3GPP TSG RAN #46
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Sanya, P. R. China

Status Report RAN WG3

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Outline

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RAN3 CRs provided to RAN

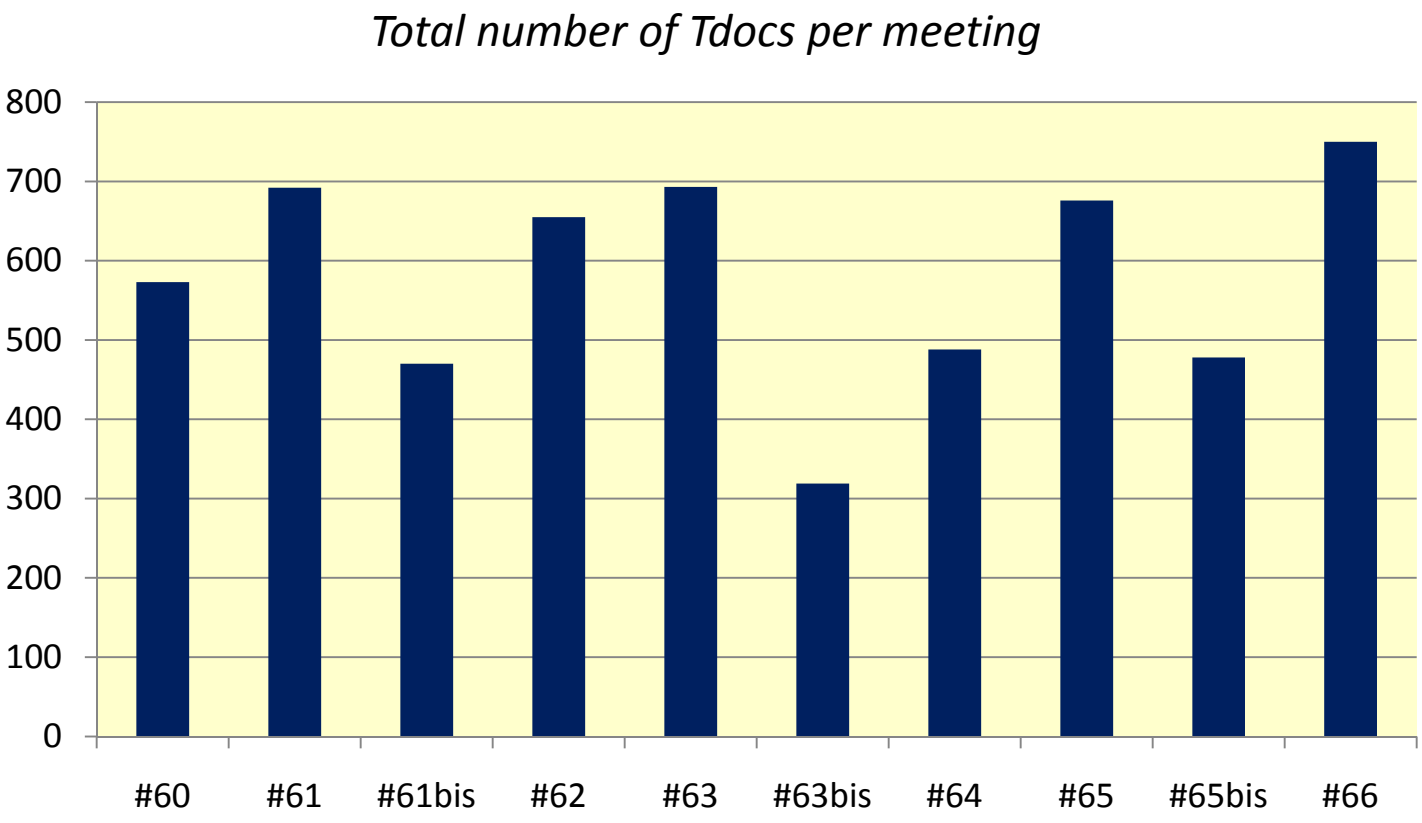
- 134 agreed CRs:
  - Maintainance work
    - Rel-7
      - 2 Cat F CRs for UTRAN
    - Rel-8
      - 38 Cat F CRs for UTRAN
      - 2 Cat A CRs for UTRAN
      - 7 Cat F CRs for E-UTRAN
  - Rel-9 work (UTRAN and E-UTRAN)
    - 29 Cat A CRs
    - 11 Cat F CRs
    - 45 Cat B CRs

RAN3 CRs provided to RAN (cont'd)

