

**3GPP PCG15(05)16**

**Valbone, France, 6<sup>th</sup> October 2005**



**TSG RAN 3GPP LTE Report**

**Source: TSG-RAN Chairman**



TM

A GLOBAL INITIATIVE

## Long term evolution for the UTRA and UTRAN

- In order to ensure the new time plan can be met, TSG RAN would like to re-assess the urgency for completion of the work at the next TSG RAN meeting in Malta. A work split has been established during the joint meeting. It is essential that the completion date for this is respected otherwise the overall time plan would have to be fully re-established as most of the work in TSG RAN pending on its completion. In any case blocking by a few company shall be stopped.
- There was discussion on the inter-working in between 3GPP access and Non 3GPP access. The requirements on interruption times were not agreed as there was several question whether interruption time between CS and PS domain for real time services between GSM/UTRAN and E-UTRAN should be equivalent to PS-to PS or not. Guidance from TSG SA WG2 is requested on that issue.
- There was also an agreement on decision to be taken at the next joint TSG RAN WG2/WG3 on architecture of the Radio Access Network in terms of number of node required.

## ***LTE status of the discussion between RAN WGs and SA2***

- 3GPP TSG SA has endorsed the TSG RAN agreed way forward (see annex) that was discussed during the joint meeting with TSG SA WG2 with the additional guidance on requirement for support for intra 3GPP mobility for support for CS/PS continuity.

First Issue to be completed:

- |                                                     |                  |
|-----------------------------------------------------|------------------|
| • Intra access network mobility in LTE Idle         | RAN WG2/WG3      |
| • Intra access network mobility in LTE active       | RAN WG2/WG3      |
| • Inter access network mobility in LTE Idle         | SA WG2           |
| • Security                                          | SA WG2           |
| • Alignment of intra and inter mobility in LTE Idle | SA2/ RAN WG2/WG3 |

## ***LTE Status of the discussion in between RAN WGs and SA2***

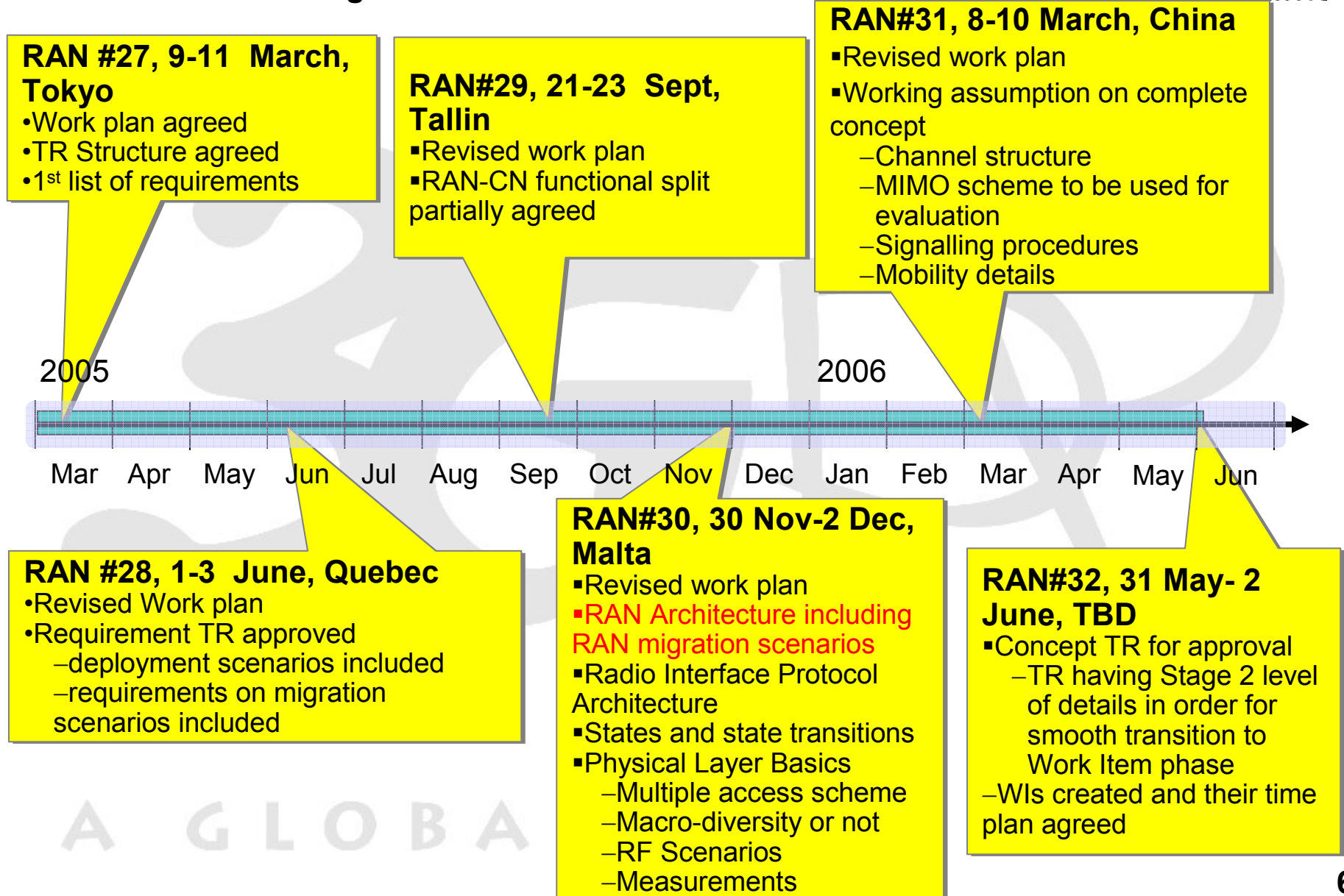
### Second Priority:

