Status Report RAN WG6 to TSG-RAN #81

RAN6 Chair: Juergen Hofmann (NOKIA)

RAN6 Secretary: Paolino Usai (ETSI MCC)

Meetings

- Meetings held since RAN #80 plenary

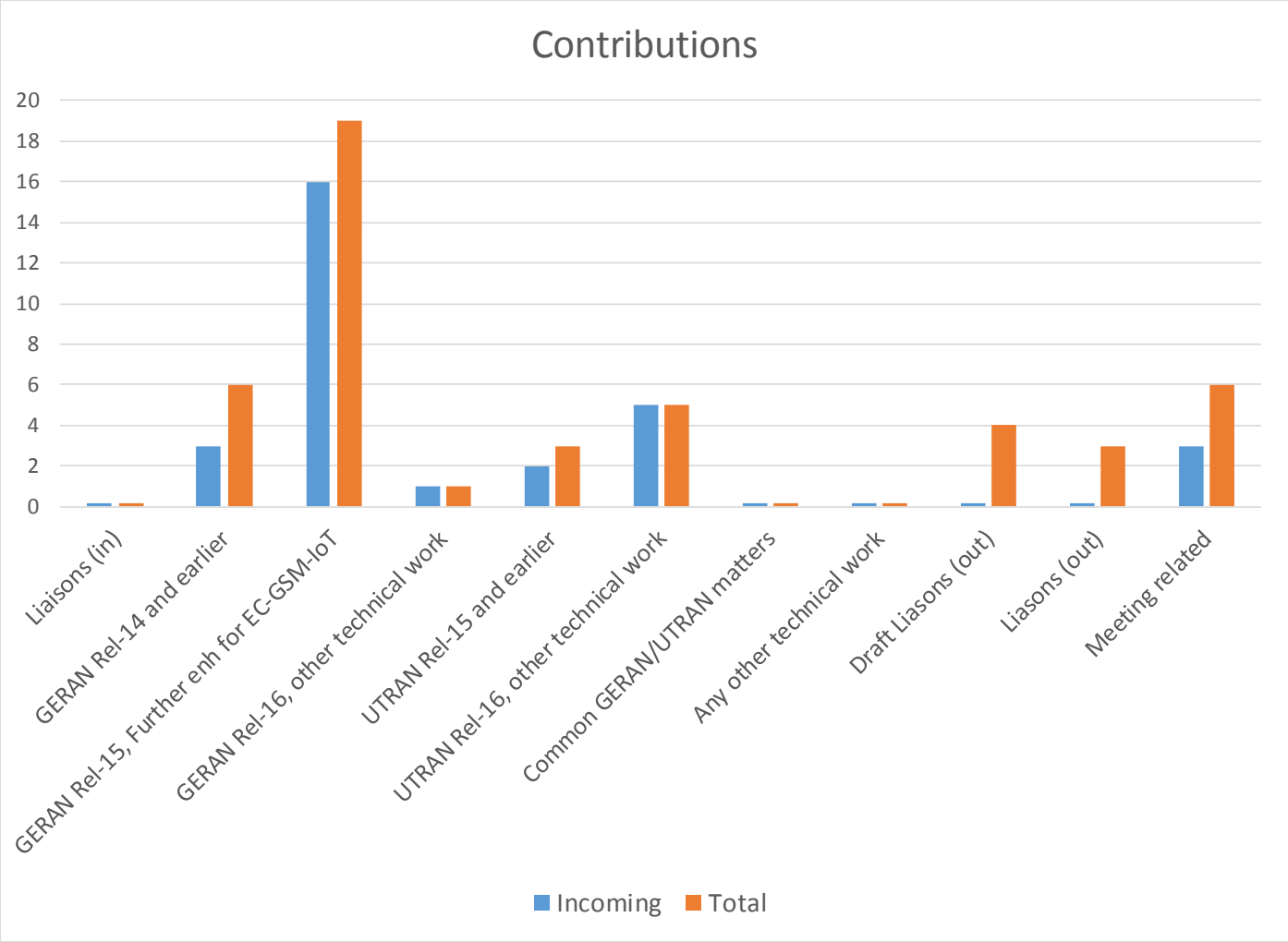
RAN6 #9	20 – 24 August, 2018	Gothenburg, Sweden	EF3
RAN6 AH	for LS on UTRAN - NR interworking 30 August, 2018	Teleconference	Nokia
RAN #81	10 – 13 September, 2018	Gold Coast, Australia	Telstra

RAN6 #9 Meeting Schedule

- The meeting schedule for RAN6 #9 was agreed.

