewed and approved.

TD SP-160387 (CR PACK) Rel-13 CRs on TEI (TEI13). (Source: SA WG3).
Abstract: 33.220 CR0184R1.

Discussion and conclusion:

This CR pack was block approved.

14 Documents related to Release 14 Features

14A SA WG1-related Work Items

14.1 (PWDIMS) Password based service activation for IMS Multimedia Telephony service

There were no contributions under this agenda item.

14.2 (MPS_Mods) Multimedia Priority Service Modifications

TD SP-160356 (CR PACK) MPS_Mod Agreed CRs. (Source: SA WG1).
Abstract: 22.153 CR0032; 22.153 CR0033; 22.153 CR0035; 22.153 CR0038; 22.153 CR0036R1; 22.153 CR0037R1; 22.153 CR0040R1; 22.153 CR0039R3; 22.153 CR0034R2.

Discussion and conclusion:

This CR pack was block approved.

14.3 (ELIOT) Enhancing Location Capabilities for Indoor and Outdoor Emergency Communications

There were no contributions under this agenda item.

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14.4 (V2XLTE) - LTE support for V2X services

TD SP-160357 (CR PACK) V2XLTE Agreed CRs. (Source: SA WG1).
Abstract: 22.185 CR0004; 22.185 CR0003R1; 22.185 CR0005; 22.185 CR0001R2.

Discussion and conclusion:

This CR pack was block approved.

14.5 (eDSVCC) - Enhancements to Domain Selection between VoLTE and CDMA CS

There were no contributions under this agenda item.

14.6 (eULRS) - Enhancements to User Location Reporting Support

There were no contributions under this agenda item.

14.7 (CATS) - Control of Applications when Third party Servers encounter difficulties

There were no contributions under this agenda item.

14.8 (EIEI) - Evolution to and Interworking with eCall in IMS

There were no contributions under this agenda item.

14.9 (MCImp) - Mission Critical Improvements (includes MCPTT Realignment, Services Common Requirements, Video over LTE, Data over LTE)

TD SP-160391 22.179 CR0040 (Rel-14, 'B'): Introduction of Audio cut-in requirements in MCPTT. (Source: HOME OFFICE).
Abstract: In currently deployed public safety systems there are special groups enabled such that the floor control allows any group member of that group to interrupt the transmissions of all other members of that group without the need to wait for the end of the current transmission. At present there are no specific requirements within MCPTT to support this feature which is different to the current defined Override feature due to the fact that it is not based at all on the priority of the users.

Discussion and conclusion:

Motorola Solutions commented that they had some concerns on this as there had been other proposals to consider and to determine whether it should be a Rel-14 requirement and suggested leaving this for review by SA WG1 and if to be included in Rel-14 a CR can be raised for it for approval at the next TSG SA meeting. The HOME OFFICE replied that they consider this essential for Rel-14 and Stage 1 is freezing at this meeting. The U.S. Department of Commerce commented that if this is not approved here they would support inclusion of this in Rel-14 at the next meeting. Ericsson proposed instead to approve this now and ask SA WG1 to review this and provide a CR to correct it if necessary to the next TSG SA meeting, rather than adding Category B CRs in September, 6 months after the Stage 1 freeze date. Motorola Solutions preferred to allow SA WG1 to look at this first. This CR was approved. **Technical concerns and alternative text proposals will be discussed and considered by SA WG1, and if necessary, text changes for Rel-14 for this feature should be made to the TS**.

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TD SP-160358 (DRAFT TS) TS 22.280 (Mission Critical Services Common Requirements). (Source: SA WG1).
Abstract:
Abstract of document:
TS 22.280 is intended to become the basis for SA WG1 to consolidate requirements that are found to be common between MCPTT, MCVideo, and MCData. The requirements that are identified as common between two or more MC services have been be placed into this specification, and where applicable, specific application of MCCoRe requirements relative to an individual MC service have been identified in a normative annex.
Changes since last presentation to TSG SA #71:
Presentation for approval. Addition of service requirements from MCPTT, MCVideo, and MCData
Outstanding Issues:
None
Contentious Issues:
None.

Discussion and conclusion:

This TS was approved and placed under TSG SA change control (Rel-14).

TD SP-160359 (CR PACK) MCImp-MCPTTR Agreed CRs. (Source: SA WG1).
Abstract: 22.179 CR0038R3; 22.179 CR0039R1; 22.179 CR0037R2.

Discussion and conclusion:

22.179 CR0039R1 was discussed off-line and TD SP-160463 was allocated for a potential revision. During off-line discussion it was decided not to create TD SP-160463, which was withdrawn and to reject this CR and send a LS to SA WG6 instead. 22.179 CR0039R1 was rejected and the LS was drafted in TD SP-160469. The remaining CRs, 22.179 CR0038R3 and 22.179 CR0037R2, were approved.

TD SP-160469 (LS OUT) LS on MCPTT over LTE feature addition through modification of TS 22.280 requirements
Abstract: To: SA WG6, SA WG1

Discussion and conclusion:

This outgoing LS was reviewed and approved.

TD SP-160360 (DRAFT TS) TS 22.281 on Mission Critical Video over LTE. (Source: SA WG1).
Abstract:
Abstract of document:
The scope of the TS is to provide specific requirements for Mission Critical Video communications. MCVideo makes use of capabilities included in Group Communications System Enablers for LTE (GCSE_LTE), Proximity based Services (ProSe), and Isolated E-UTRAN operation for Public Safety, with additional requirements specific to the MCVideo Service. The MCVideo Service can be used for public safety applications and also for general commercial applications (e.g., utility companies and railways). MCVideo requirements common to the MCPTT and/or MCData service have been consolidated in the MCCoRe specification.
Changes since last presentation to TSG SA Meeting #71:
Presentation for approval Addition of service descriptions, consolidation with MCCoRe, rewordings
Outstanding Issues:
None
Contentious Issues:
None.

Discussion and conclusion:

This TS was approved and placed under TSG SA change control (Rel-14).

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TD SP-160448 (LS In) LS from TCCA on Missing requirements in MCData Work Item for Interworking with TETRA. We have heard from ETSI TC-TCCE01 that when PPDR organisations in Europe were surveyed to update their TETRA/LTE Interworking requirements that a number of them either felt that being able to interwork with SDS (Short Data Service) was either essential or at least desirable. In some cases the entire task assignment, commanding and situational overview of a public safety organisation are dependent on SDS services.
This is because SDS messaging, sometimes with modifications (so called SDAs) to present either proformas or to cause radios to function in a different way, has, along with status messaging, become embedded in operational procedures. In MCData the need for basic messaging is captured but not the need for interworking with TETRA. TCCA therefore would like to draw this missing requirement to TSG SA's attention with the expectation that in future a CR will be raised by TCCA and member companies defining precisely the changes needed in MCData and related work to cover this need.
We apologise for the late submission of this liaison statement. We have been feeding this requirement into the ad hoc LTE/LMR Interworking Group facilitated by ATIS and had thought that it would be submitted to 3GPP via that route as part of a larger analysis of the current perceived gap between TS 22.179 and envisaged LMR requirements but this has not happened yet and we felt that we should make TSG SA aware of the requirement now as it seems to be putting its inclusion in the interworking Study Item in SA WG6 at risk.

Discussion and conclusion:

A related pCR to the draft TS was provided in TD SP-160462. This was then noted.

TD SP-160462 (P-CR) pCR to add interoperability with LMR system data services to TS 22.282 v2.0.0. (Source: Airbus Defence&Space, Bittium Wireless, Dutch police, Ericsson, Finmeccanica, Hytera, Motorola Solutions, Nokia, P3, Sepura (and TCCA as MRP)) (revision of TD SP-160449).
Abstract: TS 22.282 is presented for approval at TSG SA #72. However, in parallel, members of the TCCA have identified that a requirement for interoperability with existing TETRA and other LMR systems is missing; and seek to rectify this so that this requirement can be taken into account in the new Study Item for Interworking with non LTE systems, which is also presented to TSG SA #72 for approval. This contribution presents a pCR to TS 22.282 (TD SP-160361) for approval at plenary to incorporate this requirement.

Discussion and conclusion:

LG Electronics suggested clarifying to which non-LTE systems the requirement applies, i.e. whether this applies to TETRA only or also e.g. to P25. The U.S. Department of Commerce commented that the sub-structure of this could be added later. It was decided to update the draft TS directly instead of continuing with this pCR and this was then noted.

TD SP-160361 (DRAFT TS) TS 22.282 on Mission Critical Data over LTE. (Source: SA WG1).
Abstract:
Abstract of document:
The scope of the TS is to provide specific requirements for Mission Critical Data communications. MCData makes use of capabilities included in Group Communications System Enablers for LTE (GCSE_LTE), Proximity based Services (ProSe), and Isolated E-UTRAN operation for Public Safety, with additional requirements specific to the MCData Service. The MCData Service can be used for public safety applications and also for general commercial applications (e.g., utility companies and railways). MCData requirements common to the MCPTT and/or MCVideo service have been consolidated in the MCCoRe specification.
Changes since last presentation to TSG SA Meeting #71:
Presentation for approval Addition of service descriptions, consolidation with MCCoRe, rewordings
Outstanding Issues:
None.
Contentious Issues:
None.

Discussion and conclusion:

Proposed correction provided in TD SP-160449. This was left for further off-line discussion of inclusion of the proposal in TD SP-160462 and revised in TD S2-160468. This was reviewed and the SA WG6 Chairman asked whether reference [5] was correct as it appeared to refer to MCData rather than TETRA. It was clarified that this had been noticed after upload of the document. The reference should also be to version 3.7.1 of the TETRA TS. This was revised accordingly in TD SP-160478 which was approved and placed under TSG SA change control (Release 14).

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14.10 (EnTV) - Enhancements for TV Service

There were no contributions under this agenda item.

14.11 (PS_Data_Off) - PS Data Off Services

There were no contributions under this agenda item.

14.12 (PPEPO_LTE) - Paging Policy Enhancements and Procedure Optimizations in LTE

There were no contributions under this agenda item.

14.13 (eFMSS) - Enhancement to FMSS for Rel-14

There were no contributions under this agenda item.

14.14 (USOS) - Unlicensed Spectrum Offloading System enhancements

TD SP-160354 (CR PACK) USOS Agreed CRs. (Source: SA WG1).
Abstract: 22.115 CR0082R1.

Discussion and conclusion:

This CR pack was block approved.

14.15 (REAR) - Remote UE access via relay UE

TD SP-160362 (CR PACK) REAR Agreed CRs. (Source: SA WG1).
Abstract: 22.115 CR0083R2; 22.278 CR0227R4; 22.278 CR0225R7.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160363 (WID REVISED) Revised WID on REAR (Remote UE access via relay UE). (Source: SA WG1).
Abstract: Justification: Currently, short range and low power devices, such as wearable devices, are connecting to the network via a smart phone, and are not visible to the cellular network. 3GPP has defined requirements for ProSe UE-to-Network Relay in TS 22.278 but these requirements are restricted to the use of public safety only, preventing applicability to consumer use cases such as for wearables. Furthermore, session continuity between a direct UE/Network link and a relayed link is not currently possible. This work item aims at addressing these.

Discussion and conclusion:

Telecom Italia and The U.S. Department of Commerce asked to be removed from the list of supporting companies. This was revised accordingly in TD SP-160471. This version had not removed The U.S. Department of Commerce and no revision-marked version was included. this was revised to correct this in TD SP-160511 which was approved.

14B SA WG2-related Work Items

14.16 (EIEI) - Stage 2 of Evolution to and Interworking with eCall in IMS

TD SP-160299 (CR PACK) 4 CRs to 23.167, 23.401: EIEI (Rel-14). (Source: SA WG2).
Abstract: 23.167 CR0287R2; 23.401 CR2971R5; 23.167 CR0286R5; 23.167 CR0284R9.

Discussion and conclusion:

This CR pack was block approved.

14.17 (EWE) - EIR check for WLAN access to EPC

TD SP-160300 (CR PACK) 3 CRs to 23.402: EWE (Rel-14). (Source: SA WG2).
Abstract: 23.402 CR2944R2; 23.402 CR2945R2; 23.402 CR2951R1.

Discussion and conclusion:

This CR pack was block approved.

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14.18 (NonIP_GPRS) - Non-IP for Cellular IoT for EC-EGPRS

There were no contributions under this agenda item.

14C SA WG4-related Work Items

14.19 (TRAPI) - MBMS Transport Protocol and APIs

TD SP-160267 (CR PACK) CR to TS 26.852 on 'MBMS URL forms (TRAPI)' (Release 14). (Source: SA WG4).
Abstract: 26.852 CR0002R1.

Discussion and conclusion:

This CR pack was block approved.

14.20 (DESUDAPS) - Development of super-wideband and fullband P.835

There were no contributions under this agenda item.

14.21 (IMS_TELEP_EXT) - Media Handling Extensions of IMS-based

TD SP-160268 (CR PACK) CR to TS 26.223 on 'Introduction of Multi-Stream MTSI (MS-MTSI) Client Capability for TP UEs (Release 14) (IMS_TELEP_EXT)' (Release 14). (Source: SA WG4).
Abstract: 26.223 CR0002R1.

Discussion and conclusion:

This CR pack was block approved.

14.22 (IQoE) - Improved Streaming QoE Reporting in 3GPP

There were no contributions under this agenda item.

14D SA WG5-related Work Items

14.23 (OAM14) - OAM&P Rel-14 (including all building blocks and work tasks)

TD SP-160249 LS from SA WG5: Reply LS to ETSI ISG NFV on guidelines for cooperation between SA WG5 and ETSI ISG NFV. (SA WG5)
Abstract: SA WG5 thanks ETSI ISG NFV for their liaison statement expressing their agreement on the guidelines for cooperation between SA WG5 and ETSI ISG NFV.
SA WG5 would like to inform ETSI ISG NFV that an action plan has been initiated in SA WG5 to ensure that the work done by SA WG5 related to NFV is aligned with the cooperation guidelines between SA WG5 and ETSI ISG NFV.
Firstly, all SA WG5 NFV rapporteurs will check and potentially update SA WG5 NFV Work Item Descriptions (WIDs) to align them if needed with the cooperation guidelines between SA WG5 and ETSI ISG NFV.
It will notably be carefully double checked that there is no overlap or inconsistency between the scope of SA WG5 and ETSI ISG NFV specifications.
The potentially updated WIDs are expected at SA WG5#107 meeting (May 23-27 2016). Secondly, all SA WG5 NFV rapporteurs will check that the existing text in SA WG5 draft specifications is consistent with the revised WIDs (if revised).
If needed, change requests will be produced. This also applies to future contributions. Thirdly, rapporteurs and more generally all contributors will make sure that whenever SA WG5 specifications are using information defined in ETSI ISG NFV specifications, a reference to the relevant ETSI specifications is present in SA WG5 specifications. In case some changes to ETSI requirements are seen as needed by SA WG5, this will be documented and communicated to ETSI ISG NFV as soon as possible.
This applies both to existing text in SA WG5 draft specifications and to future contributions. SA WG5 would appreciate any feedback or suggestions from ETSI ISG NFV on this action plan aimed at ensuring compliance with the guidelines for cooperation between SA WG5 and ETSI ISG NFV.

Discussion and conclusion:

This LS was noted.

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TD SP-160397 (WID NEW) New WID OAM support for Licensed Shared Access (LSA). (Source: SA WG5).
Abstract: Justification: SA WG5 has conducted a study on OAM support for Licensed Shared Access (LSA). TR 32.855 captures the results and recommends considering OAM LSA solutions where LSA Controller interacts with PLMN at the NM level. Further, the TR recommends starting normative work for two deployment scenarios.
Deployment scenario 1: LSA controller (LC) communicates LSA spectrum resource availability information (LSRAI) to the NM.
Deployment scenario 2: LSA controller performs the planning decisions (some or all) internally and communicates the constraints on configuration attributes (max TX power, allowed downtilt range, allowed azimuth range, maximum antenna height, etc.) to the NM. In both cases, amendments to the Type-7 interface are required.

Discussion and conclusion:

This New WID was approved.

14.23.1 (OAM14-MAMO_VNF-MCAR) - Management concept, architecture and requirements for mobile networks that include virtualized network functions

TD SP-160404 (DRAFT TS) TS 28.500 'Management concept, architecture and requirements for mobile networks that include virtualized network functions'. (Source: SA WG5).
Abstract:
Abstract of document:
TS 28.500 specifies the management concepts, the management requirements and necessary use cases from operators' perspective for core networks that include virtualized network functions, and provides the management architecture for these networks. TS 28.500 clarifies the change from managing non-virtualized NE to virtualized network function and explain the concepts of NE and VNF. TS 28.500 elaborates the management architecture which include virtualized network functions and clarify the relationship between 3GPP management architecture and NFV-MANO framework (defined by ETSI ISG NFV). Following the guideline for cooperation between SA WG5 and ETSI ISG NFV (S5-161235), it also elaborates the functionalities of corresponding functional blocks and the interfaces in the management architecture. And the related specifications which produced by ETSI ISG NFV have been taken into full account.
Changes since last presentation to SA Meeting:
This is the first presentation for information. Not applicable.
Outstanding Issues:
- Continue to update the concepts of NE/VNF and the management layers.
- Continue to add necessary requirements and use cases.

Contentious Issues:
Not applicable.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG5.

14.23.2 (OAM14-MAMO_VNF-CM) - Configuration Management for mobile networks that include virtualized network functions

TD SP-160401 (WID REVISED) Revised WID Configuration Management for mobile networks that include virtualized network functions. (Source: SA WG5).
Abstract: Justification: The output of Study on Network Management of Virtualized Networks in TR 32.842 has identified:
- Use cases for Configuration Management (CM)
- Potential requirements for Configuration Management (CM)
- Configuration Management (CM) related E2E procedures.

Based on the recommendation of the study, CM related normative work is needed to continue to specify use cases, requirements, procedures and solutions of Configuration Management for mobile networks that include VNFs.

Discussion and conclusion:

This updated WID was approved.

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14.23.3 (OAM14-MAMO_VNF-FM) - Fault Management for mobile networks that include virtualized network functions

TD SP-160403 (WID REVISED) Revised WID Fault Management for mobile networks that include virtualized network functions. (Source: SA WG5).
Abstract: Justification: The output of the study on Network Management of Virtualized Networks TR 32.842 in SA WG5 has identified the use cases and requirements for the management of mobile networks that include VNFs which can be part of EPC or IMS. A NFV building block which aims at providing solutions for the management of mobile networks that include VNFs has been agreed by SA WG5. Fault Management (FM), which supports the assurance aspects of the lifecycle of any Network Service instance or VNF instance, is listed as one important aspect for network management in the scope of the building block work.

Discussion and conclusion:

This updated WID was approved.

14.23.4 (OAM14-MAMO_VNF-PM) - Performance management for mobile networks that include virtualized network functions

TD SP-160402 (WID REVISED) Revised WID Performance management for mobile networks that include virtualized network functions. (Source: SA WG5).
Abstract: Justification: The output of study on Network Management of Virtualized Networks has identified the following aspects of performance management for mobile networks that include VNFs:
- The use cases of Performance Management for mobile networks that include VNFs.
- The requirements of Performance Management for mobile networks that include VNFs.
- Gaps between ETSI NFV specifications and 3GPP specifications.

The NFV study recommends that normative work of PM for mobile networks that include VNFs is needed to specify use cases, requirements, procedures and solutions.

Discussion and conclusion:

This updated WID was approved.

14.23.5 (OAM14-MAMO_VNF-LCM) - Lifecycle management for mobile networks that include virtualized network functions

TD SP-160427 (WID REVISED) Revised WID Lifecycle Management for mobile networks that include virtualized network functions. (Source: SA WG5).
Abstract: Justification: The output of study on Network Management of Virtualized Networks has identified the following aspects based on the management concepts, the high level NFV management requirements and the management architecture for mobile networks that include VNFs captured in TR 32.842:
- The use cases of Lifecycle Management for mobile networks that include VNFs.
- The requirements of Lifecycle Management for mobile networks that include VNFs.
- The procedures of Lifecycle Management for mobile networks that include VNFs.
- Gaps between ETSI NFV specifications and 3GPP specifications.

Normative work is needed to continue to specify use cases, requirements, procedures and solutions of Lifecycle Management for mobile networks that include VNFs.

Discussion and conclusion:

This updated WID was approved.

14.23.6 (OAM14-FILMEAS) - Filtering of PM measurements and data volume

There were no contributions under this agenda item.

14E Other Work Items and Documents

14.24 (TEI14) - TEI Rel-14

TD SP-160355 (CR PACK) TEI14 Agreed CRs. (Source: SA WG1).
Abstract: 22.173 CR0114R2.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160301 (CR PACK) 1 CR to 23.402: TEI14 (Rel-14). (Source: SA WG2).
Abstract: 23.402 CR2948R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160269 (CR PACK) CR to TS 26.114 on 'RTCP Bandwidth Recommendations (TEI14)' (Release 14). (Source: SA WG4).
Abstract: 26.114 CR0374R3.

Discussion and conclusion:

This CR pack was block approved.

14.25 Any other Rel-14 Documents

TD SP-160376 (WI EXCEPTION REQUEST) Exception sheet New GPRS algorithms for EASE. (Source: SA WG3).
Abstract: This document requests an exception for the EASE Algorithm work item as we are awaiting permission to load the specifications on the 3GPP portal by the French Government.

Discussion and conclusion:

This exception request was approved.

TD SP-160377 (DRAFT TS) TS 55.241: Specification of the GIA4 encryption algorithms for GPRS; GIA4 specification. (Source: SA WG3).
Abstract:
Abstract of document:
This document defines the technical details of the 3GPP integrity algorithm GIA4.
Changes since last presentation to TSG SA:
None (This is the first presentation)
Outstanding Issues:
The following issues may be resolved before the TS is sent for approval:
a) Permission to post the full specification that includes the algorithms on the 3GPP public server is required from the French government.
b) Addition of the final algorithm and code details.
Contentious Issues:
None.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG3.

TD SP-160378 (DRAFT TS) TS 55.242: Specification of the GIA4 encryption algorithms for GPRS; Implementers' test data. (Source: SA WG3).
Abstract:
Abstract of document:
This document defines the implementers' test data of the 3GPP integrity algorithm GIA4.
Changes since last presentation to TSG SA:
None (This is the first presentation)
Outstanding Issues:
The following issues may be resolved before the TS is sent for approval:
a) Permission to post the full specification that includes the algorithms on the 3GPP public server is required from the French government.
b) Addition of the Implementers' test data.
Contentious Issues:
None.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG3.

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TD SP-160379 (DRAFT TS) TS 55.243: Specification of the GIA4 encryption algorithms for GPRS; Design conformance test data. (Source: SA WG3).

Abstract:

Abstract of document:

This document defines the design conformance test data of the 3GPP integrity algorithm GIA4.

Changes since last presentation to TSG SA:

None (This is the first presentation)

Outstanding Issues:

The following issues may be resolved before the TS is sent for approval:

a) Permission to post the full specification that includes the algorithms on the 3GPP public server is required from the French government.

b) Addition of the design conformance test data.

Contentious Issues:

None.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG3.

TD SP-160380 (DRAFT TS) TS 55.251: Specification of the GPRS confidentiality and integrity algorithms GEA5 and GIA5; GEA5 and GIA5 specifications. (Source: SA WG3).

Abstract:

Abstract of document:

This document defines the technical details of the 3GPP GEA5 encryption and GIA5 integrity algorithms for GPRS.

Changes since last presentation to TSG SA:

None (This is the first presentation)

Outstanding Issues:

The following issues may be resolved before the TS is sent for approval:

a) Permission to post the full specification that includes the algorithms on the 3GPP public server is required from the French government.

b) Addition of the final algorithm and code details.

Contentious Issues:

None.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG3.

TD SP-160381 (DRAFT TS) TS 55.252: Specification of the GPRS confidentiality and integrity algorithms GEA5 and GIA5; Implementers' test data. (Source: SA WG3).

Abstract:

Abstract of document:

This document defines the implementers' test data of the 3GPP GEA5 encryption and GIA5 integrity algorithms for GPRS.

Changes since last presentation to TSG SA:

None (This is the first presentation)

Outstanding Issues:

The following issues may be resolved before the TS is sent for approval:

a) Permission to post the full specification that includes the algorithms on the 3GPP public server is required from the French government.

b) Addition of the Implementers' test data.

Contentious Issues:

None.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG3.

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TD SP-160382 (DRAFT TS) TS 55.253: Specification of the GPRS confidentiality and integrity algorithms GEA5 and GIA5; Design conformance test data. (Source: SA WG3).

Abstract:

Abstract of document:

This document defines the design conformance test data of the 3GPP integrity algorithm GIA5 and the encryption algorithm GEA5.

Changes since last presentation to TSG SA:

None (This is the first presentation)

Outstanding Issues:

The following issues may be resolved before the TS is sent for approval:

a) Permission to post the full specification that includes the algorithms on the 3GPP public server is required from the French government.

b) Addition of the design conformance test data.

Contentious Issues:

None.

Discussion and conclusion:

This draft TS was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG3.

TD SP-160398 (WID NEW) New WID Determination of Completeness of Charging Information in IMS. (Source: SA WG5).

