Source:	**ERICSSON LM**
Title:	**ROADMAP DOCUMENT ITU-T IMT-2000**
Agenda item:	
Document for:	**DISCUSSION**

Attached is a document that is generated by ITU-T SG11 WP3 Question 8. ITU-T SG11 is maintaining the framework document Q.1701 that has been approved in May 1998. This document describes the requirements for 3G IMT-2000 networks and also introduces the concept of the IMT-2000 Family System.

During the last discussions within ITU-T SG11 WP3, the need for a roadmap of 3G specifications was identified. ITU-T SG11 WP3 has provided the first draft of this roadmap document and requested feedback from 3GPP on the used 3GPP references within the roadmap.

SOURCE:	Chairman Working Party 3/11 and Program Manager IMT-2000 Standardization Studies in ITU-T (R. Pandya)
TITLE:	**Input request for proposed Supplement to Recommendation Q.1701**
TO:	**3GPP, 3GPP2, TR45.5, TR45.3, ETSI(DECT), ITU-R TG8/1 (for action by October 22, 1999)**
COPY:	**OHG (for information)**
APPROVAL:	**Agreed at the Q8/11 Rapporteur Meeting (Ottawa, September 08-17, 1999)**

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Dear Colleagues:

During our recent meetings the need for a "Supplement" to Recommendation Q.1701 (Framework for IMT-2000 Networks) has been identified which will provide a 'roadmap' to all major IMT-2000 standards/specifications developed by the ITU, 3GPPs, and relevant SDOs. The roadmap can be used for initial planning by operators who wish to implement IMT-2000 systems.

An initial draft for the Supplement developed at the Ottawa meeting of WP3/11 Rapporteurs is attached for your information and action. We are planning to complete the Issue 1 (1999/2000 version) by November 1999 and submit it for approval to the ITU-T SG11 meeting (Geneva, November 22-December 10, 1999).

I would appreciate very much if you would assist ITU-T WP3/11 in updating/providing necessary information on standards/specifications from your organization in order that the final document could reflect the latest IMT-2000 standards/specifications from ALL relevent standards organizations. Please note that your response by October 22, 1999 is critical for meeting our November/December 1999 target for completion and final approval.

If you need additional information please do not hesitate to contact me.

With best regards,

Raj Pandya

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UIT - Secteur de la normalisation des télécommunications
ITU - Telecommunication Standardization Sector
UIT - Sector de Normalización de las Telecomunicaciones

IMT-2000 Rapporteurs' Meeting
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Ottawa, Canada 8-17 September 1999

Addressed to: WP 3/11
Question(s): Q.8/11   **Original: English**

SOURCE*:   **Chairman Q.1701 Supplement Ad-hoc (Mr. Antun Samukic)**

TITLE: Proposed text for Recommendation Q.1701 Supplement[1]

Abstract

The need for a supplement to Q.1701 has been identified in order to provide a roadmap of all major IMT-2000 standards documents developed by ITU and IMT-2000 Family member systems. This contribution contains the initial proposal for such a supplement.

Editor: Mr. Antun Samukic
Co-editors: Mr. Tom Towle, Mr. Jim Hoffmeyer and Gunther Kleindl

Proposed text for Q.1701 Supplement

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[1] A supplement contains material, which is supplementary to and associated with the subject matter of one or more Recommendations, such as the M-Series of Recommendations, but is not essential to its completeness or comprehensibility and is therefore, not considered to be an integral part of any Recommendation(s). As such, a supplement does not require approval according to Resolution 1 procedures; agreement by the Study Group is sufficient. A supplement is similar to an appendix except that it is published by the ITU-T as a separate document. A supplement may be given a specific title, such as "technical report", "handbook", etc., as directed by the Study Group. A supplement is translated, upon advice from a Study Group, in the working languages for publication after agreement by the Study Group to issue the supplement."

1   Abstract

This supplement provides a roadmap of IMT-2000 standards developed in ITU and other standards developing partnership projects and organisations (3GPPs and SDOs) . The scope includes any relevant standards that are targeted toward the specification of IMT-2000 systems. The specifications list are grouped by family member and form a complete IMT-2000 Family member system.

2   Introduction

With the introduction and acceptance of the IMT-2000 family of systems concept,the development of IMT-2000 standards/specifications is now distributed over a number of international and regional/national standards forums. Whereas, ITU-R and ITU-T are focussing on IMT-2000 radio and network interface specifications – primarily to facilitate interoperability between family member systems, 3GPPs and SDOs are addressing the specifications for individual family member systems.

In this environment, the need for a 'roadmap' or 'guide' to these standards/specifications is becoming increasingly evident – specially by network operators who may wish to implement IMT-2000 systems. This supplement to Q.1701 is intended to fulfill this emerging need.