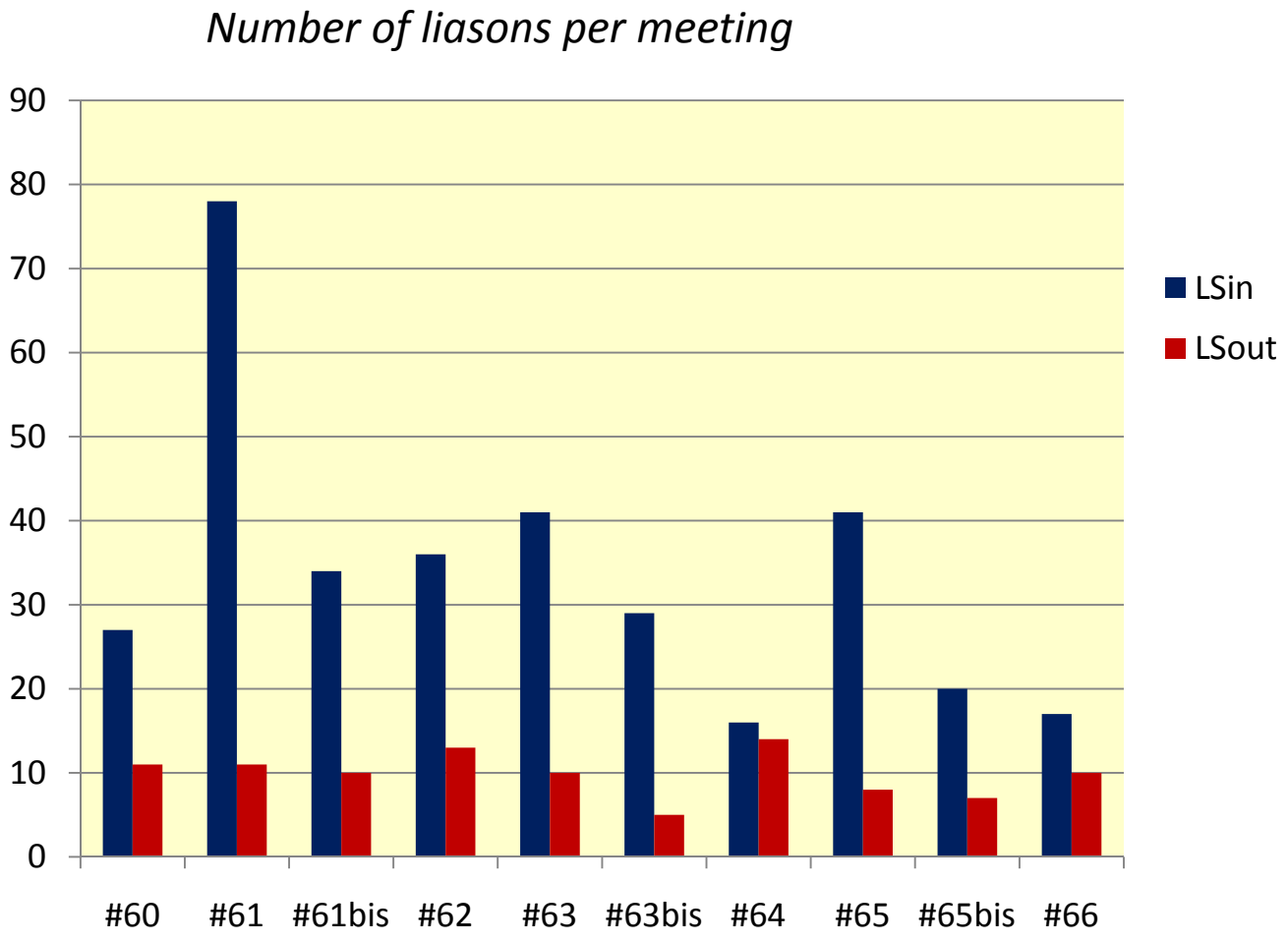
- 22 endorsed CRs (for stage-2 TSs under RAN2 responsibility)
  - LTE
    - 2 Rel-8 CRs for TS 36.300
    - 16 Rel-9 CRs for TS 36.300
    - 1 Rel-9 CR for TS 36.305
  - HSPA
    - 2 Rel-9 CRs for TS 25.319
    - 1 Rel-9 CRs for TS 25.346

