TSG-RAN Ad Hoc meeting on RRM
Torino, Italy, 9-11 February 2000

RPA000064

Title: Approved Report of the TSG-RAN Ad Hoc meeting on RRM
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1 Opening of the meeting

Denis Fauconnier (Chairman) opened the meeting and Nicola Pio Magnani (CSELT) welcomed the delegates to Turin.

The RAN Ad-hoc on RRM had two main objectives:
- Finalise and ensure overall consistency of the RAN specifications release 99 for items which were across several RAN working groups,
- Progress/finalise open issues on GSM-UMTS items with RAN and SMG2 delegates (SMG2 would have to review everything done in this Ad Hoc, as this was a RAN meeting, but not an SMG2 one).
- Progress all items necessary for the completion of 25.133 and 25.123 "requirements for support of RRM" i.e. provide all the necessary information so that RAN WG4 complete these documents in accordance with 25.331, 25.302 and 25.304.

No CRs would be agreed in this meeting, but everything done to sort out inconsistencies and make sure all RAN WGs know what other RAN WGs are doing on each topic.

With respect to the decisions taken in this RAN Ad Hoc meeting, it was made clear that all outcome of this Ad Hoc meeting would have to be applied by the RAN WGs, based on these minutes and any other output that might be decided upon.

2 Approval of the agenda

RPA000001 Proposed agenda (Chairman)
Denis Fauconnier (Chairman) proposed the agenda for the meeting.
Decision: The agenda was approved.

3 Liaisons from other groups

These liaisons would be handled so they would not need to be handled again in the RAN WGs.

3.1 Measurements

RPA000002 (R1-99L29, to TSG-RAN WG2 and TSG-RAN WG4, copy TSG-RAN) LS on the usage of measurements in RA (TSG-RAN WG1)
Andrea De Pasquale (Omnitel) presented this LS.
Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.1.

RPA000003 (R1-99L65, to TSG-RAN WG2) Response to LS (R2-99g63) on UE measurement abilities (TSG-RAN WG1)
Sarah Boumendil (Nortel Networks) presented this LS.
Discussion: Issues to be resolved in the Ad Hoc meeting:

- It was not clear what 'granularity' of the measurements referred to: what does 'measurement purpose' mean?
- A hidden question was what the requirements on the terminal were.
- There was a duplicity: the list of parameters mentioned at the end of the LS was in 25.302 and in 25.215; this should only be in one place.

Decision: The LS was noted. The topic of the LS was to be handled in agenda items 4.1 and 5.

3.2   Synchronisation

RPA000004   (R1-000191, to TSG-RAN WG2 and TSG-RAN WG3, copy TSG-RAN WG4) LS on Out-of-Synch and DTX (TSG-RAN WG1)

Armin Sitte (Siemens) presented this LS.

Discussion: There was an answer from RAN WG3 to this LS (see below, RPA000012). Issues for this Ad Hoc:

- The use of the out-of-synch procedure(s) and message(s) needed clarification.
- Call establishment should go hand in hand with out-of-synch.

Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.3.

RPA000006   (R3-99k41, to TSG-RAN WG2, copy TSG-RAN WG1 and TSG-RAN WG4) Response to LS (R2-99k90) on Synchronisation Detection (TSG-RAN WG3)

Matthias Wahlqvist (Ericsson) presented this LS.

Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.3.

RPA000012   (R3-000398, to TSG-RAN WG1, copy TSG-RAN WG2 and TSG-RAN WG4) Response to LS (R1-000191) on Out-of-Synch and DTX (TSG-RAN WG3)

Armin Sitte (Siemens) presented this LS.

Discussion: This was an answer from the RAN WG3 perspective to the LS from RAN WG1 (see above, RPA000004).

Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.3.

RPA000007   (R4-99A10, to TSG-RAN WG2, copy TSG-RAN WG1) Response to LS (R2-99k90) on Synchronisation Detection (TSG-RAN WG4)

Matthias Wahlqvist (Ericsson) presented this LS.

Discussion: Issues for this Ad Hoc:

- It was not clear what can be detected in the UE? What assumption do you have for access to the inside of the UE for measurements? The current interpretation was that a UE was a black box. For RAN WG4, this was not completely true as they could not simulate without assumptions on the inside of the UE. It was clarified that in GSM there are test points for functionality testing, but not for performance measurements. It was important to realise that the notion of the UE as a black box, only what happened on the radio interface was testable.

Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.3.

3.3   Other

RPA000005   (R2-000252, to TSG-RAN WG1 and TSG-RAN WG4) LS on Downlink outer loop power control (TSG-RAN WG2)

Joakim Bergström (Ericsson) presented this LS.

Discussion: There were input papers on this topic for agenda item 4.2.

Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.2.

RPA000011   (R3-000397, to TSG-RAN WG1 and TSG-RAN WG4, copy TSG-RAN WG2) LS on Periodicity of compressed mode pattern (TSG-RAN WG3)

Kaisu Iisakkila (Nokia) presented this LS.

Discussion: Issue for the Ad Hoc:

- The problem of performing handovers during active compressed mode period was not understood completely. The active compressed mode ought to work from the setup of the radio, if not there was a problem. Kaisu Iisakkila would check with RAN WG3 colleagues what the problem was meant to be about.

Decision: The LS was noted. The topic of the LS was to be handled in agenda item 4.5.

RPA000008   (2-00-518, to TSG-RAN WG2, copy TSG-RAN WG4) Response to LS (R2-99k97) on Measurement requirements for GSM in UMTS (SMG2)

This LS contained material that RAN WG4 needed to have for its studies, but was not presented.

4   UMTS items

RPA000030   Proposal for LS on RRM Ad-hoc outcome (Ericsson)

Matthias Wahlqvist (Ericsson) presented this document.

Discussion: This document proposed a table with the results, but the minutes were actually intended to be the output of the Ad Hoc meeting. The intention of the table was to summarise the actions for each of the groups (SMG2, CN, SA, T and the RAN WGs). It was clarified that the Ad Hoc was allowed to send LSs if a necessity was identified. It was suggested that the table might complement the minutes by summarising the actions. The table might also be attached as an annex to the minutes, which was preferred by various delegates. There was a consensus that one output of the meeting was preferable, in order not to confuse other groups about the results of the meeting.

