

Doc For	TSG SA	TSG CN	TSG RAN	TSG T
Decision				
Discussion			X	
Information	X	X		X

Agenda Item:

Source: TTC

Title: **TTC Work Items for IMT-2000 - Radio Access Network TSG**

Document for: Discussion

Please see attached Presentation

**TTC Work Items for IMT-2000
- Radio Access Network TSG -**

3GPP Radio Access Network TSG
Sophia Antipolis, France
December 7-8, 1998
TTC SWG6-4-1 & 6-5-1

Responsibility

ARIB and TTC share the responsibility for developing and maintaining the specification of Radio Access Network as follows;

- Requirements for Base Station
- Relevant terminal aspects,
- Layer 1 on MT-RAN Interface,
- Layer 2 (MAC) on MT-RAN interface,

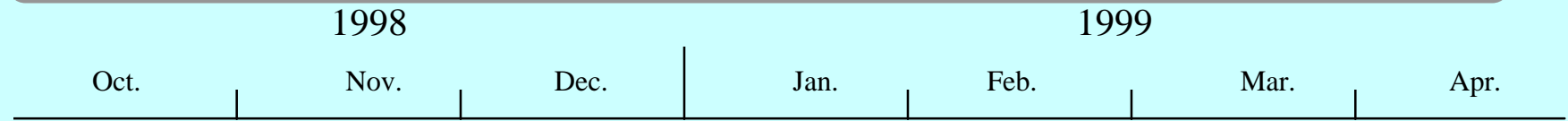
ARIB

-
- Layer 2 (LAC-C, LAC-U) on MT-RAN interface, —
- Layer 3 (RR) on MT-RAN interface, —————
- Iu, Iur and Iub interface.

TTC

Joint discussion
with ARIB

TTC's Overall Schedule for IMT-2000



3GPP

△
The end of Nov.
determination of
technical framework
and work programme

△
Early Dec.
Creation of
PCGs and elect
Chairmen

△
7-11 Dec. or 14-17 Dec.
Technical work starts

Proposed
development
schedule

△
Dec. 1998
Requirements and
Objectives for
Services and Systems

△
Dec. 1998
Air Interface Layer 1

△
Apr. 1999
Other specification

Work Item: VHE

Requirements

- Support of Standardized GSM supplementary services
- Support of existing PDC operator specific services
- Support of Multimedia Services
- Support of Operator Specific HMI
- Support of Supplementary Service Control by Subscribers

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	-	-	-

Work Item: High Speed Packet

Requirements

- Support various QoS requirements
- Co-ordination of Mobility Management for Circuit and Packet switched service
- Access point selection

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	✓	✓	✓

Work Item: High Speed Data

Requirements

- Various Bearer Capabilities
(Voice, audio, video, data, unrestricted digital, etc.)
- Asymmetric Bearer

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	-	✓	✓

Work Item: ATM

Requirements

- ATM as high performance transport technology
- AAL 2 as high efficient transport for voice call
- ATM-SVC for various QoS support and network efficient usage
- Mapping between GPRS and ATM-SVC

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	-	-	✓

Work Item: W-CDMA

Requirements

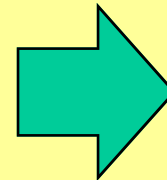
- Soft Handover (Diversity Handover)
- Handover Triggered from both MT and NW
- Service and QoS
- Protection of Security and Privacy
- Efficient Resource Usage
- MS Classmark Information

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	✓	✓	✓

Work Item: Routing

Requirements

- Efficient Usage of Network Resources
- Inter-network Signalling Optimization
- No Impact on Existing Network



- Introduction of GLR
- Paging for Multi-MSC
- Path Minimization
- Pre-Routing Paging

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	-	-	-

Work Item: Call Connection Control

Requirements

- Multicall Services
- Bearer Change
- Bearer Negotiation
- Bearer Modification
- Codec/Adaptor Control
- Security Enhancement
- Point-to-multipoint
- Emergency Call

Protocol	LAC-C / U	RRC	Iu / Iur / Iub
Impact	✓	✓	✓

IMT-2000 Documents

Work Area: Layer 2 (LAC) and Layer 3 (RR) on MT-RAN Interface

<i>Doc #</i>	<i>Doc Title</i>	<i>Prime resp. SWG</i>	<i>2nd resp. SWG</i>	<i>Current status</i>	<i>Approval status: Planned or approved</i>	<i>remarks</i>
	<i>Air Interface Layer 2 LAC sub-layer (C-Plane)</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>90%</i>	<i>Plan. 1999.4</i>	
	<i>Air Interface Layer 2 LAC sub-layer (U-Plane)</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>75%</i>	<i>Plan. 1999.4</i>	
	<i>Air Interface Layer 3 Radio Resource control</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>20%</i>	<i>Plan. 1999.4</i>	