- List of RAN3 CRs provided to RAN available in RP-091026

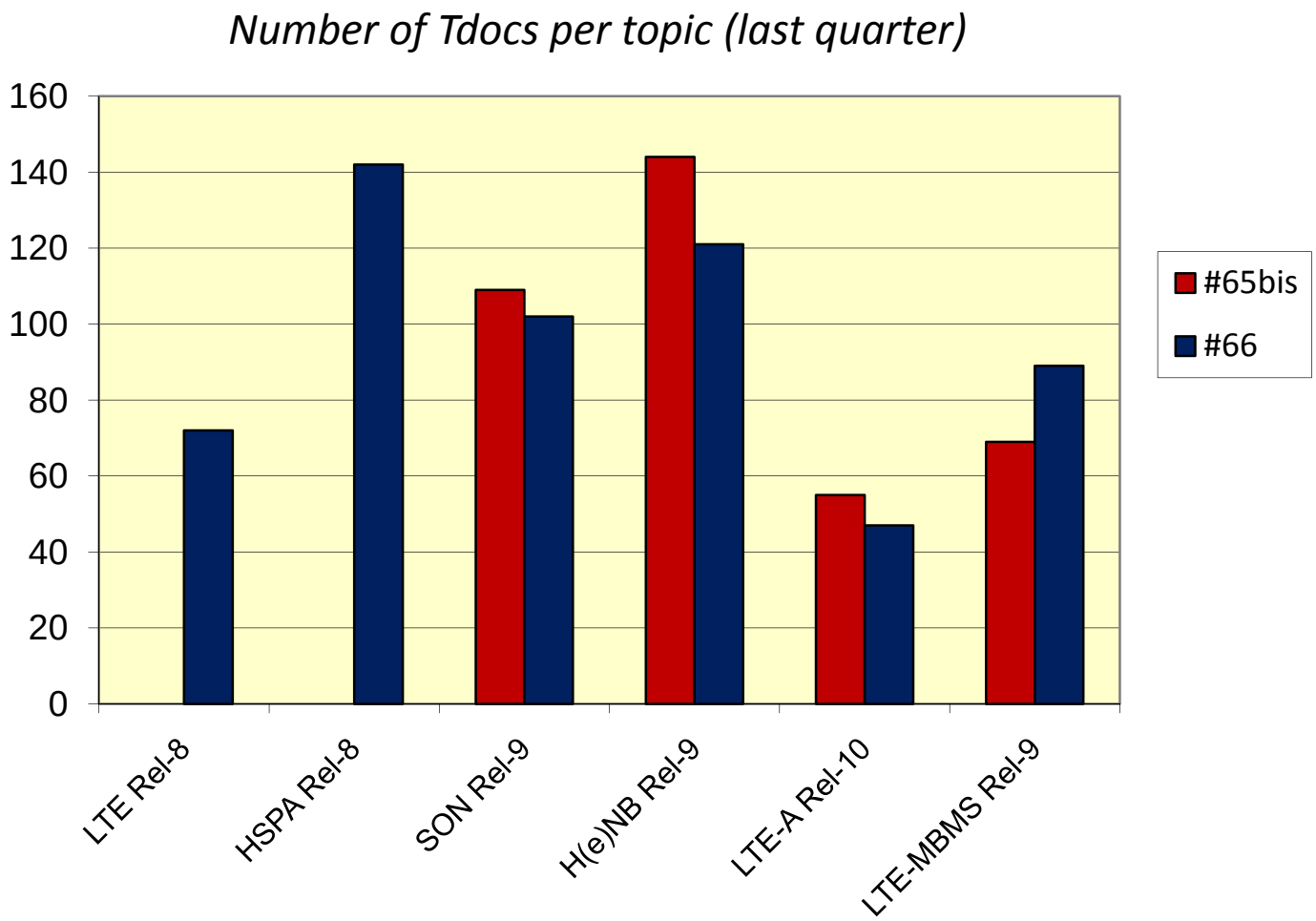
Statistics (1)