- Inter access network Connected SA WG2
- QoS SA WG2
- Header Compression (dependant on the location of ciphering) SA WG2
- **The above prioritisation does not mean that the group the work has been allocated initiate the work and provide info as soon as progress has been made to the other groups for completion of the issue.**
- **If required is is planned to have a joint session during TSG RAN session to ensure the completion of this part of the work during the Malta meeting.**

## ***LTE Status in RAN***

- RAN1 will finalize the evaluation of macro-diversity combining gains at the earliest possible date during the RAN1#42bis meeting in San Diego, i.e. October 10 and inform RAN2/3 at their meeting in Cannes with an LS summarizing the simulation results on macro-diversity gains.
- RAN2/3 will finalize their discussion on the network impact of macro-diversity at their meeting in Cannes.
- RAN2/3 will review the RAN1 results on macro-diversity gains and, in case further information is needed, request additional information from RAN1 during the week when the meeting takes place.
- RAN1 will provide all necessary additional information to RAN2/3 as soon as possible during the week when the meeting takes place.
- RAN2/3 will take a working assumption on uplink macro-diversity combining for their further work on LTE, based on weighting the gains of macro-diversity against the impact on the architecture, at their October meeting in Cannes. Note that the decision should either be to either support or not support macro-diversity combining (no optional support).

## Work Plan for the Long term evolution for the UTRA and UTRAN



# Annex A



- **Function list Version 08 (the RED text is the agreed modifications during the JM Sept 19<sup>th</sup> and 20<sup>th</sup>) as in Tdoc RP-050625**



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**Function list Version 08 (the RED text is the agreed modifications during the JM Sept 19<sup>th</sup> and 20<sup>th</sup>)**