Decision: The document was noted, but the suggestion to add the table was withdrawn.

4.1   UTRAN measurements

4.1.1   Principles

RPA000013   Principles for UTRAN Measurements Specification (Ericsson)

Matthias Wahlqvist (Ericsson) presented this document.

Discussion: Avariety of topics came up in the lengthy discussion that followed the presentation:

- The difference between the notions introduced in section 3.1 was not clear. It was clarified that the intention was just to have one definition of the measurement period.
- It was difficult to understand the proposal, in other words to see what the filter of section 3.1 would be doing. For instance, how should the UE define the correct radio conditions (are they always assumed to be the worst possible? That did not seem to be reasonable)? The opinion of Vodafone AirTouch was that this should be the case as it is rather difficult for the UE to distinguish the type of environment it is in and in accommodating the worst case the better cases are already covered. It was clarified that the input to the filter was averaged Layer 1 samples with a certain periodicity and a certain accuracy. How many samples the Layer 3 filter would actually use was intended to be left to the UE manufacturer. In figure 1, the two rightmost boxes could be combined in an implementation, but were left separate for understanding the model. There turned out to be no agreement between some of the operators and the UE manufacturers on the level of flexibility the UE could be allowed.
- From the point of view of RAN WG4, it was suggested that the number of options should be reduced where compressed mode patterns and measurements were concerned. Each 'one-line' measurement in RAN WG2 translated into a large amount of measurements in RAN WG1, putting a big load on RAN WG4 to provide accuracies. Therefore, each measurement that was not completely clear now should really be removed.
- A problem following from the discussion, that should be solved in this Ad Hoc meeting was how to define the measurements in a way that is not manufacturer-specific, but still clear enough for RAN WG4 to define the accuracies.
- RAN WG4 was not aware of any of the purposes of the measurements so far. This was the first time they saw any. There was quite some confusion about which group was doing what, and what was needed. RAN WG4 needed purposes to do its work, but not every 'consumer' was willing to specify exactly what they wanted the measurement for. Previously the measurement purposes were included in RAN WG1 specifications (see R1-99F42 (TDD) and R1-99E21 (FDD)), but they were deleted since the purposes were considered to be prescribed by RAN WG2.

RPA000010   Averaging periods for UTRA measurements (VodafoneAirtouch)
Amer El-Saigh (VodafoneAirtouch) presented this document.
Discussion:
- The focus of the contribution was dedicated channels (not idle mode). It was a high-level description of the principles of averaging and therefore there were different ways of applying the principle outlined.
- For each measurement the averaging period and number of samples is governed by the trade-off between accuracy, latency in decisions by algorithms using the measurements and the capacity reduction incurred by reporting.
- As a side issue, it was pointed out that 25.215 currently contained soms ranges which were used in RAN WG2 and RAN WG3. The conclusion was that the work on the ranges of parameters for actual use should be done in RAN WG4 and what was in the RAN WG1 documents should be removed. As far as RAN WG2 and RAN WG3 were concerned (for coding purposes) they would support the widest range in the signalling, even though the actual ranges were smaller, so that signalling was independent of outcome in RAN WG4.

  NOTE: 25.215 only considers the FDD part. The decisions taken on 25.215 should also be considered for 25.225 (TDD). Nevertheless, the ranges in 25.215 and 25.225 in RAN WG1 were already chosen in a way that RAN WG1 would never expect values that exceed the specified ranges.

RPA000014   Requirements on Parallell Measurements (Ericsson)

Torgny Palenius (Ericsson) presented this document.

Discussion:

- The number 8 was not correct with this particular scenario. The 8 was lower than it could be, as the rest of the time was needed for synchronisation purposes. However, the principle was the important thing, not the exact value which could be discussed.
- The filtering was more explained: it was left, on Layer 1, to the UE manufacturer to decide to use one sample, or more 'sub-samples', to reach the required accuracy. This was made irrelevant by the 'filter' on higher level.
- One way to look at the filtering periods was to consider it as a 'sliding window' (instead of checking after every, say, 20 samples, it was checked every, say, 300 ms whether an event had happened that needed to be reported).
- Although in principle all compressed mode patterns were allowed, in practice the ones which would be tested would almost be hard-coded and this should be taken into account for Release 99 in March!
- Compressed mode was identified as the major reason why there were so many 'problems' with measurements. No-one knew how it would behave in a real network as it had never been tried. Life would be easier without it, but removing it would remove the flexibility it was intended to provide, and would basically mean going back to GSM.

RPA000041   UTRAN optional measurements (Nokia)

Sami Jokinen (Nokia) presented this document.

Discussion:

- The document focused on base stations, not the UE (so only Node B measurements were addressed).
- For Node B measurements RAN WG3 would make sure they could be added if not yet available.
- How to ensure multi-vendor Node B? Would there be any conformance testing at all or would it be 'made' to work (checked) by the operator? If there was no conformance testing there was no point in specifying which measurements were optional and which mandatory. Current understanding was that only what was in 25.104 was conformance-tested. Currently, every measurement was optional, but if it was supported, it had to be supported in a certain way.

Decision (on RPA000041 only): The first part of the proposal was accepted: The RAN WGs were asked to check what is for Release 99 and what is for Release 2000 based on SA definition (December 1999) (see overall decisions below).The second part was not agreed.

RPA000051   A proposed way forward for measurements requirements (Nortel Networks)

Sarah Boumendil (Nortel Networks) presented this document.

Discussion:

- The concept was proposed to be general, but was mainly written with UEs in mind, not base stations.
- The word 'sample' here was taken to be an elementary measurement. The accuracy was set for the measurement, not for the sample.
- RAN WG4 had specified a set of measurement conditions. In RAN WG4's opinion, it should not be specified how to measure, but to set the conditions (with relevent propagation models) instead: stick to measurement accuracies for certain time periods, so that RAN WG4 could define the accuracies for different propagation models.
- Operators preferred to have a minimum number of samples per transmission gap as a performance measure, but manufacturers doubted it was possible to test that this was actually done by a mobile and

preferred measurements based on patterns. As an alternative, the 'toolbox' approach left the configuration to the operator, which would leave little room for the UEs.