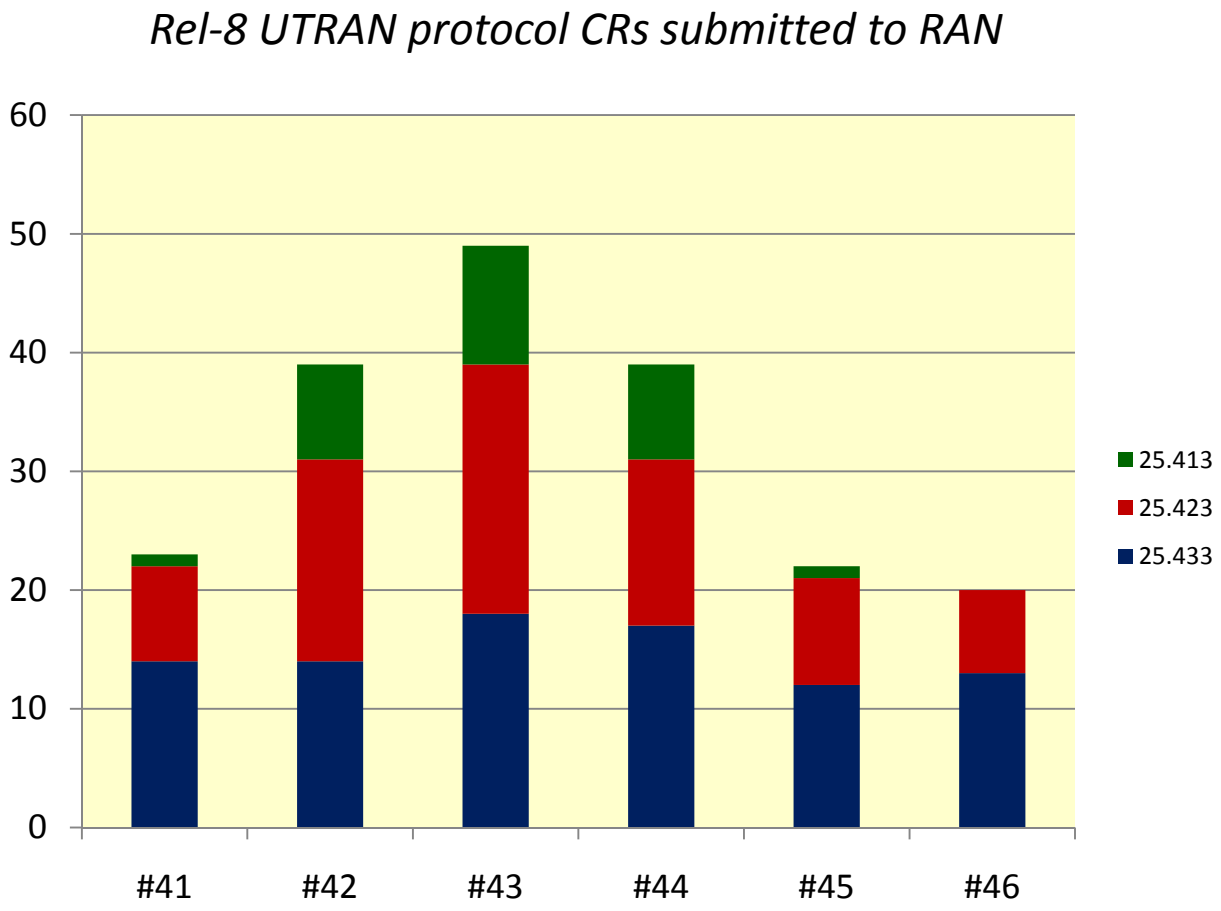
Statistics (2)



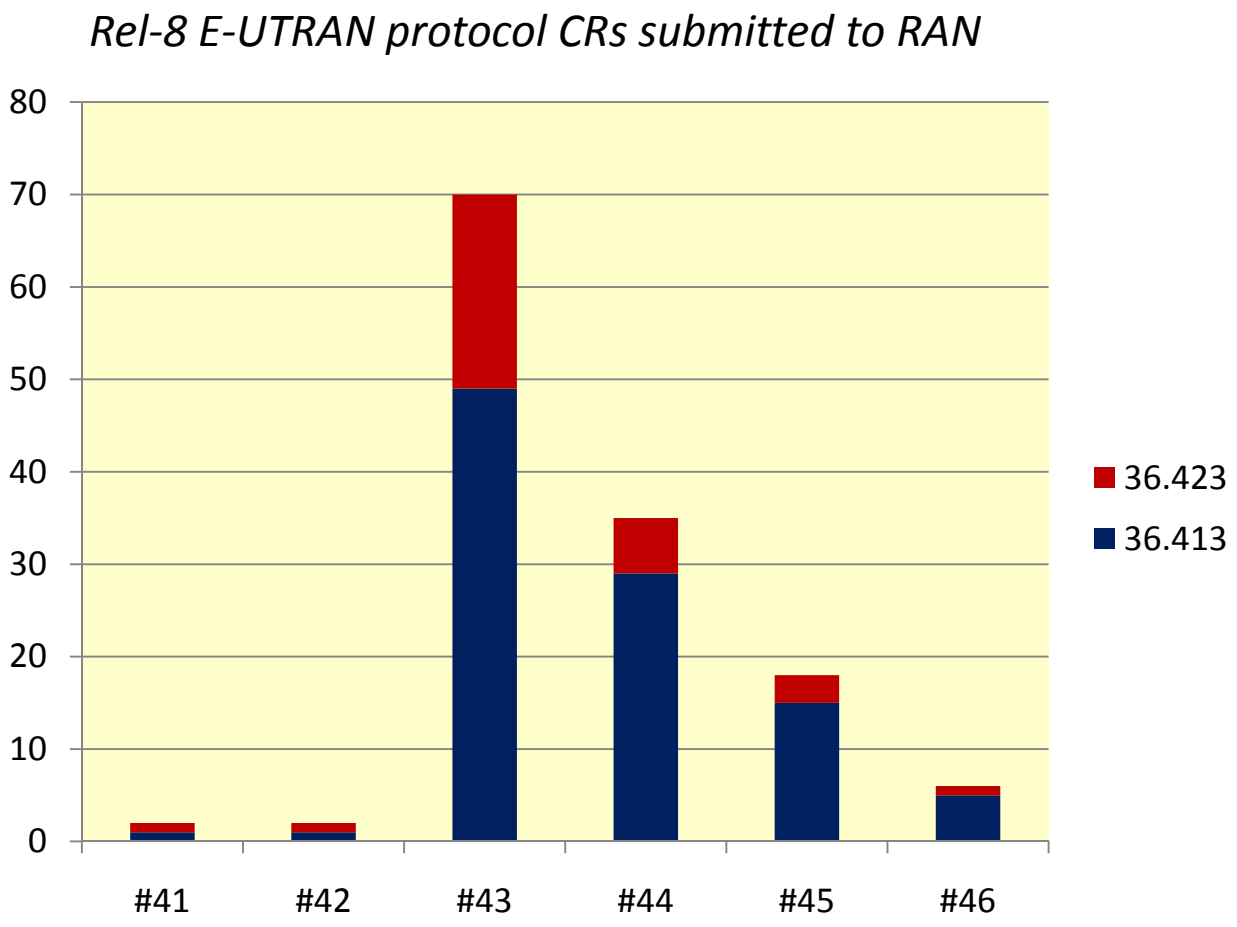
Statistics (3)