Abstract: Justification: TR 32.850, ' Study on determination of completeness of charging information in IMS,' analysed IMS service scenarios to identify and document methods to guarantee that all the relevant charging data for an IMS session has been received by the Billing Domain in order to charge correctly for the IMS session and utilized services. The following scenarios were covered this study:

- IMS sessions where the service invocation is done in the originating and/or terminating home network, in different configurations: e.g. roaming, transit, PSTN interworking, intra home network or home-a to home-b network
- IMS sessions where a concatenation of applications appears.
- IMS sessions where an Application Server hosts several applications invoked during one call.
- IMS sessions where call leg manipulation applies and more than one application is involved.
- IMS sessions where only a sub-set of IMS network elements are necessary to generate charging information based on operator's configuration.
- IMS other scenarios where a correlation of charging relevant information created by application servers is needed.

The study concluded on two enablers for Determination of Completeness of Charging Information in IMS.

1. In the case when an IMS NE is configured to generate charging information, and the IMS NE receives a SIP INVITE message, this IMS NE inserts its address into next SIP INVITE message to be sent out within the trust domain.
   And addresses of all IMS NEs configured to generate charging information will be taken back to P-CSCF in SIP 200ok response. Then the addresses of all IMS NEs configured to generate charging information will be sent to CDF via offline charging interface, which can enable the Billing Domain (BD) to check integrity of IMS CDRs required by operators involved in an IMS call.
2. The second enabler is an improvement of the first for AS, so that if an involved SIP AS and one or more invoked application hosted on this AS are configured to generate charging information, this AS should insert a list of application specific identifiers in addition to the AS address into the next SIP INVITE message to be forwarded to the trusted domain.
   Only the identifier of application invoked and configured to generate charging information is included in the list. The type of identifier to be included in the list could be possibly the IMS Application Reference Identifier.

Discussion and conclusion:

Vodafone commented that some work will be needed in CT WG1. **SA WG5 and CT WG1 should review this and determine whether this work can be done under this SA WG5 WID or whether a new CT WG1 WID should be produced**. This New WID was approved.

TD SP-160417 (CR PACK) Rel-14 CRs on Charging Management (CH14). (Source: SA WG5).

Abstract: 32.299 CR0732R1; 32.240 CR0386R1.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160428 (WID NEW) New WID Charging Aspects of Enhanced Proximity-based Services. (Source: SA WG5).
Abstract: Justification: The SA WG2 work item on Extended Proximity-based Services (eProSe-Ext S2-150571/ TD SP-150028) has identified the further improvements to the ProSe services that could be provided by the 3GPP system based on UEs being in proximity to each other. The architecture enhancements to support the following features have been studied and specified in SA WG2, available in TS 23.303 from SA#70 Dec 2015, based on the stage-1 requirements defined in TS 22.278.
- Enhancement for ProSe Restricted Direct Discovery, including application controlled extension, on-demand announce, inter-PLMN announce support.
- Support for model B of ProSe Restricted Direct Discovery ;
- Enhancements for ProSe Open Direct Discovery, such as inter-PLMN announce support , management of ProSe Application IDs and metadata at the ProSe Function from application server over PC2 and revocation of ProSe App. Code from the ProSe Function.
- ProSe UE-Network relays for Public Safety use;
- ProSe Direct Communication one-to-one for Public Safety use;
- Requirements for priority of ProSe Direct Communication sessions.
The enhancement to the charging aspect of Proximity-based Service should be taken into account.

Discussion and conclusion:

The U.S. Department of Commerce commented that consistency with REAR and other features should be checked by SA WG5. **SA WG5 were asked to check this**. This New WID was then approved.

TD SP-160429 (WID NEW) New WID on Charging Aspects of S8 Home Routing Architecture for VoLTE. (Source: SA WG5).
Abstract: Justification: GSMA have endorsed a new VoLTE roaming architecture option, 'S8 Home Routed (S8HR)'. S8HR is an architecture for IMS voice roaming whereby the PGW, PCRF, P-CSCF, ATCF and ATGW are located in the HPLMN also when the UE is roaming in a VPLMN. S8HR roaming architecture is not using Local Breakout and therefore the IMS APN is resolved to point to a PGW in the HPLMN (rather than in the VPLMN). An IMS NNI between VPLMN and HPLMN may not be needed. S8HR roaming architecture studies are being conducted in several groups:
- GSMA has published official document BA.27 charging principles support for S8HR charging.
- SA WG2 has performed a thorough analysis of S8HR as a routing architecture for VoLTE in TR 23.749.

This work item aims to implement S8HR corresponding charging requirements.

Discussion and conclusion:

This New WID was approved.

15 Documents related to Current Study Items

15.1 Recently Completed Study Items

NOTE: This agenda item may be used to maintain approved TRs or to consider related submissions, e.g. LSs related to past studies for which there is no corresponding work item.

15.1A SA WG1 Studies

15.1.1 (FS_MAPN) - Study on Need for multiple APNs

There were no contributions under this agenda item.

15.1.2 (FS_MBSP) - Multimedia Broadcast Supplement for PWS

There were no contributions under this agenda item.

15.1.3 (FS_UC_SPOOF) - Service aspects for dealing with User Control over spoofed calls

There were no contributions under this agenda item.

15.1.4 (FS_eULRS) - Study on Enhancements to User Location Reporting Support

There were no contributions under this agenda item.

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15.1.5 (FS_CATS) - Study on Control of Applications when Third party Servers encounter difficulties

There were no contributions under this agenda item.

15.1.6 (FS_MCVideo) - Study on Mission Critical Video over LTE

There were no contributions under this agenda item.

15.1.7 (FS_MCDATA) - Study on Mission Critical Data Communications

There were no contributions under this agenda item.

15.1.8 (FS_V2XLTE) - Study on LTE support for V2X services

There were no contributions under this agenda item.

15.1.9 (FS_EnTV) - Study on 3GPP Enhancement for TV Video service

There were no contributions under this agenda item.

15.1.10 (FS_PPEPO_LTE) - Study on Paging Policy Enhancements and Procedure Optimizations in LTE

There were no contributions under this agenda item.

15.1.11 (FS_eFMSS) - Study on enhancement to FMSS for Rel 14

There were no contributions under this agenda item.

15.1B SA WG2 Studies

There were no contributions under this agenda item.

15.1C SA WG3 Studies

There were no contributions under this agenda item.

15.1D SA WG4 Studies

There were no contributions under this agenda item.

15.1.12 (FS_SETA_S4) Study on Media and Quality Aspects of SRVCC Enhancements

TD SP-160270 (CR PACK) CR to TS 26.916 on 'Alignment to approved EVSoCS Specification (FS_SETA_S4)' (Release 14). (Source: SA WG4).
Abstract: 26.916 CR0001R4.

Discussion and conclusion:

This CR pack was block approved.

15.1E SA WG5 Studies

There were no contributions under this agenda item.

15.1F SA WG6 Studies

There were no contributions under this agenda item.

15.1G Other Completed Studies

There were no contributions under this agenda item.

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15.1.13 Other Study Items

TD SP-160389 (CR PACK) Rel-13 CRs on Study on EGPRS Access Security Enhancements with relation to cellular IoT (FS_EASE_IoT). (Source: SA WG3).
Abstract: 33.860 CR0001R1; 33.860 CR0003R1; 33.860 CR0004R1.

Discussion and conclusion:

This CR pack was block approved.

15.2 Ongoing Studies

NOTE: The study items listed here are roughly those that occur during the Rel-14 time frame.

15.2A TSG SA Studies

15.2.0 (FS_ENEFF) - Energy Efficiency Aspects of 3GPP Standards

TD SP-160333 (DRAFT TR) TR Skeleton of Study on Energy Efficiency Aspects of 3GPP Standards. (Source: ORANGE).
Abstract: This contribution proposes the skeleton of TR 21.866 Study on Energy Efficiency Aspects of 3GPP Standards.

Discussion and conclusion:

Some clean-up of clauses under 5 to align with those under 6 and editorial corrections were requested. This was revised in TD SP-160472 which was noted and endorsed for use as a basis for further updates.

TD SP-160334 (P-CR) The Requirements for Energy Efficiency Aspects of 3GPP Standards. (Source: Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica).
Abstract: This contribution propose the high level, architectural and functional requirements for Energy Efficiency Aspects of 3GPP Standards.

Discussion and conclusion:

A number of comments were made and corrections were suggested. It was suggested that the TR should be structured to collect key issues and then to collect potential solutions and techniques that can be used for systems design in the WGs. Blackberry commented that signalling is inevitable for a mobile device and the requirement should be rephrased to 'minimise the signalling' rather than the 'zero-goal'. This was left for further off-line discussion and revised in TD SP-160473, and again, in TD SP-160493 which was reviewed and approved.

TD SP-160335 (P-CR) The Definition of Energy Efficiency Key Performance Indicator (EE KPI). (Source: Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica).
Abstract: This contribution proposes the definition of Energy Efficiency KPI.

Discussion and conclusion:

There was some discussion and clarifications were requested. The definition for scenarios should be added in an editor's note. It was suggested to replace the formula for calculating Energy Efficiency for each scenario with a note that something will be added later. Nokia commented that it also states that *Ci* is FFS and this is needed for the calculations. Orange replied that it is not intended to do detailed calculations within the TR and may to be done by relevant WGs. It was decided to make this an editor's note. This was left for further off-line discussion and revised in TD SP-160474, and again, in TD SP-160494 which was reviewed. MediaTek commented that the UE should not be included as part of the system measurements. Further clarifications were requested and this was left for further off-line discussion and revised in TD SP-160499 which was reviewed and approved.

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TD SP-160425 (P-CR) Energy Efficiency in SON. (Source: Huawei Technologies, Orange).
Abstract: This contribution proposes Energy Efficiency in SON for Energy Efficiency Aspects of 3GPP Standards.

Discussion and conclusion:

There was some discussion and clarifications were requested. This was left for further off-line discussion and revised in TD SP-160475 which was reviewed. Nokia asked whether the figure was appropriate as it contained non-3GPP related equipment. It was suggested to remove the figure to avoid elaboration of all the components of it and to reduce the text to capture the main issues only. This was left for further off-line discussion and revised in TD SP-160500 which was reviewed and approved.

TD SP-160434 (P-CR) Increased range for normal operating conditions in equipment rooms. (Source: Telecom Italia, Orange).
Abstract: This contribution proposes a potential solution to reduce the energy bill associated to equipment room.

Discussion and conclusion:

There was some discussion and clarifications were requested. Ericsson commented that this includes many normative statements and this is inappropriate for a TR. It was suggested to clarify the intention of increasing the operating range of equipment to avoid using energy to maintain environments and to provide some examples to demonstrate this. This was left for further off-line discussion and revised in TD SP-160476 which was reviewed. An off-line comment had been received to change the third bullet to reflect no increase in total cost of ownership. Blackberry suggested using 'the same equipment'. Nokia also asked for removal of the aspects out of 3GPP scope such as personnel safety regulations and suggested it to replaced with a general statement that national regulations are assumed to be taken into account. This was further discussed off-line and revised in TD SP-160502 which was reviewed. Blackberry commented that UE had not been removed from the Editor's note. Vodafone suggested also removing the network impacts also. It was decided to remove 6.x.2 and 6.x.3. This was revised accordingly in TD SP-160509 which was approved.

TD SP-160336 (P-CR) The Energy Efficiency Control Principles. (Source: Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica).
Abstract: This contribution proposes the principles for energy efficiency control.

Discussion and conclusion:

Ericsson commented that the architectural decisions mentioned will not be made based solely on energy efficiency and this should be reflected in the text. Nokia commented that some of the bullets were not justified and should be studied. The TSG SA Chairman suggested moving them out of the general principles clause and including in the issues for study. This was left for further off-line discussion and revised in TD SP-160484, and again, in TD SP-160495 which was reviewed. It was decided to remove the first sub bullet and to bring a proposed solution to the next meeting instead. Clarification of the meaning of Mission Critical Public Safety services was requested. This was meant as an example and can be removed. This was revised accordingly in TD SP-160501 which was approved.

15.2B SA WG1 Studies

15.2.1 (FS_SMARTER) - Study on New Services and Markets Technology Enablers

TD SP-160365 (CR PACK) FS_SMARTER agreed CRs. (Source: SA WG1).
Abstract: 22.891 CR0001; 22.891 CR0003.

Discussion and conclusion:

This CR pack was block approved.

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15.2.2 (FS_SMARTER-mIoT) - FS_SMARTER - massive Internet of Things

TD SP-160366 (DRAFT TR) TR 22.861 on FS_SMARTER - massive Internet of Things. (Source: SA WG1).
Abstract:
Abstract of document:
Emerging from the FS_SMARTER work, this TR aims to identify and document the key families of use cases and their consolidated potential requirements, and to capture desired system requirements and capabilities to support the needs of new services and markets related to massive Internet of Things. The focus of this work is on the use cases and requirements that cannot be met with EPS.
Changes since last presentation to TSG SA Meeting #71:
New traffic scenarios added; Updates to the existing traffic scenarios and potential requirements added; Clean up updates including abbreviations, definitions and references; Conclusions and Recommendations added.
Outstanding Issues:
None.
Contentious Issues:
None. Considerations on security may be controversial when we see proposals for that.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

15.2.3 (FS_SMARTER-CRIC) - FS_SMARTER - Critical Communications

TD SP-160367 (DRAFT TR) TR 22.862 on FS_SMARTER - Critical Communications. (Source: SA WG1).
Abstract:
Abstract of document:
TR 22.862 contains the use case families on Critical communications, covering services and areas where the communications network operates under exceptionally high requirements:
- Higher reliability and lower latency
- Higher reliability, higher availability and lower latency
- Very low latency
- Higher accuracy positioning
- Higher availability
- Mission critical services

The main areas where the 3GPP system falls short in meeting the requirements of Critical Communications are latency, reliability, and availability.
These requirements can be met with an improved radio interface, optimised architecture, and dedicated core and radio resources.
Other requirements having emerged in TR 22.891, such, as, high bandwidth, high connection density, low complexity, low power consumption, and massive number of devices, are often irrelevant for Critical Communications.
Changes since last presentation to SA Meeting (TSG SA#71):
Clean-up of descriptions agreed Mission critical services rewritten Considerations on charging and security agreed Consolidation of requirements agreed Conclusion and recommendations agreed
Outstanding Issues:
None
Contentious Issues:
None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

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15.2.4 (FS_SMARTER-eMBB) - FS_SMARTER - enhanced Mobile Broadband

TD SP-160368 (DRAFT TR) FS_SMARTER - enhanced Mobile Broadband. (Source: SA WG1).

Abstract:

Abstract of document:

The scope of this TR is to identify and document the use cases and consolidated potential requirements, and to capture desired system requirements and capabilities to enable 3GPP network operators to support the needs of enhanced mobile Broadband services. A number of use cases have been identified for the enhanced Mobile Broadband support over 3GPP system:

- Higher Data Rates
- This family focuses on identifying key scenarios from which eMBB primary data rate requirements for peak, experienced, downlink, uplink, etc. data rates can be derived, as well as associated requirements pertaining to latency when applicable with UEs relative speed to ground up to 10 km/h (pedestrian).
- Higher Density:
- This family covers scenarios with system requirement for the transport of high volume of data traffic per area (traffic density) or transport of data for high number of connections (devices density or connection density) with UEs relative speed to ground up to 60 km/h (pedestrian or users moving on urban vehicle).
- Deployment and Coverage:
- This family covers scenarios with system requirement considering the deployment and coverage scenario e.g. indoor/outdoor, local area connectivity, wide area connectivity, with UEs relative speed to ground up to [120] km/h.
- Higher User Mobility:
- This family focuses on identifying key scenarios from which eMBB mobility requirements can be derived, with UEs relative speed to ground up to 1000 km/h.
- Devices with highly variable data rates
- This family focuses on identifying key scenarios from which eMBB requirements can be derived, for UEs having multiple applications which exchange small amount of data and large amount of data.
- Fixed Mobile Convergence
- This family focuses on identifying key scenarios to enable combined use of fixed broadband (e.g. FTTx/xDSL) access and Next Generation Radio access network.
- Femtocell deployments
- This family focuses on identifying key scenarios to enable use of fixed broadband (e.g. FTTx/xDSL) access and Next Generation Radio access network for femtocell deployments.

The study has resulted in a set of potential requirements as captured in the section 6 and 7. It is recommended that the requirements identified in this TR 22.863 are considered as the basis for the development of normative requirements.

Changes since last presentation to TSG SA Meeting #71:

Considerations on security agreed Consolidation of requirements agreed Conclusion and recommendations agreed

Outstanding Issues:

None

Contentious Issues:

None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

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15.2.5 (FS_SMARTER-NEO) - FS_SMARTER - Network Operation

TD SP-160369 (DRAFT TR) TR 22.864 on FS_SMARTER - Network Operation. (Source: SA WG1).
Abstract:
Abstract of document:
Emerging from the SA WG1 FS_SMARTER work, TR 22.864 contains the use case families on Network operation, addressing the functional system requirements and including the following families:
- System flexibility
- Scalability
- Mobility support
- Efficient content delivery
- Self-backhauling
- Access
- Migration and interworking
- Security

Changes since last presentation to SA Meeting:
Clean up to the TR agreed New requirements added to system flexibility family Updates to the existing description and potential requirements added Abbreviations added Considerations on Charging and Security added Consolidation of requirements added Conclusions and Recommendations added
Outstanding Issues:
None
Contentious Issues:
None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

15.2C SA WG2 Studies

15.2.6 (FS_V8) Study on S8 Home Routing Architecture

TD SP-160325 (DRAFT TR) TR 23.749: Study on S8 Home Routing Architecture for VoLTE (Release 14), Version 2.0.0. (Source: SA WG2).
Abstract:
Abstract of document:
The TR 23.749 studies and evaluates the S8 Home Routing Architecture for VoLTE. S8 Home Routing is a roaming architecture whereby the PGW, PCRF and P-CSCF are located in the HPLMN when the UE is roaming in a VPLMN. S8HR roaming architecture aims to provide IMS services to UEs roaming in VPLMN with the UE to network IMS interface (Gm) between the UE and the HPLMN only.
Changes since last presentation to SA:
Work has progressed on all identified key issues. Solutions have been selected for all the key issues.
Outstanding Issues:
None.
Contentious Issues:
None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

15.2.7 (FS_AE_CIoT) - Study on architecture enhancements of cellular systems for ultra low complexity and low throughput Internet of Things

There were no contributions under this agenda item.

15.2.8 (FS_SEW2) - Study on Phase 2 of the Support of Emergency services over WLAN

There were no contributions under this agenda item.

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15.2.9 (FS_AULC) - Study on improvement of awareness of user location change

TD SP-160322 (DRAFT TR) TR 23.710: 'Awareness of User Location Change (Release 14)', Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

The TR 23.710 studies and evaluates the multiple PRA extension per UE per PDN session. There are three key issues and six solutions added in TR 23.710. After SA WG2#115, all solutions are completed and evaluated. The selection of solution for all three key issues in TR 23.710 has been concluded. The TR is 100% completed.

Changes since last presentation to SA:

This is the first time the document is presented to TSG SA.

Outstanding Issues:

- No outstanding technical issue.

Contentious Issues:

No contentious issues were identified.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

15.2.10 (FS_eDecor) - Study on Enhancements of Dedicated Core Networks selection mechanism

TD SP-160323 (DRAFT TR) TR 23.711: Enhancements of Dedicated Core Networks selection mechanism; (Release 14), Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

TR 23.711 studies enhanced DECOR using UE assistance parameter to support the RAN to select a Dedicated Core Network (FS_eDECOR).

Changes since last presentation to SA Meeting # -:

This is the first presentation. TR 23.711 is 95% complete. Main feature solving Key Issue #1 'DCN selection by UE assistance' is concluded.

Outstanding Issues:

- Key Issue #2 Congestion Control for DCN Types is not concluded. - Key Issue #3 Load balancing within DCN is not concluded

Contentious Issues:

None.

Discussion and conclusion:

This draft TR was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG2.

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15.2.11 (FS_CUPS) - Study on Control and User Plane Separation of EPC nodes

TD SP-160330 (DRAFT TR) TR 23.714: 'Study on control and user plane separation of EPC nodes' (Release 14), Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

The objective of this Technical Report is to study and perform an evaluation of potential architecture enhancements for the separation of user plane functionality from control plane functionality in the EPC's S-GW, P-GW and TDF to further enable flexible (i.e. distributed or centralized) network deployment and operation.

Specifically, the following aspects are covered:

- Functional separation of the S-GW, P-GW and TDF into control plane and user plane functions, while not affecting the overall functionality provided by these nodes.
- The needed reference points between the separated control plane and user plane functions of the S-GW, P-GW and TDF and the corresponding procedures.
- Impacts to other EPC entities and interfaces that are essential to support the separation of S-GW, P-GW and TDF into control plane and user plane functions, and to enable the flexible placement of the separated control plane and user plane functions for supporting diverse deployment scenarios.

Changes since last presentation to SA:

This is the first time TR 23.714 is presented to TSG SA. The TR is 100% complete. Some of the aspects, e.g. the details of the interaction and the parameters exchanged between the control and the user plane, will be finalized during the normative phase. Conclusions to all key issues were agreed and documented in clause 8.

Outstanding Issues:

None.

Contentious Issues:

None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

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15.2.12 (FS_SeDOC) - Study on Service Domain Centralization

TD SP-160306 (SID REVISED) Updated Feasibility Study Service Domain Centralization. (Source: SA WG2).

Abstract: Justification: As part of Release 8 3GPP developed the concept of IMS Centralized Services which was then further extended in Release 9. The goal of ICS was to enable an operator to provide on a per-subscriber basis, communication services such that all services and service control are only based on IMS mechanisms and enablers. ICS therefore enables IMS services, particularly voice, to be provided using the CS domain access to transport the media including by legacy UEs. An effective deployment of services centralization will result in a number of benefits for the network operator:

- Service layer: a full implementation of ICS for all the subscribers will result in a fully consistent service delivery as well as remove the problems related to the configuration and synchronization of supplementary service settings in the two domains.
- Network layer: it will be possible for an operator to modernize the network moving towards a pure All-IP architecture. Furthermore centralization of services in IMS and use of a single service domain will also allow the decommissioning of the traditional GSM network elements that are reaching the end of life such as HLR, SMSC thus leading to network simplification.
- On the interconnection side, once the call control is realized in IMS by all interconnection partners there would be no need to keep supporting SS7 interfaces in the core network.

Note that the support of SS7 interfaces may be needed during a transitory phase, e.g. in order to support inbound and outbound roamers who still rely on CS call control.

However the functionality that has been specified in TS 23.292 has the following limitations:

a) ICS services are provided by the HPLMN of a subscriber. If a subscriber roams in a VPLMN and the HPLMN does not support ICS services then the VPLMN is unable to offer services to the roaming subscriber based on ICS;

b) ICS assumes emergency call (including eCall) originated in 2/3G CS RAN will be established via legacy means (MSC Call Control only, ISUP/TDM respectively BICC/RTP links towards PSAP) without usage of IMS Service Domain.

A work item is needed to study solutions that overcome the limitations of ICS, in order to enable operators to deploy an architecture that supports services always being provided, regardless of the access technology in use, via IMS.

Discussion and conclusion:

This revised Study WID was approved.

TD SP-160324 (DRAFT TR) TR 23.719: 'Service Domain Centralization' (Release 14), Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

TR 23.719 is a study on utilizing the capabilities standardized for IMS centralized Services (TS 23.292) to centralize the service profile of subscribers' into the IMS domain - avoiding cumbersome duplication and synchronization of a subscriber's service profile between the CS domain and IMS domain.

Changes since last presentation to SA:

First presentation to TSG SA

Outstanding Issues:

The following Key issues remain to be resolved: Key Issue #5 - Registration and Authentication - Solution 5 is pending feedback from SA WG3. Evaluation and Conclusions need to be made and documented for the study.

Contentious Issues:

No Contentious Issues.

Discussion and conclusion:

This draft TR was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG2.

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15.2.13 (FS_SDCI) - Study on sponsored data connectivity improvements

TD SP-160327 (DRAFT TR) TR 23.721: 'Study on Sponsored Data Connectivity Improvements ' Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

The TR 23.721 studies and evaluates the sponsored data connectivity improvement. There are 4 Key Issues and 10 solutions have been added in TR 23.721. After SA WG2#115, all solutions are completed and evaluated. The selection of solution for all 4 key issues in TR 23.721 has been concluded. The TR is 100% completed.

Changes since last presentation to SA:

This is the first time the document is presented to TSG SA.

Outstanding Issues:

No outstanding technical issue.

Contentious Issues:

No contentious issues were identified.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

15.2.14 (FS_GENCEF) - Study on group based enhancements in the network capability exposure functions

TD SP-160328 (DRAFT TR) TR 23.773: Study on group based enhancements in the network capability exposure functions (Release 14), Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

The TR 23.773 studies the network capability exposure functions can benefit for being performed based on a per-group basis.

Changes since last presentation to SA:

This is first time TR 23.773 is presented to TSG SA. The study aims at identifying group-based enhancements in the 3GPP capability exposure functions. Evaluations of all solutions have been made and conclusions to all key issues have been agreed. The target procedures for the normative work are the following:

- Monitoring Event Configuration/Deletion and Reporting Monitoring Event
- Communication Pattern Parameters Provisioning The TR 23.773 is 100% completed.

Outstanding Issues:

None

Contentious Issues:

None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

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15.2.15 (FS_RobVoLTE) - Study on Robust Call Setup for VoLTE subscriber in LTE

TD SP-160329 (DRAFT TR) TR 23.750: 'Study for robust call setup for VoLTE subscriber in LTE' (Release 14), Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

The TR 23.750 studies and evaluates the robust call setup for VoLTE subscriber in LTE. Robust call setup for VoLTE subscriber in LTE is to improve VoLTE call setup success rate and minimize the negative impact on user experience for VoLTE subscriber in LTE weak coverage.