- The opinion of the Vodafone AirTouch was that short frequent gaps are better than long infrequent gaps since it reduces the need to opt for halving the spreading factor with all the associated drawbacks such as re-allocation of resources in the code tree or resorting to secondary scrambling code. Also short gaps can better tolerate the loss of the uplink power control commands since fewer of them are lost. However, these were based on analytical consideration of the situation and they are provided from the operational angle rather than strictly based on performance. The problem as stated by Vodafone AirTouch is that insufficient information exists on the performance of compressed mode in its various configurations. Vodafone AirTouch pointed to a contribution made on compressed mode and presented to RAN WG4 in November last year. This document was provided for information in this meeting as RPA000063, see section 8.

Decisions (on principles of measurements, taking into account all of the above documents):

- What is specified is the performance and requirements on what Layer 1 reports to upper layer (RRC in general) which is a filtering of the internal Layer 1 measurements. The internal Layer 1 measurements are not specified.
  <u>Action</u>: RAN WG4 is to define performance objectives for L1 reports to upper layers.

- RRC receives L1 measurements every TTI for the DCCH (e.g. 20ms). This is independent on length of filtering period (e.g. .240 ms). RRC does a second filtering (FFS), and evaluates the measurement for action.

- <u>Action</u>: RAN WG2 is to finalise model in 25.302 based on the decisions in this RRM Ad Hoc.

- The need to have a second level of filtering (Ericsson proposal in RPA000013) in RRC is FFS. If it is agreed, then this second level will be specified and configured from UTRAN to UE or Node B.
  <u>Action</u>: RAN WG2 is to decide.

- Requirements will be set on some reference scenarios, with for example the following:
  - A list of type and number of measurements
  - A compressed mode configuration
  - Radio channel
  <u>Action</u>: RAN WG4 is to complete the list

- <u>Action</u>: RAN WG4 is to define also performance for Node B measurements.

- There is no need to define which measurements are optional vs. mandatory in Node B.

- <u>Action</u>: Each RAN WG is to indicate what is NOT in Release 99 based on the RAN/SA definition of Release 99 in December 1999

- For each reference scenario in RAN WG4, only the minimum performance is defined in the UE, i.e.if fewer measurements are asked from the UE, the UE can decide to improve the accuracy or decide not to. This means that some reference scenarios have to cover worst case scenario (e.g. 32 GSM cells to measure,

with bad radio propagation conditions), but also some better scenarios (e.g. 12 GSM cells to measure). The CM is configuration optimised for each case.

- Flexible compressed mode is kept in the model, so as to use other configurations whenever necessary, but the behaviour of the UE will be specified for only certain configurations in Release 99.

- Signalling may allow more than just the compressed mode configurations, to be confirmed.
  Action: RAN WG4 is to provide RAN WG2 with selected CM configurations.
  Action: RAN WG2 is to see if signalling can be generic and allow more configurations based on generalisation of selected configurations provided by RAN WG4.

- Is it better to have frequent short gaps or infrequent long gaps? There is no answer today.
  Action: RAN WG4 is to take this into account when defining reference configurations.

- The assumption of up to 8 parallel patterns is kept, but it needs to be confirmed.
  Action: RAN WG4 is to see when providing support for measurements on how to group them in "types".

- Support for measurements without CM is optional in the UE.

- Question: Does the performance apply to UEs which do not need CM?
  Action: RAN WG4 is to answer the question.

- UE performance testing is via Uu interface. There are no internal measurement points.

- RRC configuration allowing testing on Uu reporting is needed.
  Action: RAN WG4 is to give requirements to RAN WG2 on specific RRC configurations?

- A(n) (list of) example(s) of usage of measurements will be added in 25.302.
  Action: RAN WG2 is to complete 25.302 and send it to RAN WG4. The performance definition will be based on these targeted usages.
  Action: RAN WG4 is to use 25.302.

- There is twice the same description of compressed mode (RAN WG1 and RAN WG2).
  Action: RAN WG1 and RAN WG2 are to agree which group will remove the description; subsequently the relevant group is to remove it.

- Signalling should cover a wide range of values and the smallest steps, with a pointer to RAN WG4 specifications for actual limits.
  Action: RAN WG2 and RAN WG3 are to adapt their standards accordingly.

4.1.2   Specific issues

RPA000039   UTRAN Round Trip Time (Nokia)
Sami Jokinen (Nokia) presented this document.
Decision:
- Action: Each RAN WG is to flag 'Time of Arrival' as FFS because it was not for Release 99.

- Action: RAN WG3 is to use another name for what is now called Time of Arrival (in soft handover).
- Action: RAN WG1 is to add the support for the measurement on RACH.

RPA000040   UTRAN RSSI Measurement (Nokia)

Sami Jokinen (Nokia) presented this document.

Discussion: The values were intended as bounds for the signalling, not as the values RAN WG4 would decide on.

Decision: The proposals were agreed. A pointer would be needed to the exact value as defined in RAN WG4.

- Action: Each RAN WG is to apply the proposals and adapt their standards.

RPA000042   UE P-CCPCH and RSCP measurement (Nokia)

Jussi Numminen (Nokia) presented this document.

Discussion: The RSCP definition should be moved to SIR, RSCP is not supported in FDD anymore.

Decision: The proposals were agreed with this change.

- Action: Each RAN WG is tasked to apply this.

RPA000046   L1 Compressed Mode Parameter Set (Nokia)

Jussi Numminen (Nokia) presented this document.

Discussion:

- The document was for information.
- The document identified some issues not included in RAN WG2/RAN WG1 specs at the monent.
- CM stop/cancellation: No primitive has been defined yet.
- The limitation identified was the transmission gap length.

Decision: The document was noted.

4.2   Power control (downlink)

RPA000015   Power Control in Downlink (Ericsson)

Torgny Palenius (Ericsson) presented this document.

RPA000053   Downlink Outer Loop PC based on physical channel BER (Nokia)

Jussi Numminen (Nokia) presented this document.

Discussion (on Power Control):

- Before, it was assumed that the SIR was UE-(implementation-)dependent. The Ericsson paper assumed it was not. It proposed to keep the SIR target and the BLER target, and did not see much use for the BER target.
- It was pointed out that there was currently no clear definition of the SIR target, which was why the BER target had come into the picture in the first place.
- The operators would define their networks on a worst-case assumption. It was unlikely that they would grant the UE more than 4 (+/- 2) dB of freedom, which restricted the possibilities.
- It did not seem to make sense to have a MIN and a MAX defined (with freedom for the UE between the two values), if the MAX could not be unambiguously and precisely defined.

