Title: **Information Flows Document**
Date: January 20-21, 1999
Source: TTC WG6-2 & 6-3
Agenda point: 2
Purpose: Discussion

1. Introduction

Specification of GSM-evolved 3G system has been progressed in TTC aiming at approval of draft specifications in the end of March 1999. After 3GPP is established, TTC plans to transfer all relevant draft specifications to 3GPP. In order to meet TTC's tight schedule, draft 3GPP specifications would need to be approved at the TSG Plenary in March 1999.

This contribution lists TTC documents which are relevant for TSG SA WG2 (Architecture). Also through referring to the listed documents, it addresses the TTC process used to create Information Flows Document. Finally, it is proposed that Information Flows document would be treated as one of base documents, to progress the specification work, in WG2.

2. Relevant TTC Draft Specifications

The following TTC draft specifications are relevant for 3GPP TSG SA WG2.

(1) Spec. No. 2: System Configuration
TTC currently assumes that Q.1711 (Network Functional Model for IMT-2000; previously known as Q.FNA) is imported from ITU to TTC as this specification. Q.1711 specifies functional entities for IMT-2000These are used as the basis for discussion of Information Flows in TTC. Also, relevant GSM/UMTS documents could be used as a basis for this specification.

(2) Spec. No. 6: Requirements for Core Network
There are two documents supposed to be included in Spec. No. 6.
- Q.1701 (Framework for IMT-2000 Network; previously known as Q.FIN)
- GSM evolved network requirements

Q.1701 specifies the framework and guideline for IMT-2000. Especially, it defines 'Family Concept' which is the basis for IMT-2000 standardization. Therefore, TTC assumes that Q.1701 will be used as a framework document for IMT-2000.

Furthermore, TTC assumes that the "GSM evolved network requirements" document, which is being developed by TTC, will be used together with relevant GSM/UMTS documents as the basis for information flow developments. In ETSI documents, several UMTS requirements documents can be found. If these documents are clearly defined and include all TTC requirements, the 'GSM Evolved Network Requirements' document does not have to be one of base documents in 3GPP.

(3) Spec. No. 3: Information Flows
Based on Q.1721 (previously known as Q.FIF) as of May 1998, Q.1711, and GSM evolved network requirements (TTC document) together with the UMTS/GSM-related documents, TTC is developing an Information Flows document which defines functional relationships between functional entities or logical nodes.

In case of IMT-2000/UMTS, where relationships between multiple functional entities (or logical nodes) is involved in providing a service or requirement, the relationship and functional entity (or logical node) actions have to be clearly defined. Information Flows can define such relationships, overall coordination and actions clearly. Information Flows are very useful to understand overall system capabilities. Also all protocol works inside TTC's protocol groups have been and are to be based on the Information Flows together with the UMTS/GSM-related documents to specify the protocols. Therefore, Information Flows document is regarded as a necessary recommendation in TTC.

The Annex of this contribution presents the Table of Contents of the Information Flow document.

3. TTC Process used to create Information Flows Document

Figure 1 shows the process used to create Information Flows in TTC.