Changes since last presentation to SA:

This is first time TR 23.750 is presented to TSG SA. Work has progressed on key issue 1. Solution has been selected for the key issue 1. There were no input documents and therefore no discussion on the WiFi scenarios.

Outstanding Issues:

None.

Contentious Issues:

None.

Discussion and conclusion:

This TR was approved and placed under TSG SA change control (Release 14).

15.2.16 (FS_NextGen) - Study on Architecture for next Generation System

There were no contributions under this agenda item.

15.2.17 (FS_V2XARC) - Study on Stage 2of LTE support for V2X services

TD SP-160321 (DRAFT TR) TR 23.785: Study on architecture enhancements for LTE support of V2X services (Release 14), Version 1.0.0. (Source: SA WG2).

Abstract:

Abstract of document:

The TR 23.785 studies and evaluates the architecture enhancements for LTE support of V2X services. The present document mainly addresses the following in order to meet the service requirements defined in Stage 1:

- support of V2X Services using PC5 as transport;
- support of V2X Services using LTE-Uu as transport.

Changes since last presentation to SA:

This is first time TR 23.785 is presented to TSG SA.

Outstanding Issues:

The not concluded key issues.

Contentious Issues:

None.

Discussion and conclusion:

This draft TR was presented for information and was noted. Members were asked to provide any comments and update proposals to SA WG2.

15.2.18 (FS_AE_enTV) - Study on System Architecture Enhancements to eMBMS for TV Video Service

There were no contributions under this agenda item.

15.2.19 (FS_IOPS_LB) - Study on Enhanced Isolated E-UTRAN Operation for Public Safety

There were no contributions under this agenda item.

15.2D SA WG3 Studies

15.2.20 (FS_LISE) - Study on Lawful Interception Service Evolution

NOTE: This study concerns Release 13 though it will proceed after this release has been frozen.

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15.2.21 (FS_ESCAPADES) - Study on IMS enhanced spoofed call prevention and detection

There were no contributions under this agenda item.

15.2.22 (FS_LIV8) Study on LI in S8 Home Routing Architecture for VoLTE

There were no contributions under this agenda item.

15.2.23 (FS_V2XLTE) - Study on security aspects

There were no contributions under this agenda item.

15.2.24 (FS_NSA) - Study on Architecture and Security for Next Generation System

TD SP-160348 LS from SA WG3: Reply LS on Next Generation Security Requirements for RAN. (SA WG3)
Abstract: SA WG3 would like to thank RAN for sending an LS on 'Next Generation' Security Requirements for RAN. SA WG3 started working on TR 33.899 'Study on the security aspects of the next generation system' during the meeting SA WG3#83 (May 2016).
Currently the structure and a number of security areas to work on have been agreed upon and a first version for the draft-TR 33.899 is expected to be made available as TD S3-160815 in the following weeks, following the conclusion of an email approval process for several 'merging papers' that have been created during SA WG3#83 meeting.
One of the security areas SA WG3 plan to progress within TR 33.899 is named 'RAN security' and it could be a useful reference for RAN WGs seeking RAN-related security guidance for the 'Next Generation' context.
There is also a Privacy security area. SA WG3 considered the attached document and would like to provide the following initial response. A further response may change and/or extend the proposed requirements as the work on next generation networks matures.
SA WG3 agreed the following proposed security requirements:
The RAN design for the Next Generation Radio Access Technologies shall ensure support for integrity and confidentiality protection of radio signalling messages, including messages between RAN and Core network nodes.
Note: it may not be possible for all messages to be protected, for example some messages may need to be sent before security can be established. ensure the ability to support integrity and confidentiality protection of user plane messages, including messages between RAN and Core network nodes, with the use of such security to be configurable during security set-up. ensure support for the allocation and use of identities to provide user privacy, e.g. reduce the need for sending any permanent identities in the clear. ensure the efficient establishment of RAN security mechanisms.
On the topic of jamming, SA WG3 agrees that designing a radio system for resilience against jamming is a desirable goal. Network slicing allows to optimise radio parameters for different use cases, e.g. high resilience against jamming, throughput, latency etc.
SA WG3 feels that designing a radio system to best fit different use cases and requirements (incl. resilience) lies in the remit of RAN. MNOs will have to comply with LI-related obligations also in the context of 'Next Generation' networks.
SA WG3 did not consider such Lawful Interception requirements. If RAN desire guidance on LI-specific requirements impacting for Next Generation Radio Access Technologies, then RAN should contact the SA WG3-LI subgroup at the earliest convenience.

Discussion and conclusion:

This was copied to TSG SA for information and was noted.

15.2.25 (FS_ProSe_Sec) - Study on Security for Proximity-based Services

There were no contributions under this agenda item.

15.2.26 (FS_BEST_MTC_Sec) - Study on Battery Efficient Security for very low Throughput Machine Type Communication Devices

There were no contributions under this agenda item.

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15.2.27 (SCAS-SA3TR) - TR on Security Assurance scheme for 3GPP network products

TD SP-160392 (DRAFT TR) TR 33.926 Security Assurance Specification (SCAS) Threats and Critical Assets in 3GPP Network Product Class. (Source: SA WG3).

Abstract:

Abstract of document:

This document captures the network product class descriptions, threats and critical assets that have been identified in the course of the work on 3GPP security assurance specifications. The main body of the document contains generic aspects that apply to more than one network product class, while Annexes cover the aspects specific to one network product class. For this the current release, Annex only contains MME network product class.

Changes since last presentation to TSG SA:

None (This is the first presentation)

Outstanding Issues:

None

Contentious Issues:

None.

Discussion and conclusion:

It was noted that the SCAS WI is Rel-13 and this TR should show Rel-13 on the cover page. This was revised to correct this as version 1.0.1 in TD SP-160485 which was approved and placed under TSG SA change control (Release 13).

15.2E SA WG4 Studies

15.2.28 (FS_SEATS) - Study on Enhanced Acoustic Test Specifications

There were no contributions under this agenda item.

15.2.29 (FS_IS3) - Study on Interactivity Support for 3GPP-based Streaming and Download Services

There were no contributions under this agenda item.

15.2.30 (FS_SAND) - Study on Server and Network Assisted DASH for 3GPP Multimedia Services

There were no contributions under this agenda item.

15.2.31 (FS_VR) - Study on Virtual Reality

There were no contributions under this agenda item.

15.2.32 (FS_UE_VTPerf) - Study on UE characteristics and performance for Video Telephony

There were no contributions under this agenda item.

15.2F SA WG5 Studies

There were no contributions under this agenda item.

15.2.33 (FS_DOCME_CH) Study on Overload Control for Diameter Charging Applications

There were no contributions under this agenda item.

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15.2.34 (FS_D_MLB_SON_OAM) - Study on Enhancements of OAM aspects of Distributed Mobility Load Balancing (MLB) SON function

TD SP-160443 (DRAFT TR) TR 32.860 'Study on enhancement of OAM aspects of distributed Self-Organizing Network (SON) functions'. (Source: SA WG5). (Revision of TD SP-160405).

Abstract:
Abstract of document:
This document provides results of study on the enhancements of OAM aspects of distributed load balancing SON function. Several use cases are analysed, related to load information exchange interoperability issues and interaction between eNodeBs from different vendors. For some of scenarios the corresponding recommendations are provided.

Changes since last presentation to <TSG> Meeting #<N>:
This is the first presentation to SA.

Outstanding Issues:
None.

Contentious Issues:
None.

Discussion and conclusion:

Revision of TD SP-160405. LATE DOC: Rx 10/06, 13:10. This TR was approved and placed under TSG SA change control (Release 14).

15.2.35 (FS_OAM_EE) - Study on OAM support for assessment of energy efficiency in mobile access networks

TD SP-160430 (SID REVISED) Revised SID Study on OAM support for assessment of energy efficiency in mobile access networks. (Source: SA WG5).

Abstract: Justification: ETSI TC EE PS has issued ES 203 228 (Environmental Engineering (EE); Assessment of mobile network energy efficiency) which provides with the definition of metrics and methods to assess the energy efficiency performance of radio access networks.
SA WG5 has created the Work Item 'Energy Efficiency related Performance Measurements', which objectives are mainly to identify whether existing 3GPP performance measurements and/or MDT data can be used to support ETSI TC EE needs, and to define new performance measurements if needed. CRs to existing TSs have been produced. However, some metrics and methods identified by ETSI TC EE have not been addressed or have been partly addressed by this Work Item 'Energy Efficiency related Performance Measurements', including e.g. definition of sub-networks, time duration of the measurement, Design Coverage Area, etc.
It is required to ensure that the metrics and methods identified in ETSI ES 203 228 are taken into account into SA WG5 specifications. For this purpose, it is needed to provide how SA WG5 specifications provide support to ETSI ES 203 228.
On the other hand, ETSI EE 02 is specifying an architecture and information model for monitoring any type of ICT equipment power, energy and environmental parameters, in ETSI ES 202 336-12 (Environmental Engineering (EE); Monitoring and control interface for infrastructure equipment (power, cooling and building environment systems used in telecommunication networks); Part 12: ICT equipment power, energy and environmental parameters monitoring information model).
For mobile access networks, it is required to assess how SA WG5 specifications provide support to ETSI ES 202 336-12. The results of this study performed by SA WG5 shall be recorded in a new TR.

Discussion and conclusion:

This revised Study WID was approved.

15.2.36 (FS_OAM_SON_AAS) - Study on OAM support for SON for AAS-based deployments

There were no contributions under this agenda item.

15.2.37 (FS_IMP_ITFN) - Study on Implementation for the Partitioning of Itf-N

There were no contributions under this agenda item.

15.2G SA WG6 Studies

There were no contributions under this agenda item.

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15.2.38 (FS_MBMS_MCservices) - Study on MBMS usage for mission critical communication services

There were no contributions under this agenda item.

16 Proposed New WIDs (not part of an existing feature)

TD SP-160395 (WID NEW) New WID Charging Aspects of Architecture enhancements for Cellular Internet of Things. (Source: SA WG5).
Abstract: Justification Machine type communication (MTC) represents a significant growth opportunity for the 3GPP ecosystem.
To support the so called 'Internet of Things' (IoT), 3GPP operators have to address usage scenarios with devices that are power efficient (with battery life of several years), can be reached in challenging coverage conditions e.g. indoor and basements and, more importantly, are cheap enough so that they can be deployed on a mass scale and even be disposable.
SA WG2 has specified Architectural impacts and procedures to address these usage scenarios under 'Cellular Internet of Things' (CIoT) normative Stage 2 work, available in TS 23.401 and TS 23.682 from TSG SA#71, which includes the following:
- EPS Architectural impacts due to CIOT optimization.
- Attach procedure for CIOT including support for MM only attach without PDN connection establishment
- Control plane optimization
- User plane optimization
- Support for non-IP data delivery via SGi and T6a (SCEF)
- Support for IP header compression for Control plane optimization
- SMS transfer without combined attach.

Discussion and conclusion:

The related TS number was TS 32.253. The UID was 720042. This was revised to include this information in TD SP-160479 which was approved.

TD SP-160364 (WID NEW) New WID on New Services and Markets Technology Enablers (SMARTER). (Source: SA WG1).
Abstract: Justification: There are increasing interests among 3GPP network operators not only on addressing various existing and emerging markets and services to increase and diversify revenue streams, but also on enabling new business models and different operational schemes to maximise the use of the operators' networks. In order to address the demands and business contexts of 2020 and beyond the Feasibility Study on New Services and Markets Technology Enablers (FS_SMARTER, TR 22.891) has developed a set of wide-ranging use cases of the identified market segments and verticals that the 3GPP eco-system would need to support in the future. Emerging from the FS_SMARTER work, four building block studies have been created corresponding to the identified key groups, namely massive Internet of Things (FS_SMARTER-mIoT, TR 22.861), Critical Communications (FS_SMARTER-CRIC, TR 22.862), enhanced Mobile Broadband (FS_SMARTER-eMBB, TR 22.863) and Network Operation (FS_SMARTER-NEO, TR 22.864). The building block studies have further identified the key families of use cases and consolidated the desired system requirements and capabilities that enable 3GPP network operators to support the needs of new scenarios and markets. Meanwhile RAN WGs and SA WG2 WG have also started the study for next generation access technologies and network architecture taking into account of the outcome of FS_SMARTER work. It is therefore beneficial, in Stage-1 normative work, to specify the requirements that enable 3GPP network operators to support the needs of new services and markets.

Discussion and conclusion:

MediaTek asked for clarification of the inclusion of the 5G V2X study results. The SA WG1 Chairman clarified that subject to completion and conclusion of the enhanced V2X study, this WI may be expanded to cover it. MediaTek asked to change 5G V2X to FS_eV2X. This was revised accordingly in TD SP-160486 which was approved.

TD SP-160302 (CR PACK) 9 CRs to 23.167, 23.237, 23.402: (New WI) SEW2 (Rel-14). (Source: SA WG2).
Abstract: 23.402 CR2950R1; 23.402 CR2953R1; 23.402 CR2952R1; 23.167 CR0289R2; 23.402 CR2955R2; 23.237 CR0488R3; 23.167 CR0294R3; 23.167 CR0292R3; 23.402 CR2949R4.

Discussion and conclusion:

This CR pack was block approved.

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TD SP-160303 (CR PACK) 2 CRs to 23.060, 23.401: (New WI) eDECOR (Rel-14). (Source: SA WG2).
Abstract: 23.060 CR2004R1; 23.401 CR3024R2.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160304 (CR PACK) 3 CRs to 23.167, 23.203, 23.228: (New WI) V8 (Rel-14). (Source: SA WG2).
Abstract: 23.203 CR1022R2; 23.167 CR0295R3; 23.228 CR1146R6.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160307 (WID NEW) New WID on the Support of Emergency services over WLAN - phase 2. (Source: SA WG2).
Abstract: Justification: GSMA Networks Group (NG) RILTE has recently concluded the work on creating the VoWiFi profile (IR.51).
In conjunction with that work, the RILTE group has discussed scenarios pertaining to IMS Emergency Session support over WLAN and has sent a LS (S2-150566) to 3GPP noting the lack of 3GPP specifications on this topic and asking questions. TS 22.101 § 10.4.1 states that 'If a UE supports IMS Multimedia Telephony service with speech media as specified in TS 22.173 via an access network, then it shall also support IMS emergency calls via that access network'.
This means the willingness for 3GPP specifications to support IMS emergency calls over WLAN when supporting IMS Multimedia Telephony service with speech media over WLAN.
Thus it is needed to identify how to meet the existing Stage 1 requirements and essentially provide for emergency calls over WLAN access to EPC the same level of functionality than for emergency calls over 3GPP access.

Discussion and conclusion:

ZTE asked to be added as a supporting company. This was revised accordingly in TD SP-160487 which was approved.

TD SP-160308 (WID NEW) New WID on improvement of awareness of user location change. (Source: SA WG2).
Abstract: Justification: With the increasing requirements of user location awareness, operators may want to provide different users with different policies depending on specific interested areas.
Enhancement on existing location reporting mechanism and/or new location reporting mechanism may be needed in order to fully take advantage of operator network's deployment.
Differentiated charging or QoS may be applicable for a user in some areas of interest.

Discussion and conclusion:

This New WID was approved.

TD SP-160309 (WID NEW) WID on Sponsored data connectivity improvements. (Source: SA WG2).
Abstract: Justification: The sponsored data services enable operators to develop new traffic management models to achieve successful cooperation between operators, subscribers, and OTT SPs or enterprises.
To support sponsored data services, a PCC rule including IP flow description or application detection filter, Sponsor Identifier, Application Service provider Identifier and charging key could be pre-configured in the PCEF and activated by the PCRF or dynamically provided by the PCRF during IP-CAN session. Using existing specifications, there are many difficulties to deploy sponsored data connectivity, which includes:
1) Capacity limitation of PGWs/TDFs to store sponsored data connectivity information;
2) Long deployment cycle when add/update/remove sponsored data connectivity information;
3) Maintenance challenge to operate distributed PGWs/TDFs;
4) Detection of encrypted traffic when e.g. HTTPs is applied.
In FS_SDCI TR 23.721, 10 alternative solutions addressing 4 key issues have been discussed and it has been a good shape to make final conclusion before SA#72 in June, 2016.
Therefore, the normative work should be triggered to add concluded feature into related specification(s).

Discussion and conclusion:

This New WID was approved.

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TD SP-160310 (WID NEW) New WID on Enhancements of Dedicated Core Networks selection mechanism. (Source: SA WG2).
Abstract: Justification: 3GPP networks are beginning to support devices and customers with very different characteristics, such as machine type devices, MVNO, data usage, etc. These classes of devices and customers may have different requirements from the core network in terms of optional feature support, traffic characteristic support, availability, congestion management, ratio of signalling to user plane traffic, etc. As we move forward the classes of devices/customers will continue to increase.
One cost effective mechanism for operators to support these different classes of devices and customers is to create separate dedicated core networks consisting of specialized core network elements that are designed and deployed to meet the requirements of these different devices and customers. It is cost-effective as the network availability or redundancy requirements may be easier met with different hardware and/or software than the existing core network.
Also, creating separate core networks enables independent scaling or specific feature provisioning for specific user or traffic types and isolating specific users and traffic from each other.
The Rel-13 DECOR solution was not allowed to impact the UE and supports Rel-13 and earlier. Similar to the Network sharing where there are supporting and non-Supporting UEs we can enhance DECOR in Rel-14 allowing some UE impacts.

Discussion and conclusion:

This New WID was approved.

TD SP-160311 (WID NEW) New WID on enhancement in the network capability exposure of group-based services. (Source: SA WG2).
Abstract: Justification: Exposure of 3GPP system internal capabilities or services, denoted as 3GPP capability exposure, was defined in release 13 using a new functional entity called Service Capability Exposure Function (SCEF). With the SCEF, the 3GPP capability exposure to 3rd parties can be securely made.
Release 13 also defined network capability exposure functions as part of AESE, MONTE, GROUPE, and HLCOM work items. Except for the group message delivery function, all functions use per-UE network signalling. The per-UE network signalling gives significant burden to the 3GPP network and third parties using the SCEF, as the number of UEs, e.g. IoT devices, proliferates. Such burden can be reduced if these functions, other than group message delivery function defined for GROUPE, are enhanced for group-based approach.
Since IoT devices are expected to share significant portion of their characteristics, which can be identified by e.g. via communication patterns, group-based enhancements make very good sense in terms of practicability. Thus, it is beneficial to make normative work for SCEF being performed based on a per-group basis.

Discussion and conclusion:

This New WID was approved.

TD SP-160312 (WID NEW) WID on Robust call setup for VoLTE subscriber in LTE. (Source: SA WG2).
Abstract: Justification: VoLTE may require better LTE RSRP compared to data service, which means the LTE radio signal may be good enough for pure data session but may not good enough for VoLTE (i.e. QCI-1). When radio network is configured in such a manner, eNB may trigger SRVCC handover as soon as EPS bearer with QCI-1 is setup. At this point, the VoLTE setup may fail if either UE or IMS does not support bSRVCC or aSRVCC. As a result, call drop rate is increased due to call setup failure.

Discussion and conclusion:

This New WID was approved.

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TD SP-160313 (WID NEW) New WID on T-ADS supporting WiFi access. (Source: SA WG2).
Abstract: Justification: Among the operators who have launched VoLTE, some have also deployed or are planning to deploy VoWiFi as a supplementary to VoLTE so as to provide 'full-coverage' of voice/video communication services. With that, a VoLTE/VoWiFi capable UE can access network via GERAN, UTRAN, E-UTRAN and WLAN. 3GPP has defined a mechanism named T-ADS(Terminating Access Domain Selection) for the network on determine how to conduct an incoming call, i.e. via IMS or via CS. One of the main factors the T-ADS needs to take into account is the RAT which the UE is currently using, as well as whether that RAT can support 'IMS Voice over PS'.
When the HSS has registration states of more than one RATs, it needs to query SGSN/MME for the timestamp of the last ATTACH/TAU/RAU to determine which RAT is currently being used.
However, the existing T-ADS does not take WLAN access into account, which may lead to a wrong decision of call conducting when UE moves between WLAN and UTRAN/GERAN network, and thus impacts user experience.
One of the identified example case is:
The UE is accessing EPC via WLAN, then it moves out of WLAN coverage and has no chance to deregister from the EPC network, then it camps on GERAN/UTRAN which does not provide IMS Voice over PS.
In such case, the HSS has registration state of EPC(via WLAN) and GERAN/UTRAN, but it cannot determine which one is the latest.
As a result the T-ADS may make a wrong decision.

Discussion and conclusion:

The Acronym should be TADS_WLAN, not TADS-WLAN. The UID will be 720076. This was revised accordingly in TD SP-160488 which was approved.

TD SP-160314 (WID NEW) New WID eFMSS. (Source: SA WG2).
Abstract: Justification: In Rel-13 FMSS feature, PCRF is responsible for deciding on the traffic steering control policies to direct traffic towards the required service enablers in the (S)Gi-LAN. The scope of FMSS in Rel-13 assumes that the all service functions in the (S)Gi-LAN are all deployed by the UE's serving operator.
In Rel-14, Stage 1 has defined the following requirements for the scenarios that the service enablers in (S)Gi-LAN could be deployed by the third party:

- The 3GPP core network shall be able to apply traffic steering policies for the third party owned (S)Gi-LAN service functions.
- The 3GPP core network shall be able to generate accounting information to support accounting between operator and the third party service provider.

Discussion and conclusion:

This New WID was approved.

TD SP-160315 (WID NEW) New WID on S8 Home Routing Architecture for VoLTE. (Source: SA WG2).
Abstract: Justification: GSMA have been investigating a new VoLTE roaming architecture option, 'S8 Home Routed (S8HR)'. S8HR is an architecture for IMS voice roaming whereby the PGW, PCRF, and P-CSCF are located in the HPLMN also when the UE is roaming in a VPLMN. One of the main implications is that S8HR roaming architecture is not using Local Breakout anymore and therefore the IMS APN is resolved to point to a PGW in the HPLMN (rather than in the VPLMN).
An IMS NNI between VPLMN and HPLMN may not be needed.
GSMA Product and Services Management Committee (PSMC) has informed 3GPP that they endorsed S8HR architecture as a candidate for VoLTE roaming (S2-150704), subject to the related issues (inclusive of Lawful Interception, Emergency Call, SRVCC, and others) being resolved by 3GPP.

Discussion and conclusion:

This New WID was approved.

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TD SP-160316 (WID NEW) New WID on Control and User Plane Separation of EPC nodes (CUPS). (Source: SA WG2).
Abstract: Justification: Mobile operators are seeing significant increases in user data traffic. For some operators, user data traffic has more than doubled annually for several years.
The reasons for this growth in traffic are the rapidly increasing use of smart phones and tablet like devices, and the proliferation of video and other applications that they support, as well as the use of USB modem dongles and personal hotspots for laptops to provide mobile Internet access using 3GPP networks.
As the penetration of these terminals increases worldwide and the interest in content-rich multi-media services (e.g. OTT video streaming services, Person to person video, content sharing) rises, this trend of rapidly increasing data traffic is expected to continue and accelerate.
At the same time, there is a strong expectation to further improve the user experience of services like social networks, electronic business, Internet searching.
Lower latency is one of the critical performance KPIs to meet for those services. Simply redistributing S/P-GW and TDF closer to the RAN may resolve the above issues but may also multiply the number of interfaces to other network entities like MME, PCRF and charging systems, resulting in an impact on configuration and network management.
Hence, it seems desirable to study possibilities for a separation of S/P-GW and TDF functionality into user plane functions and control plane functions, so that the user plane functions can be placed flexibly (e.g. centrally or closer to the RAN) while the control plane functions could still remain centralized and continue to support the interfaces to the other network entities (like MME, PCRF, Charging Systems).

Discussion and conclusion:

This New WID was approved.

TD SP-160317 (WID NEW) New WID on architecture enhancements for LTE support of V2X services. (Source: SA WG2).
Abstract: Justification: Stage 1 requirements for support of V2X services over LTE have been defined in TS 22.185. A corresponding architecture study is being conducted by SA WG2 in TR 23.785.
Some of the functionalities defined under Proximity Service (ProSe) in Release 12/13 as well as functionalities defined under eMBMS will be reused for supporting V2X services over LTE as per the conclusions captured in TR 23.785.
RAN WGs are progressing Feasibility Study on LTE-based V2X Services (FS_LTE_V2X, TR 36.885) as well as Work Item on Support for V2V services based on LTE sidelink (LTE_SL_V2V).

Discussion and conclusion:

This New WID was approved.