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 AM		GERAN Rel-15 [5.2.1]		LS out [9] (UTRAN/NR IW)	Come backs (GERAN)
					Other Technical work [8] Work plan [10]
10:30 AM		GERAN Rel-13/-14 [5.1]			Future Meetings, AOB, Closure [11-13]
	Break	Break	Break	Break	Break
11:00 AM				LS out [9] (GERAN/NB-IoT IW)	
				Come back [3.3] (meeting format)	
12:30 PM					
	Lunch	Lunch	Lunch	Lunch	Lunch
2:00 PM	Opening, Agenda/Report approval, Meeting matters [1-3]				
	Liaisons [4]				
	GERAN Rel-15 [5.2.1]				
4:00 PM	GERAN Rel-16 [5.3.3]				
	Break	Break	Break	Break	Break
4:30 PM	GERAN Rel-16 [5.3.3]				
5:00 PM	UTRAN Rel-16 [6.1]				
5:30 PM	UTRAN Rel-16 [6.2.3] (3G/NR IW)				
7:30 PM					

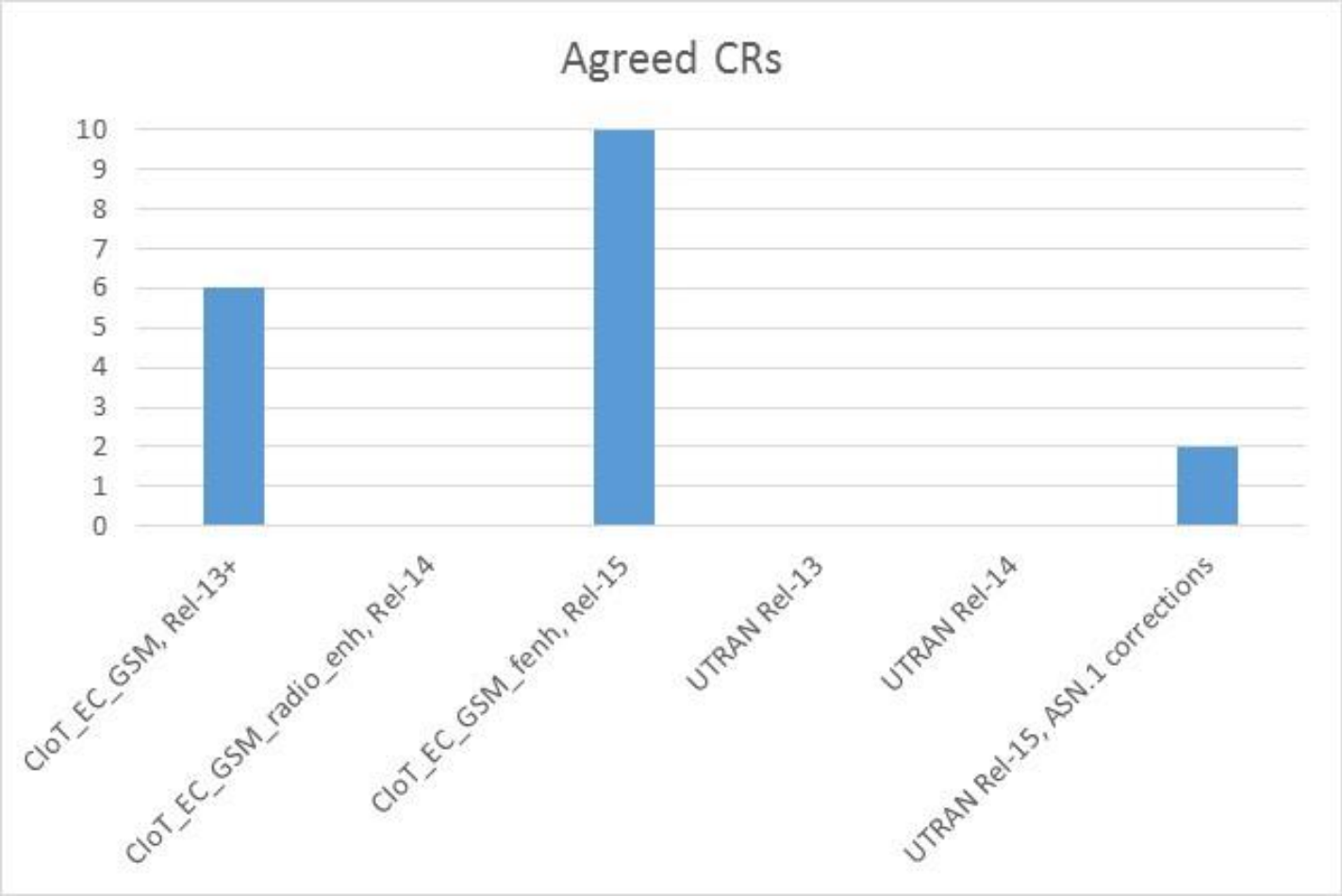
RAN6 #9 Statistics (1/3)