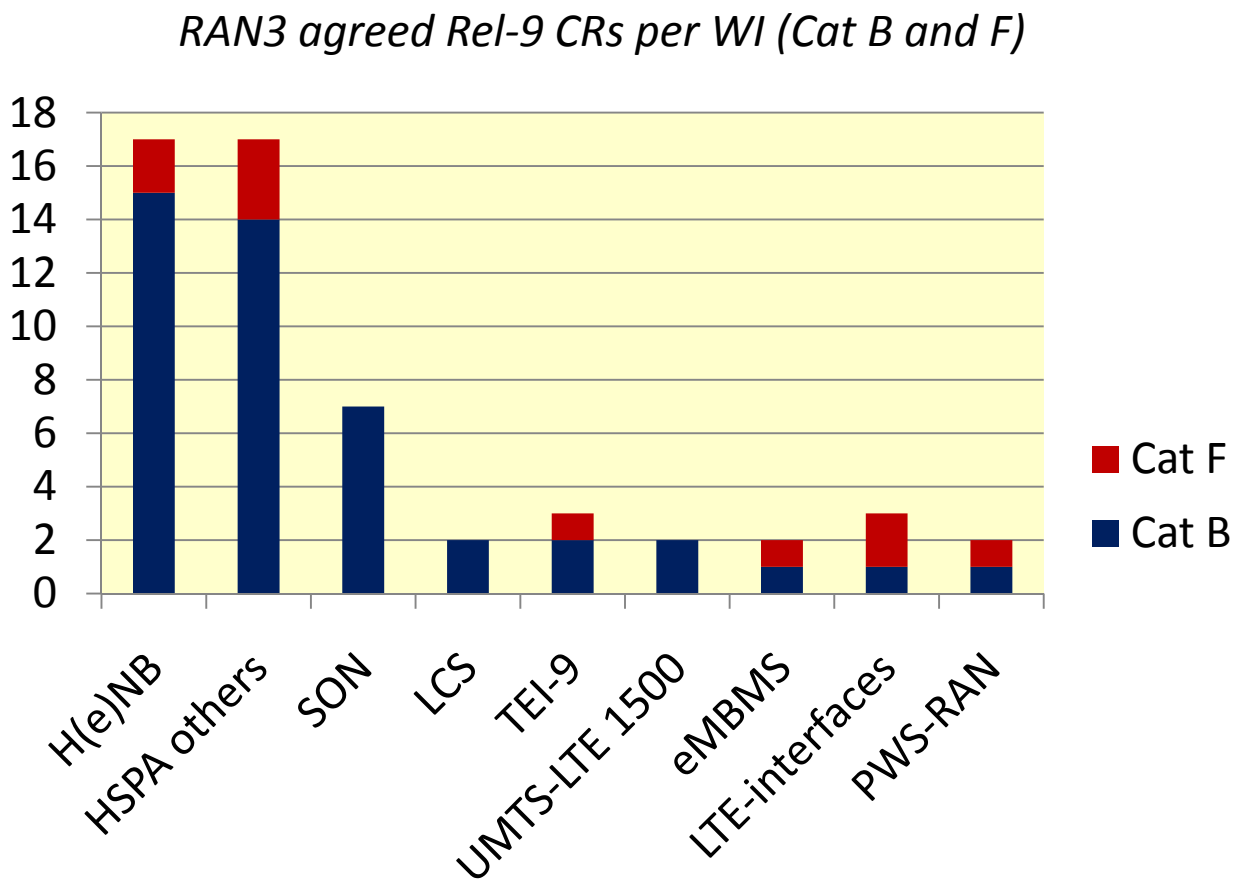
Statistics (4)