- Although many companies were in favour of removing the BER target, it was pointed out by other companies that it ought to be replaced by something else, and that a SIR target was not suitable if it was not defined precisely.
- The decision on the algorithm was already taken in RAN WG2. Both BER and BLER were supported because in RAN WG2 it was shown that both have advantages in some cases and drawbacks in other cases. RAN WG4 was asked to tell RAN WG2 if one of the two was unsuitable. From RAN WG2 point of view, nothing needed to be done unless RAN WG4 told them that one of the two was actually unsuitable.

Decision (on Power Control - valid for FDD only, downlink only):
- BLER is enough and it is possible to detect it quickly enough (UE-specific implementation).
- It will be tested that the initial behaviour of a UE is good/efficient enough.
- Action: RAN WG2 is to remove the SIR MIN and MAX.
- Action: RAN WG2 is to remove BER as a quality target.
- Action: RAN WG4 is to develop a test for minimum performance requirements on UE (based on the BLER) and a reference sensitivity limit. This means that the service target needs to be met with the lowest power possible. (There was a comment made by Vodafone AirTouch that if such a test were not to prove satisfactory in meeting operator requirements, then a clear and non-ambiguous definition of SIR is absolutely essential. This defintion will entail minimum number of samples and averaging periods.
- Action: RAN WG4 is to provide the accuracy for the BLER measurement.
- Action: RAN WG4 is to work on the reference scenarios (based on BLER).
- It is suggested to RAN WG1 to move the algorithm for inner loop power control to an informative annex, to be used by RAN WG4 for its assumptions (this is a consequence of the other actions).
  Rationale: The proposed principle allows to test that the performance of the UE is meeting operators' objectives, based on a reference UE behaviour as modelled in the RAN WG1 specification, while allowing to leave the precise inner loop algorithm as a UE internal optimisation. The freedom left to UE was felt by some manufacturers as a clear advantage.
  It should be noted also that although discussions have not been concluded in RAN WG4 on the support for the SIR measurement (where it is FFS), several companies expressed the opinion that it would not be possible to define it with a sufficient accuracy. This was seen as another benefit of the agreed principle since it does not depend on the definition of SIR in RAN WG4 which may anyway not be fulfilled.
  Action: RAN WG1 is asked to study this issue and take appropriate action.

4.3   Radio synchronisation detection/loss, radio link failure

RPA000017   Loss of RL Synchronisation on Dedicated Channels (Ericsson)
Matthias Wahlqvist (Ericsson) presented this document.
Discussion:
- There could be more ways to do what was described in section 3.2. However, the idea was to specify only a limited number of methods (those that were considered to be sufficient), not to be exhaustive.
- There was some terminology problem in the contribution, mainly because the terminology taken from RAN WG3 specifications was different from that of the RRC specification (taken from RAN WG2).
- It was felt that simpler procedures could be possible. RAN WG3 document C40 was a report that described this issue in more detail. Also, since the proposed mechanism was intended for garbage collection, long timers were possible which took away the concerns expressed about the difficulty of the mechanism.

RPA000049   Out of synchronisation procedures (Siemens)

Jörn Krause (Siemens) presented this document.

Discussion:

- The document was generally in line with the Ericsson proposal (RPA000017).
- Failure cases in the equipment should be covered as well, not just on the radio link.

Decision (on out-of-synch for dedicated channels):

- NBAP will be used both for reporting out-of-synch and in-synch detection.
- Action: RAN WG1 is to determine the criteria for the downlink case.
- Action: RAN WG1 is to determine the reference algorithm for out-of-synch and in-synch detection in the Node B (uplink). For TDD it was accepted that a use of periodic in-sync reporting is FFS.
- Action: RAN WG3 is to add the parameters in support of this reference algorithm in NBAP (uplink).
- Action: RAN WG4 is to define tests (detection point is when UE switches off uplink transmission).

4.4   Performance objectives

RPA000043   UE measurement requirements (Nokia)

This document was not available.

RPA000044   UE Handover requirement (Nokia)

This document was not available

4.5   Other

There was no time for the remaining documents, which all handled cell reselection. Some of these were handled in agenda item 5.1 and all document titles can be found there.

5   GSM-UMTS items

5.1   Cell selection/reselection

RPA000009   (R2-000266) Open Topics related to Cell Reselection (TSG-RAN WG2)

Kaisu Iisakkila (Nokia) presented this document.

Discussion: The document was revised by RPA 000047. This was the largest work area remaining in RAN WG2.

Decision: The document was noted.

RPA000047   Open Topics Related to Cell Reselection (Nokia)

This was the update of RPA000009, essentially the same document with some comments.

RPA000029   Concepts on GSM to UMTS handover and UMTS Intersystem Cell-reselection (Ericsson)

Peter Edlund (Ericsson) presented this document.

Discussion:

- The document handled both handover and cell reselection.
- In RAN WG2 there were basically two approaches, which were conflicting:
  (1) remain on one technology unless it really becomes too bad; or
  (2) change to the best coverage available, regardless of technology.
- The general assumption on the use of reselection was that it was to be used for the initial access, NOT for the service subsequently needed by the user.

RPA000033   Requirements for GSM to UMTS cell re-selection (VodafoneAirtouch)

Amer El-Saigh (VodafoneAirtouch) presented this document.

Discussion:
- The document was written with circuit-switched services in mind, but there was no reason why the principles outlined could not be applicable to GPRS as well.
- This document was for idle mode.
- Hierarchical cells were not taken into account in this document.
- This document contained high-level requirements.
- An algorithm needed to be found which was technology-independent to mix UMTS and GSM cells for reselection.
- In the ideal case, metrics (measures of 'goodness') for GSM and UMTS ought to be comparable.
- In the second bullet, 'idle mode performance' really should be read as 'idle mode behaviour'.

RPA000034   Cell re-selection from GSM to UMTS (VodafoneAirtouch)

Amer El-Saigh (VodafoneAirtouch) presented this document.