TD SP-160373 (WID NEW) New Work Item on Security Assurance Specification for PGW. (Source: SA WG3).
Abstract: Justification: At present, the states of Catalogue of General Security Assurance Requirements (TS 33.117) and Security Assurance Specification for the MME network product class (TS 33.116) are basically stable. SA WG3 already had some experiences of security assurance requirements for 3GPP network product elements.
Security assurance specification for other 3GPP network product classes can be started. The next network product class(es) to be considered by SA WG3 can be the PGW network product classes. The reasons are as below: From network deployment's view, PGW has the higher security risks than other network elements because it is located on the border of the operator network and it has the interface to connect to external entities (e.g. a server on the Internet).
An adversary can use this interface to attack PGW directly or attack other network elements such as MME via compromised PGW. In addition, PGW is connected to the Internet, so all attacks on the Internet could be applied to PGW From network functions' view, is the PGW is different from MME that it has the user plane process, so how to assure the protection of user data complying with operator's security assurance specification needs to be studied.
In addition, as the whole user traffic passes through PGWs, PGW products offer complex functions (both standardised and proprietary) that analyse user traffic, besides the basic PGW function of transport and routing.
Examples for such functions are: HTTP proxies, deep packet inspection, 3GPP Traffic Detection Function (TDF). Analysis of complex input from untrusted sources always bears the risk that implementation robustness flaws can lead to compromise of the PGW products.

Discussion and conclusion:

TeliaSonera asked to be added to the supporting companies. It was clarified that this was targeted for Rel-14. This was revised accordingly in TD SP-160481 which was approved.

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TD SP-160375 (WID NEW) New Work Item Lawful Interception Rel-14. (Source: SA WG3).
Abstract: Justification: 3GPP Release 14 adds functionality and capabilities to Release 13. National LI requirements will apply to a portion of these Release 14 enhancements and the 3GPP LI service needs to be extended to accommodate these enhancements. LI Considerations are necessary at least for following topics:
- S8 Home Routing (S8HR) roaming
- Mission Critical services enhancements
- Enhanced support for IoT devices
- V2X services
- LI of non-local numbers ('B number')

In addition, services from prior releases which have not been addressed by the LI service specifications may be considered Release 14 as needed by service deployments and national requirements.

Discussion and conclusion:

This New WID was approved.

TD SP-160271 (WID NEW) New Work Item on 'Extension of UE delay test methods and requirements' (EXT_UED). (Source: SA WG4).
Abstract: Justification: Mouth to ear delay has a significant impact to the conversational experience as it has been described in e.g. ITU-T G.114.
The audio test specifications in TS 26.131 and TS 26.132 were updated in Rel-12 to introduce LTE UE delay requirements and test methods in narrowband and wideband. In Rel-13 these delay tests have been extended in super-wideband and fullband, and the support of DTX in test equipment has been included.
Several topics have been not been fully addressed yet:
- LTE radio optimizations like DRX or SPS are now supported by test equipment, and the current UE delay test method may be adjusted to include the support of these optimizations.
- Clock related test cases (e.g. clock accuracy of UEs, behaviour of UEs in presence of clock drift) are not covered.
- Current LTE UE delay testing relies on simulated, artificial profiles in static conditions.
  Delay/loss profiles representing live operation in MTSI-based speech services could be considered.
  The behaviour of jitter buffer handling could also be studied with other profiles than the existing profiles
  in TS 26.132; it may be possible to consider dynamic test conditions with varying profiles (e.g. switched
  profiles).
- Headset jack delay and speech quality tests have been largely employed in the industry but no 3GPP standard currently exists.

Furthermore, new areas could be considered to reflect current deployments of MTSI-based speech services. These services are provided over LTE radio as well as over Wifi. It is therefore relevant to also consider UE delay characteristics with Wifi radio access. No impact is expected in service requirements or architecture.

Discussion and conclusion:

This New WID was approved.

TD SP-160272 (WID NEW) New Work Item on 'Enhancements to Multi-stream Multiparty Conferencing Media Handling' (MMCMH_Enh). (Source: SA WG4).
Abstract: Justification: Media handling of IMS communication services like voice and video over LTE are based on SA WG4 TS 26.114. Multimedia Telephony Service over IMS, MTSI, has a wide device reach. MTSI clients can connect to conferencing IMS communication services.
The original MMCMH work item specified an increment to MTSI client specifications to enable a mass market multiparty communication service with excellent multiparty user experience and media quality.
A few performance optimizations covered under the original MMCMH work item (Release 13) were found to require additional supportive specification work in CT, and the corresponding work was already initiated in CT for Rel-14 under MMCMH-CT work item.
These CT-dependent optimizations will be removed from TS 26.114 Rel-13 and they will have to be reinserted into TS 26.114 Rel-14 in alignment with the corresponding supportive specification work in CT.

Discussion and conclusion:

The TSG CT Chairman reported that the related MMCMH TSG CT WID which had been approved to Rel-14 has now been moved to Rel-13 and a new WID for MMCMH_Enh has been approved. This New WID was approved.

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TD SP-160396 (WID NEW) New WID Management for NB-IoT. (Source: SA WG5).
Abstract: Justification: As a new narrowband radio technology to address the requirements of the Internet of Things (IoT), NarrowBand Internet of Things (NB-IoT) will provide improved indoor coverage, support of massive number of low throughput devices, low delay sensitivity, ultra-low device cost, low device power consumption and optimized network architecture.
RAN WGs are working on the standardization of NB-IoT feature. From network management point of view, operators need to be able to manage NB-IoT.
Without NB-IoT management, the complete deployable solution meeting all of the operator's needs will not be possible.
In order to provide for this SA WG5 needs to specify NB-IoT network management on the essential part for Rel-13 to align with all other 3GPP WGs.

Discussion and conclusion:

This New WID was approved.

TD SP-160406 (OTHER) TS 32.25x “Control Plane (CP) data transfer domain charging”. (Source: SA WG5).
Abstract:
Abstract of document:
This document specifies the offline charging for Control Plane (CP) data transfer domain: Non-IP Data Delivery (NIDD) using SCEF procedures, based on TS 23.682. This charging description includes the offline charging architecture and scenarios for nodes involved in Control Plane (CP) data transfer: SCEF, IWK-SCEF and MME. The structure and content of the Charging Data messages and CDRs are also specified.
Changes since last presentation to SA:
This is the first presentation to SA.
Outstanding Issues:
None
Contentious Issues:
None.

Discussion and conclusion:

NOTE 1: Document is dependent on approval of CIoT-CH WID.
NOTE 2: Document must be revised with assigned TS number following WID approval.
The TS number was allocated as TS 32.253. This was revised as a type draftTS, version 1.0.1, in TD SP-160480 which was approved and placed under TSG SA change control (Release 13).

TD SP-160411 (CR PACK) Rel-13 CRs on Charging Aspects of Architecture enhancements for Cellular Internet of Things (CIoT-CH). (Source: SA WG5).
Abstract: 32.251 CR0471R1; 32.251 CR0472R1; 32.298 CR0590R1; 32.299 CR0734R1; 32.240 CR0387R2; 32.297 CR0025R2; 32.298 CR0588R2; 32.299 CR0726R2.

Discussion and conclusion:

This CR pack was block approved. **MCC was asked to correct the references to TS 32.25x to TS 32.253 when implementing these CRs**.

TD SP-160419 (CR PACK) Rel-13 CRs on Management for NB-IoT (NB_IOT-OAM). (Source: SA WG5).
Abstract: 28.657 CR0005R2; 28.658 CR0016R1; 28.659 CR0016R1; 32.425 CR0161R1; 32.425 CR0162R1.

Discussion and conclusion:

This CR pack was block approved.

TD SP-160342 (WID NEW) New work item on common functional architecture to support mission critical services. (Source: SA WG6).
Abstract: New work item on common functional architecture to support mission critical services.

Discussion and conclusion:

The Acronym should be MCImp-MC-ARCH as this is a Building Block of MCImp feature. The specifications manager asked how many new TS numbers will be needed. The SA WG6 Chairman clarified that for this WID there is only one new TS, the other three new TSs listed are relevant for the other three new WID proposals from SA WG6. The TS number for the new TS from this WID was allocated as TS 23.280. This was revised accordingly in TD SP-160489 which was approved.

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TD SP-160343 (WID NEW) New work item on enhancements for Mission Critical Push To Talk. (Source: SA WG6).
Abstract: New work item on enhancements for Mission Critical Push To Talk.

Discussion and conclusion:

The Acronym should be corrected as this is a Building Block of the MCImp feature. The TS number for the new TS from this WID was allocated as TS 23.379. This was revised accordingly in TD SP-160490 which was approved.

TD SP-160344 (WID NEW) New work item on functional architecture and information flows for Mission Critical Video. (Source: SA WG6).
Abstract: New work item on functional architecture and information flows for Mission Critical Video.

Discussion and conclusion:

The Acronym should be corrected as this is a Building Block of the MCImp feature. The TS number for the new TS from this WID was allocated as TS 23.281. This was revised accordingly in TD SP-160491 which was approved.

TD SP-160345 (WID NEW) New work item on functional architecture and information flows for Mission Critical Data. (Source: SA WG6).
Abstract: New work item on functional architecture and information flows for Mission Critical Data.

Discussion and conclusion:

The Acronym should be corrected as this is a Building Block of the MCImp feature. The TS number for the new TS from this WID was allocated as TS 23.282. This was revised accordingly in TD SP-160492 which was approved.

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17 Proposed New Study Items (SIDs)

TD SP-160275 (SID NEW) New Study Item on 'MBMS Extensions for Provisioning and Content Ingestion' (FS_xMBMS). (Source: SA WG4).
Abstract: Justification: SA WG4 is currently working on the definition of APIs to allow application developers to gain access to content and services that are delivered over MBMS.
However, there are no defined interfaces that can be used by 3rd party application service/content providers to deliver their content over MBMS. Provisioning and Content ingestion today is realized in different ways, which limits the usability of MBMS services and reduces the value of the client APIs.
MBMS services will benefit from the creation of a modern and standardized interface to enable the interaction with the BM-SC for setting up services and delivering content over MBMS.

Discussion and conclusion:

The U.S. Department of Commerce commented that there was ongoing work on this and SA WG4 should have taken this into account in developing this SID. Nokia commented that MB2 is already being used by 3GPP functions and this should be considered. Qualcomm commented that even though Multimedia is not explicitly mentioned, it is not excluded from the content covered by this. Ericsson commented that this addresses MBMS User services and there are requirements for this in SA WG1 and considered that if SA WG4 study determines there is an advantage of MB2 then this should be studied. The U.S. Department of Commerce commented that SA WG4 should not work in isolation from other WGs. Nokia suggested that the study of additional interfaces should be allowed but should be made clear in the objectives of the SID. AT&T asked what work was expected from the other WGs and asked whether the no impacts indication was correct. This was left for off-line discussion to try to clarify the scope of the work and any impacts that should be identified and was revised to TD SP-160477 which was reviewed. There had been an off-line request to send a liaison to other WGs to inform them of this WID.AT&T commented that there should be a check point built into the WID to ensure that other WGs are progressing in the work needed for this. Motorola Solutions did not understand the meaning of 'Content ingestion' and why it did not apply to unicast and raised other technical concerns with this. The SA WG1 Chairman commented that this relates to other Stage 1 WIDs and SA WG1 should be involved in this. Huawei commented that the current text was acceptable to companies and if further changes are needed then they prefer to send this back to SA WG4 to update it. It was decided to try to get agreement and this was further discussed off-line and revised to TD SP-160503 which was reviewed. Motorola Solutions commented that they did not want a second interface when there is one already available and there was no Stage 1 for this. It was commented that not all work needs to have a stage 1. It was decided to capture Motorola Solution's concerns in this report and the Study WID was approved.
Motorola Solutions asked for their concerns to be recorded in this report:
Motorola Solutions expressed strong concern that the result of this work will be the definition of a new and potentially different interface for MBMS in addition to the existing MB2, which could result in additional complexity and work in standardization and implementation for mission critical services. Additional concerns were expressed on the apparent lack of details and use cases. It was agreed that these concerns will be taken in consideration by TSG SA and SA WG4 as the work progresses.

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TD SP-160370 (SID NEW) New SID on Study on Enhancement of 3GPP support for V2X service (FS_eV2X). (Source: SA WG1).
Abstract: Justification: The study on LTE support for V2X service (FS_V2XLTE) has identified twenty-seven (27) use cases and the related consolidated potential requirements in 3GPP TR 22.885.
The normative work on LTE support for V2X Services (V2XLTE) was performed based on the input from FS_V2XLTE to generate a set of normative requirements in TS 22.185.
While the normative work (V2XLTE) has addressed service requirements in supporting V2X via LTE transport layer, it has been identified that there is need for enhancement in 3GPP support for V2X. It is triggered not only by the identification through the FS_SMARTER study (e.g. connected vehicles and other proposals) but also by the emergence of 5G aspects (e.g., new RAT and further enhanced LTE) in 3GPP.
To this end, a study toward 3GPP-based support for V2X is necessary to support technological and societal change in the near future for automotive verticals, considering:
- Car as mobile office/home (with e.g. Gaming, office applications, entertainment…)
- Comfortable semi-autonomous and fully autonomous driving (e.g. Cooperative driving, traffic and route management…)
- Services for commercial road users (e.g. Car platooning in consideration of fuel efficiency, road traffic efficiency and battery power …)

Interoperability and interworking requirements between LTE, next network generation and existing non-3GPP V2X technologies (e.g., ITS-G5/DSRC/ITS Connect) also need to be studied to consider e.g. a vehicle communicating with other vehicles (or pedestrians) regardless of whether LTE or new 3GPP RAT.

Discussion and conclusion:

A proposed update to add further supporting companies was provided in TD SP-160337 and the additional companies and also ETRI were added to the supporting companies in TD SP-160504 which was approved.

TD SP-160337 (SID NEW) Modification proposal on Study on Enhancement of 3GPP support for V2X services (FS_eV2X). (Source: LG Electronics Inc).
Abstract: SA WG1#74 has agreed on the proposal for Study on Enhancement of 3GPP support for V2X services (FS_eV2X).
There are several more member companies who decided later to be supporting members. This contribution proposes to add those member companies to the list of supporting member companies.

Discussion and conclusion:

It was reported that ETRI should also be added. These companies were added to the original SID in TD SP-160370 and this was then noted.

TD SP-160371 (SID NEW) New SID on Study on Future Railway Mobile Communication System (FS_FRMCS). (Source: SA WG1).
Abstract: Justification: The railway community is considering a successor to GSM-R, as the forecast obsolescence of the 2G-based GSM-R technology is envisaged around 2030, with first FRMCS trial implementations expected to start around 2020.
It is therefore advisable to start standardization in 3GPP now. The Future Railway Mobile Communication System (FRMCS) functional working group of the International Union of Railways (UIC) have investigated and summarised their requirements for the next generation railway communication system in the Future Railway Mobile Communication User Requirements Specification.
These requirements have been sent to 3GPP by ETSI TC-RT NG2R in LS S1-161250, and will be serving as the basis for this study. Besides general requirements, this document identifies use cases for the FRMCS based by giving descriptions, rationale etc. and identifying requirements.
These requirements need to be assessed regarding their relevance for 3GPP and if necessary adapted to 3GPP terminology.
The FRMCS User specification use cases, referred to as 'Applications' in the specification, can be reused from 3GPP point of view, and might serve as basis of work.

Discussion and conclusion:

This New Study WID was approved.

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TD SP-160318 (SID NEW) New Study on PS Data Off. (Source: SA WG2).
Abstract: Justification: By introducing the always on IP connectivity in 3GPP network (Release 8), it became difficult for the subscriber to have explicit control of the traffic sent or received by its UE, which could lead to unexpected charging. In order to give back the control to the subscriber, the 'Data off' function has been implemented on the UE.
Basically this function, when activated by the user, prevents the UE to send/receive any uplink/downlink traffic to/from the network. However the 'Data off' function is an implementation specific feature locally implemented on the UE.
The 'Data off' function is not yet defined in 3GPP specifications.

Discussion and conclusion:

This New Study WID was approved.

TD SP-160319 (SID NEW) New Study item on extended architecture support for Cellular Internet of Things. (Source: SA WG2).
Abstract: Justification: As part of Rel-13 FS_AE_CIoT study item (SP-150167), SA WG2 has studied architecture requirements for 'Internet of Things', specifically for ultra low complexity / low data rate devices which may also be power constrained.
Rel-13 normative work was completed based on the conclusion from the TR 23.720 but some key issues (e.g. Support of authorization of use of Coverage Enhancement functionality etc.) were deferred to the Rel-14. It was also identified that some the CIoT optimizations defined in Rel-13 may require further improvement e.g. further improvements for SCEF connection.
A UE which supports an NB-IOT RAT may also support other RATs. For example an asset tracking application might support both an NB-IOT RAT and a 2G RAT in order to increase the number of locations where the UE will be able to gain connectivity. For such devices, there is a need to support improved idle mode inter-RAT mobility in order to prevent the need for the device to detach and then re-attach when moving between RATs, with the consequent signalling and power consumption cost.
In Rel-13 solution NIDD via SCEF there is no way SCEF can determine if the data was successfully delivered to the UE (e.g. in case of UE radio link failure).
Some of CIoT deployments would rely on reliable delivery of data (e.g. for enterprise customer). MNOs can provide this as value added service to their customers.
There is need to support Reliable communication service between UE and SCEF.

Discussion and conclusion:

MediaTek clarified that SA WG2 had agreed that early specification work on completed items with partial conclusions will be allowed for this before the final completion and conclusions for this study item.
TeliaSonera asked to be added as a supporting company. This was revised accordingly in TD SP-160505 which was approved.

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TD SP-160320 (SID NEW) New Feasibility study on Complementary Features for Voice services over WLAN. (Source: SA WG2).

Abstract: Justification: There are clear benefits for supporting voice services over WLAN Access: examples are the offload of voice calls from the 3GPP access, reducing 3GPP access network congestion, and the extension of voice calls beyond the coverage area and indoor.
GSMA Networks Group (NG) RILTE has concluded the work on creating the VoWiFi profile (IR.51). In conjunction with that work, 3GPP is currently specifying the support IMS emergency calls over WLAN when supporting IMS Multimedia Telephony service with speech media over WLAN.
A number of WLANs (e.g. IEEE 802.11) and their backhaul (e.g. most residential accesses) can support QoS differentiation and the quality of service required for voice over IMS. Not supporting QoS differentiation all along the data path may result in poor user experience. QoS differentiation is supported over S2a and S2b, but it is not specified:

- On which basis QoS differentiation is performed by the UE for uplink traffic and by the network for downlink traffic, and whether specific signalling is needed (e.g. whether reflective QoS specified in TS 23.139 for fixed networks can be reused);
- Whether there are further user plane requirements for the support of QoS differentiation for downlink and uplink in the user plane (e.g. for untrusted WLAN, whether it should be supported by separate security associations per RFC 4301 or other means).

Furthermore, the study item FS_V8 (Study on S8 Home Routing Architecture for VoLTE) is currently being under consideration in SA WG2.
However, FS_V8 only covers VoLTE and there is no corresponding equivalent for voice services over trusted and untrusted WLAN accesses.

Discussion and conclusion:

KPN asked to be added as a supporting company. This was revised accordingly in TD SP-160506 which was approved.

TD SP-160374 (SID NEW) New Study Item for Study on Mission Critical Security Enhancements. (Source: SA WG3).

Abstract: Justification: Stage 1 work for Release 14 Mission Critical features is under development within SA WG1, based on TS 22.179 'Mission Critical Push-To-Talk (MCPTT) over LTE', TS 22.280 'Mission Critical Services Common Requirements' and TS 22.281 'Mission Critical Video over LTE' and TS 22.282 'Mission Critical Data over LTE'.
SA WG3 has defined security features for MCPTT in Release 13 and enhancements to these services need to be studied to meet the new security requirements defined in Release 14.

Discussion and conclusion:

This New Study WID was approved.

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TD SP-160274 (SID NEW) New Study Item on 'MBMS usage and codecs for MCPTT call and MC Video Service' (FS_MCP_V). (Source: SA WG4).

Abstract: Justification: Stage 1 requirements for Mission Critical Video (MCVideo) service are being developed for Release 14. The requirements are documented in 2 draft technical specifications.

a. The requirements specific to mission critical video are documented in 3GPP draft TS 22.281.
b. The requirements common to all mission critical services are documented in 3GPP draft TS 22.280. MCVideo shall be based on the common functional architecture for mission critical services developed by SA WG6.

Service requirements for Group Communication System Enablers for LTE (GCSE_LTE, TS 22.468) were approved in June 2013. While these service requirements provide the essential LTE enabler, specific application support is needed to the development of network and application architectures, security, RAN aspects, and network and application protocols to support mission critical communication services over MBMS.

Stage 2 aspects are covered by SA WG6 as part of the Study on MBMS usage for mission critical communication services. During Release 13, SA WG4 completed a work item (MCPTT) to specify the codec and media handling aspects for MCPTT support. Several aspects of use of MBMS for MCPTT have not been addressed.

Those aspects are listed below and expected to be addressed in this release:

- Service continuity; MCPTT call should remain when a MCPTT client moves in/out of broadcast network coverage and crosses different MBMS service area or MBSFNs.
- Reception reporting and evaluation.
- Transfer of MCPTT calls from unicast to broadcast and vice versa to optimize the use of MBMS resources;
- Forward Error Correction (FEC); controlling packet loss in transmission over MBMS, the benefit of using FEC with small RTP packets should be studied.

Discussion and conclusion:

The U.S. Department of Commerce commented that this covers areas in the scope of different groups, particularly SA WG6. The HOME OFFICE agreed that SA WG4 should not be doing work which overlaps with work being done in SA WG6. AT&T commented that this also overlaps with SA WG2 work. Motorola Solutions agreed and suggested that if this work is to be done in SA WG4, then the scope of the SID needs to be limited. There was some discussion around this and this was left for further off-line consideration and revised in TD SP-160497 which was reviewed. Blackberry commented that MCPTT Enhancements should be done in a separate WID in SA WG4, as done in other WGs. The U.S. Department of Commerce proposed removing these bullets and the final sentence to avoid the check point. This was revised accordingly in TD SP-160510 which was approved.

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TD SP-160273 (SID NEW) New Study Item on 'User Services Enhancements in 3GPP for TV Services' (FS_USE_3GPP_4_TV). (Source: SA WG4).

Abstract: Justification: SA WG1 has collected service requirements in TS 22.101, clause 32 for TV Enhancements.

A corresponding SA WG2 Study Item has been approved. Based on this, a study is justified in the area of TV enhancements to identify any required specification work as part of SA WG4 specifications.

According to TS 22.101, clause 32.1, '3GPP enhancement for TV service support is a feature whereby 3GPP networks can provide unicast and broadcast transport, referred to as 'TV transport services', to support distribution of TV programs. TV transport services can support the three types of TV services

- Free-to-air (FTA), Free-to-view (FTV), and Subscribed services.
  Each type of TV service has different requirements in order to meet regulatory obligations and public service and commercial broadcaster's requirements regarding content distribution, hence many requirements captured below are optional to implement depending on the type of TV transport services
  an MNO chooses to offer.'
  There is interest for the TV industry to be able to deliver broadcast television (TV services) to connected
  consumer devices (smartphones, tablets and TVs) anywhere, by using cellular networks.
  Audio/Video content is already a significant and growing traffic type.
  There is an opportunity to leverage the support for this content, and 3GPP delivery methods such as eMBMS, to provide TV broadcast and on-the-go TV/video services:
- There is an interest from Over-the-top (OTT) TV/video service providers to be able to reach their customers regardless of location, and available access technology, particularly when the consumers have cellular access but not access to a broadcast TV signal (if that signal exists at all).
- There may be opportunities in the near future for LTE-based cellular TV broadcast services, in particular, the free-to-air TV service in some regions of Europe.

Discussion and conclusion:

This New Study WID was approved.

TD SP-160394 (SID NEW) New Study on Management and Orchestration of Network Slicing. (Source: SA WG5).

Abstract: Justification: The network slicing is a key feature for next generation network. It is about transforming the network/system from a static 'one size fits all' paradigm, to a new paradigm where logical networks/partitions are created, with appropriate isolation, resources and optimized topology to serve a particular purpose or service category (e.g. use case/traffic category, or for internal reasons) or even individual customers (logical system created 'on demand').

It can be enriched by use of NFV and SDN. As the network slice instances may be isolated from each other, the management of the network slice instances should enable the possibility to be separated as well.

A special care should be taken in case of sharing of resources by multiple slices.

For the case of individual enterprise customers that own part of a slice instance, it is very likely that the management of such part is separated from the management of the rest of the slice. Therefore, it is also useful to study slice management by multiple parties.

It is needed to study the management and orchestration support of network slicing corresponding to the discussions in SA WG1, SA WG2, NGMN NWMO and ETSI NFV.

Discussion and conclusion:

This New Study WID was approved.

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TD SP-160399 (SID NEW) New Study on management aspects of next generation network architecture and features. (Source: SA WG5).
Abstract: Justification: Studies on next generation network are being conducted in 3GPP WGs, specifically include
- study on requirements of next generation network has been started in SA WG1
- Study on Scenarios and Requirements for Next Generation Access Technologies in TSG RAN
- Study on the architecture of next generation network in SA WG2
- Study on New Radio (NR) Access Technology in RAN WGs

The management aspects need to be studied in terms of
- How to satisfy the operational and management requirements of next generation network
- What are the role and location of the management functionalities in the network architecture of next generation network, and how should the management aspects support the network architecture
- What management aspects are needed to support the key next generation features at high level

In addition, the management aspects of next generation network (aka 5G, future network) are being addressed by NWMO project in NGMN and in FG IMT-2020 in ITU-T, and ETSI ISG NFV has developed a management and orchestration architecture that can be applied to next generation networks.
Those works could be also taken into account to SA WG5 study.

Discussion and conclusion:

This New Study WID was approved.