IMT-2000 Documents

Work Area: Layer 3 (CC, MM) on MT-RAN Interface

<i>Doc #</i>	<i>Doc Title</i>	<i>Prime resp. SWG</i>	<i>2nd resp. SWG</i>	<i>Current status</i>	<i>Approval status: Planned or approved</i>	<i>remarks</i>
	<i>Air Interface Layer 3 Call Control and Session Management</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>85%</i>	<i>Plan. 1999.4</i>	
	<i>Air Interface Layer 3 Mobility Management</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>92%</i>	<i>Plan. 1999.4</i>	
	<i>Air Interface Layer 3 Protocol Architecture</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>75%</i>	<i>Plan. 1999.4</i>	
	<i>Air Interface Layer 3 Procedure</i>	<i>6-4-1</i>	<i>ARIB</i>	<i>0%</i>	<i>Plan. 1999.4</i>	<i>Start after Protocol spec become stable, and can be finalize within short time</i>

IMT-2000 Documents

Work Area: *Iu, Iur, and Iub*

<i>Doc #</i>	<i>Doc Title</i>	<i>Prime resp. SWG</i>	<i>2nd resp. SWG</i>	<i>Current status</i>	<i>Approval status: Planned or approved</i>	<i>remarks</i>
	<i>UTRAN Architecture Description</i>	<i>6-5-1</i>		<i>80%</i>	<i>Plan. 1999.4</i>	<i>ETSI document</i>
	<i>Description of Iu Interface</i>	<i>6-5-1</i>		<i>30%</i>	<i>Plan. 1999.4</i>	<i>ETSI document</i>
	<i>Description of Iur Interface</i>	<i>6-5-1</i>		<i>30%</i>	<i>Plan. 1999.4</i>	<i>ETSI document</i>
	<i>Description of Iub Interface</i>	<i>6-5-1</i>		<i>30%</i>	<i>Plan. 1999.4</i>	<i>ETSI document</i>
	<i>UTRAN Functions, Examples on Signaling Procedures</i>	<i>6-5-1</i>		<i>20%</i>	<i>Plan. 1999.4</i>	<i>ETSI document</i>
	<i>Iu Interface Specification</i>	<i>6-5-1</i>		<i>10%</i>	<i>Plan. 1999.4</i>	<i>TTC document</i>
	<i>Iur Interface Specification</i>	<i>6-5-1</i>		<i>10%</i>	<i>Plan. 1999.4</i>	<i>TTC document</i>
	<i>Iub Interface Specification</i>	<i>6-5-1</i>		<i>-</i>	<i>Plan. 1999.12</i>	<i>Note</i>

Note: If decided to be standardized.

Annex 1: ToC of LAC-C Protocol

1. Introduction
 - 1.1 • Scope
2. Link Access Control sub-layer
 - 2.1 Services offered by LAC sub-layer to layer 3
 - 2.1.1 General Requirement
 - 2.1.2 Delivery Mode
 - 2.1.2.1 Acknowledged delivery mode
 - 2.1.2.2 Unacknowledged delivery mode
 - 2.2 Functions of LAC sub-layer to deliver layer 2 services
 - 2.3 Functions of LAC sub-layer to receive MAC services
 - 2.4 Architecture of Link Access Control sub-layer
 - 2.4.1 LAC Structure and Relationships with Other Layers
 - 2.5 Primitives between Layer 3 and LAC sub-layer
 - 2.5.1 Primitives
 - 2.5.2 Parameters
 - 2.6 Primitives between LAC sub-layer and MAC sub-layer
 - 2.6.1 Primitives
 - 2.6.2 Parameters
 - 2.7 Primitives between layer management and LAC sub-layer
 - 2.7.1 Primitives
 - 2.7.2 Parameters
 - 2.8 Format and Parameters of LAC sub-layer
 - 2.8.1 LAC PDUs
 - 2.8.2 LAC PDU formats
 - 2.8.2.1 1PDU formats
 - 2.8.2.2 Coding conventions
 - 2.8.2.3 Reserved field
 - 2.8.2.4 PDU length
 - 2.8.2.5 STAT and USTAT PDU codings
 - 2.8.3 States of LAC protocol entity
 - 2.8.4 LAC state variables
 - 2.8.5 LAC PDU parameters
 - 2.8.6 LAC parameters
 - 2.8.7 LAC credit and flow control
 - 2.8.7.1 Credit and peer-to-peer flow control
 - 2.8.7.2 Local flow control
- 2.9 Timers
- 2.10 SDL diagrams
 - 2.10.1 Introduction
 - 2.10.2 Assumptions

