**TSG RAN Meeting #25** **RP-040303**
**Palm Springs, USA, 07 - 09 September 2004**

**Title** **CR (REL-6 category B) to TS 25.401 on Introduction of Iuant into UTRAN architecture for control of RET antennas**
**Source** **TSG RAN WG3**
**Agenda Item** **8.2.3**

| RAN3 Tdoc | Spec | curr. Vers. | new Vers. | CR | Rev | Cat | Rel | Title | Work item |
|---|---|---|---|---|---|---|---|---|---|
| R3-041188 | 25.401 | 6.3.0 | 6.4.0 | 87 | 1 | B | Rel-6 | Introduction of Iuant into UTRAN architecture for control of RET Antennas | RANimp-TiltAn |
| | | | | | | | | | |

**3GPP TSG-RAN WG3 Meeting #43** **R3-041188**
**Prague, Czech Republic, 16th - 20th August 2004**

CR-Form-v7.1

# CHANGE REQUEST

⌘ **25.401** **CR** **87** ⌘ **rev** **1** ⌘ Current version: **6.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

***Proposed change affects:*** UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

| | | |
|---|---|---|
| ***Title:*** | ⌘ | Introduction of Iuant into UTRAN architecture for control of RET Antennas |
| ***Source:*** | ⌘ | RAN3 |
| ***Work item code:*** | ⌘ | RANimp-TiltAnt |
| ***Date:*** | ⌘ | 18/08/2004 |
| ***Category:*** | ⌘ | **B** |
| ***Release:*** | ⌘ | Rel-6 |

*Use one of the following categories:*
***F*** *(correction)*
***A*** *(corresponds to a correction in an earlier release)*
***B*** *(addition of feature),*
***C*** *(functional modification of feature)*
***D*** *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

*Use one of the following releases:*

| | |
|---|---|
| *Ph2* | *(GSM Phase 2)* |
| *R96* | *(Release 1996)* |
| *R97* | *(Release 1997)* |
| *R98* | *(Release 1998)* |
| *R99* | *(Release 1999)* |
| *Rel-4* | *(Release 4)* |
| *Rel-5* | *(Release 5)* |
| *Rel-6* | *(Release 6)* |
| *Rel-7* | *(Release 7)* |

| | | |
|---|---|---|
| ***Reason for change:*** | ⌘ | Introduction of the new Iuant interface for control of RET antennas into the UTRAN architecture |
| ***Summary of change:*** | ⌘ | The following changes are made for the introduction of the Iuant interface:<br>- Modification of figure 9: RNS architecture with O&M interfaces<br>- Addition of Note 5 under figure 9 on the new Iuant interface<br>- Addition of a translation function for the control signalling |
| ***Consequences if not approved:*** | ⌘ | |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | 2, 3.2, 10.1 |

| ***Other specs affected:*** ⌘ | Y | N | |
|---|---|---|---|
| | | X | Other core specifications |
| | | X | Test specifications |
| | | X | O&M Specifications |

⌘

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

**How to create CRs using this form:**
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

**START of CHANGES**

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.


[1] 3GPP TR 25.990: "Vocabulary".

[2] 3GPP TS 23.110: "UMTS Access Stratum Services and Functions".

[3] 3GPP TS 25.211: "Physical channels and mapping of transport channels onto physical channels (FDD)".

[4] 3GPP TS 25.442: "UTRAN Implementation Specific O&M Transport".

[5] 3GPP TS 25.402: "Synchronisation in UTRAN, Stage 2".

[6] 3GPP TS 23.003: "Numbering, Addressing and Identification".

[7] 3GPP TS 25.331: "RRC Protocol Specification".

[8] 3GPP TS 23.101: "General UMTS Architecture".

[9] 3GPP TS 25.414: " UTRAN Iu Interface Data Transport & Transport Signalling".

[10] 3GPP TS 25.424: "UTRAN Iur Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[11] 3GPP TS 25.434: "UTRAN Iub Interface Data Transport & Transport Signalling for Common Transport Channel Data Streams".