Discussion:
- There might be a difference between whether an operator had both GSM and UMTS licenses or only GSM. In the former case the GSM and UMTS cells were likely to be co-located, in which case the criteria to find cells might actually be the opposite of the latter case.
- The threshold was a useful tool if you had a clear preference for a radio access technology. However, if this preference was not so clear, the threshold was less useful.

RPA000048   Proposal for Cell Selection / Reselection in HCS (Siemens)

Jörn Krause (Siemens) presented this document.

Discussion:
- The introduction of layer-dependent priority levels, an HCS threshold criterion as a prerequisite for these priority levels and a cell ranking within each layer (like in GPRS) was supported by Ericsson and VodafoneAirtouch for further consideration to be applied for a common GSM/UMTS cell reselection approach.
- For the proposed mapping of GSM, FDD and TDD measurement values on a common generic quality level a mapping rule should be provided.

RPA000054   Open Topics related to Inter system Cell Reselection (Nokia)

Kaisu Iisakkila (Nokia) presented this document.

Discussion:
- There seemed to be a general unspoken assumption in this and other papers that there was some sort of relation between GSM and UMTS cells. However, it was possible to have a lot of UMTS cells in one GSM cells or vice versa, and so it was difficult to say how many UMTS neighbours a GSM cell would

have in general. In other words, more than a threshold was needed (a general comparison method, and a general definition of 'goodness') to solve the case where there is more than either of the extreme cases (being only co-location or no co-location at all). The threshold could only be used for a priority.

RPA000055   Flexible Mapping Function to Compare GSM and UMTS Measurements (Nokia)
Kaisu Iisakkila (Nokia) presented this document.
Discussion:
- There might be a problem with a formula, considering that the absolute accuracies of GSM and UMTS each are not very high, and therefore the combined one was even worse. Also, for idle mode RLA was used instead of RXLEV, and for RLA no accuracy was defined, to complicate matters even further.
- It was not guaranteed that a dual-mode (GSM-UMTS) terminal had implemented GPRS.
- It should be the case that a dual-mode GSM-UMTS terminal for which a UMTS cell was not available for some reason, would with ~95% certainty end up on the same cell as a GSM-only terminal.
- It was an open question whether anything could be changed in the GSM standards in order to make inter-RAT cell reselection work. There was not much scope for such changes, but it was not ruled out in advance.

Decision (on cell selection/reselection):
- A means of comparison between GSM and UMTS needs to be found, e.g. a formula, mapping table, etc.
- Is broadcast in GSM cells of UMTS system information necessary? There may be ways in between all or nothing. Some UMTS cell-specific parameters could, instead of being broadcast on the GSM cell, be found on a UMTS cell. Frequency and scrambling codes is the information needed by the UE and therefore necessary to be broadcast on the GSM cell. In case of need to read the UMTS BCCH for some information, the GSM cell should assist the UE as much as possible in finding the UMTS cell.
- Having the requirements, and accepting the above principles, it seemed that this Ad Hoc meeting could not go much further without having the formula.
  Action: SMG2 and RAN WG2 are requested to progress the issue.

Because of the above decision, the remaining documents on this topic were for information only and did not need to be presented. Including the UMTS-only documents, these were:

RPA000018   Principles for GSM vs UMTS cell selection/reselection (Ericsson)

RPA000019   Measurement order Idle mode (Ericsson)

RPA000032   Inter System Handover and Cell re-selection (Ericsson)

RPA000016   Triggering Criteria for Cell re-selection (Ericsson)

RPA000045   Cell Reselection in HCS (Nokia)

RPA000050   Update of test parameters for Cell Selection / Reselection (Siemens)

5.2   Handover

RPA000035   Requirements for GSM to UMTS handovers (VodafoneAirtouch)
Amer El-Saigh (VodafoneAirtouch) presented this document.
Discussion:
- The document was for circuit-switched handover only (anything delay-critical, data-rate-independent).

- The document was for the GSM-to-UMTS case only.
- The 'requirement' on the lines of "If it is necessary ... something less sophisticated might be acceptable" (not exact wording), was not really a requirement. Actually, the best possible solution was looked for, not any algorithm to save the call/link.
- An additional bullet point to the effect that a handover should not (significantly) degrade another system should have been added.

RPA000036   Aspects of GSM to UMTS handover (VodafoneAirtouch)

Amer El-Saigh (VodafoneAirtouch) presented this document.

Discussion:

- The restriction to 32 carriers etc. mentioned in the first section was intended not to make any mobile fall apart. However, if it is a requirement to tell the BSS whether the mobile is UMTS-GSM or not, this restriction should not be there. It was understood that this was indeed a requirement, so the restriction was dropped.
- Synchronisation between GSM and UMTS was not easy. In order to do it within the short time requested here, a priori information from GSM is needed by the terminal. The minimum information that needed to be given to the terminal was frequency and scrambling code. It was not clear how much time was needed by the terminal to be frame-synchronised, it could maybe be less than the full frame period.
- On the topic of determination by BSC of the reason for access on an SDCCH, one bit was considered to be needed (sufficient?) to say "move this mobile to UMTS if at all possible". On higher layers, a message might be needed to inform the radio of the need for an upgrade to UMTS, if possible.
- Because there was a principle of separation of the layers, it was questioned why the radio layer should know any reasons of higher layers. However, it was pointed out that GSM already had similar information to notify the radio layer in order that something reasonable was allocated (SDCCH for location update for instance), whether a request could be held off (user) or not (paging) etc.

    In summary the requirement here is that there is a need for the BSC to have the capability to direct a call to a cell providing the best service that the user has requested, irrespective of the initial access. The BSC needs to know the requested service so as to perform that choice of the best cell. BSC needs to know the capabilities of the mobile in both systems. The difficult situation is when some service can be provided, but not the optimal service preferred by the mobile and that case needs to be covered.

RPA000037   GSM to Other Systems Handover (GSM 10.89 v 0.0.1) (Roke Manor Research)

The document was provided for information.

RPA000052   Issues and possible solutions for handovers between UTRA FDD and GSM (Nortel Networks)

David Choukroun (Nortel Networks) presented this document.