Appendix

1. Recommended values
 - 1.1 PDU length
 - 1.2 MaxCC
 - 1.3 MaxPD
 - 1.4 MaxDAT
 - 1.5 MaxQR
 - 1.6 MaxSTAT
 - 1.7 Timer-POLL
 - 1.8 Timer-SDwithPOLL
 - 1.9 Timer-KEEPALIVE
 - 1.10 Timer-IDLE
 - 1.11 Timer-NO-RESPONSE
 - 1.12 Timer-CC
 - 1.13 Timer-QR
2. Specific modifications and additions to Q.2110 SDL diagram

Annex 2: ToC of LAC-U Protocol

1. Introduction
 - 1.1 Scope
 - 1.2 Definitions
2. Link Access Control sub-layer
 - 2.1 Services offered by LAC sub-layer(User-Plane)to layer 3
 - 2.2 Functions of LAC sub-layer(User-Plane)
to deliver LAC Layer services
 - 2.3 Services expecting to MAC sub-layer
 - 2.4 Architecture of LAC sub-layer(User-Plane)
 - 2.5 Primitives between Layer3 and LAC sub-layer
 - 2.5.1 Primitives
 - 2.5.2 Parameters
 - 2.6 Primitives between layer management and LAC sub-layer
 - 2.6.1 Primitives
 - 2.6.2 Parameters
 - 2.7 Format and Parameters of LAC sub-layer
 - 2.7.1 LAC PDUs
 - 2.7.2 LAC PDU formats
 - 2.7.2.1 PDU formats
 - 2.7.2.2 Coding conventions
 - 2.7.2.3 PDU length
 - 2.7.3 LAC PDU parameters
 - 2.7.3.1 Type Field
 - 2.7.3.2 Polling Bit and Sequence Number Fields
 - 2.7.3.3 Padding, Extension and Length Indicator Fields
 - 2.7.4 States of LAC protocol entity
 - 2.7.5 LAC state variables

Annex 3: ToC of RRC Protocol

- 1 Scope
- 2 References
- 3 Definitions and Abbreviations
- 4 General
- 5 Functions
- 6 RRC services provided to upper layers
 - 6.1 General Control
 - 6.2 Notification
 - 6.3 Dedicated Control
- 7 Services required from lower layers
 - 7.1 Acknowledged Mode Information Transfer
 - 7.2 Unacknowledged Mode Information Transfer
 - 7.3 Channel Management
 - 7.4 Transparent transportation of L3 PDUs
- 8 Elementary RRC procedures
 - 8.1 Idle Mode procedures
 - 8.1.1 System Information Broadcasting
 - 8.1.2 Paging
 - 8.1.3 Notification Broadcast
 - 8.2 RRC connection establishment procedures
 - 8.2.1 RRC connection establishment initiated by the mobile station
 - 8.2.2 RRC connection establishment initiated by the network
 - 8.2.3 RRC connection establishment initiated by the network
 - 8.2.4 RRC connection establishment initiated by the network
 - 8.2.5 RRC connection establishment initiated by the network
 - 8.2.6 RRC connection establishment initiated by the network
 - 8.2.7 RRC connection establishment initiated by the network
 - 8.2.8 RRC connection establishment initiated by the network
 - 8.2.9 RRC connection establishment initiated by the network
 - 8.2.10 RRC connection establishment initiated by the network
 - 8.3 RRC connected mode procedures
 - 8.3.1 Radio Access Bearer Setup
 - 8.3.2 Bearer Reconfiguration
 - 8.3.3 Radio Access Bearer Release
 - 8.3.4 Code Reconfiguration
 - 8.3.5 RRC Connection release
 - 8.3.6 RRC Connection Re-establishment
 - 8.4 Mobility procedures
 - 8.4.1 Soft handover
 - 8.4.2 Hard handover
 - 8.5 UE Measurement Procedures
 - 8.5.1 Measurement Control
 - 8.5.2 Measurement Report
- 9 Primitives between RRC and upper layers
- 10 Elements for peer-to-peer communication
 - 10.1 Message functional definition and content
 - 10.2 Message format and information element coding
- 11 Protocol states and SDL diagrams
- 12 Timers
- 13 History
- 14 Appendices: Examples of operation