Incoming: 30

Total: 47
(incl. RAN6 Adhoc for LS to SA2)

RAN6 #9 Statistics (2/3)



Total agreed CRs: 18

RAN6 #9 Statistics (3/3)

- Total number of participants attending: 18 (registered for the meeting: 23)

Executive Summary (1/2)

- In total 18 CRs agreed: to GERAN specs (16), to UTRAN specs (2).
- Liaisons: no incoming LS, and 3 outgoing LS (2 on UTRAN, 1 on GERAN)
- Future RAN6 meeting arrangement
  - RAN6 agreed to request RAN for approving the change to electronic agreement meetings due to decreased work load, that will be proposed by RAN6 Chairman.
  - The background for the change and the change proposal are submitted to RAN #81 in RP-181636.
- GERAN, Rel-13: 2 CRs agreed for CIoT_EC_GSM (with mirrors).
- GERAN, Rel-14: no contributions.
- GERAN, Rel-15: Work item 'Further enhancements for EC-GSM-IoT':
  - Working assumptions for paging indication channel (sequence design and performance requirements) and system info acquisition enhancements for PEO devices agreed; refined Stage-2 functional description agreed.
  - All related Stage-3 normative work was completed for Core WI Part and Performance WI Part for both enhancements (10 CRs agreed).
  - Completion level: 100%.

  No other Rel-15 related ongoing work.
- GERAN, Rel-16: Discussion on GERAN/NB-IoT Idle mode interworking started.
  - 'RAN6 Impact for Rel-16 NB-IoT enhancements related to Inter-RAT cell reselection' debated related to WID 'Additional enhancements for NB-IoT', agreed at RAN #80.
  - LS sent to TSG RAN in R6-180158 / RP-181528 containing a proposal to revise the scope related to interworking with GERAN.

Executive Summary (2/2)

- UTRAN, Rel-13 / Rel-14: No contributions.
- UTRAN, Rel-15: 2 essential ASN.1 corrections identified related to RRC spec
- UTRAN, Rel-16: For SRVCC from NG-RAN to UTRAN, the return after CS voice call release was again debated based on 5 contributions identifying 3 options:
  1) Network assisted redirection based on channel release with redirection,
  2) Network assisted reselection based on broadcast of NR frequencies in UTRAN
  3) UE based cell selection to NR without network assistance

  These are indicated in the reply LS to SA2 (Cc: RAN2, RAN3) in R6-180157. Agreement reached at RAN6 #9 to draft a second LS after the meeting to provide additional information to SA2 on the pros & cons of the listed options in response to their request for input to their ongoing feasibility study.
  - RAN6 Adhoc meeting for LS on UTRAN-NR interworking scheduled on 30th August.
  - It was agreed to finalize the second LS by E-mail approval on 4th Sept.

  Second LS sent in R6-180164 to SA2 (Cc: RAN2, RAN3).
- Transfer of rapporteur responsibilities for UTRAN and GERAN specs: no further progress at RAN6 #9, thus will be progressed offline by RAN6 Chairman until RAN6#10.
- List of agreed CRs for block approval at RAN #81 is found in RP-181504.