TD SP-160400 (SID NEW) New Study on Management and Orchestration Architecture of Next Generation Network and Service. (Source: SA WG5).
Abstract: Justification: The next generation network architecture is an important topic which is currently under discussion in 3GPP.
It is also very important for SA WG5 to study the management and orchestration architecture to evaluate whether the existing management mechanisms can be applicable or need to be enhanced to support the next generation management and orchestration features.
It should also be studied whether revolutionary changes of the architecture are needed to satisfy the next generation network management requirements.
The management and orchestration architecture should also take into account the support of the next generation service management and orchestration features.
The management and orchestration architecture should also consider the support of the next generation network slicing management and orchestration. The impact from the management of next generation features on the management and orchestration architecture should also be studied.
SA WG5 will need to take into consideration the SA WG2 discussion on the network architecture, and identify the management and orchestration architecture related aspects.

Discussion and conclusion:

This New Study WID was approved.

TD SP-160340 (SID NEW) New study item on mission critical system migration and interconnect between MCPTT systems. (Source: SA WG6).
Abstract: New study item on mission critical system migration and interconnect between MCPTT systems.

Discussion and conclusion:

This New Study WID was approved.

TD SP-160341 (SID NEW) New study item on Mission Critical Communication Interworking between LTE and non-LTE Systems. (Source: SA WG6).
Abstract: New study item on Mission Critical Communication Interworking between LTE and non-LTE Systems.

Discussion and conclusion:

This New Study WID was approved.

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18 Project Management

18.1 Review of the work plan

TD SP-160459 (Work Plan) Snapshot of 5G Activities identified in the 3GPP Work Plan. (Source: MCC Work Plan Manager).
Abstract: Snapshot of 5G Activities identified in the 3GPP Work Plan.

Discussion and conclusion:

This was withdrawn.

TD SP-160496 (Work Plan) Work Plan presentation. (MCC).
Abstract: Review of the 3GPP Work Plan at TSG SA#72.
Status:
- includes TSG CT#72 and TSG SA#72 outputs, not TSG RAN#72 updates

Content of this Work Plan review:
- Rel-13 Status
- Rel-14 Status
- Rel-15 Status
- Conclusion
- Background information

Questions and comments:

Slide 16: Nokia commented that the Stage 2 freeze should be left open. It was clarified that the Stage 2 freeze timescale for NextGen features is not necessarily the same as the complete Stage 2 freeze.

Slide 4: The completion of SA WG4 MCPTT was questioned. The SA WG4 Chairman clarified that this was actually 100% at the end of their previous meeting.

General: General clarification of the completion status of work items was provided.

The MCC Work Plan manager was thanked for this report, which was noted.

18.2 Release contents and planning discussions

There were no contributions under this agenda item.

18.3 Specification Status

TD SP-160436 (OTHER) Copyright infringement in C code of TS 26.443. (Source: MCC).
Abstract: To avoid legal complications it is necessary to revise all current versions of 26.443. This document explains the problem and proposes a solution.

Discussion and conclusion:

This contribution was withdrawn.

19 Project Support

19.1 Improvements to working methods

There were no contributions under this agenda item.

19.2 MCC Status Report

TD SP-160346 (REPORT) Support Team report. (Source: MCC).
Abstract: Report of MCC activities.
Changes of personnel:
- SA WG3 subgroup on Lawful Interception has traditionally drawn its secretary from amongst its delegates. But due to retirement of the long-standing volunteer, SA WG3-LI asked the PCG for support from MCC. This was granted for a provisional period of one year (though SA WG3-LI was urged to continue to seek a volunteer from amongst its ranks).
- MCC is pleased to welcome **Carmine (Lino) Rizzo** to the part-time position of project manager for SA WG3-LI.

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- Lino is an experienced member of the ETSI Secretariat and supports a number of regular ETSI groups, including that on Lawful Interception, so is familiar with the type of work undertaken by the group.

Exciting statistics ! (See slides).

Other stuff:

Marketing matters…

- 13 News stories in last 6 months
- New web banner
- 5G Naming discussions at PCG

Plans for the next six months:

- **Stories**
  - Release 13 - all done
  - Release 14 progress updates
  - 5G studies and opinions shared by the 3GPP leadership
  - News on key features; IoT, LAA, V2X, eMBMS, Mission critical data, etc.
  - Priorities for Release 15…
- **5G naming**
- **Charity run at SA2#116, Vienna - July**
  - T-shirts in exchange for contributions to the Gustave Roussy cancer charity.

Planned Conferences:

Critical Communications World	31/05/2016, Amsterdam	Dave Chater Lea, Erik Guttman, Stand Planned
5G World Summit	28/06/2016, London	Erik Guttman, Stand Planned
Broadband World Forum	18/10/2016, London	Erik Guttman, Satoshi Nagata , Stand Planned
Africa.com	15/11/2016, Cape Town	Georg Mayer, Adrian Scrase , Stand Planned

Meeting badges:

Reminder …

- Meeting hosts are no longer systematically printing meeting badges. Delegates must print their own. However, hosts will continue to provide a small number of badge holders, but delegates are urged to retain and re-use holders from previous meetings.
- Hotels are increasingly conscious of security issues, and wearing your badge actively helps identify a 3GPP delegate as "friend" rather than potential "foe". Please help them to help us keep you safe by always wearing your 3GPP meeting badge.

Check-in at meetings:

- The self-declaration of presence has been successfully trialled at meetings during the first half of 2016 and will very soon become the method of confirming presence.
- Remember, the instructions are in the email you were sent acknowledging your registration.
- The systematic provision of paper sign-in sheets will soon be discontinued.

Over-Working Groups ?

- The TSGs and their WGs are respectfully reminded of the PCG's strong recommendation on working hours, particularly in some Working Groups with a high - and increasing - work load:
  - PCG strongly recommends that 3GPP leadership organize meetings such that:
    - they are no longer than 5 consecutive days in duration;
    - all meeting participants (including chairmen, individual delegates, MCC, etc.) have a minimum of 11 hours break between the close of one meeting day and the start of the next.
  - It is further recommended that working group leadership determine the agenda and organization of work well in advance of meetings. This provides an opportunity for delegations to organize their resources to take advantage of gaps in the agenda so that individuals may be absent from some official sessions.

Beware of exploding delegates:

- With growing interest in 5G matters, a trend has been identified for some groups, particularly in RAN, to attract more and more delegates. While on the face of it this is excellent news, and bodes well for the future of 3GPP and the popularity of its technologies, the ever increasing head count poses a real problem for meeting hosts. The cost of providing meeting facilities for 600 people dividing into five parallel subgroups is very substantially more than that for 350 people dividing into three parallel subgroups.

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- For example, EF3 hosting commitments for RAN WGs in 2016 - 2017 were originally budgeted at 160,000 € in hotels, but if these have to be moved to larger capacity conference centres, the cost is likely to escalate to 450,000 € (disregarding the potential cancellation fees to the original venues).
- **There is a real danger of it being physically or financially impossible to accommodate meetings of some groups in the near future.**

Solutions …

- Cap the number of delegates who can register for these popular meetings?
  - Place a limit on the number of delegates from any one organization?
  - Impose a per-delegate attendance fee?
  - …?
- None of these seems entirely suitable, so the only solution appears to be to accept the extra headcount with concomitant costs and to
  - Seek further financial support from the existing members of the several "Friends of 3GPP" consortia;
  - Recruit more members into those "Friends" consortia;
  - Request offers to host from organizations which are not members of any "Friends" consortium;
  - Seek centralized funding from the OPs with corresponding increase in budget.
- Whatever we do, the problem is not trivial and must be addressed urgently.
  We need ideas!

Collocation

- Even without the problem of more delegates and more break-out rooms, the benefits of holding collocated meetings have been brought into question.
- The costs and logistics are exacerbated by these trends, and it must be asked whether the advantages of collocating meetings of several groups - particularly the very populous RAN groups - are now outweighed by the disadvantages. It seems that the systematic practice of collocating groups on a regular basis might need to be re-examined.

Questions and comments:

LATE DOC: Rx 13/06, 10:55.
This was presented to both TSG SA and TSG RAN at the joint session on Wednesday evening.
The TSG SA Chairman asked Members to take note of the Resource Funding issues raised in this report.
The MCC Director was thanked for this report, which was then noted.

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20 Future meeting schedule

Future meetings are planned as follows (see http://webapp.etsi.org/MeetingCalendar/QueryForm.asp):

Meeting	dates	Venue	Host
August - September 2016			
GERAN#71	22 - 26 August 2016	**CANCELLED**	
RAN#73	19 - 22 September 2016	New Orleans, USA	NAF3
CT#73	19 - 20 September 2016	New Orleans, USA	NAF3
SA#73	21 - 23 September 2016	New Orleans, USA	NAF3
December 2016			
RAN#74	05 - 08 December 2016	Vienna, Austria	EF3
CT#74	05 - 06 December 2016	Vienna, Austria	EF3
SA#74	07 - 09 December 2016	Vienna, Austria	EF3
March 2017			
RAN#75	06 - 09 March 2016	Dubrovnik, Croatia	EF3
CT#75	06 - 07 March 2016	Dubrovnik, Croatia	EF3
SA#75	08 - 10 March 2016	Dubrovnik, Croatia	EF3
June 2017			
RAN#76	05 - 08 June 2017	TBC USA	NAF3
CT#76	05 - 06 June 2017	TBC USA	NAF3
SA#76	07 - 09 June 2017	TBC USA	NAF3
September 2017			
RAN#77	11 - 14 September 2017	TBC Japan	TBD
CT#77	11 - 12 September 2017	TBC Japan	TBD
SA#77	13 - 15 September 2017	TBC Japan	TBD
December 2017			
RAN#78	18 - 21 December 2017	Lisbon, Portugal	EF3
CT#78	18 - 19 December 2017	Lisbon, Portugal	EF3
SA#78	20 - 22 December 2017	Lisbon, Portugal	EF3

21 Any Other Business

Joint session with TSG RAN on NextGen / New Radio issues

A summary of the joint session discussions can be found in the TSG RAN#72 meeting report.

A Summary of agreements from the joint session were provided in TD SP-160460 (RP-161269).

TD SP-160460 (OTHER) Summary of agreements from the joint session between TSG SA and TSG RAN. (Source: Joint Session).
Abstract: Summary of agreements from the joint session between TSG SA and TSG RAN.
Same as RP-161269.
Tasks:

- SA WG2 should deliver options 2, 4, 5 and 7 in line with the time plan in RP-161253*
  - By March 17 we should understand if SA WG2 can deliver option 2,4,5 and 7
- RAN WG2/RAN WG3 should continue to work on option 3 (together with the other options)
  - Table in slide 10 of RP-161266 is confirmed (removes options 6 and 8)
- RAN WG1/ RAN WG2/ RAN WG3/ RAN WG4/SA WG2 to ensure availability of forward compatibility and report to TSG RAN#75
  - Forward compatibility between NSA and SA
  - Forward compatibility between scenarios
- In March 17 - once the forward compatibility task is reviewed - we will assess what options will be specified
  - Considering device complexity, migration, etc.

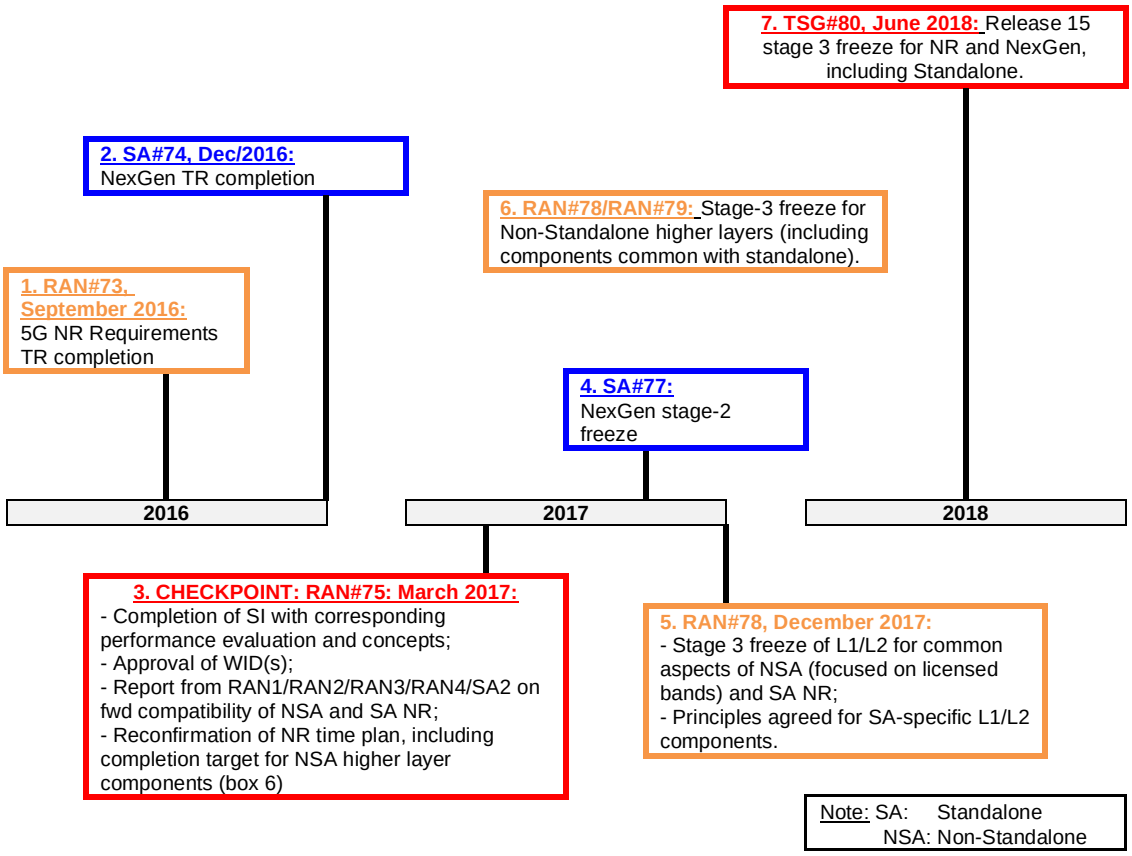
*Options describe from RP-161266 (TD SP-160455)

Discussion and conclusion:

This was noted.

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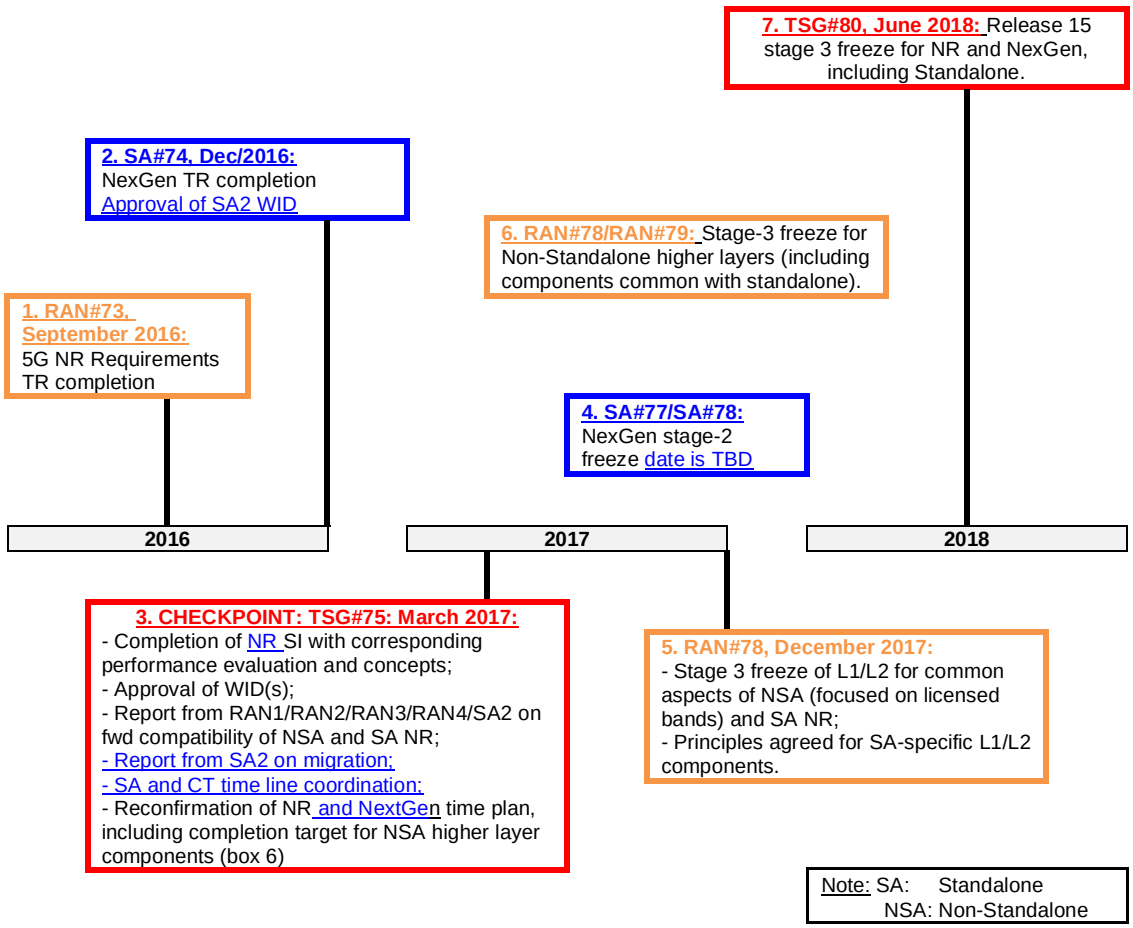
TD SP-160461 (Other) Combined NR / NextGen time plan. (Source: Nokia Networks).
Abstract: Proposed timeline for NR and NextGen.



Discussion and conclusion:

Huawei commented that for the item 4 Stage 2 freeze, there was no discussion in the joint session and asked if this had been agreed in TSG RAN. Nokia clarified that the red boxes were agreed and the blue boxes reflect the stage 2 deadlines needed to achieve the RAN timescales. There had been a clear wish to have the NextGen work completed in good time at the joint session. It was commented that the Stage 2 freeze is currently December 2017, rather than September 2017 as shown here. Ericsson commented that the development of the protocols will be a significant task for CT WGs and 9 months should be provided after Stage 2 work to do this. Nokia commented that completion of Stage 2 work by September 2017 would enable timely completion of the Stage 3 work with high quality specifications. Telecom Italia asked whether there could be an earlier completion of some work. Nokia Networks replied that there is a check point in March 2017 where the possibility of an 'early drop' can be determined, which could affect the timescales from that point. The TSG CT Chairman commented that they will need stable Stage 2 at least 6 months before the Stage 3 freeze and had concerns that the Stage 2 work will continue to be modified after the September deadline due to the increased pressure on Stage 2 work to complete earlier. The SA WG2 Chairman commented that tightening the deadline for Stage 2 work can lead to lower quality specification work and this should be considered when defining deadlines. China Mobile commented that they did not think that the Stage 2 NextGen work can be satisfactorily completed by September 2017 without fragmentation of the functional content. Deutsche Telekom commented that this the feasibility of September 2017 completion for NextGen needs to be considered. The SA WG2 Chairman commented that it had been agreed at the joint session that TSG SA will identify the status of work in March 2017 and this should be indicated in the plan. There was some discussion on this and it was generally agreed that the plan will need to be refined depending on the determination of whether SA WG2 can achieve completion of the NextGen work by September 2017 which should be also reviewed in March 2017.

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This was revised to update the figure as above in TD SP-160465 which was endorsed by TSG SA.

TD SP-160454 (DISCUSSION) Work plan proposal for NextGen in SA WG2. (Source: NextGen Rapporteurs (Tao Sun, Devaki, Chandramouli)) (revision of TD SP-160453).

Abstract: Proposal: At least one SA WG2 stream 'for most of the meeting week' needs to be dedicated to NextGen SI and possible subsequent normative work for the 5G architecture This should not hinder progress on EPC evolution The specific arrangements are left to the discretion of SA WG2 leadership. TSG SA Plenary #72 tasks SA WG2 to prioritize the key issues to be addressed necessary for the foundation of the NextGen Arch, target for normative specification in R15.

Discussion and conclusion:

The SA WG2 Chairman clarified that the NextGen work in SA WG2 so far has been running almost continuously but there were still a large number of documents left for e-mail approval due to lack of time to consider all the revisions in the meeting. The next meeting is likely to be almost continuously considering NextGen and Rapporteurs have been asked to try to divide the work into topics in order to better schedule the work in parallel. Allot Communications commented that there is an issue with having smaller delegation participation in the work when there are parallel sessions in SA WG2. China Mobile commented that as SA WG2 is an important WG in the 5G work, so if they are unable to deliver the specifications in time this will seriously impact the project. The SA WG2 Chairman clarified that the time allocation provides minimum time provided and there is flexibility to give time to topics which require it and also that the parallel scheduling issues need to be addressed as well as the time unit allocation. Nokia commented that there needs to be a readiness for hosting the parallel streams for SA WG2 meetings. The SA WG2 Chairman confirmed that this has been managed so far for the forthcoming meetings. This was then noted.

---

22 Close of Meeting

The TSG SA Chairman, **Mr. E. Guttman**, thanked the hosts (**TTA**) for providing the meeting facilities, the Vice Chairmen and Secretary for support during the meeting and the delegates for their co-operation and hard work during the meeting. He then closed the meeting.

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Action points at TSG SA meeting #72:

None

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Annex A: Co-ordinates of TSG and WG Officials

A.1 TSG SA Officials

Position	Name	Company	Telephone	(Mobile Tel.)
TSG SA Officials:				
Chairman	Erik Guttman	Samsung Electronics Co., Ltd	+49 7263 911 484	+49 157 8458 9355
Vice Chairman	Mr. Christian Toche	HuaWei Technologies Co., Ltd	+33 1 72 58 55 69	+33 6 75 94 36 94
Vice Chairman	Mr. Daisuke Yokota	SoftBank Corp.	+81 3 6889 0708	
Vice Chairman	Mr. Gregory Schumacher	Sprint Corporation	+1 571 426 7940	+1 571 426 7940
Secretary	Maurice Pope	3GPP Support Team	+33 4 92 94 42 59	+33 6 07 59 08 49
TSG SA WG1 Officials:				
Chairman	Toon Norp	KPN N.V.	+31 15 285 72 08	
Vice Chairman	Ki-dong Lee	LG Electronics Inc.	+18588056648	
Vice Chairman	Mark Younge	T-Mobile USA Inc.	+1 760 672 0987	
Secretary	Alain Sultan	3GPP Support Team	+33 4 92 94 42 71	+33 6 74 40 83 70
TSG SA WG2 Officials:				
Chairman	Frank Mademann	HuaWei Technologies Co., Ltd	+49 30 720 121 105	+49 172 6381644
Vice Chairman	Puneet Jain	Intel	+1-503-712-6214	
Vice Chairman	Krisztian Kiss	Apple (UK) Limited		+16503915969
Secretary	Maurice Pope	3GPP Support Team	+33 4 92 94 42 59	+33 6 07 59 08 49
TSG SA WG3 Officials:				
Chairman	Anand Prasad	NEC Corporation	+81-44-455-8491	
Vice Chairman	Adrian Escott	Qualcomm Incorporated	+44 1252 363209	
Vice Chairman	Alf Zugenmaier	NTT DOCOMO INC.	+49 89 1265 3753	+49 152 5475 1589
Secretary	Mirko Cano Soveri	3GPP Support Team	+33 4 92 94 42 97	+33 6 73 99 62 94
TSG SA WG4 Officials:				
Chairman	Kari Jarvinen	Nokia	+3587180 35854	+358 50 555 0999
Vice Chairman	Frederic Gabin	Ericsson LM	+33 6 78 44 85 75	+33 6 78 44 85 75
Vice Chairman	Nikolai Leung	Qualcomm Incorporated	+18588453333	+17033468351
Secretary	Paolo Usai	3GPP Support Team	+33 4 92 94 42 36	+33 6 74 40 83 73
TSG SA WG5 Officials:				
Chairman	Thomas Tovinger	Ericsson LM	+46 10 712 3010	+46 709 87 3010
Vice Chairman	Jean Michel Cornily	ORANGE SA	+33 2 96 05 34 32	
Vice Chairman	Christian Toche	HuaWei Technologies Co., Ltd	+86 216 8644 808-23124	+86 136 8309 3420
Secretary	Mirko Cano Soveri	3GPP Support Team	+33 4 92 94 42 97	+33 6 73 99 62 94
TSG SA WG6 Officials:				
Chairman	Yannick Lair	LG Electronics Inc.	+33 1 49895716	+33 6 98 76 93 93
Vice Chairman	David Chater-Lea	Motorola Solutions UK Ltd.	+44 1256 484 311	-
Vice Chairman	Suresh Chitturi	Samsung Electronics Co., Ltd	+91-9591700224	-
Secretary	Bernt Mattsson	3GPP Support Team	+33 4 92 94 42 18	+33 6 87 69 12 50