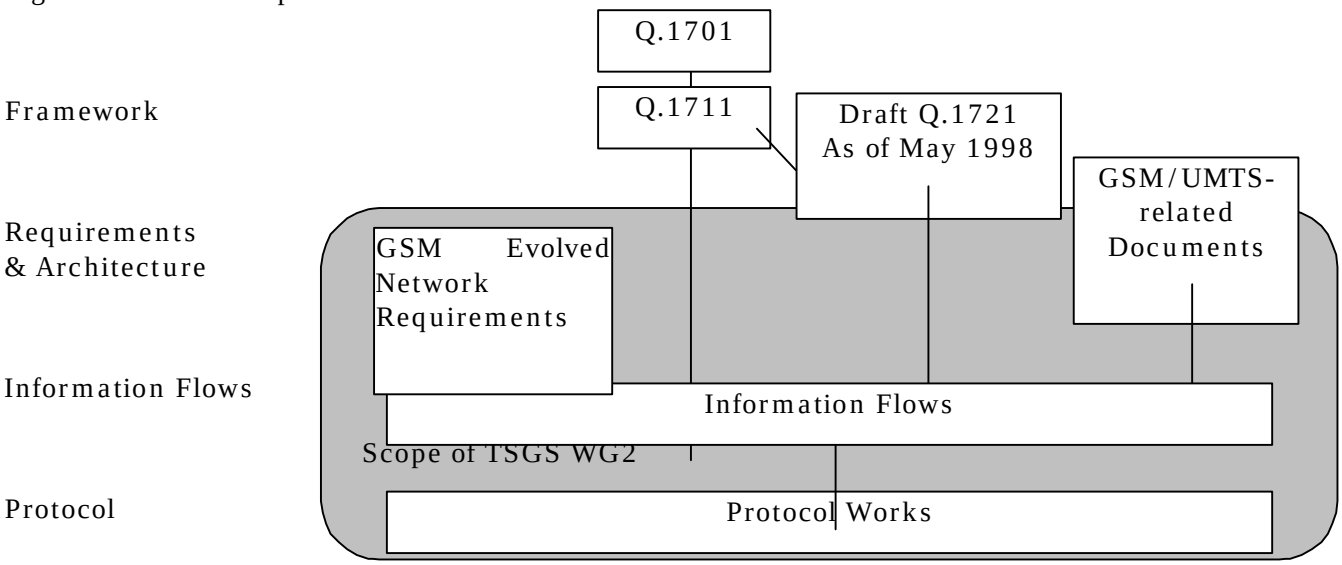

Figure 1. TTC process used to create Information Flows document.

4. Relationship of TTC's Information Flow document with GSM/UMTS documents

According to TTC understanding, there are only few GSM or UMTS documents (GSM 09.09 and UMTS xx.yy) defining similar information flows. That is, in GSM and UMTS specification work, information flows have been used as a system design tool to a limited extent only. The Information Flows document developed by TTC aims at describing all information flows at system level. Therefore, TTC feels that this document is useful and should be regarded as one of base documents in 3GPP TSG-S WG2.

Current Information Flows document may include some differences in terms of notation, terminology, network model etc. compared with specifications developed by other SDOs. Although the RAN related part of the document has been newly developed based on new radio technologies, the document is largely in line with existing GSM specifications for the CN part and some draft UMTS specifications. Therefore, especially GSM evolution points and other possible improvements contained in the Information Flows document need to be clarified. Also possible duplications with existing approved GSM specifications need to be identified. Consequently, TTC plans to clarify these issues by the next WG2 meeting so that the usability

of Information Flows document would be clearer to other SDOs and 3GPP work could be accelerated.

5. Proposal

Pending on clarification of the issues mentioned, TTC proposes that TTC's Information Flows document will be used as one of base documents in 3GPP TSG SA WG2 to progress the specification of protocols.

ANNEX. Table of Contents of Information Flows Document

7.2.1 Common Procedure Modules

7.2.1.1. Deleted

7.2.1.2. Terminal paging

7.2.1.2.1. RACF originated Paging
7.2.1.2.2. SACF originated Paging
7.2.1.2.3. PSCF originated Paging

7.2.1.3. Routing (Only Scenario 1-4 and Scenario C with optimal routing capability)

7.2.1.3.1. Routing - Scenario without optimal routing
7.2.1.3.2. Routing - Scenario with optimal routing

7.2.1.4. Deleted

7.2.1.5. UE-UTRAN related Connection Control

7.2.1.5.1. RRC Connection Setup
7.2.1.5.1.1. RRC Connection Setup (DCH)
7.2.1.5.1.2. RRC Connection Setup (CCH)
7.2.1.5.2. RRC Connection Release
7.2.1.5.2.1. RRC Connection Release(DCH)
7.2.1.5.2.2. RRC Connection Release(CCH)
7.2.1.5.3. Transport CH Reconfiguration
7.2.1.5.3.1. Transport CH Reconfiguration (DCH-DCH)
7.2.1.5.3.2. Transport CH Reconfiguration (DCH-CCH)
7.2.1.5.3.3. Transport CH Reconfiguration (CCH-DCH)
7.2.1.5.3.4. Transport CH Reconfiguration (CCH-CCH)
7.2.1.5.4. Physical CH Reconfiguration
7.2.1.5.4.1. Physical CH Reconfiguration (DCH-DCH)
7.2.1.5.4.2. Physical CH Reconfiguration (DCH-CCH)
7.2.1.5.4.3. Physical CH Reconfiguration (CCH-DCH)
7.2.1.5.5. RACH/FACH and RACH/PCH related Procedure
7.2.1.5.5.1. From RACH/FACH to RACH/PCH transition
7.2.1.5.5.1. From RACH/PCH to RACH/FACH transition
7.2.1.5.6. Measurement Control/Report*

7.2.1.6. UTRAN-CN related Connection Control

7.2.1.6.1. Iu signaling connection setup
7.2.1.6.2. Iu signaling connection release
7.2.1.6.3. Direct Transfer with Iu Signaling Connection Establishment