General Matters/RAN6 #8 Report Approval

- Report of 3GPP TSG RAN WG6 meeting #8, R6-180118 was approved.
- Upcoming Chairman / Vice Chair Elections at RAN6#10
  - The Secretary remarked that ETSI will provide corresponding information on the RAN and RAN6 reflectors. According to the 3GPP working procedures, a physical meeting is required.
- Discussion held on RAN6 future meeting arrangement
  - RAN6 Electronic Agreement Meeting Proposal, R6-180119
    - Observes decreasing work load in RAN6 and proposes to change to electronic agreement meetings with handling of Tdocs by E-mail correspondence on RAN6 reflector.
    - Overlapping of the procedure with RAN WG meeting week was seen as disadvantageous.
  - Discussion on RAN6 future meeting format, R6-180151
    - provides options for the new meeting arrangement: 1) E-mail correspondence over RAN6 reflector, 2) Telco with decision power, 3) less physical meetings, 4) any combination thereof, 5) holding GERAN/UTRAN session at RAN plenary
  - RAN6 agreed on the combination of 1) and 2) prior to RAN WG meeting week and to request approval by TSG RAN to establish the change from RAN6 #10.
    - Though brief physical meeting for elections is needed, see Chairman's input in RP-181636.

Liaisons (1/2)

- No incoming LSs were received. Two incoming LSs from RAN6 #8, that were postponed, were treated:
- R6-180060 Return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN (source: SA2)
  - In its ongoing feasibility study on SRVCC from NR to 3G, SA2 investigates options for the return from 3G to NR after CS voice call release.
  - RAN6 has started discussion on possible options (network based / UE based solutions) at RAN6 #8 and has agreed to allow for studying this further until RAN6 #9.
  - LS was postponed to RAN6 #9 where RAN6 plans to send a reply to SA2.
  - At RAN6 #9, the LS was noted as a reply LS was sent to SA2 in R6-180157 as well as a further LS in R6-180164.
- R6-180089 LS on Removal of LTE specific terminology from Group Communication System Enablers TS 22.468 (source: SA1)
  - SA1 have decided to replace the term 'LTE' by '3GPP' in regard to Mission Critical services to allow that these services can be supported in 5G and future generations. SA1 asks groups to update their specs to the latest version of TS 22.468. RAN6 will finalize this work at RAN6 #9. LS was postponed to RAN6 #9 where RAN6 considers to send a reply.
  - At RAN6 #9, the LS was further postponed as no analysis was made for GERAN/UTRAN specs so far. The Secretary committed to check if any specs are affected until RAN6 #10.

Liaisons (2/2)

- Two outgoing LS were sent from RAN6 #9 and 1 outgoing LS per E-mail approval.
- R6-180157 Reply LS on Return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN (To: SA2, Cc: RAN2, RAN3), approved
  - The LS is a reply to SA2's LS to RAN6 #8 in R6-180060 inquiring possible options for the return to NG-RAN after voice call completion in UTRAN triggered by SRVCC.
  - The LS lists 3 options (RRC release command with redirection to NR, idle mode interworking with broadcast of NR frequencies, UE implementation based redirection). The impact to UTRAN specifications is briefly depicted for all options.
- R6-180164 LS on additional information related to return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN (To: SA2, Cc: RAN2, RAN3), approved
  - An additional LS was sent as outcome of the RAN6 Adhoc for LS on UTRAN-NR Interworking on 30 Aug and subsequent E-mail approval, see slide 30.
- R6-180158 LS on RAN6 impact for Rel-16 NB-IoT enhancements related to Inter-RAT cell reselection (To: TSG RAN, Cc: RAN2), approved (received in RP-181528)
  - The LS depicts scenarios for idle mode interworking between NB-IoT and GERAN (optional support of interworking for PEO and EC-GSM-IoT from / to NB-IoT as well as the service based redirection for starting a voice call in GERAN).
  - A corresponding TP for modifying the WID in RP-181451 to add RAN6 in the mobility enhancement and support GERAN functionality up to Rel-15 in the interworking is provided.

CRs to features in Rel-14 or earlier (GERAN)

EC-GSM-IoT (Rel-13) (1/1)

CIoT_EC_GSM, Core and Performance aspects

- Cleaning done for MS and BSS performance requirements.
- **CR 45.008-0664 Finalization of requirements for EC-GSM-IoT (Rel-13)** agreed in R6-180142. Removal of brackets for Radio Link Control related requirements for EC-GSM-IoT. Corresponding Rel-14/Rel-15 mirrors agreed in R6-180155 and R6-180156.
- **CR 51.021-0297 Editorial corrections related to EC-GSM-IoT (Rel-13)** agreed in R6-180140. Corresponding Rel-14/Rel-15 mirrors agreed in R6-180141 and R6-180154.