Discussion:

- The proposal was to cover the worst case, assuming that other cases would then also be covered.
- This was a proposal for reference patterns (according to current understanding, taking into account the discussions held earlier in this meeting).
- The synchronisation and measurements processes needed to go together. It was questioned whether was it was necessary in UMTS to confirm synchronisation all the time (as in GSM), but this seemed indeed to be the case. In that case, the patterns needed to be minimised.
- Slotting downlink did not automatically imply slotting uplink.

- There was no agreement on whether to have small, frequent gaps, of big infrequent gaps.

Decision:

- Action: RAN WG4 is to define the reference patterns for synchronisation and measurements on GSM cells and the performance requirements for a UE which is on a UMTS dedicated channel and which monitors GSM cells. The necessary SMG2 information is available in its liaison to RAN WG4 and RAN WG2 (see RPA000008).

Decision (on handover):

- Synchronisation:

  Action: RAN WG1 is to study if it is possible to attain full synchronisation between GSM and UMTS within the required time limits (5 ms according to the VodafoneAirtouch paper RPA000036), and if so, how long it takes (how many measurements are needed), how often it needs to be reconfirmed, whether that needs to be done in consecutive frames or if that could be spaced in time etc., all this taking into account the minimisation of the use of GSM idle frames as target; and provide the results to SMG2.

  Action: SMG2 is requested to make it work with the information from RAN WG1. Companies are requested to provide RAN WG1 experts to the SMG2 Ad Hoc on Handover (6-8 March) for this purpose.

5.2.1 GSM measurements from UMTS UE

There were no documents on this topic.

5.2.2 UMTS measurements from GSM MS

RPA000020   Scenarios and Requirements for measurements supporting GSM to UTRAN Handover (Ericsson)

Torgny Palenius (Ericsson) presented this document.

Discussion:

- It was the intention to use only idle frames and have no requirement on the manufacturers to use anything else.
- The performance of using idle frames only had not been investigated.
- Studies had shown that GSM and UMTS measurements could be interleaved.
- Could a measurement be done in one GSM timeslot (577 ms) following an idle frame? There was no agreement on this. Manufacturers felt that it should not be limited to one GSM timeslot (plus one idle frame), although it was clarified that that was all that was guaranteed by GSM.
- Some maximum number of frequencies was needed by manufacturers to restrict coding space etc.

Decision:

- The first bullet of the proposal in RPA000020 was accepted.
- The second bullet (maximum of 32) was not accepted. No assumption on the value was made.
- The third bullet (maximum of 4) was not accepted. There may be another (probably higher) limit.
- The fourth bullet (maximum time for detecting a new strong UTRAN cell is related to number of frequencies) was accepted.
- The fifth bullet was accepted with some modification: the time to detect in UTRAN should be at least as good as the time to detect in GSM.
- The sixth bullet was accepted (for dedicated channels).
- The first bullet of the 'details of the "solution"' was accepted.
- The second bullet was accepted.
- The third bullet was accepted.

- The fourth bullet was not accepted as there was no justification at this moment (uplink message size might be a limitation).
- The fifth bullet was accepted.

RPA000021   Measurement order Connected Mode (Ericsson)

This document needed to be presented in SMG2.

Decision: The document was noted.

RPA000022   Measurement Reporting (Ericsson)

This document was based on existing measurement reports. It was not considered necessary to present it as it needed to be discussed in SMG2 instead.

Decision: The document was noted. The recommendation to SMG2 was to allow both the existing measurement reports and the extended measurement reports (for which Nokia had a proposal).

RPA000032   Inter System Handover and Cell re-selection (Ericsson) (see also 5.1)

Peter Edlund (Ericsson) presented this document.

Discussion:

- There might be a need for more than one bit (e.g. to distinguish UTRA-FDD, UTRA-TDD high chiprate, UTRA-TDD low chiprate, ...).

Decision: The document was noted. The information that goes into the transparent container needs to be specified in RRC for UMTS and in RR for GSM.

5.2.3   GSM/GPRS classes with GSM - UMTS handovers

There were no documents on this topic.

5.2.4   Signalling requirements

RPA000038   GSM-3G Handover: BSSAP aspects (Nokia)

Kati Vainola (Nokia) presented this document.

RPA000024   Target Id for Handover to UMTS (Ericsson)

RPA000025   Handover to UTRAN A-interface signalling (Ericsson)

RPA000058   Source Identification in Intersystem handover from UMTS to GSM (Siemens)

Discussion (on Target Id, documents RPA000024, RPA000025, RPA000038 and RPA000058):

- The reason why UMTS used RNC Id and not Cell Id, was that the Cell Id should not be known to the Core Network.
- Either BSC or MSC could provide the calculation for target RNC Id. It was agreed that both would work: it was an architecture decision. Therefore, other arguments should be used to take a decision. The advantage of BSC (Nokia proposal) was that in case the translation table is in BSC, only neighbours are needed. If the translation table is in MSC the table needs to be span to the entire PLMN. If MSC was used, the source relay MSC was preferable because if the anchor MSC was used a much larger translation table was needed (it needed to span the entire system; in the BSC or source relay MSC case, only the

neighbours were needed). Operators preferred the anchor MSC instead, however, which was in agreement with the proposal from Ericsson.
- The general principle that the source radio access system adapts to the target was agreed, although the exact meaning was not clear, but the applicability had to be checked on a case by case basis.

Decision:
- Action: SMG12 and SA WG2 are asked to take a decision on this topic. The above documents could be presented in their respective meetings.

RPA000056   UMTS Security parameters in BSSMAP messages (Siemens)
Alexander Vesely (Siemens) presented this document.
Decision: It turned out there were no issues between groups in this document. It needed to be presented directly to SMG2.

RPA000062   Reconfiguration of UTRAN Radio Access Bearer (Ericsson)
PeterEdlund (Ericsson) presented this document.
Discussion:
- The topic was recognised as being very important.

Decision: The document was noted.
- Generally, the encoding of messages should be as compact as possible.
- Action: RAN WG2 is to find a good solution for the problem described in the contribution, at least for GSM and possibly optimise the UMTS case.

For the remaining documents, there were no issues that needed to be solved between groups (the issues raised could be solved autonomously by SMG2 or other groups). Therefore, it was suggested to the authors to submit these documents to the relevant groups instead.