3   Scope

ITU-T Recommendation Q.1701 provides the framework for IMT-2000 networks and defines the IMT-2000 family of systems concept. This supplement to Recommendation Q.1701 brings together the IMT-2000 standards/specifications being developed by various standards organizations in order to provide a 'roadmap' or 'guide' that may be used by network operators who may be planning to implement IMT-2000 systems.

4   Abbreviations and acronyms

ANSI – American National Standards Institute
IMT-2000 CS-1 – IMT-2000 Capability Set 1
ETSI – European Telecommunications Standardization Institute
GPRS – General Packet Radio Services
PSO - Participating Standards Organization
SDO Standard Development Organisation
3GPP Third Generation Partnership Project
3GPP2 Third Generation Partnership Project 2
RANAP – Radio Access Network Application Part
T1 – T1 Standardization Committee (part of ANSI)
TIA – Telecommunication Industry Association (part of ANSI)
TTA - Telecommunication Technology Association (Korea)
TTC – Telecommunication Technology Council (Japan)
UTRAN – UMTS Terrestrial Radio Access Network

5   Overview of IMT-2000 family of systems concept

In 1997, the IMT-2000 family of systems concept was adopted in ITU-T Study Group 11 and the on-going work on IMT-2000 within WP3/11 was re-focused. A new recommendation, Q.1701, was developed to define the framework for IMT-2000 Networks based on the IMT-2000 Family of systems concept. Recommendations Q.1701 and Q.1711 were completed (determined) in May 1998 and approved in March 1999. These two recommendations provided the foundation for IMT-2000 systems.

Following statements are extracted from Recommendation Q.1701 as background information on the IMT-2000 Family of systems concept.

5.1   IMT-2000 Family Concept

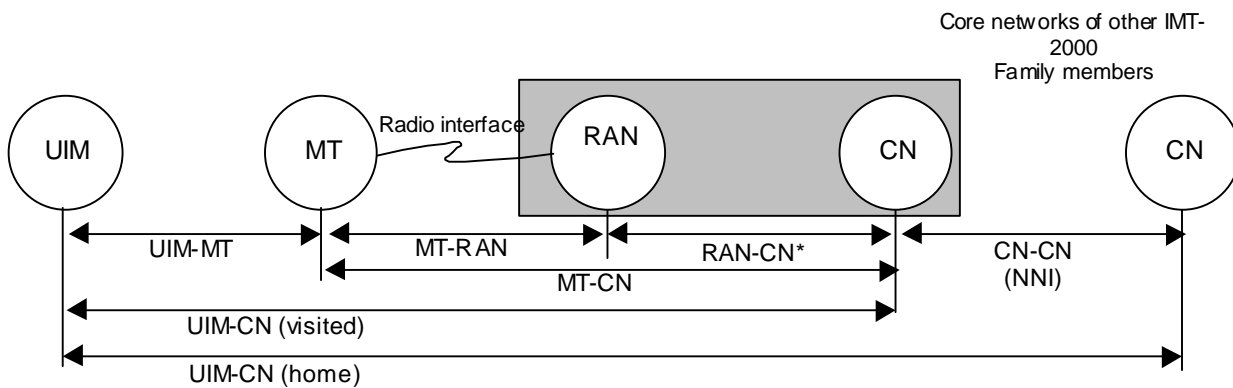*The IMT-2000 Family concept is used to realize a global service offering among IMT-2000 systems.*

5.2   IMT-2000 Family

The IMT-2000 Family is a federation of IMT-2000 Systems providing IMT-2000 capabilities to its users as identified in IMT-2000 Capability Sets. The family is characterized by the ability of its member systems to provide service to the subscribers of other family members in a roaming service offering. However, individual family members may have different intra-system specifications (e.g., functionalities in physical entities, signalling protocols, etc.)

5.3   An IMT-2000 Family Member

An IMT-2000 Family Member is an IMT-2000 System. A Family Member integrates and incorporates the IMT-2000 functions into physical entities and associated interfaces as necessary to provide IMT-2000 capabilities. The UIM, MT, RAN, and CN functional subsystems may be specific to each Family Member along with the associated internal processes, internal interactions, and internal communication between functional entities. Support for IMT-2000 capabilities and interfaces will facilitate roaming between family members. The family members' networks interoperate as necessary to accomplish the roaming objectives.

The following figure is also extracted from Recommendation Q.1701 that identifies the functional subsystems and the associated interfaces for standardization in CS-1.