Statistics (5)



Statistics (6)



Maintenance: Rel-7 UTRAN

- 2 Rel-7 CRs for UTRAN
  - 25.433: corrected inconsistent name of a MIMO Power Offset IE in ASN.1
  - 25.423: corrected cause value mismatch between Rel-7 and Rel-8/Rel-9 in ASN.1

Maintenance: Rel-8 UTRAN

- 8 Rel-8 CRs related to closed FDD/TDD WIs
  - 25.423/433: applied the *MAC-e Reset Indicator* concept to *MAC-i Reset*
  - 25.435: clarified that *Silent Mode* is applicable to both FDD and 1.28Mcps/TDD operations
  - 25.427/425/435: corrected value range of *Number of MAC-is SDU in frame* IE
  - 25.423: corrected references of *HS-DSCH Semi-Persistent scheduling Deactivate Indicator LCR* IE in the tabular format
  - 25.419: fixed support for ETWS in UTRAN; Write-Replace message changed as follows:
    - Moved position of some IEs in ASN.1
    - Added *Broadcast Message Content Validity Indicator* IE

- 8 Rel-8 CRs related to closed Rel-8 FDD WIs
  - 25.433: added some clarifications on DPC mode configuration for common E-DCH
  - 25.423/433: corrected abnormal condition in RL Addition procedure for DC-HSDPA operation
  - 25.423/433: added clarifications on DC-HSDPA operation
  - 25.433: introduced E-RNTI in RL Information in RL Setup Request
  - 25.423/433: allowed different Transmit Diversity settings different carriers in DC-HSDPA operation

Maintenance: Rel-8 UTRAN (cont'd)

- 11 Rel-8 CRs related to closed Rel-8 TDD WIs
  - 25.433: corrected ASN.1 errors in *Common E-DCH System Information Response LCR for 1.28Mcps TDD* IE
  - 25.433: corrected SPS-related resource configuration for 1.28Mcps TDD
  - 25.425/435: introduced a new control frame for 1.28Mcps TDD operation. This is used to stop HS downlink data transmission in case of UL synch failure at the NB in CELL_FACH state
  - 25.423: clarified the meaning of BIT STRING type IEs for SPS operation in 1.28Mcps TDD
  - 25.433: aligned tabular and ASN.1 for *E-DCH Semi-Persistent scheduling Information LCR* IE and *E-DCH Semi-Persistent scheduling Information to modify LCR* IE
  - 25.433: clarified few IEs names in ASN.1 for the *Common E-DCH System Information LCR* IE
  - 25.433: corrected error in the *HS-DSCH Common System Information LCR* IE
  - 25.433: corrected the HARQ Memory Partitioning configuration in Enhanced Cell_FACH operation for 1.28 Mcps TDD
  - 25.433: clarified aspects related to the Priority Queue ID used in Ehanced CELL_FACH operation for 1.28Mcps TDD
  - 25.435: corrected the scope of the eDRX Indication
  - 25.435: removed limitation in the use of the FACH indicator in case of 1.28Mcps TDD

Maintenance: Rel-8 UTRAN (cont'd)

- 5 Rel-8 CRs related to closed Rel-8 WI on 3G HNB architecture
  - 25.467: added assigned SCTP Port Number for RUA and HNBAP
  - 25.469: corrected a reference in ASN.1
  - 25.469: added cause value *UE not allowed on this HNB* in *UE DE-REGISTER* message
  - 25.467: clean up
  - 25.467: removed FFSs

- 3 Others
  - 25.435: corrected description of HS-DSCH DATA FRAME TYPE2
  - 25.423/433: editorial correction for *E-AGCH Table Choice* IE

Maintenance: Rel-8 E-UTRAN

- 2 Rel-8 CRs on signalling and data transport
  - 36.412/ 36.422: addition of SCTP destination port number to be used for S1-AP

- 6 Rel-8 CRs related to S1-AP
  - 36.413: corrected definition of *Transport Layer Address* IE
  - 36.413: corrected ASN.1 for *BroadcastCompleteAreaList* IE
  - 35.413: corrected E-RAB Modify to align it with RRC
  - 36.413: corrected missing reference and clarified handling of CDMA2000 Sector ID
  - 36.300: clarified the expected eNB behaviour in case of subsequent Overload Start message (=>RAN2)
  - 36.300: clarified how to handle the case of multiple NAS PDUs in a dowlink S1-AP message in order to guarantee in oder delivery at the UE