RPA000023   Inter System Handover Command (Ericsson)

RPA000026   Adding UE Capabilities to Handover Request Message (Ericsson)

RPA000027   Adding UE capabilities to Handover Required BSSMAP message (Ericsson)

RPA000028   Adding UE capbilities to Classmark Change (Ericsson)

RPA000031   BSSMAP Handover Command for handover to UMTS (Ericsson)

RPA000057   Supported/Selected Codec information in BSSMAP messages (Siemens)

RPA000059   Adding of Stream Identifier IE to BSSMAP messages (Siemens)

RPA000060   Handover command for handover to UMTS (Ericsson)

RPA000061   Transportation RNC specific information (Ericsson)

5.2.5   Other

There were no other documents.

6   Time-plan in RAN on RRM

Francois Courau (Alcatel), as the SA WG2 co-ordinator on GSM handover aspects, would like to be informed of the time plan on the various specifications from RAN WG1, RAN WG2, RAN WG3, SMG2, SMG2 WPA and SMG2 WPB.

CSELT commented that, in line with the decision (taken during RAN #6) to continue the Ad Hoc on RRM (namely AH02-Simulation parameters) within WG4 with contributions from the other WGs, it would have been better to rename AH02 from the original title AH02-Simulation parameters to a more clear name such as AH02-RRM(Radio Resource Management). The Chairman suggested to resolve this within WG4.

There were no inputs to this agenda item, so Denis Fauconnier (Chairman) proposed to keep the time plan as originally proposed (for RAN groups: March 2000, for SMG2: latest May 2000).

7   Liaison and output to other groups

The output to other groups would consist of these Ad Hoc meeting minutes.

For the approval of the minutes, the draft minutes would be circulated latest Saturday 12 February and comments should be received before Tuesday morning 15 February 09:00.

8   Any other business

RPA000063   Measurement channels for compressed mode (VodafoneAirtouch)
This document was provided for information.

There was no other business.

9   Closing of the meeting Friday (4:30 PM)

The chairman thanked the hosts (CSELT) and the delegates and closed the meeting.

Annex A: List of delegates

1.	Andersen	Niels Peter Skov	Motorola A/S
2.	Arzelier	Claude	Vodafone Airtouch
3.	Benn	Howard	Motorola
4.	Bergstrom	Joakim	Ericsson L.M.
5.	Boumendil	Sarah	Nortel Networks
6.	Buldorini	Andrea	CSELT
7.	Burbidge	Richard	Motorola
8.	Calin	Doru	Motorola
9.	Cao	Qiang	Lucent
10.	Choi	Jinsung	LGIC
11.	Choukroun	David	Nortel Networks
12.	Cooper	David	Panasonic
13.	Courau	Francois	Alcatel
14.	de Montgolfier	Rémi	Alcatel
15.	De Pasquale	Andrea	Omnitel
16.	Dick	Steve	Interdigital Comm Corp
17.	Dietrich	Olaf	Mannesmann Mobilfunk GmbH
18.	Dominguez Romero	Francisco	Airtel Movil S.A.
19.	Dumazy	Jeun	Philips Consumer Communications
20.	Edlund	Peter	Ericsson Radio Systems
21.	El-Saigh	Amer	Vodafone Airtouch
22.	Fauconnier	Denis	Nortel Networks
23.	Fernandes	Edgar	Motorola
24.	Friman	Leif	Nokia
25.	Furuya	Yukitsuma	NEC Corporation
26.	Georgeaux	Eric	Nortel Networks
27.	Hammer	Volkmar	France Telecom
28.	Henningsson	Hakan	Ericsson Mobile
29.	Howell	Andrew	Motorola
30.	Iisakkila	Kaisu	Nokia
31.	Imaizumi	Satoshi	Panasonic
32.	Israelsson	Martin	Ericsson Radio Systems
33.	Isaacs	Ken	Siemens - Roke Manor
34.	Jokinen	Sami	Nokia
35.	Kikuchi	Nobuo	Mitsubishi Electric Corporation
36.	Kola	Tero	Nokia
37.	Krampf	Matthias	Lucent
38.	Krause	Joern	Siemens AG
39.	Kuchibhotla	Ravi	Motorola
40.	Magotti	Matteo	Omnitel
41.	Marchent	Brian	Fujitsu Europe R&D
42.	Meyrath	Wilhelm	Siemens AG
43.	Minet	Jean-Francois	Nortel Networks
44.	Mueckenheim	Jens	Lucent
45.	Nacson	Yosef	InterDigital Communications
46.	Nakamura	Takaharu	Fujitsu
47.	Nedelcu	Bogdan	Motorola
48.	Norimatsu	Hidehiko	Nec Corporation
49.	Numminen	Jussi	Nokia
50.	Palenius	Torgny	Ericsson Mobile Communications
51.	Persson	Bengt	Ericsson

52.	Pusch	Wolfgang	Siemens AG
53.	Roberts	Michael	Lucent
54.	Ronchini	Maria Cristina	CSELT
55.	Sanmugam	Raj	Ericsson Radio Systems
56.	Sitte	Armin	Siemens AG ICN
57.	Sivagnanasundaram	Suthaharan	Lucent
58.	Tabe	Takashi	NEC Corporation
59.	Takada	Junichi	Matsushita Communication Ind
60.	Tegth	Ulf	Telia AB
61.	Thomas	David	Roke Manor Research - Siemens
62.	Tomasin	Marina	Telital Mob Term SpA
63.	Vainola	Kati	Nokia Networks
64.	Van Bussel	Han	T-Mobil
65.	van der Veen	Hans	ETSI
66.	Vesely	Alexander	Siemens AG
67.	Wahlqvist	Mattias	Ericsson L.M.
68.	Yamamoto	Naoyuki	Matsushita Communication Ind
69.	Zangani	Marco	Omnitel
70.	Zeira	Eldad	Interdigital Comm Corp