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A.2 TSG CT Officials

Position	Name	Company	Telephone	(Mobile Tel.)
TSG CT Officials:				
Chairman	Mr. Georg Mayer	HuaWei Technologies Co., Ltd	+43 699 1900 5758	+43 699 1900 5758
Vice Chairman	Mr. Nigel Berry	Alcatel-Lucent	+44 1793775019	+44 7880 786684
Vice Chairman	Mr. Martin Dolly	AT&T	+1 609 903 3360	
Vice Chairman	Mr. Atsushi Minokuchi	NTT DOCOMO INC.	+81 468 40 3333	
Secretary	Kimmo Kymalainen	3GPP Support Team	+33 4 92 94 42 38	+33 6 85 76 89 74
TSG CT WG1 Officials:				
Chairman	Atle Monrad	Ericsson LM	+47 454 10 665	+47 454 10 665
Vice Chairman	Peter Leis	Nokia Networks		+49 160 90526212
Vice Chairman	Chen-ho Chin	Intel Corporation (UK) Ltd		+32477413371
Secretary	Frédéric Firmin	3GPP Support Team	+33 4 92 94 43 09	+33 6 85 76 89 73
TSG CT WG2 (THERE IS NO CT WG2 AT PRESENT)				
TSG CT WG3 Officials:				
Chairman	Weihua Qiao	HuaWei Technologies Co., Ltd	+8613691091311	+8613691091311
Vice Chairman	Kenjiro Arai	NTT	+81422593518	
Vice Chairman	Susana Fernandez	Telefon AB LM Ericsson	+34646006865	
Secretary	Saurav Arora	3GPP Support Team	+33 4 92 94 42 00	
TSG CT WG4 Officials:				
Chairman	Nigel Berry	Alcatel-Lucent Telecom Ltd	+44 1793775019	+44 7880 786684
Vice Chairman	Yvette Koza	Deutsche Telekom AG	+43 1795856176	+43 6763456176
Vice Chairman	Lionel Morand	France Telecom	+33 14529 6257	
Secretary	Kimmo Kymalainen	3GPP Support Team	+33 4 92 94 42 38	+33 6 85 76 89 74
TSG CT WG5 Officials (CT WG5 HAS BEEN CLOSED)				
TSG CT WG6 Officials:				
Chairman	Paul Jolivet	LG Electronics Mobilecomm	+33 1 41 59 93 37	
Vice Chairman	Michele Berionne	Qualcomm UK Ltd	+18585983642	
Vice Chairman	Heiko Kruse	Morpho Cards GmbH	+49 52 51 88 91 517	+49 175 4383519
Secretary	Xavier Piednoir	3GPP Support Team	+33 4 92 94 43 23	+33 6 74 40 83 68

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A.3 TSG RAN Officials

Position	Name	Company	Telephone	(Mobile Tel.)
TSG RAN Officials:				
Chairman	Dino Flore	Qualcomm Incorporated	+39 0649218128	+39 3338948951
Vice Chairman	Takaharu Nakamura	Fujitsu Limited	+81-44 874 9064	
Vice Chairman	Sharat Chander	AT&T	+1 (312) 364-6189	
Vice Chairman	Giovanni Romano	Telecom Italia	+39 011 228 7069	
Secretary	Joern Krause	3GPP Support Team	+33 4 92 94 42 61	+33 6 07 59 08 45
TSG RAN WG1 Officials:				
Chairman	Satoshi Nagata	NTT DOCOMO INC.	+81 468 40 3333	
Vice Chairman	Matthew Baker	Alcatel-Lucent	+44 7595 968709	
Vice Chairman	Wanshi Chen	Qualcomm Incorporated		+18583663080
Secretary	Patrick Merias	3GPP Support Team	+33 4 92 94 43 22	+33 6 07 59 08 47
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TSG RAN WG3 Officials:				
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Secretary	Juha Korhonen	3GPP Support Team	+33 4 92 94 43 52	+33 6 74 40 83 78
TSG RAN WG4 Officials:				
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Vice Chairman	Dai Xizeng	HuaWei Technologies Co., Ltd		
Vice Chairman	Hiromasa Umeda	NTT DOCOMO INC.	+ 81 46 840 3190	
Secretary	Issam Toufik	3GPP Support Team	+33 4 92 94 49 63	+33 6 74 40 83 74
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Vice Chairman	Pradeep Gowda	Qualcomm Incorporated	+1858-845-7131	
Vice Chairman	Xiaozhong Chen	CATT		+8613911652018
Secretary	Ingbert Sigovich	3GPP Support Team	+33 4 92 94 43 24	+33 6 74 40 83 75
TSG RAN WG6 Officials:				
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Secretary	Paolo Usai	3GPP Support Team	+33 4 92 94 42 36	+33 6 74 40 83 73
TSG RAN RAN AHG-ITU Officials:				
Chairman	Giovanni Romano	Telecom Italia S.p.A.	+39 011 228 7069	
Secretary	Joern Krause	3GPP Support Team	+33 4 92 94 42 61	+33 6 07 59 08 45

A.4 TSG GERAN Officials

GERAN has now closed

Position	Name	Company	Telephone	(Mobile Tel.)
TSG GERAN Officials:				
Chairman	Olof Liberg	Ericsson	+46107146252	
Vice Chairman	Xinhui Wang	ZTE Corporation	+086-021-68896824	
Vice Chairman	Davide Sorbara	Telecom Italia S.p.A	+ 39 011 228 5446	+ 39 335 766 9680
Vice Chairman	Zhixi Wang	HuaWei Technologies Co., Ltd	+86(0)21 28920604	+86 13386111638
Secretary	Paolo Usai	3GPP Support Team	+33 4 92 94 42 36	+33 6 74 40 83 73
TSG GERAN WG1 Officials:				
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Vice Chairman	**Vacancy**			
Vice Chairman	**Vacancy**			
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Vice Chairman	**Vacancy**			
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Annex B: List of documents

TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160235	Draft agenda for TSG SA meeting #72	TSG SA Chairman	2	Approval	Agenda	Approved
SP-160236	Draft Report of TSG SA meeting #71	TSG SA Secretary	4.1	Approval	REPORT	Approved
SP-160237	LS from TSG RAN: DRAFT LTI on Work towards revision 1 of Recommendations ITU-R M.2070 and M.2071 - Questions for clarification within 3GPP specifications	TSG RAN (RP-160691)	4.2	Action	LS In	Endorsed
SP-160238	LS from GSMA: GSMA IoT Security Guidelines	GSMA (IoTSG_129r3)	6	Action	LS In	Noted
SP-160239	LS from ETSI NGP: Liaison about ETSI ISG NGP (Next Generation protocols)	ETSI NGP (NGP(16)000037)	6	Information	LS In	Noted
SP-160240	LS from ETSI NTECH: LS OUT to SA WG5 and SA WG2 on GANA instantiation in the Core and Backhaul network parts of the 3GPP Architecture	ETSI NTECH (NTECH(16)14_019 r1)	6	Information	LS In	Noted
SP-160241	LS fromITU-R: Invitation for submission of proposals for candidate radio interface technologies for the terrestrial components of the radio interface(s) for IMT-2020 and invitation to participate in their subsequent evaluation	ITU-R (R00-SG05-CIR-0059)	6	Information	LS In	Noted
SP-160242	LS from SA WG5: LS reply on progress of the work on Diameter Base Protocol Update	SA WG5 (S5-162219)	6	Information	LS In	Noted
SP-160243	LS from GSMA: Liaison statement regarding GSMA Wi-Fi PRD TS.22 Version 5 Publication	GSMA (TSGWIF_334)	6	Information	LS In	Noted
SP-160244	LS from WBA: Liaison Statement Software Defined Networking (SDN) and Network Function Virtualisation (NFV) for Wi-Fi networks	WBA (WBA LS on SDN & NFV project status vF 3GPP SA)	6	Information	LS In	Noted
SP-160245	LS from ETSI TC RT: Updated User requirements Specification on Future Railway Mobile Communication System	ETSI TC RT (RT(16)061020r1)	6	Information	LS In	Noted
SP-160246	LS from TSG RAN: Draft LTI on Revision of Report ITU-R M.2291	TSG RAN (RP-160693)	4.2	Action	LS In	Endorsed
SP-160247	LS from ONF: Publication of ONF TR-526 'Applying SDN Architecture to 5G Slicing'	ONF (5Gslicing_liaison_3GPP)	6	Information	LS In	Noted
SP-160248	LS from ITU-T Study Group 13: LS on 'Report on standard gap analysis', from ITU-T Focus Group on IMT-2020 and on extension of lifetime of Focus Group IMT-2020: Request for feedback	ITU-T Study Group 13 (COM 13 - LS 142)	6	Information	LS In	Replied to
SP-160249	LS from SA WG5: Reply LS to ETSI ISG NFV on guidelines for cooperation between SA WG5 and ETSI ISG NFV	SA WG5 (S5-162246)	14.23	Information	LS In	Noted

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160250	LS from PCG: Appreciation for the completion of 3GPP Rel-13 Specifications related to the LTE for Public Safety	PCG (PCG36_23_Letter_from_MSIP)	6	Information	LS In	Noted
SP-160251	[DRAFT] Reply LS on LS/o on 'Report on standard gap analysis', from ITU-T Focus Group on IMT-2020 and on extension of lifetime of Focus Group IMT-2020: Request for feedback	TSG SA Chairman	6	Approval	LS OUT	Revised
SP-160252	Release 14 Planning at TSG SA#72	TSG SA Chairman, TSG SA WG2 Chairman	5	Discussion	DISCUSSION	Noted
SP-160253	Specification Withdrawal	TSG SA Chairman	5	Discussion	DISCUSSION	Noted
SP-160254	PCG#36 Actions for TSG SA	TSG SA Chairman	4	Information	REPORT	Noted
SP-160255	TSG SA Report to TSG RAN - Questions for Advice and Requests	TSG SA Chairman	4	Information	REPORT	Noted
SP-160256	SA WG4 Status Report at TSG SA#72	SA WG4 Chairman	7.4	Presentation	REPORT	Noted
SP-160257	CRs to TS 26.114, TS 26.442, TS 26.443, TS 26.444, TS 26.445, TS 26.447 and TR 26.952 on 'Codec for Enhanced Voice Services (EVS_codec)' (Release 12 & Release 13)	SA WG4	12	Approval	CR pack	Approved
SP-160258	CRs to TS 26.346 on 'MBMS Improvements (MI)' (Release 12 & Release 13)	SA WG4	12	Approval	CR pack	Approved
SP-160259	CRs to TS 26.114, TS 26.223, TS 26.234 and TS 26.346 on '(IETF) High Efficiency Video Coding (HEVC-SA4IETF)' (Release 12 & Release 13)	SA WG4	12	Approval	CR pack	Approved
SP-160260	CRs to TS 26.131 and TS 26.132 on 'Enhanced LTE UE delay test methods and requirements (E_LTE_UED)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved
SP-160261	CRs to TS 26.103 and 26.454 on 'Support of EVS in 3G Circuit-Switched Networks (EVSoCS)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved
SP-160262	CR to TS 26.247 on 'eDASH: $Time$ needs to go (eDASH)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved
SP-160263	CRs to TS 26.114 on 'QoS End-to-end Multimedia Telephony Service for IMS (MTSI) extensions (Stage 3) (QOSE2EMTSI)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved
SP-160264	CRs to TS 26.114 on 'MTSI Extension on Multi-stream Multiparty Conferencing Media Handling (MMCMH)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved
SP-160265	CRs to TS 26.179 and TR 26.879 on 'Mission Critical Push-to-Talk over LTE (MCPTT)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved
SP-160266	CR to TS 26.114 on 'Correction to Speech Media Flow Information (TEI13)' (Release 13)	SA WG4	13D	Approval	CR pack	Approved

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160267	CR to TS 26.852 on 'MBMS URL forms (TRAPI)' (Release 14)	SA WG4	14.19	Approval	CR pack	Approved
SP-160268	CR to TS 26.223 on 'Introduction of Multi-Stream MTSI (MS-MTSI) Client Capability for TP UEs (Release 14) (IMS_TELEP_EXT)' (Release 14)	SA WG4	14.21	Approval	CR pack	Approved
SP-160269	CR to TS 26.114 on 'RTCP Bandwidth Recommendations (TEI14)' (Release 14)	SA WG4	14.24	Approval	CR pack	Approved
SP-160270	CR to TS 26.916 on 'Alignment to approved EVSoCS Specification (FS_SETA_S4)' (Release 14)	SA WG4	15.1.12	Approval	CR pack	Approved
SP-160271	New Work Item on 'Extension of UE delay test methods and requirements' (EXT_UED)	SA WG4	16	Approval	WID new	Approved
SP-160272	New Work Item on 'Enhancements to Multi-stream Multiparty Conferencing Media Handling' (MMCMH_Enh)	SA WG4	16	Approval	WID new	Approved
SP-160273	New Study Item on 'User Services Enhancements in 3GPP for TV Services' (FS_USE_3GPP_4_TV)	SA WG4	17	Approval	SID new	Approved
SP-160274	New Study Item on 'MBMS usage and codecs for MCPTT call and MC Video Service' (FS_MCP_V)	SA WG4	17	Approval	SID new	Revised
SP-160275	New Study Item on 'MBMS Extensions for Provisioning and Content Ingestion' (FS_xMBMS)	SA WG4	17	Approval	SID new	Revised
SP-160276	LS from ITU-T SG13: LS on 'Report on standard gap analysis', from ITU-T Focus Group on IMT-2020 and on extension of lifetime of Focus Group IMT-2020	ITU-T SG13 (SG13-LS139)	6	Information	LS In	Noted
SP-160277	LS from SA WG1: Response LS on Future Railway Communication System (FRMCS)	SA WG1 (S1-161305)	6	Information	LS In	Noted
SP-160278	LS from SA WG3: LS on Progress on Security for LWIP	SA WG3 (S3-160831)	6	Action	LS In	Replied to
SP-160279	DRAFT LTI on Work towards revision 1 of Recommendations ITU-R M.2070 and M.2071 - Questions for clarification within 3GPP specifications	TSG SA	4.2	Approval	LS OUT	Approved
SP-160280	Draft LTI on Revision of Report ITU-R M.2291	TSG SA	4.2	Approval	LS OUT	Approved
SP-160281	3GPP Marketing and New Markets	TSG SA Chairman	4	Information	REPORT	Noted
SP-160282	TR Skeleton of Study on Energy Efficiency Aspects of 3GPP Standards	Rapporteur (ORANGE)	15.2.0	Information	draft TR	withdrawn
SP-160283	Status report from SA WG2 to TSG SA#72	SA WG2 Chairman	7.2	Presentation	REPORT	Noted
SP-160284	2 CRs to 23.204: SMSMI (Rel-12, Rel-13)	SA WG2	12	Approval	CR pack	Approved
SP-160285	3 CRs to 23.402, 23.216: TEI12 (Rel-12, Rel-13)	SA WG2	12	Approval	CR pack	Approved
SP-160286	24 CRs to 23.060, 23.401: CIoT (Rel-13)	SA WG2	13B	Approval	CR pack	Partially approved
SP-160287	10 CRs to 23.203, 23.272, 23.682: CIoT (Rel-13)	SA WG2	13B	Approval	CR pack	Partially approved
SP-160288	1 CR to 23.251: CSPS_Coord_GERAN (Rel-13)	SA WG2	13B	Approval	CR pack	Approved

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160289	6 CRs to 23.272, 23.682, 23.060, 23.401: eDRX (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160290	1 CR to 23.303: eProSe-Ext-SA2 (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160291	2 CRs to 23.203: FMSS (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160292	1 CR to 23.402: LTE_dualC_ext-Core (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160293	2 CRs to 23.682: MONTE (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160294	6 CRs to 23.161, 23.203: NBIFOM (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160295	2 CRs to 23.060, 23.682: NonIP_GPRS (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160296	1 CR to 23.002: ProSe (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160297	1 CR to 23.228: SEW1 (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160298	9 CRs to 23.402, 23.060, 23.401, 23.203, 23.228: TEI13 (Rel-13)	SA WG2	13B	Approval	CR pack	Approved
SP-160299	4 CRs to 23.167, 23.401: EIEI (Rel-14)	SA WG2	14.16	Approval	CR pack	Approved
SP-160300	3 CRs to 23.402: EWE (Rel-14)	SA WG2	14.17	Approval	CR pack	Approved
SP-160301	1 CR to 23.402: TEI14 (Rel-14)	SA WG2	14.24	Approval	CR pack	Approved
SP-160302	9 CRs to 23.167, 23.237, 23.402: (New WI) SEW2 (Rel-14)	SA WG2	16	Approval	CR pack	Approved
SP-160303	2 CRs to 23.060, 23.401: (New WI) eDECOR (Rel-14)	SA WG2	16	Approval	CR pack	Approved
SP-160304	3 CRs to 23.167, 23.203, 23.228: (New WI) V8 (Rel-14)	SA WG2	16	Approval	CR pack	Approved
SP-160305	Updated work item on Architecture enhancements for cellular Internet of Things (Cellular IoT)	SA WG2	13B	Approval	WID revised	Approved
SP-160306	Updated Feasibility Study Service Domain Centralization	SA WG2	15.2.12	Approval	SID revised	Approved
SP-160307	New WID on the Support of Emergency services over WLAN - phase 2	SA WG2	16	Approval	WID new	Revised
SP-160308	New WID on improvement of awareness of user location change	SA WG2	16	Approval	WID new	Approved
SP-160309	WID on Sponsored data connectivity improvements	SA WG2	16	Approval	WID new	Approved
SP-160310	New WID on Enhancements of Dedicated Core Networks selection mechanism	SA WG2	16	Approval	WID new	Approved
SP-160311	New WID on enhancement in the network capability exposure of group-based services	SA WG2	16	Approval	WID new	Approved
SP-160312	WID on Robust call setup for VoLTE subscriber in LTE	SA WG2	16	Approval	WID new	Approved
SP-160313	New WID on T-ADS supporting WiFi access	SA WG2	16	Approval	WID new	Revised
SP-160314	New WID eFMSS	SA WG2	16	Approval	WID new	Approved
SP-160315	New WID on S8 Home Routing Architecture for VoLTE	SA WG2	16	Approval	WID new	Approved

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160316	New WID on Control and User Plane Separation of EPC nodes (CUPS)	SA WG2	16	Approval	WID new	Approved
SP-160317	New WID on architecture enhancements for LTE support of V2X services	SA WG2	16	Approval	WID new	Approved
SP-160318	New Study on PS Data Off	SA WG2	17	Approval	SID new	Approved
SP-160319	New Study item on extended architecture support for Cellular Internet of Things	SA WG2	17	Approval	SID new	Revised
SP-160320	New Feasibility study on Complementary Features for Voice services over WLAN	SA WG2	17	Approval	SID new	Revised
SP-160321	TR 23.785: Study on architecture enhancements for LTE support of V2X services (Release 14), Version 1.0.0	SA WG2	15.2.17	Information	draft TR	Noted
SP-160322	TR 23.710: 'Awareness of User Location Change (Release 14)', Version 1.0.0	SA WG2	15.2.9	Approval	draft TR	Approved
SP-160323	TR 23.711: Enhancements of Dedicated Core Networks selection mechanism; (Release 14), Version 1.0.0	SA WG2	15.2.10	Information	draft TR	Noted
SP-160324	TR 23.719: 'Service Domain Centralization' (Release 14), Version 1.0.0	SA WG2	15.2.12	Information	draft TR	Noted
SP-160325	TR 23.749: Study on S8 Home Routing Architecture for VoLTE (Release 14), Version 2.0.0	SA WG2	15.2.6	Approval	draft TR	Approved
SP-160326	TR 23.771: 'Study on system impacts of IMS emergency sessions over WLAN' Version 2.0.0.	SA WG2	13B	Approval	draft TR	Approved
SP-160327	TR 23.721: 'Study on Sponsored Data Connectivity Improvements ' Version 1.0.0.	SA WG2	15.2.13	Approval	draft TR	Approved
SP-160328	TR 23.773: Study on group based enhancements in the network capability exposure functions (Release 14), Version 1.0.0	SA WG2	15.2.14	Approval	draft TR	Approved
SP-160329	TR 23.750: 'Study for robust call setup for VoLTE subscriber in LTE' (Release 14), Version 1.0.0	SA WG2	15.2.15	Approval	draft TR	Approved
SP-160330	TR 23.714: 'Study on control and user plane separation of EPC nodes' (Release 14), Version 1.0.0	SA WG2	15.2.11	Approval	draft TR	Approved
SP-160331	TSG GERAN#70 Status report	Ericsson LM	7.9	Presentation	REPORT	Noted
SP-160332	Introduction of Audio cut-in requirements in MCPTT	HOME OFFICE	14.9	Approval	CR	Withdrawn
SP-160333	TR Skeleton of Study on Energy Efficiency Aspects of 3GPP Standards	ORANGE	15.2.0	Information	draft TR	Revised
SP-160334	The Requirements for Energy Efficiency Aspects of 3GPP Standards	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160335	The Definition of Energy Efficiency Key Performance Indicator (EE KPI)	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised
SP-160336	The Energy Efficiency Control Principles	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised
SP-160337	Modification proposal on Study on Enhancement of 3GPP support for V2X services (FS_eV2X)	LG Electronics Inc.	17	Approval	SID new	Noted
SP-160338	SA WG6 status report to TSG SA#72	SA WG6 Chairman	7.6	Presentation	REPORT	Noted
SP-160339	Rel-13 CRs to TS 23.179 for MCPTT	SA WG6	13F	Approval	CR pack	Approved
SP-160340	New study item on mission critical system migration and interconnect between MCPTT systems	SA WG6	17	Approval	SID new	Approved
SP-160341	New study item on Mission Critical Communication Interworking between LTE and non-LTE Systems	SA WG6	17	Approval	SID new	Approved
SP-160342	New work item on common functional architecture to support mission critical services	SA WG6	16	Approval	WID new	Revised
SP-160343	New work item on enhancements for Mission Critical Push To Talk	SA WG6	16	Approval	WID new	Revised
SP-160344	New work item on functional architecture and information flows for Mission Critical Video	SA WG6	16	Approval	WID new	Revised
SP-160345	New work item on functional architecture and information flows for Mission Critical Data	SA WG6	16	Approval	WID new	Revised
SP-160346	Support Team report	MCC	19.2	Information	REPORT	Noted
SP-160347	LS from TSG GERAN: LS on Corrections of 3GPP vocabulary due to renaming to EC-GSM-IoT	TSG GERAN (GP-160409)	13A	Action	LS In	Noted
SP-160348	LS from SA WG3: Reply LS on Next Generation Security Requirements for RAN	SA WG3 (S3-160833)	15.2.24	Information	LS In	Noted
SP-160349	LS from SA WG5: Reply to LS from ETSI NTECH on Autonomic Networking applied to 3GPP Core and Backhaul parts	SA WG5 (S5-163233)	6	Information	LS In	Noted
SP-160350	Discussion on NextGen Work Planning to support parallel NSA-NR and SA-NR Development	ZTE Corporation	5	Discussion	DISCUSSION	Noted
SP-160351	SA WG1 Report to TSG SA#72	SA WG1 Chairman	7.1	Presentation	REPORT	Noted
SP-160352	TEI13 Agreed CRs	SA WG1	13G	Approval	CR pack	Approved
SP-160353	SEES Agreed CRs	SA WG1	13A	Approval	CR pack	Approved
SP-160354	USOS Agreed CRs	SA WG1	14.14	Approval	CR pack	Approved
SP-160355	TEI14 Agreed CRs	SA WG1	14.24	Approval	CR pack	Approved
SP-160356	MPS_Mod Agreed CRs	SA WG1	14.2	Approval	CR pack	Approved
SP-160357	V2XLTE Agreed CRs	SA WG1	14.4	Approval	CR pack	Approved

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160358	TS 22.280 (Mission Critical Services Common Requirements)	SA WG1	14.9	Approval	draft TS	Approved
SP-160359	MCImp-MCPTTR Agreed CRs	SA WG1	14.9	Approval	CR pack	Partially approved
SP-160360	TS 22.281 on Mission Critical Video over LTE	SA WG1	14.9	Approval	draft TS	Approved
SP-160361	TS 22.282 on Mission Critical Data over LTE	SA WG1	14.9	Approval	draft TS	Revised
SP-160362	REAR Agreed CRs	SA WG1	14.15	Approval	CR pack	Approved
SP-160363	Revised WID on REAR (Remote UE access via relay UE)	SA WG1	14.15	Approval	WID revised	Revised
SP-160364	New WID on New Services and Markets Technology Enablers (SMARTER)	SA WG1	16	Approval	WID new	Revised
SP-160365	FS_SMARTER agreed CRs	SA WG1	15.2.1	Approval	CR pack	Approved
SP-160366	TR 22.861 on FS_SMARTER - massive Internet of Things	SA WG1	15.2.2	Approval	draft TR	Approved
SP-160367	TR 22.862 on FS_SMARTER - Critical Communications	SA WG1	15.2.3	Approval	draft TR	Approved
SP-160368	FS_SMARTER - enhanced Mobile Broadband	SA WG1	15.2.4	Approval	draft TR	Approved
SP-160369	TR 22.864 on FS_SMARTER - Network Operation	SA WG1	15.2.5	Approval	draft TR	Approved
SP-160370	New SID on Study on Enhancement of 3GPP support for V2X service (FS_eV2X)	SA WG1	17	Approval	SID new	Revised
SP-160371	New SID on Study on Future Railway Mobile Communication System (FS_FRMCS)	SA WG1	17	Approval	SID new	Approved
SP-160372	SA WG3 Status Report	SA WG3 Chairman	7.3	Presentation	REPORT	Noted
SP-160373	New Work Item on Security Assurance Specification for PGW	SA WG3	16	Approval	WID new	Revised
SP-160374	New Study Item for Study on Mission Critical Security Enhancements	SA WG3	17	Approval	SID new	Approved
SP-160375	New Work Item Lawful Interception Rel-14	SA WG3	16	Approval	WID new	Approved
SP-160376	Exception sheet New GPRS algorithms for EASE	SA WG3	14.25	Approval	WI exception request	Approved
SP-160377	TS 55.241: Specification of the GIA4 encryption algorithms for GPRS; GIA4 specification	SA WG3	14.25	Information	draft TS	Noted
SP-160378	TS 55.242: Specification of the GIA4 encryption algorithms for GPRS; Implementers' test data.	SA WG3	14.25	Information	draft TS	Noted
SP-160379	TS 55.243: Specification of the GIA4 encryption algorithms for GPRS; Design conformance test data.	SA WG3	14.25	Information	draft TS	Noted
SP-160380	TS 55.251: Specification of the GPRS confidentiality and integrity algorithms GEA5 and GIA5; GEA5 and GIA5 specifications	SA WG3	14.25	Information	draft TS	Noted
SP-160381	TS 55.252: Specification of the GPRS confidentiality and integrity algorithms GEA5 and GIA5; Implementers' test data.	SA WG3	14.25	Information	draft TS	Noted