Figure 3.1/Q.1701 Supplement

IMT-2000 Functional Subsystems

It was agreed that the following inter-subsystem signaling relationships (or interfaces) will be standardized by ITU-T to facilitate global roaming between different IMT-2000 family members:

UIM-MT
UIM-CN (visited)
UIM-CN (home)
MT-RAN (radio interface Layers 2 and 3)
MT-CN (radio interface Layer 3)
CN-CN (NNI) Note: The proposed text further elaborationg views on NNI is Appendix 2.

In order to apply the family of systems concept to Figure3.1/Q.1701 Supplement), it is necessary to define four terms that are being used in the IMT-2000/3G standards vocabulary. These are:

1. intra-subsystem
2. inter-subsystem
3. intra-family
4. inter-family

It is important to define these terms to establish a common understanding on how to apply these terms to various signalling relationships shown in Figure-1. By doing so, it will be easier to identify the focus of ITU-T and other IMT-2000 family member standardization bodies. These terms can be illustrated through the use of the following figure on global roaming possibilities:
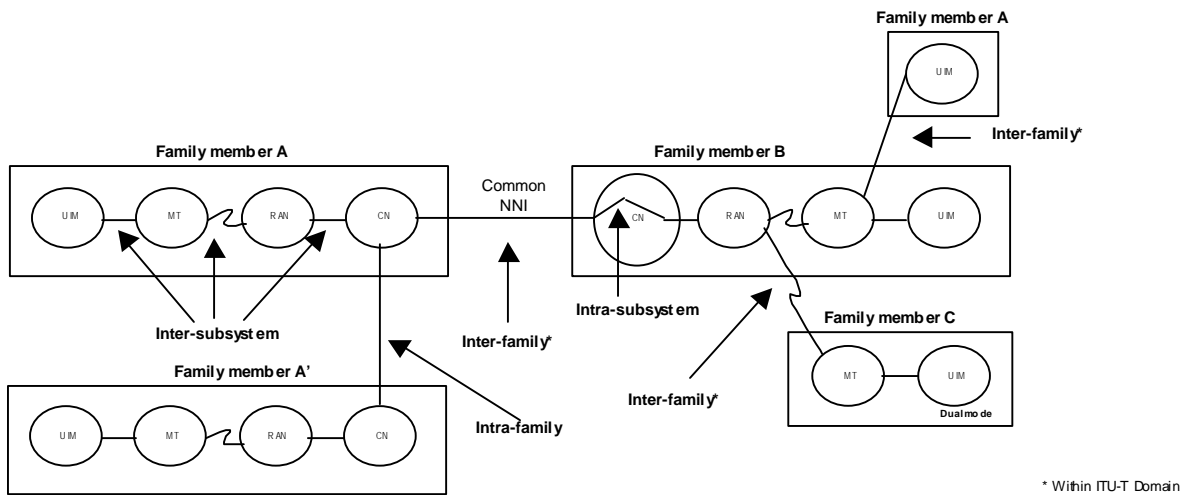

Figure 3.2/Q.1701 Supplement

Global Roaming Possibilities

By analyzing the above figure, the terms intra-subsystem, inter-subsystem, intra-family, and inter-family are easily identifiable. These terms, if used independently, are subject to interpretation. Therefore, it is necessary that these terms be used in combination to avoid ambiguity. The terms that are of interest are categorized as follows:

Category	Term	Definition	Primary responsible standards bodies
1	Intra-subsystem	Signalling relationship contained within a specific subsystem, e.g., within CN of one family member system. An intra-subsystem signalling relationship is outside the scope of ITU-T standardization.	Family member
2	Inter-subsystem	Signalling relationship between two subsystems, either contained in the same or different IMT-2000 family member system, e.g., MT-RAN, etc.	Primarily family member, with ITU-T to provide commonality and global roaming details
3	Intra-family	Signalling relationship contained in the same IMT-2000 family member system.	Primarily family member, with ITU-T to provide commonality and global

			roaming details
4	Inter-family	Signalling relationship between two subsystems contained in different IMT-2000 family member systems, e.g., CN-CN.	ITU-T (To facilitate global roaming)

At the GSC-4 ad-hoc meeting (Geneva, May 18 – 19, 1999) representatives from five Participating Standards Organizations (ETSI, TTA, TTC, T1, TIA) and from ITU-T SG11 met in Geneva to discuss the coordination of work on IMT-2000 standards. The key results from this meeting are shown in the following extracts from the meeting report.

1) Endorsement of IMT-2000 Family of Systems concept and architecture
The IMT-2000 Family of Systems concept and functional architecture as described in ITU-T (Draft)* New Recommendations Q.1701, Framework for IMT-2000 Networks, and Q.1711, Network functional model for IMT-2000, were presented to the PSOs. Q.1701 and the family concept were agreed by the PSOs as a valuable framework for planning and organizing PSOs' work on both defining family members' relevant standards and supporting ITU-T planned standardization activities.