[12] IETF RFC 2460: "Internet Protocol, Version 6 (Ipv6) Specification".

[13] IETF RFC 2474: "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers " December 1998

[14] IETF RFC 768: "User Datagram Protocol", (8/1980)

[15] "Information technology – Open Systems Interconnection – Network service definition", X.213, ISO/IEC 8348.

[16] "Information technology – Open Systems Interconnection – Network service definition Amendment 1: Addition of the Internet protocol address format identifier", X.213/Amd.1, ISO/IEC 8348.

[17] IETF RFC 791 (1981): "Internet Protocol".

[18] 3GPP TS 25.426: "UTRAN Iur and Iub Interface Data Transport & Transport Signalling for DCH Data Streams".

[19] Void

[20] 3GPP TS 23.236: "Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes".

[21] 3GPP TR 43.930: "Iur-g interface; Stage 2".

[22] 3GPP TR 44.901: "External Network Assisted Cell Change".

[23] 3GPP TS 48.018: "General Packet Radio Service (GPRS); BSS GPRS Protocol (BSSGP)".

[24] 3GPP TS 25.460: "UTRAN Iuant Interface: General Aspects and Principles".

[25] 3GPP TS 25.461: "UTRAN Iuant Interface: Layer 1".

[26] 3GPP TS 25.462: "UTRAN Iuant Interface: Signalling Transport".

[27] 3GPP TS 25.463: "UTRAN Iuant Interface: Remote Electrical Tilting (RET) Antennas Application Part (RETAP) Signalling".

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**ALCAP:** generic name for the transport signalling protocols used to set-up and tear-down transport bearers

**Cell:** Radio Network object that can be uniquely identified by a User Equipment from a (cell) identification that is broadcasted over a geographical area from one *UTRAN Access Point*
A Cell is either FDD or TDD mode.

**Iu:** interface between an RNC and an MSC, SGSN or CBC, providing an interconnection point between the RNS and the Core Network. It is also considered as a reference point

**Iub:** interface between the RNC and the Node B

**Iur:** logical interface between two RNCs
Whilst logically representing a point to point link between RNCs, the physical realisation need not be a point to point link.

**Iur-g:** logical interface between RNC/BSS and BSS
Whilst logically representing a point to point link between RNC/BSS and BSS, the physical realisation need not be a point to point link.

**Logical Model:** Logical Model defines an abstract view of a network or network element by means of information objects representing network element, aggregations of network elements, the topological relationship between the elements, endpoints of connections (termination points), and transport entities (such as connections) that transport information between two or more termination points

The information objects defined in the Logical Model are used, among others, by connection management functions. In this way, a physical implementation independent management is achieved.

**Node B:** logical node in the RNS responsible for radio transmission / reception in one or more cells to/from the UE
The logical node terminates the Iub interface towards the RNC.

**Radio Resources:** resources that constitute the radio interface in UTRAN, e.g. frequencies, scrambling codes, spreading factors, power for common and dedicated channels

**Node B Application Part:** Radio Network Signalling over the Iub

**Radio Network Controller:** logical node in the RNS in charge of controlling the use and the integrity of the radio resources

**Controlling RNC:** role an RNC can take with respect to a specific set of Node B's
There is only one Controlling RNC for any Node B. The Controlling RNC has the overall control of the logical resources of its node B's.

**Radio Network Subsystem:** RNS can be either a full UTRAN or only a part of a UTRAN
An RNS offers the allocation and release of specific radio resources to establish means of connection in between an UE and the UTRAN. A Radio Network Subsystem contains one RNC and is responsible for the resources and transmission/reception in a set of cells.

**Serving RNS:** role an RNS can take with respect to a specific connection between an UE and UTRAN
There is one Serving RNS for each UE that has a connection to UTRAN. The Serving RNS is in charge of the radio connection between a UE and the UTRAN. The Serving RNS terminates the Iu for this UE.

**Drift RNS:** role an RNS can take with respect to a specific connection between an UE and UTRAN
An RNS that supports the Serving RNS with radio resources when the connection between the UTRAN and the UE need to use cell(s) controlled by this RNS is referred to as Drift RNS.

