

TSG-RAN Workshop on UTRAN Evolution
Helsinki, Finland, 5-6 February 2001

RPW010015

Title: Draft Report of the Workshop on UTRAN Evolution
(Helsinki, Finland, 5-6 February 2001)
Document for: Comment
Source: 3GPP support team

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1 Agenda

In the TSG-RAN #10 meeting in Bangkok, it was decided to hold a Workshop on the evolution of UTRAN. The Workshop invited the following groups to provide input:

- TSG RAN and its working groups
- TSG SA WG2 and WG3
- TSG GERAN

The agenda was proposed and agreed as follows (documents presented under the various agenda items are indicated in **bold**; document **RPW010008** was withdrawn):

1. Status of the current situation of UTRAN in Rel4
 - Presentation of the TSG RAN WG3 status including the Iub/Iur, Iu and IP Transport
RPW010010 Report of IP-Transport Work Item (Alcatel)
 - High Speed Downlink Packet Access (HSDPA) status and expected requirements on UTRAN architecture and functional split
RPW010002 HSDPA presentation (TSG-RAN WG2 Chairman, HSDPA rapporteur)
2. Presentation of the TSG GERAN architecture status
3. Requirements from TSG SA WG2
RPW010003 Requirements for Open RAN Target Architecture (Mobile Wireless Internet Forum (MWIF))
4. Requirements from TSG SA WG3 from the security point of view
5. Identification of possible improvements of the Rel4 UTRAN (contributions invited from companies)
 - RPW010004 Requirements for an Evolved UTRAN (Hutchison 3G UK Ltd)**
 - RPW010012 IP based RAN Architecture (Samsung Electronics Ltd)**
 - RPW010009 Architecture Principles and Requirements (Lucent Technologies)**
 - RPW010001 Evolution for IP Based UTRAN Architecture (Nokia)**
 - RPW010006 Towards an IP-based RAN (Siemens)**
 - RPW010005 Vision on UTRAN evolution (NEC)**
 - RPW010011 UTRAN Evolutions (Alcatel)**
 - RPW010007 UTRAN Evolution (Ericsson)**
6. Discussion to identify the requirements
7. Drafting of the tentative conclusions
8. Summary and review of the conclusions

The remainder of this report is the result of agenda items 6, 7 and 8.

2 Discussion

RPW010013 Result of drafting session (Drafting group)

- This document was the result of discussion on Monday evening 5 February.
- It consisted a list of possible motivations for RAN evolution.
- This list was **not** agreed in the evening session (i.e., not all companies agreed on all motivations listed). In other words, there was no consensus in the evening session on the **validity** of the motivations.
- However, it was a summary of all issues that had been brought up in the presentations, which had already been **screened** to some extent in the evening discussion.
- It was also important to realise that the motivations were general (**not** necessarily assuming an IP architecture).

- The result of the Workshop was proposed to be a feasibility study into the issues identified on the list, without any prejudice on whether or not a new UTRAN architecture is necessary.
- It was stated that so far still no compelling reasons had been presented why a new architecture is needed. It was still not clear that anything is impossible with the existing architecture. The level of legacy compatibility was missing from the list.
- Most of the items on the list seemed to be important, and likely to be agreeable as necessary to happen. However, none of the items as listed now seem to **require** a new architecture.
- It was commented that instead of taking a decision on the necessity of a new architecture based on each of the issues, it might be better to do that in any feasibility study. However, the issues were discussed.
- It was stated that for all feasibility studies that were agreed, it was important not only to show feasibility, but also to show benefits. Cost and complexity should be considered as well.
- Several presenters of the first day stated after the discussion of the listed issues (see below) that they actually do not like the term "new architecture" and that their proposals are intended as enhancements to the current architecture.
- The issues listed were discussed in detail:
 - *Multiradio support*: It was stated that it was possible to provide multiradio support with a local solution using the existing architecture. A counter-argument was that such support could perhaps be provided in a better way with a new architecture (although it remained to be seen if that was indeed the case).
 - *Air interface user plane efficiency for common (and HS) shared MAC*: There was consensus that for the new (HSDPA) shared channel functionality it was worthwhile studying if it was useful to move that functionality to Node B. However, it was also questioned why this would be necessary for existing shared channels, as there was a Release 99 solution that works. If that was proposed, it would need to be justified clearly. The words "air interface" were confusing and it was decided to remove this issue from the list completely.
 - *Optimised location of the MDC*: It was not clear if a totally new architecture is needed, although there may be a need for a partial new architecture. There was consensus that this issue could be studied in a feasibility study.
 - *Operability of the network (avoid RNC to be single point of failure)*: There was consensus that a new architecture would improve this.
 - *Reduce delay/processing in UTRAN*: Some companies believe that delay can be reduced by moving MAC/c/shared closer to or into Node B, but this was doubted by other companies. There was consensus that this issue could be studied in a feasibility study.
 - *Open basic UTRAN management*: This was originally proposed as an item irrespective of an architecture change. However, another opinion was that it could be possible to provide this in a better manner with a different architecture.
 - *More cost effective solution*: There was agreement that "more cost effective solution" was something desirable, but not that a new architecture was needed to achieve that. It was stated that "widely used protocols and products" does not necessarily mean "IETF protocols and products". The other example (different servers) provoked counter-arguments. Good would be to have a multivendor environment, but there was concern that this would actually increase rather than decrease cost.