(Draft)*: Q.1701 (Framework for IMT-2000 Networks) and Q.1711 (Network functional model for IMT-2000) were approved as Recommendations by ITU-T SG11 in March 1999.

2) Endorsement of IMT-2000 interfaces
The interfaces and functional relationships identified in ITU-T (Draft)* New Recommendation Q.1701 were recognized by PSOs as the interfaces to be covered by ITU-T Recommendations. PSOs also noted ITU-T SG 11's current plan on defining signalling requirements and protocols for UIM-MT,MT-RAN and NNI interfaces to meet IMT-2000 CS1 capability requirements.

*Note: Q.1701 and Q.1711 were formally approved in March 1999.

3) PSOs' responsibility in evolving 2nd generation (2G) mobile systems and interworking with IMT-2000
It was re-confirmed that, because of the extensive knowledge of 2G mobile systems and specific needs of individual IMT-2000 family member markets, PSOs are better equipped to handle intra-family member standards matters. They also have better knowledge on how to evolve 2G systems toward IMT-2000 and how to interwork between 2G systems and IMT-2000. It was also understood that the long-term goal for PSOs' activities is to evolve toward a common ITU-T standard for IMT-2000.

With the creation of 3GPPs, the industry experts are heavily involved in writing the IMT-2000/3G specifications for their family member systems. The current 2G interfaces are being enhanced and new ones are being created to support the IMT-2000/3G set of services and capabilities. It is clear that from the service provider point of view, there is a lot of questions as to which interfaces ITU-T will define and which ones it will not. Hence, a complete list of different 3G standards/specifications must be available to help guide the service providers around the world to better understand IMT-2000/3G as they make critical 3G deployment decisions. Since ITU-T adopted and defined the IMT-2000 Family of concept, it seems logical that ITU-T should provide a list of relevant IMT-2000/3G standards/specifications. Such a list will be very helpful for network operators and service providers in planning their next generation networks. This list will also be very valuable for developing countries that are not directly involved in the development of 3G family of standards.

Section 4 and 5 of this guide provides information relating to these various standards/specifications.

6   ITU Recommendations

The table proposed for the introduction describing ITU Recommendation is in Appendix 1 and should be further elaborated. Note: The distinction between interfaces for study (UIM, Radio, NNI,) and functional communications (e.g. UIM – CN) will be clarified within q.1701 Supplement , based on the guidelines in Recommendation Q.1701.

6.1   ITU-T Recommendations

ITU-T has developed several IMT-2000 CS-1 framework Recommendations that are common to all family members and are designed to facilitate global roaming. The common recommendations are as follows:

- Q.1701 (Framework for IMT-2000 Networks)
- Q.1711 (IMT-2000 Functional Architecture)
- Q.1721 (IMT-2000 Information Flows)

The following is the list of ITU-T IMT-2000 CS-1 Recommendations on signalling requirements and protocols:

ITU-T specified Interface	ITU-T Recommendation
UIM-MT	Q.1741 – IMT-2000 UIM Signalling Requirements (Draft)
UIM-CN (visited)	Q.1741 – IMT-2000 UIM Signalling Requirements (Draft)
UIM-CN (home)	Q.1741 – IMT-2000 UIM Signalling Requirements (Draft)
MT-RAN (L1)	**To be specified by ITU-R Recommendation M.RSPC**
MT-RAN (L2)	Q.1731.2* – IMT-2000 Radio Interface Layer 2 Signalling Requirements (Draft)
MT-RAN (L3)	Q.1731.3* – IMT-2000 Radio Interface Layer 3 Signalling Requirements (Draft)
RAN-CN	**Not to be specified by ITU-T in CS-1**
CN-CN (NNI)	Q.1751 – IMT-2000 Network Signalling Requirements (Draft)

* ITU-T to specify radio independent requirements only

6.2 ITU-R Recommendations

Specification	Title	Comment (comments equested from ITU-R)
818	**Satellite operation within IMT-2000**	
1034-1	**Radio requirements**	
1035	**Radio framework**	
1036	**Spectrum considerations**	
1225	**Guidelines for evaluation of radio transmission technologies**	
1311	**Modularity within IMT-2000**	
1167	**IMT-2000 satellite framework**	
TERM	**Essential Technical and Operational Requirements for Mobile Stations and Mobile Earth Stations of IMT-2000 Systems**	
1390	**Methodology for the Calculation of IMT-2000 Terrestrial Spectrum Requirements**	
1391	**Methodology for the Calculation of IMT-2000 Satellite Spectrum Requirements**	
Report [SPEC]	**Spectrum Requirements for IMT-2000**	
RES xx	**Future submission of satellite radio transmission technologies for IMT-2000**	
HAPS	**Minimum performance characteristics and operational conditions for HAPS operating within the IMT-2000 system in the bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz**	
RKEY	**Key characteristics for the IMT-2000 radio interfaces**	

RSPC	**Detailed specifications of the radio interfaces of IMT-2000**	
etc.		