CRs for Approval

- The agreed CRs are collected in RP-181594 for block approval at RAN #81.

Rel-15 features (GERAN)

Further enhancements for EC-GSM-IoT (Rel-15) (1/4)

The work item CIoT_EC_GSM_fenh, approved at RAN #79, was completed at RAN6 #9.

- **Meeting minutes from Telco #1 on CIoT_EC_GSM_fenh**, R6-180136, agreed
  - Captures discussion on EC-PICH sequence design and performance as well as SI acquisition enhancement for PEO, treated in telco on 21st June.

Concept design for the two enhancements: paging indication channel for EC-GSM-IoT and energy efficient SI acquisition for PEO finalized at RAN6 #9:

- **EC-PICH Sequence Design**, R6-180123, noted
  - Introduces backward compatible sequence design for EC-PICH, i.e. the legacy EC-GSM-IoT device in CC1 will detect an unknown message type (proposal already presented in Telco #1).
- **Performance Evaluation of EC-PICH**, R6-180124, noted
  - Performance evaluation for backward compatible sequence design for 8 TSCs for CC4 and for CC3.
  - The combined error rate performance requirement for EC-PICH and EC-PCH, which is to be introduced in TS 45.005, is presented. RAN6 agreed the proposal.

Further enhancements for EC-GSM-IoT (Rel-15) (2/4)

- **Deferred System Information Acquisition for PEO, Concept Design and Evaluation**, R6-180132, agreed
  - Deferred system information acquisition for MS reselecting to a new cell belonging to a group of cells, having common system information parameters related to idle mode mobility configuration, was already introduced for EC-GSM-IoT at RAN6 #8.
  - The WID in RP-180541 foresees to study energy saving enhancements also for PEO devices.
  - An energy consumption benefit in idle mode for PEO of up to 25% of the radio module energy consumption is estimated, applying the same concept to PEO, with required signalling changes to SI13 (for cell group definition) and AGCH/PCH messages (to allow for fast detection if a cell belongs to the same cell group as the serving cell).
  - All working assumptions were agreed. No MS capability indication is foreseen for this enhancement.

Further enhancements for EC-GSM-IoT (Rel-15) (3/4)

Normative Work

- **Agreed Stage-2 CRs**
  - **CR 43.064-0119 Corrections to EC-PICH (Rel-15)**, R6-180125
  - **CR 43.064-0120 Deferred System Information Acquisition for PEO (Rel-15)**, R6-180133
- **Agreed Stage-3 CRs**
  - **CR 44.018-1084 rev 1 Introduction of EC PAGING INDICATION message (Rel-15)**, R6-180148
  - **CR 44.018-1085 Deferred System Information Acquisition for PEO (Rel-15)**, R6-180134
  - **CR 45.001-0099 Introduction of EC-PICH (Rel-15)**, R6-180127
  - **CR 45.002-0215 Corrections for EC-PICH (Rel-15)**, R6-180128
  - **CR 45.003-0149 Introduction of EC-PICH (Rel-15)**, R6-180129
  - **CR 45.005-0616 Introduction of EC-PICH performance requirements (Rel-15)**, R6-180130
  - **CR 45.008-0662 Introduction of EC-PICH (Rel-15)**, R6-180131
  - **CR 45.008-0663 Deferred System Information Acquisition for PEO (Rel-15)**, R6-180135

CRs for Approval

- The agreed CRs are collected in RP-181593 for block approval at RAN #81.

Further enhancements for EC-GSM-IoT (Rel-15) (4/4)

Work Plan

- **Work plan for WI Further enhancements for EC-GSM-IoT** agreed in R6-180160
  - Captures progress on completion of stage 2 and stage 3 CRs for this WI.

WI Status Report to RAN #81

- **Status Report for WI Further enhancements for EC-GSM-IoT** in RP-181886
  - No comments on RAN6 reflector received.
  - WI completion level: 100%

WI Summary to RAN #81

- **WI Summary for CIoT_EC_GSM_fenh** submitted in RP-181976 to RAN #81
  - endorsed by RAN6 in R6-180138

Other Rel-15 items (GERAN)

- None.