RPW010014 Some items for UTRAN evolution (Nokia)

This document was for information only.

3 Way forward

3.1 Feasibility study on UTRAN evolution

This Workshop provides **starting point** for discussion.

- Requirements in this workshop will be provided
- High level solutions will be discussed

3.2 Everything in one group or different groups?

1 **Architecture study:**

- Consolidation of results of individual studies
- Specific issues:
 - *Operability of the network (avoid RNC to be single point of failure)*
 - *More cost effective solution*
 - *Synergies and economy of scale, convergence to widely used protocols and products*
 - *(ex. openness of additional network elements, like UE positioning server, etc.)*
 - *Counter-argument: increase complexity and costs with new open protocols*

2 **Individual study (studies):**

- Discuss about technical solutions
- Identify system impact of different solutions
- Provide preliminary report by XXX
- Topics:
 - *Multiradio support*
 - *Optimised location of the MDC*
 - *Enable of direct SRNC-Node B transport for DCH?*
 - *Reduce delay/processing in UTRAN*
 - *Optimised location of the MACsh?*
 - *Open basic UTRAN management*

3 **Individual study (studies) with less impact on architecture:**

- To be handled in WGs; new architecture should also consider above items.
- Topics:
 - *Multicasting on air interface*
 - *Service area broadcast restriction*
 - *Support of multicarrier*
 - *Improved support for inter-PLMN handover and cell reselection*
 - *DSCH power control improvements*
 - *Support for RL timing adjustment*
 - *Neighbouring cell information reporting optimisation*
 - *DPC Rate Control*

4 **Another Workshop around XXX**

3.3 How to organise work

- Convenor for e-mail discussions nominated to start the work: Antti Toskala.
- Topic of one e-mail discussion: Confirmation with RAN on results of this workshop
- Topic of other e-mail discussion: Organisation of the groups
 - How to organise groups (in WGs or new groups?/ who will lead the groups?)
 - How to run the groups (e-mail, physical meeting?)
 - What milestones?

Annex A: List of delegates

NOTE: Registered people; actual participants to be included

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Annex B: List of documents

| Doc.No. | Title | Source | Ag.It. | Comments |
|-----------|-----------------------------------------------|----------------------------------------------|--------|-----------|
| RPW010001 | Evolution for IP Based UTRAN Architecture | Nokia | 6 | |
| RPW010002 | HSDPA presentation | TSG-RAN WG2 Chairman, HSDPA rapporteur | 1 | |
| RPW010003 | Requirements for Open RAN Target Architecture | Mobile Wireless Internet Forum (MWIF) | 5 | |
| RPW010004 | Requirements for an Evolved UTRAN | Hutchison 3G UK Ltd | 6 | |
| RPW010005 | Vision on UTRAN evolution | NEC | 6 | |
| RPW010006 | Towards an IP-based RAN | Siemens | 6 | |
| RPW010007 | UTRAN Evolution | Ericsson | 6 | |
| RPW010008 | Consideration for IP UTRAN Evolution | Lucent Technologies | 6 | withdrawn |
| RPW010009 | Architecture Principles and Requirements | Lucent Technologies | 6 | |
| RPW010010 | Report of IP-Transport Work Item | Alcatel | 1 | |
| RPW010011 | UTRAN Evolutions | Alcatel | 6 | |
| RPW010012 | IP based RAN Architecture | Samsung Electronics Ltd | 6 | |
| RPW010013 | Result of drafting session | Drafting group | 7 | |
| RPW010014 | Some items for UTRAN evolution | Nokia | 7 | |
| RPW010015 | Draft minutes | Secretary | | |