7   Family member standards/specifications

This section provides a non exhaustive set of IMT-2000 family members. This list is strictly informative and IMT-2000 family members are not restricted to the following systems. The initial list does NOT prevent inclusion of future family members.

7.1   Family member: GSM evolved Core Network with UTRAN Access Network

The following standards apply to this family member
(co-editor Mr. Antun Samukic):

7.1.1   RAN Radio Access Networks

Specification	Title	Comment
3GPP 3G TS 25.201	Physical layer – general description	Gives general description of the physical layer of the UTRA air interface.
3GPP 3G TS 25.211	Physical channels and mapping of transport channels onto physical channels (FDD)	Describes the characteristics of the Layer 1 transport channels and physicals channels in the FDD mode of UTRA
3GPP 3G TS 25.212	Multiplexing and channel coding (FDD)	Describes the characteristics of the Layer 1 multiplexing and channel coding in the FDD mode of UTRA
3GPP 3G TS 25.213	Spreading and modulation (FDD)	Describes spreading and modulation for UTRA Physical Layer FDD mode.
3GPP 3G TS 25.214	Physical layer procedures (FDD)	Specifies and establishes the characteristics of the physicals layer procedures in the FDD mode of UTRA.
3GPP 3G TS 25.221	Physical channels and mapping of transport channels onto physical channels (TDD)	
3GPP 3G TS 25.222	Multiplexing and channel coding (TDD)	Describes multiplexing, channel coding and interleaving for UTRA Physical Layer TDD mode.
3GPP 3G TS 25.223	Spreading and modulation (TDD)	Establishes the characteristics of the spreading and modulation in the TDD mode.
25.224	Physical layer procedures description (TDD) .	Describes the Physical Layer Procedures in the TDD mode of UTRA
3GPP 3G TS 25.231	Physical layer – Measurements	Contains the description of the measurements done at the UE and network in order to support operation in idle mode and connected mode.
3GPP 3G TS 25.301	Radio Interface Protocol Architecture	Provide an overview and overall description of the UE-UTRAN radio interface protocol architecture.
3GPP 3G TS 25.302	Services provided by the Physical Layer	Contains a technical specification of the services provided by the physical layer of UTRA to upper layers.
3GPP 3G TS 25.303	UE functions and Interlayer Procedures in Connected Mode	Defines the UE States and the principal tasks undertaken by the UE

		when in Connected Mode.
3GPP 3G TS 25.304	UE procedures in Idle Mode	Describes the overall idle mode process for the UE and the functional division between the non-access stratum and access stratum in the UE.
3GPP 3G TS 25.321	Medium Access Control (MAC) Protocol Specification	The scope of this description is the specification of the MAC protocol.
3GPP 3G TS 25.322	Radio Link Control (RLC) Protocol Specification	The scope of this description is to describe the RLC protocol. A description document is intermediate between a stage 2 document and a protocol specification.
3GPP 3G TS 25.331	Radio Resource Control (RRC) Protocol Specification	The scope of this specification is to describe the Radio Resource Control protocol for the 3GPP radio system.
3GPP 3G TS 25.401	UTRAN Overall Description	Describes the overall architecture of the UTRAN, including internal interfaces and assumptions on the radio and Iu interfaces.
3GPP 3G TS 25.410	UTRAN Iu Interface: General Aspects and Principles	The present document is an introduction to the UMTS 25.41x series of Technical Specifications that define the Iu interface for the interconnection of Radio Network Controller (RNC) component of the UMTS Terrestrial Radio Access Network (UTRAN) to the Core Network of the UMTS system.
3GPP 3G TS 25.411	UTRAN Iu interface Layer 1	Specifies the standards allowed to implement Layer 1 on the I_u interface. The specification of transmission delay requirements and O&M requirements are not in the scope of this document.
3GPP 3G TS 25.412	UTRAN Iu interface signalling transport	Specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers.
3GPP 3G TS 25.413	RANAP Specification	<some text needed>
3GPP 3G TS 25.414	UTRAN Iu interface data transport & transport signalling	Specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers.
3GPP 3G TS 25.415	Iu interface CN-UTRAN user plane protocols	Defines the protocols being used to transport and control over the Iu interface, the Iu User Data Streams.
3GPP 3G TS 25.420	UTRAN Iur Interface: General Aspects and Principles	The present document is an introduction to the TSG RAN TS 25.42x series of UMTS Technical Specifications that define the Iur Interface. It is a logical interface for the interconnection of two Radio Network Controller (RNC) components of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system.
3GPP 3G TS 25.421	UTRAN Iur interface Layer 1	Specifies the standards allowed to implement Layer 1 on the I_{ur} interface.