Annex 4: ToC of Protocol Architecture

1	Introduction	5.5	Interactions between MAC and RRC in the C Plane
1.1	Scope	5.6	Protocol Termination
2	References	5.6.1	Protocol Termination for DCH
3	Definitions and Abbreviations	5.6.2	Protocol Termination for RACH/FACH
3.1	Definitions	5.6.3	Protocol Termination for Transport Channel of Type BCH
3.2	Abbreviations	5.6.4	Protocol Termination for Transport Channel of Type PCH
4	Assumed UMTS Architecture	6.1	User Identity and RRC Connection Mobility
5	Radio Interface Protocol Architecture	6.2	UE Identification within UTRAN on Common Radio Channels
5.1	Overall Protocol Structure	6.2	Activity Levels on the Radio Interface
5.2	Layer 1 Services and Functions	6.2.1	Definition of UTRAN Registration Area
5.2.1	L1 Services	7	History
5.2.1.1	Transport Channels	8	Services provided by signalling layer 3 at the MS side
5.2.1.2	Model of Physical Layer of the MS	8.1	Registration services
5.2.2	L1 Functions	8.2	Call Control services
5.3	Layer 2 Services and Functions	8.3	Call independent Supplementary Services Support
5.3.1	MAC Sub-layer	8.4	Short Message Services Support
5.3.1.1	MAC Services to Upper Layers	9	Services provided by signalling layer 3 on the Network side
5.3.1.2	MAC Functions	9.1	Call control services
5.3.1.3	Open Issues	9.2	Call independent Supplementary Services Support
5.3.2	LAC Services and Functions	9.3	Short Message Services Support
5.3.2.1	LAC-U Services provided to the upper layer	10	Services assumed from signalling layers 1 and 2
5.3.2.2	LAC-U Functions	11	Interlayer service interfaces on the MS side
5.3.2.4	LAC-C Services	11.1	Services provided by the Radio Resource Management entity
5.3.2.5	LAC-C Functions	11.2	Services provided by the Mobility Management entity
5.3.2.6	LAC-C Open Issues	12	Interlayer service interfaces on the Network side
5.4	Layer 3 - RRC Services and Functions	12.1	Services provided by the Radio Resource Management entity
5.4.1	RRC Services	12.2	Services provided by the Mobility Management entity
5.4.1.1	General Control		
5.4.1.2	Notification		
5.4.1.3	Dedicated Control		
5.4.2	RRC Functions		

Annex 5:

ToC of Iu Interface Specification

1 Scope	3.2.1.12 COMPLETE L3 INFORMATION	3.2.2.17 Chosen Channel
1.1 Normative Reference	3.2.1.13 CIPHER MODE COMMAND	3.2.2.18 Cipher Response Mode
1.2 Abbreviation and Acronyms	3.2.1.14 CIPHER MODE COMPLETE	3.2.2.19 Group Call Reference
2 Interface Structure	3.2.1.15 CIPHER MODE REJECT	3.2.2.10 Talker Flag
3 Iu Interface specification for Control Plane	3.2.1.16 PAGING REQUEST	3.2.3 List of Timers
3.1 RANAP	3.2.1.17 SIGNALLING CHANNEL RELEASE REQUEST	3.2.4 Sequence Flow
3.1.1 RANAP Procedures	3.2.1.18 SIGNALLING CHANNEL RELEASE ACKNOWLEDGE	3.2.5 Diagrams for SDL
3.1.1.1 Radio Access Bearer Setup	3.2.1.19 STREAMLINING	4 Iu Interface specification for Transport Network Control Plane
3.1.1.2 Initial UE Message	3.2.1.20 STREAMLINING RESPONSE	4.1 BSSUP
3.1.1.3 Paging	3.2.1.21 STREAMLINING FAILURE	4.2 AAL type2 signalling protocol
3.1.1.4 Radio Access Bearer Release	3.2.1.22 RESET	4.2.1 AAL type2 signalling protocol Procedures
3.1.1.5 Cipher Mode Control	3.2.1.23 RESET ACKNOWLEDGE	4.2.1.1 Setup
3.1.1.6 Streamlining	3.2.1.24 CONFUSION	4.2.1.2 Release
3.1.1.7 Radio Access Bearer Reconfiguration	3.2.2 Signalling Element Coding	4.2.1.3 Reset
3.1.1.8 Common ID update	3.2.2.1 Message Type	4.2.2 AAL type2 signalling protocol messages
3.1.1.9 Signalling Channel Release	3.2.2.2 Message Compatibility Information	4.2.3 List of Timers in the AAL type2 signalling protocol Procedures
3.1.1.10 Reset	3.2.2.3 Parameter Compatibility Information	4.3 BEARER CONVERTER
3.1.1.11 Direct Transfer	3.2.2.4 Call ID	4.4 PNN1
3.1.2 RANAP Error Handling	3.2.2.5 Radio Access Bearer Information	4.5 UNI
3.2 RANAP messages	3.2.2.6 Transport layer addressing Information	5 Underlying Transfer Protocol for Control Plane
3.2.1 Message Contents	3.2.2.7 Cause	5.1 SCCP
3.2.1.1 RAB SETUP	3.2.2.8 RFR Cause	5.2 MTP-3b
3.2.1.2 RAB SETUP RESPONSE	3.2.2.9 MS Classmark for RAN	5.3 SSCF
3.2.1.3 RAB SETUP FAILURE	3.2.2.10 Direct transfer Information	5.4 SSCOP
3.2.1.4 RAB RECONFIGURATION	3.2.2.11 Layer 3 Information	5.5 AAL5
3.2.1.5 RAB RECONFIGURATION RESPONSE	3.2.2.12 IMU1	5.6 ATM
3.2.1.6 RAB RECONFIGURATION FAILURE	3.2.2.13 User ID	6 Iu Interface Specification for User Plane
3.2.1.7 RAB RELEASE	3.2.2.14 Cipher Information	6.1 AAL
3.2.1.8 RAB RELEASE RESPONSE	3.2.2.15 Cell Identifier List	6.2 ATM
3.2.1.9 COMMON ID UPDATE	3.2.2.16 Cell Identifier	
3.2.1.10 COMMON ID UPDATE ACKNOWLEDGE		
3.2.1.11 DIRECT TRANSFER REQUEST		

Annex 6:

ToC of Iur Interface Specification

1 Scope	3.1.6 Sequence Flow
1.1 Normative reference	3.1.7 Diagrams for SDL
1.2 Abbreviation and Acronyms	4 Iur Interface Specification for Transport Network Control Plane
2 Interface Structure	4.1 BISUP
3 Iur Interface Specification for Control Plane	4.2 AAL type 2 signalling protocol
3.1 RNSAP	4.2.1 AAL type 2 signalling protocol Procedures
3.1.1 RNSAP Procedures	4.2.1.1 Setup
3.1.1.1 Branch Addition	4.2.1.2 Release
3.1.1.2 Branch Deletion	4.2.1.3 Reset
3.1.1.3 Cipher key delivery	4.2.2 AAL type 2 signalling protocol messages
3.1.1.4 Power Control	4.2.3 List of Timers in the AAL type 2 signalling protocol Procedures
3.1.1.5 Paging	4.3 Bearer Converter
3.1.1.6 SRNS Relocation	4.4 PNNI
3.1.1.7 DCH Modification	4.5 UNI
3.1.1.8 Load Indication	5 Underlying Transfer Protocol for Control Plane
3.1.2 RNSAP Error Handling	5.1 SCCP
3.1.3 RNSAP messages	5.2 MTP-3b
3.1.3.1 Handover Branch Addition	5.3 SSCT
3.1.3.2 Handover Branch Addition Response	5.4 SSCOP
3.1.3.3 Handover Branch Deletion	5.5 AAL5
3.1.3.4 Handover Branch Deletion	5.6 ATM
3.1.3.5 Power Control Report	6 Iur Interface Specification for User plane
3.1.3.6 Cipher Key Delivery	6.1 AAL
3.1.3.7 Paging Request	6.2 ATM
3.1.3.8 SRNS Relocation Request	
3.1.3.9 DCH Modification Response	
3.1.3.10 DCH Modification Response	
3.1.3.11 Load Indication	
3.1.4 Signalling Element Coding	
3.1.4.1 Message Type	
3.1.4.2	
3.1.5 List of Timers	