Annex B: List of documents

Doc.No.	Title	Source	Ag.It.
RPA000001	Proposed agenda	Chairman	2
RPA000002	(R1-99L29, to TSG-RAN WG2 and TSG-RAN WG4, copy TSG-RAN) LS on the usage of measurements in RA	TSG-RAN WG1	3
RPA000003	(R1-99L65, to TSG-RAN WG2) Response to LS (R2-99g63) on UE measurement abilities	TSG-RAN WG1	3
RPA000004	(R1-000191, to TSG-RAN WG2 and TSG-RAN WG3, copy TSG-RAN WG4) LS on Out-of-Synch and DTX	TSG-RAN WG1	3
RPA000005	(R2-000252, to TSG-RAN WG1 and TSG-RAN WG4) LS on Downlink outer loop power control	TSG-RAN WG2	3
RPA000006	(R3-99k41, to TSG-RAN WG2, copy TSG-RAN WG1 and TSG-RAN WG4) Response to LS (R2-99k90) on Synchronisation Detection	TSG-RAN WG3	3
RPA000007	(R4-99A10, to TSG-RAN WG2, copy TSG-RAN WG1) Response to LS (R2-99k90) on Synchronisation Detection	TSG-RAN WG4	3
RPA000008	(2-00-518, to TSG-RAN WG2, copy TSG-RAN WG4) Response to LS (R2-99k97) on Measurement requirements for GSM in UMTS	SMG2	3
RPA000009	(R2-000266) Open Topics related to Cell Reselection	TSG-RAN WG2	5.1
RPA000010	Averaging periods for UTRA measurements	VodafoneAirtouch	4.1
RPA000011	(R3-000397, to TSG-RAN WG1 and TSG-RAN WG4, copy TSG-RAN WG2) LS on Periodicity of compressed mode pattern	TSG-RAN WG3	3
RPA000012	(R3-000398, to TSG-RAN WG1, copy TSG-RAN WG2 and TSG-RAN WG4) Response to LS (R1-000191) on Out-of-Synch and DTX	TSG-RAN WG3	3
RPA000013	Principles for UTRAN Measurements Specification	Ericsson	4.1
RPA000014	Requirements on Parallell Measurements	Ericsson	4.1
RPA000015	Power Control in Downlink	Ericsson	4.2
RPA000016	Triggering Criteria for Cell re-selection	Ericsson	5.1
RPA000017	Loss of RL Synchronisation on Dedicated Channels	Ericsson	4.3
RPA000018	Principles for GSM vs UMTS cell selection/reselection	Ericsson	5.1
RPA000019	Measurement order Idle mode	Ericsson	5.1
RPA000020	Scenarios and Requirements for measurements supporting GSM to UTRAN Handover	Ericsson	5.2.2
RPA000021	Measurement order Connected Mode	Ericsson	5.2.2
RPA000022	Measurement Reporting	Ericsson	5.2.2
RPA000023	Inter System Handover Command	Ericsson	5.2.4
RPA000024	Target Id for Handover to UMTS	Ericsson	5.2.4
RPA000025	Handover to UTRAN A-interface signalling	Ericsson	5.2.4
RPA000026	Adding UE Capabilities to Handover Request Message	Ericsson	5.2.4
RPA000027	Adding UE capabilities to Handover Required BSSMAP message	Ericsson	5.2.4
RPA000028	Adding UE capbilities to Classmark Change	Ericsson	5.2.4
RPA000029	Concepts on GSM to UMTS handover and UMTS Intersystem Cell-reselection	Ericsson	5.1
RPA000030	Proposal for LS on RRM Ad-hoc outcome	Ericsson	4
RPA000031	BSSMAP Handover Command for handover to UMTS	Ericsson	5.2.4
RPA000032	Inter System Handover and Cell re-selection	Ericsson	5.1, 5.2.2
RPA000033	Requirements for GSM to UMTS cell re-selection	VodafoneAirtouch	5.1
RPA000034	Cell re-selection from GSM to UMTS	VodafoneAirtouch	5.1
RPA000035	Requirements for GSM to UMTS handovers	VodafoneAirtouch	5.2
RPA000036	Aspects of GSM to UMTS handover	VodafoneAirtouch	5.2
RPA000037	GSM to Other Systems Handover (GSM 10.89 v 0.0.1)	Roke Manor Research	5.2

RPA000064 - Approved Report of the TSG-RAN Ad Hoc meeting on RRM (Torino, Italy, 9-11 February 2000)

Doc.No.	Title	Source	Ag.It.
RPA000038	GSM-3G Handover: BSSAP aspects	Nokia	5.2.4
RPA000039	UTRAN Round Trip Time	Nokia	4.1
RPA000040	UTRAN RSSI Measurement	Nokia	4.1
RPA000041	UTRAN optional measurements	Nokia	4.1
RPA000042	UE P-CCPCH and RSCP measurement	Nokia	4.1
RPA000043	UE measurement requirements	Nokia	4.4
RPA000044	UE Handover requirement	Nokia	4.4
RPA000045	Cell Reselection in HCS	Nokia	5.1
RPA000046	L1 Compressed Mode Parameter Set	Nokia	4.1
RPA000047	Open Topics Related to Cell Reselection	Nokia	5.1
RPA000048	Proposal for Cell Selection / Reselection in HCS	Siemens	5.1
RPA000049	Out of synchronisation procedures	Siemens	4.3
RPA000050	Update of test parameters for Cell Selection / Reselection	Siemens	5.1
RPA000051	A proposed way forward for measurements requirements	Nortel Networks	4.1
RPA000052	Issues and possible solutions for handovers between UTRA FDD and GSM	Nortel Networks	5.2
RPA000053	Downlink Outer Loop PC based on physical channel BER	Nokia	4.2
RPA000054	Open Topics related to Inter system Cell Reselection	Nokia	5.1
RPA000055	Flexible Mapping Function to Compare GSM and UMTS Measurements	Nokia	5.1
RPA000056	UMTS Security parameters in BSSMAP messages	Siemens	5.2.4
RPA000057	Supported/Selected Codec information in BSSMAP messages	Siemens	5.2.4
RPA000058	Source Identification in Intersystem handover from UMTS to GSM	Siemens	5.2.4
RPA000059	adding of Stream Identifier IE to BSSMAP messages	Siemens	5.2.4
RPA000060	Handover command for handover to UMTS	Ericsson	5.2.4
RPA000061	Transportation RNC specific information	Ericsson	5.2.4
RPA000062	Reconfiguration of UTRAN Radio Access Bearer	Ericsson	5.2.4
RPA000063	Measurement channels for compressed mode	VodafoneAirtouch	8
RPA000064	Approved Report of the TSG-RAN Ad Hoc meeting on RRM (Torino, Italy, 9-11 February 2000)	Secretary	-