3GPP 3G TS 25.422	UTRAN Iur interface signalling transport	The present document specifies the standards for user data transport protocols and related signalling protocols to establish user plane transport bearers.
3GPP 3G TS 25.423	RNSAP Specification	Specifies the radio network layer signalling procedures between RNCs in UTRAN.
3GPP 3G TS 25.424	Iur interface data transport & transport signalling for Common Transport Channel data streams	Provides a description of the UTRAN RNS-RNS (Iur) interface Data Transport and Transport Signalling for Common Transport Channel data streams
3GPP 3G TS 25.425	UTRAN Iur interface user plane protocols for Common Transport Channel data streams	Provides a description of the UTRAN RNS-RNS (Iur) interface user plane protocols for Common Transport Channel data streams
3GPP 3G TS 25.426	Iur & Iub interface data transport & transport signalling for DCH data streams	The scope of this Technical Specification is to specify the transport bearers for the DCH data streams on UTRAN Iur and Iub interfaces. The corresponding Transport Network Control plane is also specified.
3GPP 3G TS 25.427	Iur & Iub interface user plane protocol for DCH data streams	Provides a description of the UTRAN Iur and Iub interfaces user plane protocols for Dedicated Transport Channel data streams
3GPP 3G TS 25.430	UTRAN Iub Interface: General Aspects and Principles	The present document is an introduction to the TSG RAN TS 25.43x series of UMTS Technical Specifications that define the Iub Interface. The Iub interface is a logical interface for the interconnection of NodeB and Radio Network Controller (RNC) components of the UMTS Terrestrial Radio Access Network (UTRAN) for the UMTS system.
3GPP 3G TS 25.431	Iub interface Layer 1	Specifies the standards allowed to implement Layer 1 on the I_{ub} interface
3GPP 3G TS 25.432	UTRAN Iub interface signalling transport	Specifies the signalling transport related to NBAP signalling to be used across the Iub Interface.
3GPP 3G TS25.433	NBAP Specification	Specifies the standards for NBAP specification to be used over Iub Interface.
3GPP 3G TS 25.434	UTRAN Iub interface data transport & transport signalling for Common Transport Channel data streams	Provide a description of the UTRAN RNC-Node B (Iub) interface Data Transport and Transport Signalling for CCH data streams
3GPP 3G TS 25.435	Iub interface user plane protocols for Common Transport Channel data streams	Provide a description of the UTRAN RNC-Node B(Iub) interface user plane protocols for Common Transport Channel data streams
3GPP 3G TS 25.101	UE Radio transmission and reception (FDD)	Establishes the minimum RF characteristics of the FDD mode of UTRA.

3GPP 3G TS 25.102	UE Radio transmission and reception (TDD)	Establishes the minimum RF characteristics of the TDD mode of UTRA for the User Equipment (UE).
3GPP 3G TS 25.103	RF parameters in support of Radio Resource Management	Describes RF parameters and Requirements for the Radio Resource Management.
3GPP 3G TS 25.104	BTS Radio transmission and reception (FDD)	Establishes the Base Station minimum RF characteristics of the FDD mode of UTRA.
3GPP 3G TS 25.105	BTS Radio transmission and reception (TDD)	Establishes the minimum RF characteristics of the TDD mode of UTRA
3GPP 3G TS 25.141	Basestation conformance testing (FDD)	Gives general description of the physical layer of the UTRA air interface.
3GPP 3G TS 25.142	Basestation conformance testing (TDD)	Specifies the Radio Frequency (RF) test methods and conformance requirements for UTRA Base Transceiver Stations (BTS) operating in the TDD mode.
3GPP 3G TS 25.113	Base station EMC	
etc.		