**Radio Access Network Application Part:** Radio Network Signalling over the Iu

**Radio Network Subsystem Application Part:** Radio Network Signalling over the Iur

**RRC Connection:** point-to-point bi-directional connection between RRC peer entities on the UE and the UTRAN sides, respectively
An UE has either zero or one RRC connection.

**Stand-Alone SMLC:** logical node that interconnects to the RNC over the Iupc interface via the PCAP protocol
This node provides GPS related data to the RNC and may perform the position calculation function.

**User Equipment:** Mobile Equipment with one or several UMTS Subscriber Identity Module(s)
A device allowing a user access to network services via the Uu interface. The UE is defined in ref. [8]. If this term is used in the context of Iur-g, it means MS in case it uses radio resources of a DBSS.

**Universal Terrestrial Radio Access Network:** UTRAN is a conceptual term identifying that part of the network which consists of RNCs and Node Bs between Iu an Uu
The concept of UTRAN instantiation is currently undefined.

**UTRAN Access Point:** conceptual point within the UTRAN performing radio transmission and reception
A UTRAN access point is associated with one specific *cell*, i.e. there exists one UTRAN access point for each cell. It is the UTRAN-side end point of a *radio link*.

**Radio Link:** "radio link" is a logical association between a single User Equipment and a single UTRAN access point
Its physical realisation comprises one or more radio bearer transmissions.

**Radio Link Set:** set of one or more Radio Links that has a common generation of Transmit Power Control (TPC) commands in the DL

**Uu:** Radio interface between UTRAN and the User Equipment

**RAB sub-flows:** Radio Access Bearer can be realised by UTRAN through several sub-flows
These sub-flows correspond to the NAS service data streams that have QoS characteristics that differ in a predefined manner within a RAB e.g. different reliability classes.

RAB sub-flows have the following characteristics:

1) The sub-flows of a RAB are established and released at the RAB establishment and release, respectively.

2) The sub-flows of a RAB are submitted and delivered together at the RAB SAP.

3) The sub-flows of a RAB are carried over the same Iu transport bearer.

4) The sub-flows of a RAB are organised in a predefined manner at the SAP and over the Iu interface. The organisation is imposed by the NAS as part of its co-ordination responsibility.

**Set of co-ordinated DCHs:** set of co-ordinated DCHs is a set of dedicated transport channels that are always established and released in combination
Individual DCHs within a set of co-ordinated DCHs cannot be operated on individually e.g. if the establishment of one

DCH fails, the establishment of all other DCHs in the set of co-ordinated DCHs shall be terminated unsuccessfully. A set of coordinated DCHs is transferred over one transport bearer. All DCHs in a set of co-ordinated DCHs shall have the same TTI.

**Shared Network Area (SNA):** Area consisting or one or more LA's to which access can be controlled.

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|---|---|
| AAL | ATM Adaptation Layer |
| AAL2 | ATM Adaptation Layer 2 |
| ALCAP | Access Link Control Application Part |
| ATM | Asynchronous Transfer Mode |
| BM-IWF | Broadcast Multicast Interworking Function |
| BMC | Broadcast/Multicast Control |
| BSS | Base Station Subsystem |
| CBC | Cell Broadcast Centre |
| CBS | Cell Broadcast Service |
| CN | Core Network |
| CPCH | Common Packet Channel |
| CRNC | Controlling Radio Network Controller |
| DCH | Dedicated Channel |
| DL | Downlink |
| DRNS | Drift RNS |
| EDGE | Enhanced Data rates for Global Evolution |
| FACH | Forward Access Channel |
| FFS | For Further Study |
| GERAN | GSM EDGE Radio Access Network |
| GSM | Global System for Mobile Communications |
| GTP | GPRS Tunnelling Protocol |
| IPv4 | Internet Protocol, version 4 |
| IPv6 | Internet Protocol, version 6 |
| LA | Location Area |
| MAC | Medium Access Control |
| NACC | Network Assisted Cell Change |
| NAS | Non Access Stratum |
| NBAP | Node B Application Part |
| NNSF | NAS Node Selection Fuction |
| NSAP | Network Service Access Point |
| PCH | Paging Channel |
| PLMN | Public Land Mobile Network |
| QoS | Quality of Service |
| RAB | Radio Access Bearer |
| RACH | Random Access Channel |
| RANAP | Radio Access Network Application Part |
| RET | Remote Electrical Tilting |
| RIM | RAN Information Management |
| RNC | Radio Network Controller |
| RNL | Radio Network Layer |
| RNS | Radio Network Subsystem |
| RNSAP | Radio Network Subsystem Application Part |
| RNTI | Radio Network Temporary Identity |
| SAB | Service Area Broadcast |
| SAS | Stand-Alone SMLC |
| SMLC | Serving Mobile Location Centre |
| SNA | Shared Network Area |
| SRNC | Serving Radio Network Controller |
| SRNS | Serving RNS |
| TEID | Tunnel Endpoint Identifier |
| TNL | Transport Network Layer |