Rel-16 features (GERAN)

Rel-16 items (GERAN)

- No contributions to “New Work or Study item proposals”
- No contributions to TEI16.
- 1 contribution to “Any other Rel-16 documents”

Other Rel-16 items (GERAN)

- **GERAN - NB-IoT Idle mode interworking**
  - RAN6 Impact for Rel-16 NB-IoT enhancements related to Inter-RAT cell reselection, R6-180139, noted
    - Proposal to clarify the scope of GERAN – NB-IoT Idle mode interworking being addressed in the mobility enhancement aspect of WID in RP-181451 opened at RAN #80.
  - RAN6 discussed the scope and agreed to propose inclusion of GERAN Rel-15 functionality for the interworking between GERAN and NB-IoT in the WID.
    - This means that the interworking should optionally support PEO and EC-GSM-IoT operation in GERAN as well as take into account the scenario of service based redirection to GERAN for starting a voice call.
  - RAN6 approved a corresponding LS to TSG RAN in R6-180158 (received in RP-181528).

CRs to features in Rel-15 or earlier (UTRAN)

ASN.1 corrections (Rel-15)

- ASN.1 review was completed at RAN6 #8.
- At RAN6 #9, two ASN.1 errors were observed requiring essential corrections to TS 25.331:
  - **CR 25.331-5959 rev 1 RRC ASN.1 correction (Rel-15)**, R6-180149 agreed.
  - **CR 25.331-5960 Essential correction for RRC ASN.1 (Rel-15)**, R6-180145 agreed.

CRs for Approval

- The agreed CRs are submitted in RP-181592 for block approval at RAN #81.

Rel-16 features (UTRAN)

Rel-16 items (UTRAN)

- No contributions to “New Work or Study item proposals”
- No contributions to TEI16.
- 5 contributions to “Any other Rel-16 documents”

Other Rel-16 items (UTRAN) (1/3)

- **SRVCC from 5GS to UTRAN CS – Return to NG-RAN,** R6-180120, noted
  - Similar proposal as submitted to RAN6 #8 in R6-180062 on options for return from NG-RAN to UTRAN; a solution without UTRA RRC signalling being targeted.
  - Proposal 1: *RAN6 acknowledges SA2's working assumption that PS handover from UTRAN to NG-RAN is not supported and that return back to NG-RAN occurs in idle mode, following the release of the RRC Connection.* Proposal 1 already agreed at RAN6 #8.
  - Proposal 2: *UTRAN specifications are kept unchanged; no redirection mechanism is specified to return to NG-RAN/NR from UTRAN upon RRC Connection Release. Redirection to NG-RAN/E-UTRA is supported by means of existing redirection to E-UTRAN/E-UTRA, with no distinction specified between NG-RAN and E-UTRAN target info.* Proposal 2 not agreed at RAN6 #9.
- **Draft Reply LS on Return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN**, R6-180121, noted
  - Already presented at RAN6 #8 in R6-180063. Proposes to reply to not foresee specification changes for UTRAN for returning to NG-RAN at RRC Connection Release.
  - No consensus reached to send this draft LS to SA2.

Other Rel-16 items (UTRAN) (2/3)

- **Options for NR cell reselection from UTRAN Idle mode,** R6-180144, noted
  - Proposes a network controlled procedure, i.e. allowing idle mode interworking via broadcast and/or redirection with NR frequencies based or not on UE measurements of NR frequencies while connected to UTRAN.
  - Use case scenarios for SRVCC from NR to UTRAN and redirection from UTRAN to NR were discussed.
  - *Proposal: NR cell reselection from UTRAN Idle mode shall be supported with Network involvement.* Proposal not agreed.
- **Return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN**, R6-180146, noted
  - Proposes network assisted redirection based on broadcast of NR frequencies in SIB 19 and/or RRC Connection Release with redirection to NR aligning to procedure for redirection from UTRAN to E-UTRAN.
  - *Proposal 1: Inform SA2 that if existing procedures are reused and no updates are made, the UE may be redirected back to LTE with LTE frequencies indicated in the RRC Connection Release message due to the lack of knowledge of where the UE comes from.* Proposal not agreed.
  - *Proposal 2: Inform SA2 that a solution purely based on UE implementation is against current specifications. It would also make network maintenance more difficult and give incorrect statistics.* Proposal not agreed.