High-level Function:	Location:	RAN	CN	Comments
Radio resource management		X		
Policy Decision			X	
<b>Terminating</b> Signalling between UE and NW for QoS Negotiation		FFS (2)	FFS (8)	Depends on the selected mechanism. A single entity in the NW should terminate the signalling.
Admission/commitment of requested or downgrade to available radio resources		X		Includes appropriate RAN capabilities and RAN transport resources
Admission/commitment of network resources			X	Transport network resources outside RAN
Authorisation of QoS based on subscription/service			X	
Uplink packet Classification				Done by UE.
Uplink packet re-classification based on operator administered subscriber policies		FFS	FFS	<b>For the RAN: if needed and visible.</b>
Uplink packet re-classification based on <b>subscription independent serving operator policies for the transport</b>		X		If needed and visible. e.g. Mapped from radio bearer.
Uplink QoS policy enforcement of negotiated QoS		X		E.g. by scheduling. (does not include packet marking, QoS Authorisation).
Downlink packet classification			X	Does not include radio QoS (by definition done in RAN).
Downlink QoS policy enforcement of negotiated QoS		<del>FFS</del>	X	<del>Deleted: FFS</del>
Attach, Subscriber & Key Management, Authentication and Authorisation			X	
Location management, Paging, Intra-radio access mobility in <b>LTE_IDLE</b>		<del>FFS</del>	<del>FFS</del>	<del>Deleted: FFS</del> <del>Deleted: FFS</del>
<ul style="list-style-type: none"> <li>Indicate cell information (PLMN-ID, tracking area-ID, radio parameters) to UE for cell/PLMN selection in <b>LTE_IDLE</b></li> </ul>		X		Deleted: Idle mode Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Accept/deny UE's location (tracking area) in <b>LTE_IDLE</b></li> </ul>		FFS (5)	FFS (9)	Deleted: (3) Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Store UE's location (tracking area) in <b>LTE_IDLE</b></li> </ul>		FFS (5)	FFS (11)	Deleted: (4) Formatted: Bullets and Numbering



High-level Function:	Location:	RAN	CN	Comments	
<ul style="list-style-type: none"> <li>Initiation (trigger) of Paging of LTE_IDLE UEs within tracking area</li> </ul>		FFS (7)	FFS (10)	Not in eNodeB (11), in eNodeB (5)	Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Local Storage of subscriber information about allowed PLMNs and location restrictions within PLMN</li> </ul>		FFS (5)	FFS (14)	Not in eNodeB (15), in eNodeB (3) To decide on tracking areas allowed for UE/user	Formatted: Bullets and Numbering
Handling of terminals in power saving mode,		X	FFS	Further definition needed	
Radio channel coding		X			
Integrity protection protection terminating in UE					
- For user plane data		-	-	As yet, not required to be provided by the "access system".	
- For CN signalling		Note A, FFS(2)	Note A, FFS (2)		
- For RAN signalling		X			
Ciphering terminating in UE					
- For user plane data		Note A, FFS (7)	Note A, FFS (3)		
- For CN signalling		Note A, FFS (2)	Note A, FFS (4)		
- For RAN signalling		If needed		The requirements for RAN signalling encryption need to be clarified.	
IP Header compression between UE and network		FFS	FFS	It is agreed that, within the network, IP Header Compression is performed in between the User Plane Encryption functionality and the Flow Based Charging functionality.	
Intra-radio access mobility in LTE_ACTIVE					Deleted: X Deleted: FFS
<ul style="list-style-type: none"> <li>Determine allowed tracking areas and PLMNs for handover in LTE_ACTIVE</li> </ul>			X	Derived from subscription and provided to RAN.	Deleted: , connected mode Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Guiding the measurement process within UE for handovers in LTE_ACTIVE</li> </ul>		X		Guidance might be modified based on information received from CN.	Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Decision for intra access system handover in LTE_ACTIVE</li> </ul>		X			Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Path switch/mobility anchor for intra access system handover in LTE_ACTIVE</li> </ul>		FFS(2)	FFS(15)	Not in eNodeB	Formatted: Bullets and Numbering
<ul style="list-style-type: none"> <li>Support for lossless HO (E.g. Downlink duplication, Packet forwarding or Anchor)</li> </ul>		FFS	FFS	If needed, check requirements with SA1	
<ul style="list-style-type: none"> <li>Support for seamless HO (E.g. Downlink duplication, packet forwarding or Anchor)</li> </ul>		FFS	FFS	Sufficiently good for voice HO	
<ul style="list-style-type: none"> <li>Transfer of UE specific contexts for handover of</li> </ul>		X?	X?	The need for this functionality depends on the chosen architecture	Formatted: Bullets and Numbering