- 1 Rel-8 CRs related to X2-AP
  - 36.423: clarified on operational use of updated configuration data

Rel-9 work: H(e)NB

- Introduced network support for in-bound mobility to H(e)NBs
  - The framework addresses the following scenarios:
    - 3G Macro -> 3G CSG/hybrid cells
    - LTE Macro -> LTE CSG/hybrid cells
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    - 3G Macro -> LTE CSG/hybrid cells
      - Low priority item as per RAN prioritization (*RP-090995*), but came for free given the adopted solution. Unclear if there will be over-the-air support for this scenario in Rel-9 (LS sent to RAN2)
  - Main principles for CSG-capable UEs
    - Final UE membership check perfomed at the CN based on target cell's CSG-ID (and Access Mode)* provided by the source RAN in the HO required message
      - CSG-ID of the target cell avaiable at the source RAN via UE measurements (RAN2)
    - Target cell's CSG-ID (and the UE membership status at the CSG)* provided from the CN to the target RAN in the HO request message
      - CSG-ID used for post-verification purposes
      - UE membership status used for prioritization purposes
  - Main principle for non CSG-capable UEs (3G only)
    - Final UE membership check done at HNB-GW

(*) applicable in case of hybrid cell only

Rel-9 work: H(e)NB (cont'd)

- Introduced UL multiplexing support for HNB
  - Stage-2 description
  - Changes to HNBAP
  - New TS 25.444 on *Iuh data transport*
    - For approval at RAN#46
- Introduced ETWS support for HNB
  - Stage-2 description
  - Changes to HNBAP
- Open issue
  - Handling of CSG membership expiration/removal
    - LS to SA2 to request further feedback

Rel-9 work: SON

- Mobility Load Balancing (MLB)
  - Intra-RAT
    - Introduced the *Composite Available Capacity* concept to allow neighbor eNBs to exchange the overall available resource level over X2
    - Agreed framework for mobility parameters negotiation over X2
      - The functionality allows an eNB to communicate/request a change of mobilty parameters from/to its neighbors
      - One new class-1 procedure introduced in X2-AP: *Mobility Settings Change*
  - Inter-RAT
    - Working assumption to use RIM to exchange load information across RATs
      - Pending GERAN2/CT4/SA2 assessment on the feasibility of the approach
      - Technically endorsed CRs for Iu/S1 (may be submitted to RAN#47)
        - » Need to extend RIM routing address to address UTRAN <-> EUTRAN transfers
    - For exchanges from other RATs to E-UTRAN the LTE load definition should be the same as for the intra-RAT case (*Composite Available Capacity*)
      - Extension needed to RIM container (GERAN2)

Rel-9: SON (cont'd)

- Mobility Robustness Optimization (MRO)
  - Agreed framework that allows neighbor eNBs to exchange information related to RLFs that occurred due to *Too Early Handovers*, *Too Late Handovers* or *Handover to Wrong Cell*
  - Two new stage-2 procedures introduced in X2-AP:
    1. *Radio Link Failure Indication*
    2. *Handover Report*

- RACH optimization
  - Based on RAN2 feedback, signaling support was introduced over X2 to allow neighbor eNBs to exchange their used PRACH resources
    - To avoid interference and RACH collisions, RACH resources, including frequency and root sequences, should not be used in neighbor eNBs.

- CCO
  - Not discussed

Rel-9 work: HSPA topics

- Dual Cell HSUPA (R1 WI)
  - Introduced the Dual Cell HSUPA capability in Iur/Iub, including
    - CP solution for signaling of deactivation/activation of secondary carrier
    - Capability handling
  - Updated stage-2

- Combination of DC-HSDPA with MIMO (R1 WI)
  - Introduced the single stream MIMO capability in Iur/Iub
  - Removed MAC-ehs format indicator and updated cell capability

Rel-9 work: HSPA topics (cont'd)

- UTRAN 2ms TTI uplink range improvement (R1 WI)
  - No activity
- Cell Portion for 1.28 Mcps TDD (R3 WI)
  - Introduced the Cell Portion capability for 1.28 Mcps TDD
    - Includes power configuration method
- Study on 1.28 Mcps TDD Home NodeB (R4 SI)
  - No activity
- 1.28Mcps TDD Multi-carrier HSUPA (R1 WI)
  - No activity

Rel-9: eMBMS

- Progress on stage-2 :
  - Reuse of SYNC protocol
    - Corrections for SYNC for Rel-8 (stage 2 and 3), to form a solid base for LTE MBMS work
    - Enhanced to handle consecutive packet losses
  - Agreement on M2-AP CP-synchronisation
  - Agreement to handle admission control at MCE