7.2.1.7. SACF, LMF, and PSCF related Connection Control

7.2.1.7.1. RACF Information Inquiry (CS originated)
7.2.1.7.2. RACF Information Inquiry (PS originated)

7.2.1.8. UE, UTRAN, and CN related Connection Control

7.2.1.8.1. Radio Access Bearer Setup
7.2.1.8.1.1. Radio Access Bearer Setup(DCH-DCH)
7.2.1.8.1.2. Radio Access Bearer Setup(CCH-CCH)
7.2.1.8.1.3. Radio Access Bearer Setup(CCH-DCH)
7.2.1.8.2. Radio Access Bearer Release
7.2.1.8.2.1. Radio Access Bearer Release(DCH-DCH)
7.2.1.8.2.2. Radio Access Bearer Release(DCH-CCH)
7.2.1.8.2.3. Radio Access Bearer Release(CCH-CCH)
7.2.1.8.3. Radio Access Bearer Reconfiguration
7.2.1.8.3.1. Radio Access Bearer Reconfiguration (DCH-DCH) [ishikawa1]
7.2.1.8.3.2. Radio Access Bearer Reconfiguration (DCH-CCH) [ishikawa2]
7.2.1.8.3.3. Radio Access Bearer Reconfiguration (CCH-DCH) [ishikawa3]
7.2.1.8.3.4. Radio Access Bearer Reconfiguration (CCH-CCH) [ishikawa4]

7.2.2. Mobile Outgoing Call

7.2.2.1. Outgoing CS call addition

7.2.2.1.1. MM IDLE and GMM STANDBY , RRC IDLE
7.2.2.1.1.1. To RRC Dedicated CH
7.2.2.1.2. MM IDLE and GMM READY , RRC Dedicated CH
7.2.2.1.2.1. To RRC Dedicated CH
7.2.2.1.3. MM IDLE and GMM READY , RRC RACH/FACH
7.2.2.1.3.1. To RRC Dedicated CH
7.2.2.1.4. MM IDLE and GMM READY , RRC RACH/PCH
7.2.2.1.4.1. To RRC Dedicated CH
7.2.2.1.5. MM READY , RRC Dedicated CH
7.2.2.1.5.1. To RRC Dedicated CH

7.2.2.1.6. MM READY , RRC RACH/FACH
7.2.2.1.6.1. To RRC Dedicated CH

7.2.2.2. SMS Setup by UE (CS side) *(F.F.S.)**

7.2.2.2.1. MM IDLE and GMM STANDBY
7.2.2.2.2. MM IDLE and GMM READY
7.2.2.2.3. MM READY

7.2.2.3. PDP Context Activation by UE

7.2.2.3.1. MM IDLE and GMM STANDBY , RRC IDLE
7.2.2.3.1.1. To RRC Dedicated CH
7.2.2.3.1.2. To RRC RACH/FACH
7.2.2.3.2. MM READY and GMM STANDBY , RRC Dedicated CH
7.2.2.3.2.1. To RRC Dedicated CH
7.2.2.3.3. MM READY and GMM STANDBY , RRC RACH/FACH
7.2.2.3.3.1. To RRC Dedicated CH
7.2.2.3.3.2. To RRC RACH/FACH
7.2.2.3.4. GMM READY , RRC Dedicated CH
7.2.2.3.4.1. To RRC Dedicated CH
7.2.2.3.5. GMM READY , RRC RACH/FACH
7.2.2.3.5.1. To RRC Dedicated CH
7.2.2.3.5.1. To RRC RACH/FACH
7.2.2.3.6. GMM READY , RRC RACH/PCH
7.2.2.3.6.1. To RRC Dedicated CH
7.2.2.3.6.2. To RRC RACH/FACH

7.2.2.4. SMS Setup by UE (PS side) *(F.F.S.)**

7.2.2.4.1. GMM STANDBY and MM IDLE
7.2.2.4.2. GMM STANDBY and MM READY
7.2.2.4.3. GMM READY

7.2.2.5. Anonymous Access PDP Context Activation by MS

7.2.3. Mobile Incoming Call

7.2.3.1. Incoming CS call

7.2.3.1.1. From MM IDLE and GMM STANDBY , RRC IDLE
7.2.3.1.1.1. To RRC Dedicated CH
7.2.3.1.2. From MM IDLE and GMM READY , RRC Dedicated CH
7.2.3.1.2.1. To RRC Dedicated CH
7.2.3.1.3. From MM IDLE and GMM READY , RRC RACH/FACH
7.2.3.1.3.1. To RRC Dedicated CH
7.2.3.1.4. From MM IDLE and GMM READY , RRC RACH/PCH
7.2.3.1.4.1. To RRC Dedicated CH
7.2.3.1.5. From MM READY , RRC Dedicated CH
7.2.3.1.5.1. To RRC Dedicated CH
7.2.3.1.6. From MM READY , RRC RACH/FACH
7.2.3.1.6.1. To RRC Dedicated CH