| | |
|---|---|
| TTI | Transmission Time Interval |
| UDP | User Datagram Protocol |
| UE | User Equipment |
| UL | Uplink |
| UMTS | Universal Mobile Telecommunication System |
| URA | UTRAN Registration Area |
| USIM | UMTS Subscriber Identity Module |
| UTRAN | Universal Terrestrial Radio Access Network |

## 3.3 Notation

Parts of the document apply only to one mode, FDD or TDD. Any such area will be tagged by [FDD — xxxxxxxxx] and [TDD — yyyyyyyyyy] respectively. The tag applies to the text until the closing bracket.

**Unchanged Parts skipped**

# 10 UTRAN O&M Requirements

## 10.1 O&M of Node B

The O&M of Node B is separated in two parts: the O&M linked to the actual implementation of Node B, denoted as Implementation Specific *O&M*, and the O&M which impacts on the traffic carrying resources in Node B controlled from the RNC, denoted *logical O&M*. The RNS architecture with the O&M interfaces is shown in figure 9.

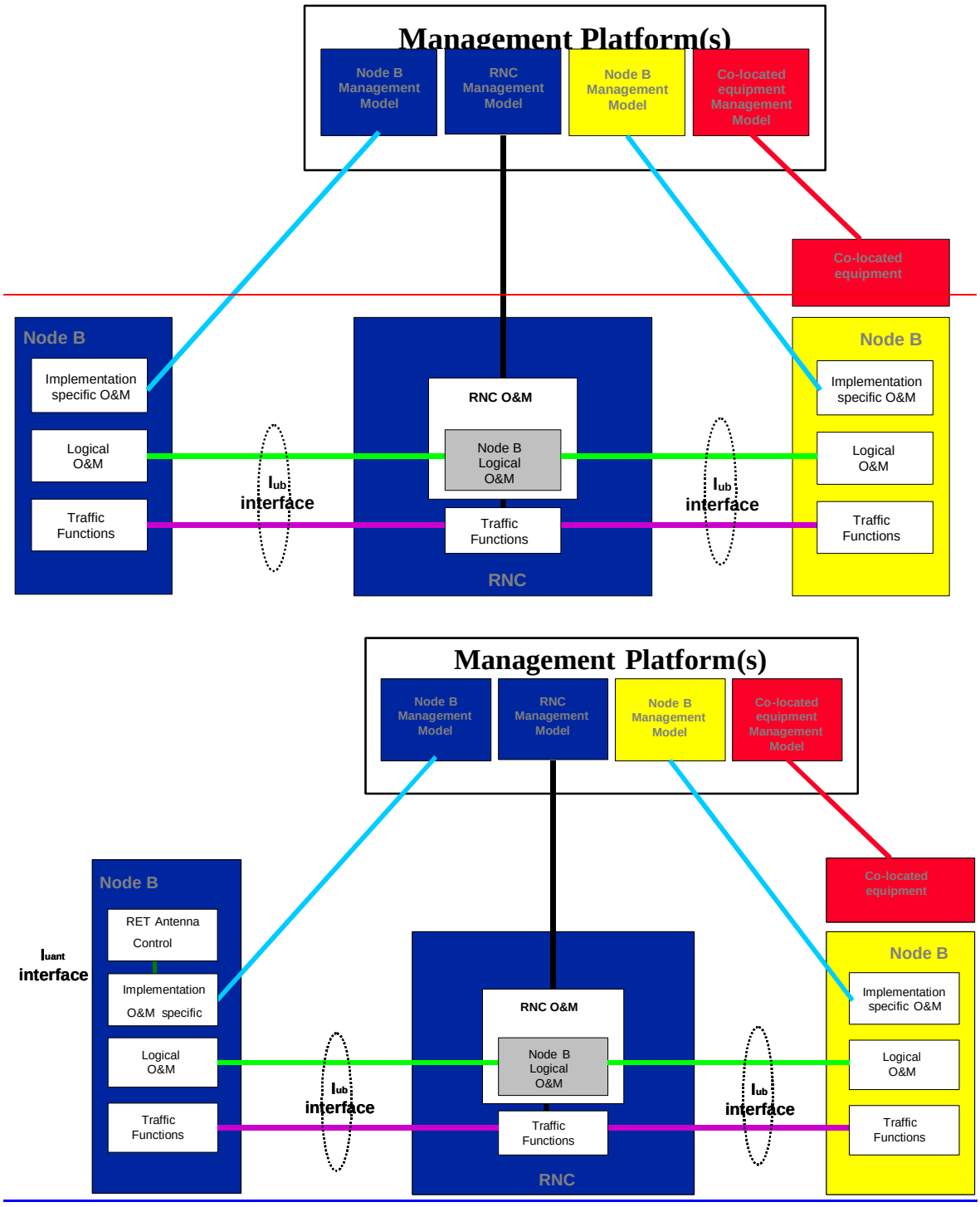


**Figure 9: RNS architecture with O&M interfaces**

NOTE 1: The concept of an interface from the RNC to the management system is shown for clarity only. It's definition is outside the scope of 3GPP-TSG-RAN-WG3.

NOTE 2: The presentation of the O&M functions within the management system is shown for clarity only. Their actual implementation is outside the scope of 3GPP-TSG-RAN-WG3.

NOTE 3: The standardisation of the Implementation Specific O&M is outside the scope of 3GPP-TSG-RAN-WG3. The 3GPP-TSG-RAN-WG3 should only address the bearer for the Implementation Specific O&M.

NOTE 4: The figure shows only logical connections and does not intend to mandate any physical interfaces.