7.1.2   CN Core Network

Specification	Title	Comment
3GPP 3G TS 23.108	Mobile Radio Interface Layer 3 specification Core Network Protocols stage 2;	Specifies the procedures used at the radio interface for Call Control (CC), Mobility Management (MM) and Session Management (SM).
3GPP 3G TS 23.022	Functions related to Mobile Stations (MS) in idle mode and group receive mode	give an overview of the tasks undertaken by a Mobile Station (MS) when in idle mode, that is, switched on but not having a dedicated channel allocated, e.g. not making or receiving a call, or when in group receive mode, that is, receiving a group call or broadcast call but not having a dedicated connection.
3GPP 3G TS 24.007	Mobile Radio Interface Signalling Layer 3 – General Aspects	Defines the principal architecture of layer 3 and its sublayers on the GSM Um interface, i.e. the interface between Mobile Station (MS) and network; for the CM sublayer, the description is restricted to paradigmatic examples, call control, supplementary services, and short message services for non-GPRS services
3GPP 3G TS 24.008	Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3	Specifies the procedures used at the radio interface for Call Control (CC), Mobility Management (MM) and Session Management (SM
3GPP 3G TS 24.010	Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3	
3GPP 3G TS 24.011	Point-to-Point (p-t-p) Short Message Service (SMS); Support on Mobile Radio Interface Layer 3	Specifies the procedures used across the mobile radio interface by the signalling layer 3 function Short

		Message Control (SMC) and Short Message Relay function (SM-RL) for both circuit switched GSM and GPRS
3GPP 3G TS 24.012	Short Message Cell Broadcast; Support on Mobile Radio Interface Layer 3	Describes how the Short Message Service Cell Broadcast (SMSCB) is supported over the mobile radio interface
3GPP 3G TS 23.060	General Packet Radio Service (GPRS) Service description; Stage 2	Provides a general overview over the GPRS Architecture as well as a more detailed overview of the MS - Core Network protocol architecture
3GPP 3G TS 24.022	Radio Link Protocol (RLP) for Data and Telematic Services on the (MS-BSS) Interface and the Base Station System – Mobile-services Switching Centre (BSS-MSC) Interface	Specifies the Radio Link Protocol (RLP) for data transmission over the 3GPP UMTS PLMN
3GPP 3G TS 24.065	Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)	Provides the description of the Subnetwork Dependent Convergence Protocol (SNDCP) for the General Packet Radio Service (GPRS).
3GPP 3G TS 24.010	Mobile Radio Interface Layer 3 – Supplementary Services Specification – General Aspects	Gives specification the general aspects of the specification of supplementary services at the layer 3 radio interface.
3GPP 3G TS 24.080	Mobile radio Layer 3 Supplementary Service specification - Formats and coding	Contains the coding of information necessary for support of supplementary service operation on the mobile radio interface layer 3.

7.1.3   Service and System Architecture

Specification	Title	Comment
3GPP 3G TS 23.110	UMTS Access Stratum; Services and Functions	The basis of the detailed specifications of the protocols which rule the information flows, both control and user data, between the Access Stratum and the parts of UMTS outside the Access Stratum, and of the detailed specifications of the UTRAN
3GPP 3G TS 23.930	Iu Principles	Identifies the requirements on the Iu and studies relevant principles to guide further standardisation of the related interface(s).

7.2 Family member: ANSI-41 evolved Core Network with cdma-2000 Access Network

The following standards apply to this family member (Editorial Note: *the list of standards to be provided, co-editor Mr. Tom Towle):*

Specification	Title	Comment
3GPP2 xxxx.xxx	MS-BS Performance Specification	Addresses the mobile station interoperability and performance
3GPP2 xxxx.xxx	UIM Interface Specification	Addresses the UIM for cdma2000 terminals
etc.		

7.3 Family member: ANSI-41/GPRS evolved Core Network with UWC-136 Access Network

The following standards apply to this family member (Editorial Note: *the list of standards to be provided, co-editor Mr. Jim Hoffmeyer):*
:

Specification	Title	Comment
3GPP 3G TS 29.060	GPRS Tunnelling (GPT) protocol across Gn and Gp interface	Addresses the tunnel protocol between Packet Service Gateway Control Function (PSGCF) and Packet Service Control Function (PSCF)
3GPP 3G TS 31.102	USIM characteristics	Addresses the UMTS Subscriber Identity Module (SIM)
ANSI/J-STD-011-96 (February 1, 1999)	PCS-136 Based Air Interface Compatibility 1900 MHz Standard	This Standard is one of three that share a common purpose of assuring that a mobile station can obtain service in any compatible personal communications system (PCS) network operating in the 1900 MHz band. This document contains specification text for the DCCH air interface and the air interface requirements for the digital traffic channel. **Phase I (Current TDMA-136 Capability**: Voice quality comparable to wireline; security comparable to PSTN/ISDN; supports multiple public/private/residential operators in the same area: interconnection to other mobile or fixed users; support of multiple cell layers (hierarchical cell structure). **Phase II (TDMA-136+)**: Improved voice quality, higher speed packet and switched data, high spectral efficiency. **Phase III (TDMA-136HS)**: Support for 384 kbps data rates over a wide area: support for 2 Mbps data rates over local area.
TIA/EIA/IS-370 (August 8, 1997)	Intersystem Operations Support for the IS-136 Digital Control Channel	This Interim Standard identifies the necessary Stage-1 descriptions, as well as Stage-2 and 3 changes and additions, to IS-41-C and subsequent editions, in order to support basic roaming and handoff scenarios for wireless systems following the IS-136-A air interface specification.