Other Rel-16 items (UTRAN) (3/3)

- **DRAFT Reply LS on return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN**, R6-180147, noted
  - Content aligned to R6-180146.
  - No consensus reached to send this draft LS to SA2.
- **Discussion at RAN6 #9 on return from UTRAN to NG-RAN**
  - Agreement reached to merge both draft LS in R6-180121 and R6-180147 into R6-180151.
  - The options for return from UTRAN to NR should be listed in the reply LS and their pros & cons as well.
  - The lack of information on potential use case scenarios will also be raised to SA2.
  - Later, it was concluded that a second LS will be drafted in an offline session to provide additional information to SA2 on the pros & cons of the listed options.
  - Agreement reached to schedule a RAN6 Adhoc teleconference on this matter on 30 August (see next slide).

RAN6 Adhoc for LS on UTRAN-NR Interworking (1/1)

- RAN6 Adhoc meeting held on 30 Aug, 16.00 – 18.00 CEST in order to draft the second LS on the topic of redirection from UTRAN to NR.
- Draft LS on additional information related to return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN, R6-180162, noted
  - Draft proposal submitted by LS author to meeting
- Comments to Draft LS on additional information related to return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN (originated by Qualcomm and Ericsson), R6-180163, noted
  - Comments were debated during the meeting and further offline, thus LS undergoing E-mail approval procedure (4th Sept, 13.00 CEST)
- LS on additional information related to return from UTRAN to NG-RAN for SRVCC from 5GS to UTRAN, R6-180164, approved
  - Providing further information on pros & cons of the options listed in R6-180157
  - LS sent to SA2 (Cc: RAN2, RAN3)

Common GERAN / UTRAN matters

- No contributions.

Other technical work (1/1)

Transfer of rapporteur responsibilities for UMTS 25.xxx specifications and GERAN 4x.xxx and 5x.xxx specifications

- No progress reached at RAN6 #9, still under work.
- Proceeding according to agreement at RAN6 #6 to distinguish between TSs with frequent changes and TSs with infrequent changes and TRs and to assign priorities accordingly for updating rapporteur responsibilities.
- Chairman will progress this until RAN6 #10 on RAN6 reflector.

Work Plan

- Presented in R6-180159 and agreed.
- Active work / study items:

Work / Study Item	Objective	Rel (Core Feature)	Completion
CIoT_EC_GSM_fenh (WI)	Further enhancements for EC-GSM-IoT (Stage 2 + Stage 3)	Rel-15	100%

RAN WG6 Schedule (2016 – 2018)

Meeting	Date	Location	Host
RAN6 #1	22 – 26 August 2016	Gothenburg, Sweden	EF3
RAN #73	19 – 22 September 2016	New Orleans, US	NAF3
RAN6 #2	14 – 18 November 2016	Reno, US	NAF3
RAN #74	5 – 8 December 2016	Vienna, Austria	EF3
RAN6 #3	13 – 17 February 2017	Athens, Greece	EF3
RAN #75	6 – 9 March 2017	Dubrovnik, Croatia	EF3
RAN6 #4	15 – 19 May 2017	Hangzhou, China	Huawei
RAN #76	5 – 8 June 2017	West Palm Beach, US	NAF3
RAN6 #5	21 – 25 August 2017	Berlin, Germany	EF3
RAN #77	11 – 14 September 2017	Sapporo, Japan	ARIB, TTC
RAN6 #6	27 November – 1 December 2017	Reno, US	NAF3
RAN #78	18 – 21 December 2017	Lisbon, Portugal	EF3
RAN6 #7	26 February – 2 March 2018	Athens, Greece	EF3
RAN #79	19 - 22 March 2018	Chennai, India	IF3, COAI
RAN6 #8	21 - 25 May 2018	Busan, Korea	Samsung
RAN #80	11 - 14 Jun 2018	La Jolla, US	NAF3
RAN6 #9	20 - 24 Aug 2018	Gothenburg, Sweden	EF3
RAN #81	10 - 13 Sep 2018	Gold Coast, Australia	Telstra
RAN6 #10	12 - 16 Nov 2018	Spokane, US	NAF3
RAN #82	10 - 13 Dec 2018	Sorrento, Italy	EF3

Concluding Remarks

- A special thanks to Paolo Usai (ETSI MCC) for his efficient secretary support.
- Thanks to all delegates for their hard work.
- Thanks to the host EF3 for the convenient meeting organization (with co-located other RAN WG's).