High-level Function:	Location:	RAN	CN	Comments
<a href="#">LTE_ACTIVE Ues</a>				
Radio protocols (ARQ, scheduling etc.)		X		
Charging			X	
IP Address Allocation			X	
Roaming			X	
Local breakout			X	
Inter-Radio Access mobility, (3GPP <> 3GPP RAT) in LTE_ACTIVE				
<ul style="list-style-type: none"> <li>Determine tracking areas and PLMNs allowed for handover in LTE_ACTIVE</li> </ul>			X	Derived from subscription
<ul style="list-style-type: none"> <li>Guiding the measurement process within UE for handovers in LTE_ACTIVE</li> </ul>		X		
<ul style="list-style-type: none"> <li>Decision for inter access system handover in LTE_ACTIVE</li> </ul>		X		Based on measurements and potentially resource availability, blind handover could also be possible
<ul style="list-style-type: none"> <li>Path switch/mobility anchor for inter access system handover in LTE_ACTIVE</li> </ul>			X	
<ul style="list-style-type: none"> <li>Transfer of UE specific contexts for handover of LTE_ACTIVE Ues</li> </ul>		X?	X?	The need for this functionality depends on the chosen architecture
Inter-Radio Access mobility, (3GPP <> non-3GPP RAT) in LTE_ACTIVE				FFS in SA2, includes e.g. I-WLAN
Inter-Radio Access mobility (3GPP <> 3GPP RAT) in LTE_IDLE				UTRAN, eUTRAN and GERAN
<ul style="list-style-type: none"> <li>Indicate cell information (PLMN-ID, tracking area-ID, radio parameters) to UE for cell/PLMN selection in LTE_IDLE</li> </ul>		X		
<ul style="list-style-type: none"> <li>Accept/deny and store UE's location (tracking area) in LTE_IDLE</li> </ul>		FFS (1)	FFS (12)	For paging inactive UEs and for recovery
<ul style="list-style-type: none"> <li>Initiation of Paging of LTE_IDLE UEs within tracking area</li> </ul>		FFS (1)	FFS (12)	Same location as Accept/deny and store UE's location (tracking area) in LTE_IDLE.
<ul style="list-style-type: none"> <li>Local Storage of subscriber information about allowed PLMNs and location restrictions within PLMN</li> </ul>		FFS (3)	FFS (14)	To decide on tracking areas allowed for UE/user
Inter-Radio Access mobility (3GPP <> non-3GPP RAT) in LTE_IDLE				FFS in SA2, includes e.g. I-WLAN
Access system selection		FFS	X	
Load sharing among RATs		X		
Lawful intercept			X	
Positioning		X	X	
Frame selection (if MDC is needed)		FFS	FFS	If needed

Deleted: Volume reporting of unsent data

Deleted: FFS

<b>High-level Function:</b>	<b>Location:</b>	<b>RAN</b>	<b>CN</b>	<b>Comments</b>
Downlink Duplication for HO support		FFS	FFS	If needed
Flow Control and buffering		FFS	FFS	If Needed
MBMS		X	X	

Note A: the location of this function is FFS. However, there are expected to be some dependencies between the locations of the ciphering and integrity protection functions.

Note: Packet Re-classification and QoS Enforcement at operator interconnect are done in CN if needed.

Note: transcoding has been considered and the conclusion is that it is handled on the Application level (IMS), and hence not in RAN or CN.