NOTE 5: The Iuant interface to the control unit of the RET antenna is specified in the series of Technical Specifications 25.460, 25.461, 25.462 and 25.463 [24,25,26,27]. An Implementation Specific O&M function is needed for the RET antenna control to translate the control signalling from the Node B Element Manager into the control commands of the Iuant interface specified in [24].

### 10.1.1 Implementation Specific O&M

The Implementation Specific O&M functions are heavily dependent on the implementation of Node B, both for its hardware components and for the management of the software components. It needs therefore to be implementation dependent, and be performed between Node B and the management system.

One solution for the transport of Implementation Specific O&M is to route from Node B to the management system via the RNC. In this case, the Implementation Specific O&M interface and Iub interface share the same physical bearer, and [4] specifies the routing function and the transport bearer for this scenario. The deployment of the routing across the RNC in the UTRAN is optional. Where signalling between co-located equipment and its management system is required, this may be carried over the same bearer as Implementation Specific O&M.

### 10.1.2 Logical O&M

Logical O&M is the signalling associated with the control of logical resources (channels, cells,…) owned by the RNC but physically implemented in the Node B. The RNC controls these logical resources. A number of O&M procedures physically implemented in Node B impact on the logical resources and therefore require an information exchange between RNC and Node B. All messages needed to support this information exchange are classified as Logical O&M forming an integral part of NBAP.

**END of CHANGES**