- Progress on stage-3:
  - New TSs submitted for approval to RAN#46
    - 36.440 , 36.441, 36.442, 36.443, 36.444, 36.445
  - M3AP - Working assumption on no need of MBMS Session Update

- Open issue
  - When/how to apply packets dropping at the eNB?
  - M3-flex (ongoing LS to SA2)
  - M2-AP: needs additional clarifications (MBSFN Area value range, …)

Rel-9: Positioning

- LPPa protocol
  - Modelled as end-to-end protocol between E-SMLC and eNB (transparently traversing the MME)
  - Support
    - E-CID positioning mechanim
    - Transfer of OTDOA assistance data between eNB and E-SMLC
  - Specified in new TS 36.455
    - Presented for approval at RAN#46

- LPPa transport over S1
  - Added new S1: *LPPa transport*
    - Procedure consists of four new S1-AP messages to cater for
      - eNB -> E-SMLC vs. E-SMLC -> eNB transmissions
      - UE-associated (E-CID) vs. non-UE-associated (OTDOA) signaling support

- Remaining open issues:
  - Can the MME rely on the NAS NON DELIVERY INDICATION message for non-HO cases e.g. RLF?
    - RAN3 answer needed by RAN2 in the context of the LPP reliability discussion
  - Semantic of Routing ID used in LPPa transport procedure
    - Correlation ID vs E-SMLC ID
    - Feedback request to SA2

LTE-A SI: Relays architecture

- Progress of the discussion on the four architecture alternatives
  - Feasibility
    - Established that all alternatives are feasible from S1-MME and S1-U termination point of view
  - Grouping
    - Established that three alternatives share common characteristics with respect to the Un interface and could be grouped together into a single architecture family
  - Comparison
    - Converged on an initial comparison table
    - Very slow progress in filling the table

- Open items / plan for next quarter
  - Complete the comparison between alternatives
    - Need a more cooperative spirit between companies to complete this task in a timely fashon
  - Decide a way forward on Relay architecture
    - Jointly with RAN2

Rel-9: TEI-9

- Interference management for HNBs
  - Documented in stage-2 possible interference management techniques that are already supported in the standard
- Data forwarding during inter-RAT and intra-RAT HO
  - Based on the task received in RAN#45
  - Clarified the scenarios where it may be beneficial for the MME to influence the handling of data forwarding for inter-RAT and intra-LTE HO
    - The EPC shall not influence the handling of data forwarding for the inter-RAT and intra-LTE HO cases in case of direct forwarding path availability as indicated by the source RAN node
  - Agreed the CR that introduces the above capability in S1
    - Reply LS to RAN/SA2 available in R3-093384
- Energy saving
  - Introduced mechanism that allows an RNC to gradually swith-on/off the cell TX (without deleting the cell configuration)
    - Mechansim to be used to switch-on/off capacity booster cells depending on network load
  - Similar discussion took place for LTE but no conclusion was reached
    - Discussion postponed to next quarter

Conclusions

- Stable Rel-8
- Overall good progress on Rel-9 work
- RAN3-lead WIs ready to be closed
  - H(e)NB enhancements
    - Completed high priority items in *RP-090995*.
  - SON
    - MRO: completed baseline solution
    - MLB: completed baseline solution for intra-RAT; working assumption for inter-RAT (pending feedback from GERAN2/SA2/CT4)
    - RACH optimization: functionality introduced based on RAN2 recommendation
    - COO: not discussed; will be addressed in the Rel-10 WI
- Slow progress on LTE-A architecture discussion
  - Next quarter need to complete the comparison between alternatives and decide a way forward on Relay architecture

Future meeting dates

Title	Dates	Venue	Host
2010			
RAN3#66bis	18 – 22 Jan	Valencia (Spain)	EF3
RAN3#67	22 - 26 Feb	San Francisco (USA)	NAF3
RAN#47	16 – 19 Mar	Vienna (Austria)	EF3
RAN3#68	10 – 14 May	Canada	RIM
RAN#48	1 – 4 Jun		
RAN3#69	23 - 27 Aug	Madrid (Spain)	EF3
RAN#49	14 – 17 Sep	USA	NAF3
RAN3#69bis	11 - 15 Oct	China	ZTE
RAN3#70	15 – 19 Nov	USA	NAF3
RAN#50	2 – 5 Dec		EF3

Merci

- Juha: for the excellent support
- Martin: for chairing HSPA sessions and email discussions
- Philippe: for chairing the eMBMS sessions
- To all rapporteurs of specifications, WIs and discussions for their hard work

… and many thanks to Alex for building a great RAN3-machine: it is quite smooth and fun to ride ☺