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SP-160382	TS 55.253: Specification of the GPRS confidentiality and integrity algorithms GEA5 and GIA5; Design conformance test data.	SA WG3	14.25	Information	draft TS	Noted
SP-160383	Rel-13 CRs on Mission Critical Push to Talk (MCPTT)	SA WG3	13C	Approval	CR pack	Approved
SP-160384	Rel-13 CRs on Lawful Interception (LI13)	SA WG3	13C	Approval	CR pack	Approved
SP-160385	Rel-13 CRs on enhancements of Proximity Based Services (eProSe-ext-SA3)	SA WG3	13C	Approval	CR pack	Revised
SP-160386	Rel-13 CRs on Security Aspects of CIoT (aka NB-IoT)	SA WG3	13C	Approval	CR pack	Approved
SP-160387	Rel-13 CRs on TEI (TEI13)	SA WG3	13G	Approval	CR pack	Approved
SP-160388	Rel-13 CRs on EGPRS Access Security Enhancements in relation to Cellular IoT(EASE_EC_GSM)	SA WG3	13C	Approval	CR pack	Approved
SP-160389	Rel-13 CRs on Study on EGPRS Access Security Enhancements with relation to cellular IoT (FS_EASE_IoT)	SA WG3	15.1.13	Approval	CR pack	Approved
SP-160390	Rel-13 CRs on Core part: LTE-WLAN Radio Level Integration and Interworking Enhancement (LTE_WLAN_Radio-Core)	SA WG3	13G	Approval	CR pack	Partially approved
SP-160391	Introduction of Audio cut-in requirements in MCPTT	HOME OFFICE	14.9	Approval	CR	Approved
SP-160392	TR 33.926 Security Assurance Specification (SCAS) Threats and Critical Assets in 3GPP Network Product Class	SA WG3	15.2.27	Approval	draft TR	Revised
SP-160393	SA WG5 Status Report	SA WG5 Chairman	7.5	Presentation	REPORT	Noted
SP-160394	New Study on Management and Orchestration of Network Slicing	SA WG5	17	Approval	SID new	Approved
SP-160395	New WID Charging Aspects of Architecture enhancements for Cellular Internet of Things	SA WG5	16	Approval	WID new	Revised
SP-160396	New WID Management for NB-IoT	SA WG5	16	Approval	WID new	Approved
SP-160397	New WID OAM support for Licensed Shared Access (LSA)	SA WG5	14.23	Approval	WID new	Approved
SP-160398	New WID Determination of Completeness of Charging Information in IMS	SA WG5	14.25	Approval	WID new	Approved
SP-160399	New Study on management aspects of next generation network architecture and features	SA WG5	17	Approval	SID new	Approved
SP-160400	New Study on Management and Orchestration Architecture of Next Generation Network and Service	SA WG5	17	Approval	SID new	Approved
SP-160401	Revised WID Configuration Management for mobile networks that include virtualized network functions	SA WG5	14.23.2	Approval	WID revised	Approved

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SP-160402	Revised WID Performance management for mobile networks that include virtualized network functions	SA WG5	14.23.4	Approval	WID revised	Approved
SP-160403	Revised WID Fault Management for mobile networks that include virtualized network functions	SA WG5	14.23.3	Approval	WID revised	Approved
SP-160404	TS 28.500 'Management concept, architecture and requirements for mobile networks that include virtualized network functions'	SA WG5	14.23.1	Information	draft TS	Noted
SP-160405	TR 32.860 'Study on enhancement of OAM aspects of distributed Self-Organizing Network (SON) functions'	SA WG5	15.2.34	Approval	draft TR	Revised
SP-160406	TS 32.25x 'Control Plane (CP) data transfer domain charging'	SA WG5	16	Approval	Draft TS	Revised
SP-160407	Rel-13 CRs on OAM Maintenance and small Enhancements (OAM13)	SA WG5	13E	Approval	CR pack	Approved
SP-160408	Rel-11 CRs on OAM Maintenance and small Enhancements (OAM11)	SA WG5	11	Approval	CR pack	Approved
SP-160409	Rel-10 CRs on OAM Maintenance and small Enhancements (OAM10)	SA WG5	10	Approval	CR pack	Approved
SP-160410	Rel-8 CRs on IMS Charging (CH8_IMS)	SA WG5	8	Approval	CR pack	Approved
SP-160411	Rel-13 CRs on Charging Aspects of Architecture enhancements for Cellular Internet of Things (CIoT-CH)	SA WG5	16	Approval	CR pack	Approved
SP-160412	Rel-13 CRs on Charging aspects of MONTE (MONTE-CH)	SA WG5	13E	Approval	CR pack	Approved
SP-160413	Rel-13 CRs on Compliance of 3GPP SA5 specifications to the NGMN Top Operational Efficiency (OPE) Recommendations (OAM-NGMN-OPE)	SA WG5	13E	Approval	CR pack	Approved
SP-160414	Rel-8 CRs on Charging Management (CH8)	SA WG5	8	Approval	CR pack	Withdrawn
SP-160415	Rel-12 CRs on Charging Management (CH12)	SA WG5	12	Approval	CR pack	Approved
SP-160416	Rel-13 CRs on Charging Management (CH13)	SA WG5	13E	Approval	CR pack	Approved
SP-160417	Rel-14 CRs on Charging Management (CH14)	SA WG5	14.25	Approval	CR pack	Approved
SP-160418	Rel-9 CRs on 3G HNB and LTE HeNB OAM&P Type 1 Interface (HNB_eHNB-OAM_Type1)	SA WG5	9	Approval	CR pack	Approved
SP-160419	Rel-13 CRs on Management for NB-IoT (NB_IOT-OAM)	SA WG5	16	Approval	CR pack	Approved
SP-160420	Rel-13 CRs on Charging Aspects of IP Flow Mobility support for S2a and S2b Interfaces (NBIFOM-CH)	SA WG5	13E	Approval	CR pack	Approved
SP-160421	Discontinuation of I-WLAN CT1 TS 24.234, TS 24.235 and TS 24.327 in Rel-12	QUALCOMM UK Ltd	5	Approval	DISCUSSION	Noted
SP-160422	Creating stub version of TS 23.234	QUALCOMM UK Ltd	5	Approval	CR	Withdrawn

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SP-160423	Creating stub version of TS 23.234	QUALCOMM UK Ltd	5	Approval	CR	Withdrawn
SP-160424	Update of reference to TS 24.234	QUALCOMM UK Ltd	5	Approval	draftCR	Withdrawn
SP-160425	Energy Efficiency in SON	Huawei Technologies, Orange	15.2.0	Approval	P-CR	Revised
SP-160426	New Study on management and orchestration of virtualized network functions for the next generation radio access networks	SA WG5	17	Approval	SID new	Withdrawn
SP-160427	Revised WID Lifecycle Management for mobile networks that include virtualized network functions	SA WG5	14.23.5	Approval	WID revised	Approved
SP-160428	New WID Charging Aspects of Enhanced Proximity-based Services	SA WG5	14.25	Approval	WID new	Approved
SP-160429	New WID on Charging Aspects of S8 Home Routing Architecture for VoLTE	SA WG5	14.25	Approval	WID new	Approved
SP-160430	Revised SID Study on OAM support for assessment of energy efficiency in mobile access networks	SA WG5	15.2.35	Approval	SID revised	Approved
SP-160431	Update of reference to TS 24.234	QUALCOMM UK Ltd	5	Approval	CR	Withdrawn
SP-160432	Update of reference to TS 24.234	QUALCOMM UK Ltd	5	Approval	CR	Withdrawn
SP-160433	Support for SMS using CP optimisation	Qualcomm Incorporated, Intel, Ericsson	13B	Approval	CR	Approved
SP-160434	Increased range for normal operating conditions in equipment rooms	Telecom Italia, Orange	15.2.0	Approval	P-CR	Revised
SP-160435	Support for SMS using CP optimisation for CIOT	Qualcomm Incorporated, Intel, Ericsson	13B	Approval	CR	Approved
SP-160436	Copyright infringement in C code of TS 26.443	MCC	18.3	Decision	other	Withdrawn
SP-160437	AT&T Views on Phase 1 Acceleration of Next Generation Systems	AT&T	5	Discussion	DISCUSSION	Noted
SP-160438	On NextGen architecture options	Intel	5	Approval	DISCUSSION	Noted
SP-160439	LWA Corrections	Nokia, Ericsson, Broadcom Corporation, AT&T, Deutsche Telekom	13G	Approval	CR	Revised
SP-160440	Rel-12 CRs for Security for Proximity-based Services	SA WG3	12	Approval	CR pack	Approved
SP-160441	LWIP security solution	Nokia, Ericsson, Broadcom Corporation, AT&T, Deutsche Telekom, Juniper Networks	13G	Approval	CR	Revised
SP-160442	Next Generation Architecture_x00B_for New Radio	VODAFONE Group Plc	5	Approval	DISCUSSION	Noted
SP-160443	TR 32.860 'Study on enhancement of OAM aspects of distributed Self-Organizing Network (SON) functions'	SA WG5	15.2.34	Approval	draft TR	Approved
SP-160444	Status report of TSG CT#72	TSG CT Chairman	7.8	Presentation	REPORT	Noted

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SP-160445	Draft meeting report of TSG CT#72	MCC	7.8	Information	REPORT	Noted
SP-160446	IETF Status report	TSG CT Chairman	7.8	Presentation	REPORT	Noted
SP-160447	LS from NGMN: Vertical industry application perspectives and implications for 5G	NGMN (NGMN-160603)	6	Action	LS In	Noted
SP-160448	LS from TCCA on Missing requirements in MCData Work Item for Interworking with TETRA	TCCA (TCCA-LS-to-SA#72-Busan-160614-1_4)	14.9	Action	LS In	Noted
SP-160449	pCR to add interoperability with LMR system data services to TS 22.282 v2.0.0	Airbus Defence&Space, Bittium Wireless, Dutch police, Ericsson, Finmeccanica, Hytera, Motorola Solutions, Nokia, P3, Sepura (and TCCA as MRP)	14.9	Approval	P-CR	Revised
SP-160450	[DRAFT] Response LS on Progress on Security for LWIP	TSG SA (Nokia)	6	Approval	LS OUT	Revised
SP-160451	Rel-13 CRs on enhancements of Proximity Based Services (eProSe-ext-SA3)	SA WG3	13C	Approval	CR pack	Approved
SP-160452	Discontinuation of 3GPP Specifications including I-WLAN Specifications	BlackBerry UK Ltd	5	Discussion	DISCUSSION	Noted
SP-160453	Work plan proposal for NextGen in SA WG2	China Mobile, Qualcomm Inc.	7.2	Presentation	Discussion	Withdrawn
SP-160454	Work plan proposal for NextGen in SA WG2	NextGen Rapporteurs (Tao Sun, Devaki, Chandramouli)	21	Presentation	Discussion	Noted
SP-160455	Architecture configuration options for NR	Deutsche Telekom	5	Discussion	Discussion	Revised
SP-160456	LWIP security solution	Nokia, Ericsson, Broadcom Corporation, AT&T, Deutsche Telekom, Juniper Networks	13G	Approval	CR	Approved
SP-160457	Response LS on Progress on Security for LWIP	TSG SA	6	Approval	LS OUT	Approved
SP-160458	Reply LS on LS/o on 'Report on standard gap analysis', from ITU-T Focus Group on IMT-2020 and on extension of lifetime of Focus Group IMT-2020: Request for feedback	TSG SA	6	Approval	LS OUT	Approved
SP-160459	Snapshot of 5G Activities identified in the 3GPP Work Plan	MCC Work Plan Manager	18.1	Information	Work Plan	Withdrawn
SP-160460	Summary of agreements from the joint session between TSG SA and TSG RAN	Joint Session	21	Information	OTHER	Noted
SP-160461	Combined NR / NextGen time plan	Nokia Networks	21	Information	Other	Revised

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SP-160462	pCR to add interoperability with LMR system data services to TS 22.282 v2.0.0	Airbus Group SAS, ASTRID, Bittium Wireless, Ericsson, Federal Ministry of Interior of Austria, Finmeccanica, Hytera, Motorola Solutions, P3, Police of the Nederlands, Sepura, US DoC (and TCCA as MRP)	14.9	Approval	P-CR	Noted
SP-160463	Removing distinction of with and without floor control for priority when interrupted by emergency calls	TSG SA	14.9	Approval	CR	Withdrawn
SP-160464	Architecture configuration options for NR	Deutsche Telekom	5	Discussion	Discussion	Noted
SP-160465	Combined NR / NextGen time plan	Nokia Networks	21	Information	Other	Endorsed
SP-160466	Correction of 3GPP vocabulary due to renaming to EC-GSM-IoT	Ericsson LM, MediaTek Inc.	13A	Approval	CR	Approved
SP-160467	Discussion on requirements for extended HPLMN seach period	Morpho Cards	13G	Discussion	Discussion	Noted
SP-160468	TS 22.282 on Mission Critical Data over LTE	SA WG1	14.9	Approval	draft TS	Revised
SP-160469	LS on MCPTT over LTE feature addition through modification of TS 22.280 requirements	TSG SA	14.9	Approval	LS OUT	Approved
SP-160470	[DRAFT] LS on Specification withdrawal and I-WLAN handling	TSG SA	5	Approval	LS OUT	Revised
SP-160471	Revised WID on REAR (Remote UE access via relay UE)	SA WG1	14.15	Approval	WID revised	Revised
SP-160472	TR Skeleton of Study on Energy Efficiency Aspects of 3GPP Standards	ORANGE	15.2.0	Information	draft TR	Noted
SP-160473	The Requirements for Energy Efficiency Aspects of 3GPP Standards	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised
SP-160474	The Definition of Energy Efficiency Key Performance Indicator (EE KPI)	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised
SP-160475	Energy Efficiency in SON	Huawei Technologies, Orange	15.2.0	Approval	P-CR	Revised
SP-160476	Increased range for normal operating conditions in equipment rooms	Telecom Italia, Orange	15.2.0	Approval	P-CR	Revised
SP-160477	New Study Item on 'MBMS Extensions for Provisioning and Content Ingestion' (FS_xMBMS)	SA WG4	17	Approval	SID new	Revised
SP-160478	TS 22.282 on Mission Critical Data over LTE	SA WG1	14.9	Approval	draft TS	Approved

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SP-160479	New WID Charging Aspects of Architecture enhancements for Cellular Internet of Things	SA WG5	16	Approval	WID new	Approved
SP-160480	TS 32.253 'Control Plane (CP) data transfer domain charging'	SA WG5	16	Approval	Draft TS	Approved
SP-160481	New Work Item on Security Assurance Specification for PGW	SA WG3	16	Approval	WID new	Approved
SP-160482	TSG RAN report to TSG SA#72 (focus on issue with relevance to TSG SA)	TSG RAN Chairman	7.7	Presentation	REPORT	Noted
SP-160483	Draft reply letter to ITU-R WP5D in reply to ITU-R WP1A/TEMP/100 = RP-151138 on Report ITU-R SM.[SMART_GRID] on the Smart Grid project	TSG RAN (RP-161330)	7.7	Action	LS In	Noted
SP-160484	The Energy Efficiency Control Principles	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised
SP-160485	TR 33.926 Security Assurance Specification (SCAS) Threats and Critical Assets in 3GPP Network Product Class	SA WG3	15.2.27	Approval	draft TR	Approved
SP-160486	New WID on New Services and Markets Technology Enablers (SMARTER)	SA WG1	16	Approval	WID new	Approved
SP-160487	New WID on the Support of Emergency services over WLAN - phase 2	SA WG2	16	Approval	WID new	Approved
SP-160488	New WID on T-ADS supporting WiFi access	SA WG2	16	Approval	WID new	Approved
SP-160489	New work item on common functional architecture to support mission critical services	SA WG6	16	Approval	WID new	Approved
SP-160490	New work item on enhancements for Mission Critical Push To Talk	SA WG6	16	Approval	WID new	Approved
SP-160491	New work item on functional architecture and information flows for Mission Critical Video	SA WG6	16	Approval	WID new	Approved
SP-160492	New work item on functional architecture and information flows for Mission Critical Data	SA WG6	16	Approval	WID new	Approved
SP-160493	The Requirements for Energy Efficiency Aspects of 3GPP Standards	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Approved
SP-160494	The Definition of Energy Efficiency Key Performance Indicator (EE KPI)	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised
SP-160495	The Energy Efficiency Control Principles	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Revised

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TD No.	TITLE	SOURCE	Agenda Item	Doc For	Type	Status/Comment
SP-160496	Work Plan presentation	MCC	18.1	Presentation	Work Plan	Noted
SP-160497	New Study Item on 'MBMS usage and codecs for MCPTT call and MC Video Service' (FS_MCP_V)	SA WG4	17	Approval	SID new	Revised
SP-160498	[DRAFT] LS on Specification withdrawal and I-WLAN handling	TSG SA	5	Approval	LS OUT	Revised
SP-160499	The Definition of Energy Efficiency Key Performance Indicator (EE KPI)	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Approved
SP-160500	Energy Efficiency in SON	Huawei Technologies, Orange	15.2.0	Approval	P-CR	Approved
SP-160501	The Energy Efficiency Control Principles	Orange, KPN, Telecom Italia, China Mobile, Deutsche Telekom, Telefonica	15.2.0	Approval	P-CR	Approved
SP-160502	Increased range for normal operating conditions in equipment rooms	Telecom Italia, Orange	15.2.0	Approval	P-CR	Revised
SP-160503	New Study Item on 'MBMS Extensions for Provisioning and Content Ingestion' (FS_xMBMS)	SA WG4	17	Approval	SID new	Approved
SP-160504	New SID on Study on Enhancement of 3GPP support for V2X service (FS_eV2X)	SA WG1	17	Approval	SID new	Approved
SP-160505	New Study item on extended architecture support for Cellular Internet of Things	SA WG2	17	Approval	SID new	Approved
SP-160506	New Feasibility study on Complementary Features for Voice services over WLAN	SA WG2	17	Approval	SID new	Approved
SP-160507	[DRAFT] LS to PCG: Reply letter to ITU-R WP5D in reply to ITU-R WP1A/TEMP/100 = RP-151138 on Report ITU-R SM.[SMART_GRID] on the Smart Grid project	TSG SA	7.7	Approval	LS OUT	For e-mail approval. Approved and forwarded to the PCG.
SP-160508	LS on Specification withdrawal and I-WLAN handling	TSG SA	5	Approval	LS OUT	Approved
SP-160509	Increased range for normal operating conditions in equipment rooms	Telecom Italia, Orange	15.2.0	Approval	P-CR	Approved
SP-160510	New Study Item on 'MBMS usage and codecs for MCPTT call and MC Video Service' (FS_MCP_V)	SA WG4	17	Approval	SID new	Approved
SP-160511	Revised WID on REAR (Remote UE access via relay UE)	SA WG1	14.15	Approval	WID revised	Approved

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Annex C: List of attendees and TSG SA Voting List

C.1 List of Attendees

Name	Represented Company	Mobile Telephone	Telephone	Facsimile	3GPP Status	Partner	Cty
Mr. Johannes Achter	T-MOBILE AUSTRIA GMBH	+43 676 3456322	+43 1 79585 6322	+43 1 79585 96322	3GPPMEMBER	ETSI	AT
Mr. Ming Ai	CATT		+86 10 62305566-2180	+86 10 62302887	3GPPMEMBER	ETSI	CN
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Mr. Balazs Bertenyi	NOKIA NETWORKS		+36 209849152		3GPPMEMBER	ETSI	DE
Mr. Michael Brown	HITACHI LTD.				3GPPMEMBER	ARIB	JP
Mr. Richard Burbidge	INTEL MOBILE FRANCE	+447775555326	+44 1793 402264		3GPPMEMBER	ETSI	FR
Mr. Mark Cannon	VIRTUOSYS LIMITED	+44 7951 934381			3GPPMEMBER	ETSI	GB
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Mr. Stephen Hayes	ERICSSON JAPAN K.K.	+1 469 360 8500	+1 469 360 8500	+1 817 977 8920	3GPPMEMBER	ARIB	JP
Mrs. Hennie Helleman-van Vliet	KPN N.V.		+31613000098		3GPPMEMBER	ETSI	NL
Mr. Tero Henttonen	ALCATEL-LUCENT SHANGHAI BELL		+358504836369	+	3GPPMEMBER	CCSA	CN
Mr. Andrew Howell	HOME OFFICE	+44 7912 296587			3GPPMEMBER	ETSI	GB
Mr. Nan Hu	CHINA MOBILE E-COMMERCE CO.	+8613910011825	+861066006688	+861066006688	3GPPMEMBER	CCSA	CN
Mr. David Hutton	GSM ASSOCIATION	+447920271321	+447920271321		3GPPMARK_REP	OTHER	GB
Mr. Chungwoo Hwang	KT CORP.	+821073320251	+82317270869	+82151501073320251	3GPPMEMBER	TTA	KR
Mr. Masataka Ikeda	NTT DOCOMO INC.				3GPPMEMBER	ARIB	JP
Mr. Puneet Jain	INTEL		+1-503-712-6214	+1-503-264-4522	3GPPMEMBER	ATIS	US
Mr. Kari Järvinen	NOKIA CORPORATION	+358 50 555 0999	+358 50 555 0999	+358 7180 35888	3GPPMEMBER	ETSI	FI
Mr. Vivek Jha	CISCO SYSTEMS FRANCE	+917406998209	+1978 658 8227	+1978 658 8465	3GPPMEMBER	ETSI	FR
Mr. Dan Jiang	PHILIPS INTERNATIONAL B.V.	+19144322518	+16172500316	+	3GPPMEMBER	ETSI	NL
Mr. Paul Jolivet	LG ELECTRONICS FRANCE		+33 1 4989 8864		3GPPMEMBER	ETSI	FR
Mr. Sangwoo Kang	KT CORP.	+821073331697	+821073331697	+	3GPPMEMBER	TTA	KR
Dr. Ingolf Karls	INTEL DEUTSCHLAND GMBH		+49 (89) 99885335497	+49 (89) 999552976	3GPPMEMBER	ETSI	DE
Mr. Dongwook Kim	GSM ASSOCIATION	+821041809802			3GPPMARK_REP	OTHER	GB
Ms. Eunah Kim	ETRI	+821099404820	+82 42 860 4820	+82 42 860 6732	3GPPMEMBER	TTA	KR