TSB73 (July 17, 1996)	IS-136/IS-136A Compatibility Issues	In the process of development of IS-136, several issues were raised regarding parts of the standard that would cause incorrect operation. Thus changes were proposed and accepted by the committee. However due to their very nature in correcting Revision 0 deficiencies, these changes will necessarily be non-backwards-compatible with Revision 0. In order to prevent large numbers of such forward-incompatible phones from being distributed to users, it is recommended that the following "Revision A" functionality be included (to the exclusion of some Revision O functionality) in all phones intended for large-scale production and general distribution.
IS-41		Wireless Information Network (WIN)
TSB68	PCN to PCN Intersystem Operations – IS-41 Based	This document describes the enhancements, additions and modifications to TIA/EIA-IS-41-C that are required to support Personal Communications Services (PCS) at 1800Mhz. The scope is limited to providing the specifications and technical requirements for the intersystem operations between two PCS networks. The unique characteristics of Mobility Management for PCS along with other PCS-specific characteristics are highlighted and the differences are bridged to support full compatibility with IS-41-C. The technical requirements for a Mobile Application Part (MAP) based upon the Cellular Radio Telecommunications Intersystem Operations MAP specified in IS-41-C are provided.
etc.		

7.4 Family Member: DECT Digital Enhanced Cordless Telecommunications

The following standards apply to this family member (Editorial Note: *the list of standards to be provided, co-editor Mr. Gunther Kleindl):*
:

Specification	Title	Comment (cooments requested from ETSI DECT)
	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer	
	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer	
	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer	
	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing	
	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features	
etc.		

Appendix 1

Generic functions of each layer	UIM subsystem	UIM-MT interface Recom'tions	MT subsystem	Roadmap to ITU radio interface Recom'tions	Radio interface Recom'tions	RAN/CNv subsystem	CN-CN interface Recom'tions	RAN/CNh subsystem
Sends & receives signalling messages Requests delivery modes	Layer 3 Network	Q.FIF/ Q.FSU	Layer 3 Network		Q.FIF/ Q.FSR-L3	Layer 3 Network	Q.FIF/ Q.FSN	Layer 3 Network
Messaging across L2-L3 SAPs	L2-L3 primitives		L2-L3 primitives			L2-L3 primitives		L2-L3 primitives
Provides delivery and error control services	Layer 2 LAC		Layer 2 LAC		Q.FSR-L2	Layer 2 LAC		Layer 2 LAC
Messaging across MAC-LAC SAPs	LAC-MAC primitives		LAC-MAC primitives	Q.FSR-GA			AAL ??	
Sends & receives LAC payload to/from logical channels	Layer 2 MAC	Not defined by ITU (Refer to regional Specification for removable UIM)	Layer 2 MAC			Layer 2 MAC		Layer 2 MAC
Messaging across L3-L1 & LAC-L1 SAPs	L3-L1 & MAC-L1 primitives		L3-L1 & MAC-L1 primitives		ITU-R TG 8/1 IMT.RSPC (layers 1 & 2)	L3-L1 & MAC-L1 primitives		L3-L1 & MAC-L1 primitives
Bundles and unbundles logical channels to/from physical channels Transports over physical channels	Layer 1 Physical		Layer 1 Physical			Layer 1 Physical	ATM ??	Layer 1 Physical

SDOs view on Common NNI

GSC-5/RAST-8 Resolution (Williamsburg) VA, August 26, 1999)

Global Standards Collaboration 5 and Radio Standards Meeting 8 jointly resolve that:

"they recognize the need for the Common NNI protocol in a multi-network environment in order to derive benefit from existing (fixed and mobile) investments, and support in principle the ITU-T SG11 effort in support of global roaming and seamless service provisioning. Considering the current work plans and aggressive schedule of 3GPPs and SDOs, with associated heavy deployment of resources, SDOs are encouraged, through appropriate national processes, to encourage ITU-T SG11 to validate its schedule for the development of the common NNI taking into account the potential resource scarcity"

Interworking using a Common NNI

- Open Interface: One common and unique NNI (developed by ITU-T)
- Efficient: One IWF design per Family (developed by family member)
- Transparent: Change in one family member IWF does not affect other IWFs
- Future-proof: Can easily accommodate new family members Family-specific
- IWFx to Common NNI