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Name	Represented Company	Mobile Telephone	Telephone	Facsimile	3GPP Status	Partner	Cty
Mr. Ki Young Kim	LG ELECTRONICS INC.		+82 10 5600 5663		3GPPMEMBER	TTA	KR
Dr. Laeyoung Kim	LG ELECTRONICS FRANCE		+821048100298		3GPPMEMBER	ETSI	FR
Mr. Soenghun Kim	SAMSUNG RESEARCH AMERICA		+82 31 279 5118	+82 31 279 5130	3GPPMEMBER	ATIS	US
Mr. Yunesung Kim	SK TELECOM	+82 010-2104-4158	+82 10-4738-9610		3GPPMEMBER	TTA	KR
Mr. Håkon eyde Kjuus	TELENOR ASA		+4793652456	+	3GPPMEMBER	ETSI	NO
Mr. Axel Klatt	DEUTSCHE TELEKOM AG	+491715229937	+4922818118015	+4922893618523	3GPPMEMBER	ETSI	DE
Mr. Osamu Kobayashi	KDDI CORPORATION	+818050659799	+81 80 5065 9799		3GPPMEMBER	TTC	JP
Ms. Yoshiko Koizumi	FUJITSU LIMITED		+81-44-874-2214	+81-44-754-3839	3GPPMEMBER	ARIB	JP
Mr. Eng Wei Koo	VIAVISOLUTIONS DEUTSCH. GMBH	+1-719-492-9744	+1-303-416-9879		3GPPMEMBER	ETSI	DE
Ms. Hyounhee Koo	SYNCTECHNO INC.		+82 10 5777 9817	+82 2 6008 8741	3GPPMEMBER	ETSI	KR
Mr. Yeon Sang Koo	LG UPLUS	+82 10 8080 2238	+82-10-8080-2238	+82-2-6920-1668	3GPPMEMBER	TTA	KR
Mr. Frank Korinek	MOTOROLA SOLUTIONS UK LTD.	+1 847 877-7179	+44 1256 790 790		3GPPMEMBER	ETSI	GB
Dr. Joern Krause	ETSI	+33 607 59 08 45	+33 4 92 94 42 61	+33 4 93 65 47 16	3GPPORG_REP	ETSI	FR
Mr. Heiko Kruse	MORPHO CARDS GMBH	+49 175 4383519	+49 4347-715-0		3GPPMEMBER	ETSI	DE
Mr. Kimmo Kymalainen	ETSI	+33 6 85 76 89 74	+33 4 92 94 42 38	+33 4 92 38 52 38	3GPPORG_REP	ETSI	FR
Mr. Yannick Lair	LG ELECTRONICS INC.	+33 6 98 76 93 93	+33 1 49895716		3GPPMEMBER	TTA	KR
Mr. Alex Leadbeater	BT GROUP PLC		+441473608440	+44 1473 608703	3GPPMEMBER	ETSI	GB
Dr. Duckey Lee	SAMSUNG ELECTRONICS POLSKA		+82-10-2619-5032	+82-31-279-5130	3GPPMEMBER	ETSI	PL
Ms. Hyeyoung Esthel Lee	TTA	+82-10-5110-9946	+82-31-724-4637		3GPPORG_REP	TTA	KR
Mr. Juho Lee	SAMSUNG ELECTRONICS CO., LTD	+82-10-9530-5115	+82-31-279-5120	+82-31-279-5130	3GPPMEMBER	TTA	KR
Dr. Ki-dong Lee	LG ELECTRONICS INC.		+18588056648		3GPPMEMBER	TTA	KR
Mr. Volker Leisse	CABLELABS	+49 179 5232941		+49 531 5901672	3GPPMEMBER	ETSI	US
Mr. Xiayu Li	CATR		+86 10 68094322	+86 10 68034801	3GPPMEMBER	CCSA	CN
Mr. Gerardo Libunao	VERIZON UK LTD	+19085815824	+19085597561	+19085597140	3GPPMEMBER	ETSI	GB
Dr. Bengt-Ake Lindholm	TELIASONERA AB	+46 70 6555266	+46 8 504 524 82	+46 70 611 5266	3GPPMEMBER	ETSI	SE
Mr. Hong Liu	CHINA MOBILE COM. CORPORATION	+86 13501093376	+86 1066006688	+86 10 63600340	3GPPMEMBER	CCSA	CN
Mr. Casaccia Lorenzo	QUALCOMM TECH. NETHERLANDS B.V		+39 348 92 46 537		3GPPMEMBER	ETSI	NL
Mr. Achim Luft	IPCOM GMBH & CO.KG	+49 172 7429663	+49 5121 6906583		3GPPMEMBER	ETSI	DE
Dr. Frank Mademann	HUAWEI TECHNOLOGIES CO., LTD	+49 172 6381644	+49 30 720 121 105	+49 30 720 121 111	3GPPMEMBER	CCSA	CN
Mr. Kai Mao	FUJITSU LIMITED	+19729557470	+19724793213	+19724793008	3GPPMEMBER	ETSI	JP
Miss Luisa Marchetto	AT&T		+1 425 580 6840		3GPPMEMBER	ATIS	US
Mr. Georg Mayer	HUAWEI TECHNOLOGIES CO., LTD	+43 699 1900 5758	+4369919005758		3GPPMEMBER	CCSA	CN
Mr. Alan McIntyre	SOUTHERNLINC WIRELESS		+1 205 257 1708	+1 205 874 3953	3GPPMEMBER	ATIS	US
Mr. John M Meredith	ETSI	+33 (0)6 10 42 03 76	+33 4 92 94 42 37	+33 4 93 65 47 16	3GPPORG_REP	ETSI	FR
Mr. Atsushi Minokuchi	NTT DOCOMO INC.		+81 468 40 3333	+81 468 40 3829	3GPPMEMBER	TTC	JP
Mr. Naotaka Morita	NTT				3GPPMEMBER	TTC	JP
Dr. Adrian Neal	VODAFONE LIBERTEL BV	+447919555744	+44 79 19 555 744	+44 1635 528 295	3GPPMEMBER	ETSI	NL
Mr. Chenghock Ng	NEC TELECOM MODUS LTD.		+81 44 455 8416	+81 44 455 8419	3GPPMEMBER	ETSI	GB
Ms. Sari Nielsen	NOKIA SOLUTIONS & NETWORKS (S)		+358503026833	+358718044544	3GPPMEMBER	CCSA	CN
Mr. Aki Noda	FUJITSU LIMITED		+81 44 874 2214	+81 44 754 3839	3GPPMEMBER	ETSI	JP
Mr. Minseok Noh	WILUS INC.		+82-10-4210-5872	+82-2-552-0868	3GPPMEMBER	TTA	KR
Mr. Christian Nord	SONY EUROPE LIMITED	+46 708 172 599	+46 10 801 3267		3GPPMEMBER	ETSI	GB
Mr. Toon Norp	TNO		+31 15 285 72 08	+31 15 285 73 70	3GPPMEMBER	ETSI	NL
Mr. Val Oprescu	MOTOROLA SOLUTIONS GERMANY		+1 847 576 3465		3GPPMEMBER	ETSI	DE
Mr. Xueming Pan	DATANG MOBILE COM. EQUIPMENT	+86 10 15801439395	+86 10 62305566		3GPPMEMBER	CCSA	CN
Mr. Ken Park	SHARP CORPORATION		+1 360 817 7580	+	3GPPMEMBER	ARIB	JP

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Name	Represented Company	Mobile Telephone	Telephone	Facsimile	3GPP Status	Partner	Cty
Mr. Peter Park	TTA		+82428708536		3GPPORG_REP	TTA	KR
Mr. Francois Piroard	AIRBUS GROUP SAS	+33685744851			3GPPMEMBER	ETSI	FR
Mr. Eshwar Pittampalli	CTIA		+1 2027363882		3GPPMARK_REP	OTHER	US
Mr. Miikka Poikselka	NOKIA NETWORKS JAPAN	+358 50 3210275	+358 50 3210275		3GPPMEMBER	ARIB	JP
Mr. Maurice Pope	ETSI	+33 (0)6 07 59 08 49	+33 4 92 94 42 59	+33 4 93 65 47 16	3GPPORG_REP	ETSI	FR
Dr. Anand Prasad	NEC CORPORATION		+81-44-455-8491	+81-44-455-8498	3GPPMEMBER	TTC	JP
Mrs. Haiyang Quan	DATANG SEMICONDUCTOR CO., LTD		+86 10 62305566 2039	+86 10 62302887	3GPPMEMBER	CCSA	CN
Mr. Dongwook Roh	LG ELECTRONICS INC.	+821083171732	+821083171732		3GPPMEMBER	TTA	KR
Mr. Tony Saboorian	HUAWEI TECH.(UK) CO., LTD		+1-972-814-7986	+1-972-509-0309	3GPPMEMBER	ETSI	GB
Mr. Krister Sällberg	ERICSSON INDIA PRIVATE LIMITED	+46 706 845 765	+46 10 715 4928		3GPPMEMBER	TSDSI	IN
Mr. Andreas Schmidt	IPCOM GMBH & CO.KG		+49-5121-6906584		3GPPMEMBER	ETSI	DE
Mr. Greg Schumacher	SPRINT CORPORATION	+1 571 426 7940	+1 571 426 7940		3GPPMEMBER	ATIS	US
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Mr. Guillaume Sebire	MEDIATEK INC.	+358 5048 37388	+358 5048 37388		3GPPMEMBER	ETSI	TW
Mr. Viqar Shaikh	APPLIED COMMUNICATION SCIENCES				3GPPMEMBER	ATIS	US
Dr. MyungKi Shin	ETRI		+82-42-860-4847	+82-42-861-5404	3GPPMEMBER	TTA	KR
Mr. Sasha Sirotkin	INTEL MOBILE DENMARK		+972507288473		3GPPMEMBER	ETSI	DK
Ms. Tricci So	ZTE WISTRON TELECOM AB	+18582286333			3GPPMEMBER	ETSI	SE
Dr. Jungje Son	SAMSUNG ELECTRONICS GMBH	+821045056309	+82312795098	+82312795130	3GPPMEMBER	ETSI	DE
Miss Yuexia Song	GOHIGH DATA NETWORKS TECH.		+86 13911678775	+ 86 10 6230 2887	3GPPMEMBER	CCSA	CN
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Dr. Shaohui Sun	CATT				3GPPMEMBER	CCSA	CN
Mr. Hidetoshi Suzuki	PANASONIC CORPORATION		+815036867942	+81459381545	3GPPMEMBER	ARIB	JP
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Mr. Toshiyuki Tamura	NEC CORPORATION		+81 44 455 8496	+81 44 455 8498	3GPPMEMBER	ARIB	JP
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Mr. Christian Toche	HUAWEI TECHNOLOGIES CO., LTD	+86 159 2198 4256	+33 6 75 94 36 94		3GPPMEMBER	CCSA	CN
Mr. Thomas Tovinger	ERICSSON LM	+46 709 87 3010	+46 10 712 3010	+46 10 712 6033	3GPPMEMBER	ETSI	SE
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Mr. Ke Wang	DATANG LINKTESTER TECHNOLOGY		+86 10 62305566 2076		3GPPMEMBER	CCSA	CN
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Mr. Peter A. Wild	VODAFONE LIBERTEL BV	+49 172 7211170	+49 211 533 3798	+49 211 533 3804	3GPPMEMBER	ETSI	NL
Dr. Colin Willcock	RADIO FREQUENCY SYSTEMS GMBH	+49 1732984166	+49 1732984166		3GPPMEMBER	ETSI	DE
Ms. Lixiang Xu	TIANJIN SAMSUNG TELECOM		+86 10 84439777	+86-10-84681366	3GPPMEMBER	CCSA	CN
Dr. Xiaodong Xu	CMDI		+86 10 66006688	+86 10 63600340	3GPPMEMBER	CCSA	CN
Mr. Daisuke Yokota	SOFTBANK CORP.		+81 3 6234 3113	+81 3 6234 3940	3GPPMEMBER	ARIB	JP
Mr. Gordon Young	BLACKBERRY UK LIMITED		+44 17841899393	+15198834914	3GPPMEMBER	ETSI	GB
Mr. Philip Young	GENERAL DYNAMICS UK LIMITED		+44 1249 800109	+44 1249 800101	3GPPMEMBER	ETSI	GB
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Name	Represented Company	Mobile Telephone	Telephone	Facsimile	3GPP Status	Partner	Cty
Dr. Dawei Zhang	APPLE FRANCE		+1 408 528 4978		3GPPMEMBER	ETSI	FR
Mrs. Wenruo Zhu	HISILICON TECHNOLOGIES CO. LTD	+86 13916666788	+86 21 38902812	+86 21 38906434	3GPPMEMBER	CCSA	CN

134 Participants

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C.2 List of eligible Voting members after TSG SA#72

The attached list is dependent upon the information in C.1 and Individual Member companies who are recorded as attending TSG SA Meetings #71 or #70 (representation of an Individual Member at any of TSG SA Meetings #70, #71 or #72).

Voting list for 3GPP TSG SA
(Technical Specification Group - Services and System Aspects)

List Created on: 22 June 2016

This report shows the 3GPP Member Companies on the Voting List after **TSG SA Meeting #72**
Inclusion on the list is obtained by attending a meeting of **TSG SA**
A company is removed from this list if it is not represented at any of the 3 previous meetings of this group.
If you believe your company should be included in this list, please provide supporting information to MCC, the 3GPP Support Team at: 3gppcontact@etsi.org

Organisation Name	Organisation Status	Country
A.S.T.R.I.D. S.A.	3GPPMEMBER - ETSI	BE
Airbus Group SAS	3GPPMEMBER - ETSI	FR
AIR-LYNX	3GPPMEMBER - ETSI	FR
Alcatel-Lucent	3GPPMEMBER - ETSI	FR
Alcatel-Lucent Deutschland AG	3GPPMEMBER - ETSI	DE
Alcatel-Lucent Shanghai Bell	3GPPMEMBER - CCSA	CN
Alcatel-Lucent Telecom Ltd	3GPPMEMBER - ETSI	GB
Allot Communications Ltd.	3GPPMEMBER - ETSI	IL
Apple France	3GPPMEMBER - ETSI	FR
Apple GmbH	3GPPMEMBER - ETSI	DE
Applied Communication Sciences	3GPPMEMBER - ATIS	US
ASTRI	3GPPMEMBER - ETSI	HK
AT&T	3GPPMEMBER - ATIS	US
AT&T GNS Belgium SPRL	3GPPMEMBER - ETSI	BE
BlackBerry Japan Limited	3GPPMEMBER - ARIB	JP
BlackBerry UK Limited	3GPPMEMBER - ETSI	GB
BMWi	3GPPMEMBER - ETSI	DE
BROADCOM CORPORATION	3GPPMEMBER - ETSI	US
BT Group Plc	3GPPMEMBER - ETSI	GB
CableLabs	3GPPMEMBER - ETSI	US
CATR	3GPPMEMBER - CCSA	CN
CATT	3GPPMEMBER - CCSA	CN
CATT	3GPPMEMBER - ETSI	CN
China Mobile Com. Corporation	3GPPMEMBER - CCSA	CN
China Mobile E-Commerce Co.	3GPPMEMBER - CCSA	CN
China Unicom	3GPPMEMBER - CCSA	CN
Cisco Systems	3GPPMEMBER - ATIS	US
Cisco Systems Belgium	3GPPMEMBER - ETSI	BE
Cisco Systems France	3GPPMEMBER - ETSI	FR
CMDI	3GPPMEMBER - CCSA	CN
Datang Linktester Technology	3GPPMEMBER - CCSA	CN
Datang Mobile Com. Equipment	3GPPMEMBER - CCSA	CN
DATANG SEMICONDUCTOR CO., LTD	3GPPMEMBER - CCSA	CN
DATANG TELECOM INTERNATIONAL	3GPPMEMBER - CCSA	CN
Deutsche Telekom AG	3GPPMEMBER - ETSI	DE
Dish Network	3GPPMEMBER - ATIS	US
EBU	3GPPMEMBER - ETSI	CH
Ericsson France S.A.S	3GPPMEMBER - ETSI	FR
Ericsson GmbH, Eurolab	3GPPMEMBER - ETSI	DE
Ericsson Inc.	3GPPMEMBER - ATIS	US
Ericsson India Private Limited	3GPPMEMBER - TSDSI	IN
Ericsson Japan K.K.	3GPPMEMBER - ARIB	JP
Ericsson Limited	3GPPMEMBER - ETSI	GB
Ericsson LM	3GPPMEMBER - ETSI	SE
Ericsson-LG Co., LTD	3GPPMEMBER - TTA	KR
ETRI	3GPPMEMBER - TTA	KR
Fraunhofer HHI	3GPPMEMBER - ETSI	DE
FUJITSU Laboratories of Europe	3GPPMEMBER - ETSI	GB
Fujitsu Limited	3GPPMEMBER - ARIB	JP
Fujitsu Limited	3GPPMEMBER - ETSI	JP
Fujitsu Limited	3GPPMEMBER - TTC	JP

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Organisation Name	Organisation Status	Country
Gemalto N.V.	3GPPMEMBER - ETSI	NL
General Dynamics UK Limited	3GPPMEMBER - ETSI	GB
GOHIGH DATA NETWORKS TECH.	3GPPMEMBER - CCSA	CN
Guangdong OPPO Mobile Telecom.	3GPPMEMBER - CCSA	CN
Harris Corporation	3GPPMEMBER - ATIS	US
HiSilicon Technologies Co. Ltd	3GPPMEMBER - CCSA	CN
Hitachi Europe Ltd.	3GPPMEMBER - ETSI	GB
Hitachi Ltd.	3GPPMEMBER - ARIB	JP
HOME OFFICE	3GPPMEMBER - ETSI	GB
Huawei Device Co., Ltd	3GPPMEMBER - CCSA	CN
Huawei Tech.(UK) Co., Ltd	3GPPMEMBER - ETSI	GB
HuaWei Technologies Co., Ltd	3GPPMEMBER - CCSA	CN
HUAWEI Technologies Japan K.K.	3GPPMEMBER - ARIB	JP
Huawei Technologies Sweden AB	3GPPMEMBER - ETSI	SE
III	3GPPMEMBER - ETSI	TW
Intel	3GPPMEMBER - ATIS	US
Intel Corporation (UK) Ltd	3GPPMEMBER - ETSI	GB
Intel Deutschland GmbH	3GPPMEMBER - ETSI	DE
Intel Finland Oy	3GPPMEMBER - ETSI	FI
Intel K.K.	3GPPMEMBER - ARIB	JP
Intel Korea, Ltd.	3GPPMEMBER - TTA	KR
Intel Mobile Denmark	3GPPMEMBER - ETSI	DK
Intel Mobile France	3GPPMEMBER - ETSI	FR
Interdigital Asia LLC	3GPPMEMBER - TTA	KR
IPCom GmbH & Co.KG	3GPPMEMBER - ETSI	DE
ITRI	3GPPMEMBER - ETSI	TW
KDDI Corporation	3GPPMEMBER - ARIB	JP
KDDI Corporation	3GPPMEMBER - TTC	JP
KPN N.V.	3GPPMEMBER - ETSI	NL
KT Corp.	3GPPMEMBER - TTA	KR
Kyocera Corporation	3GPPMEMBER - ARIB	JP
LG Electronics France	3GPPMEMBER - ETSI	FR
LG Electronics Inc.	3GPPMEMBER - TTA	KR
LG Uplus	3GPPMEMBER - TTA	KR
MediaTek Beijing Inc.	3GPPMEMBER - CCSA	CN
MediaTek Inc.	3GPPMEMBER - ETSI	TW
MINISTERE DE L'INTERIEUR	3GPPMEMBER - ETSI	FR
Ministère Economie Indu. Numer	3GPPMEMBER - ETSI	FR
Mitsubishi Electric Co.	3GPPMEMBER - ARIB	JP
Mitsubishi Electric Corp	3GPPMEMBER - TTC	JP
Morpho Cards GmbH	3GPPMEMBER - ETSI	DE
Motorola Solutions Danmark A/S	3GPPMEMBER - ETSI	DK
Motorola Solutions Germany	3GPPMEMBER - ETSI	DE
Motorola Solutions UK Ltd.	3GPPMEMBER - ETSI	GB
Nanjing Ericsson Panda Com Ltd	3GPPMEMBER - CCSA	CN
National Technical Assistance	3GPPMEMBER - ETSI	GB
NEC Corporation	3GPPMEMBER - ARIB	JP
NEC Corporation	3GPPMEMBER - ETSI	JP
NEC Corporation	3GPPMEMBER - TTC	JP
NEC EUROPE LTD	3GPPMEMBER - ETSI	GB
NEC India Private Limited	3GPPMEMBER - TSDSI	IN
NEC Telecom MODUS Ltd.	3GPPMEMBER - ETSI	GB
NextNav	3GPPMEMBER - ATIS	US
Nokia	3GPPMEMBER - ATIS	US
Nokia Corporation	3GPPMEMBER - ETSI	FI
Nokia Networks	3GPPMEMBER - ETSI	DE
Nokia Networks Japan	3GPPMEMBER - ARIB	JP
Nokia Networks Oy	3GPPMEMBER - ETSI	FI
Nokia Solution&Networks Korea	3GPPMEMBER - TTA	KR
Nokia Solutions & Networks (S)	3GPPMEMBER - CCSA	CN
NTT	3GPPMEMBER - TTC	JP
NTT corporation	3GPPMEMBER - ETSI	JP
NTT DOCOMO INC.	3GPPMEMBER - ARIB	JP
NTT DOCOMO INC.	3GPPMEMBER - TTC	JP
Nubia Technology Co.,Ltd	3GPPMEMBER - CCSA	CN
OBERTHUR TECHNOLOGIES	3GPPMEMBER - ETSI	FR

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Organisation Name	Organisation Status	Country
Office of Emergency Com.	3GPPMEMBER - ATIS	US
ORANGE	3GPPMEMBER - ETSI	FR
Orange Romania	3GPPMEMBER - ETSI	RO
Orange Spain	3GPPMEMBER - ETSI	ES
Orange UK	3GPPMEMBER - ETSI	GB
OTD	3GPPMEMBER - ETSI	US
P3 communications GmbH	3GPPMEMBER - ETSI	DE
Panasonic Corporation	3GPPMEMBER - ARIB	JP
Philips International B.V.	3GPPMEMBER - ETSI	NL
Qualcomm Europe Inc.(Italy)	3GPPMEMBER - ETSI	IT
Qualcomm India Pvt Ltd	3GPPMEMBER - TSDSI	IN
Qualcomm Japan Inc	3GPPMEMBER - ARIB	JP
Qualcomm Tech. Netherlands B.V	3GPPMEMBER - ETSI	NL
QUALCOMM UK Ltd	3GPPMEMBER - ETSI	GB
RADIO FREQUENCY SYSTEMS GmbH	3GPPMEMBER - ETSI	DE
Rogers Communications Canada	3GPPMEMBER - ETSI	CA
Ruckus Wireless Inc.	3GPPMEMBER - ETSI	US
Samsung Electronics Co., Ltd	3GPPMEMBER - TTA	KR
SAMSUNG Electronics Co., Ltd.	3GPPMEMBER - ARIB	JP
Samsung Electronics GmbH	3GPPMEMBER - ETSI	DE
Samsung Electronics Polska	3GPPMEMBER - ETSI	PL
Samsung R&D Institute UK	3GPPMEMBER - ETSI	GB
Samsung Research America	3GPPMEMBER - ATIS	US
Sepura PLC	3GPPMEMBER - ETSI	GB
SHARP Corporation	3GPPMEMBER - ARIB	JP
SK Telecom	3GPPMEMBER - TTA	KR
SoftBank Corp.	3GPPMEMBER - ARIB	JP
Sony Corporation	3GPPMEMBER - ARIB	JP
Sony Europe Limited	3GPPMEMBER - ETSI	GB
Sony Mobile Communications	3GPPMEMBER - ARIB	JP
SouthernLINC Wireless	3GPPMEMBER - ATIS	US
Sprint Corporation	3GPPMEMBER - ATIS	US
SPRINT Corporation	3GPPMEMBER - ETSI	US
SyncTechno Inc.	3GPPMEMBER - ETSI	KR
TELECOM ITALIA S.p.A.	3GPPMEMBER - ETSI	IT
TELEFONICA S.A.	3GPPMEMBER - ETSI	ES
Telekom Deutschland GmbH	3GPPMEMBER - ETSI	DE
TELENOR ASA	3GPPMEMBER - ETSI	NO
TeliaSonera AB	3GPPMEMBER - ETSI	SE
Telstra Corporation Limited	3GPPMEMBER - ETSI	AU
TELUS	3GPPMEMBER - ATIS	CA
THALES	3GPPMEMBER - ETSI	FR
Tianjin Samsung Telecom	3GPPMEMBER - CCSA	CN
T-Mobile Austria GmbH	3GPPMEMBER - ETSI	AT
T-Mobile Polska S.A.	3GPPMEMBER - ETSI	PL
T-Mobile USA Inc.	3GPPMEMBER - ATIS	US
TNO	3GPPMEMBER - ETSI	NL
U.S. Department of Commerce	3GPPMEMBER - ATIS	US
UPV/EHU	3GPPMEMBER - ETSI	ES
Verizon UK Ltd	3GPPMEMBER - ETSI	GB
ViaviSolutions Deutsch. GmbH	3GPPMEMBER - ETSI	DE
Virtuosys Limited	3GPPMEMBER - ETSI	GB
VODAFONE Group Plc	3GPPMEMBER - ETSI	GB
Vodafone Libertel BV	3GPPMEMBER - ETSI	NL
Vodafone Omnitel B.V.	3GPPMEMBER - ETSI	IT
Vodafone Telekomünikasyon A.S.	3GPPMEMBER - ETSI	TR
WILUS Inc.	3GPPMEMBER - TTA	KR
ZTE Corporation	3GPPMEMBER - CCSA	CN
ZTE Corporation	3GPPMEMBER - ETSI	CN
ZTE Wistron Telecom AB	3GPPMEMBER - ETSI	SE

Total: 177 Individual Member Companies

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Annex D: Specifications and CR Lists

The current status of specifications and technical reports can be queried on the 3GPP portal https://portal.3gpp.org/

The status of change requests can be queried on the 3GPP portal https://portal.3gpp.org/

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www.3gpp.org / ftp / Specs / archive / 21_series / 21.905

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	21905-670.zip	2004/06/09 10:34	118 KB

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76 items.

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www.3gpp.org / ftp / tsg_ran / WG2_RL2 / TSGR2_99 / Docs

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R2-1707844.zip	2017/08/11 19:35	125,7 KB

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R2-1707915.zip	2017/08/11 16:56	52,8 KB

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R2-1709097.zip	2017/08/11 6:13	380,2 KB
R2-1709098.zip	2017/08/11 6:13	31,2 KB
R2-1709099.zip	2017/08/11 6:13	26 KB
R2-1709100.zip	2017/08/11 6:13	23,8 KB

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R2-1709134.zip	2017/08/11 9:34	24,6 KB

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R2-1709410.zip	2017/08/11 19:19	49,3 KB
R2-1709411.zip	2017/08/11 12:31	23,4 KB
R2-1709412.zip	2017/08/11 19:19	10,8 KB
R2-1709414.zip	2017/08/11 16:51	25,5 KB

Petitioners' Exhibit 1012
Nokia of America Corp., et al. v. KT Corporation, et al.
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