7.2.3.2. SMS Setup by NW (CS side) *(F.F.S.)**

7.2.3.2.1. MM IDLE and GMM STANDBY
7.2.3.2.2. MM IDLE and GMM READY
7.2.3.2.3. MM READY

7.2.3.3. PDP Context Activation by Network

7.2.3.3.1. From MM IDLE and GMM STANDBY , RRC IDLE
7.2.3.3.1.1. To RRC Dedicated CH
7.2.3.3.1.2. To RRC RACH/FACH
7.2.3.3.2. From MM READY and GMM STANDBY , RRC Dedicated CH
7.2.3.3.2.1. To RRC Dedicated CH
7.2.3.3.3. From MM READY and GMM STANDBY , RRC RACH/FACH
7.2.3.3.3.1. To RRC Dedicated CH
7.2.3.3.3.2. To RRC RACH/FACH
7.2.3.3.4. From GMM READY , RRC Dedicated CH
7.2.3.3.4.1. To RRC Dedicated CH
7.2.3.3.5. From GMM READY , RRC RACH/FACH
7.2.3.3.5.1. To RRC Dedicated CH
7.2.3.3.5.2. To RRC RACH/FACH
7.2.3.3.6. From GMM READY , RRC RACH/PCH
7.2.3.3.6.1. To RRC Dedicated CH
7.2.3.3.6.1. To RRC RACH/FACH

7.2.3.4. SMS Setup by NW (PS side) *(F.F.S.)**
7.2.3.4.1. GMM STANDBY and MM IDLE
7.2.3.4.2. GMM STANDBY and MM READY
7.2.3.4.3. GMM READY

7.2.4. UE initiated Call Release

7.2.4.1. Normal CS Call release
7.2.4.1.1. From MM READY , RRC Dedicated CH
7.2.4.1.1.1. To MM IDLE , RRC Dedicated CH
7.2.4.1.1.2. To MM IDLE , RRC RACH/FACH
7.2.4.1.1.3. To MM IDLE , RRC IDLE
7.2.4.1.1.4. To MM READY , RRC Dedicated CH
7.2.4.1.1.5. To MM READY , RRC RACH/FACH

7.2.4.2. Abnormal release (upon radio link failure)

7.2.4.3. SMS Release by UE(CS side) *(F.F.S.)**
7.2.4.2.1. MM IDLE and GMM STANDBY
7.2.4.2.2. MM IDLE and GMM READY
7.2.4.2.3. MM READY

7.2.4.4. PDP Context Deactivation Initiated by UE
7.2.4.4.1. From GMM READY , RRC Dedicated CH
7.2.4.4.1.1. To GMM STANDBY , RRC Dedicated CH
7.2.4.4.1.2. To GMM STANDBY , RRC RACH/FACH
7.2.4.4.1.3. To GMM STANDBY , RRC IDLE
7.2.4.4.1.4. To GMM READY , RRC Dedicated CH
7.2.4.4.1.5. To GMM READY , RRC RACH/FACH
7.2.4.4.2. From GMM READY , RRC RACH/FACH
7.2.4.4.2.1. To GMM STANDBY , RRC RACH/FACH
7.2.4.4.2.2. To GMM STANDBY , RRC IDLE
7.2.4.4.2.3. To GMM READY , RRC RACH/FACH
7.2.4.4.3. From GMM READY , RRC RACH/PCH
7.2.4.4.3.1. To GMM STADNBY , RRC IDLE
7.2.4.4.3.2. To GMM READY, RRC RACH/FACH

7.2.4.5. SMS Release by UE(PS side) *(F.F.S.)**
7.2.4.5.1. GMM STANDBY and MM IDLE
7.2.4.5.2. GMM STANDBY and MM READY
7.2.4.5.3. GMM READY

7.2.4.6. Anonymous Access PDP Context Deactivation Initiated by Timer expiry

7.2.5. NW initiated Call Release

7.2.5.1. Normal CS Call release
7.2.5.1.1. From MM READY , RRC Dedicated CH
7.2.5.1.1.1. To MM IDLE , RRC Dedicated CH
7.2.5.1.1.2. To MM IDLE , RRC RACH/FACH
7.2.5.1.1.3. To MM IDLE , RRC IDLE
7.2.5.1.1.4. To MM READY , RRC Dedicated CH
7.2.5.1.1.5. To MM READY , RRC RACH/FACH

7.2.5.2. Abnormal release (upon radio link failure)

7.2.5.3. SMS Release by NW(CS side) *(F.F.S.)**
7.2.5.3.1. MM IDLE and GMM STANDBY
7.2.5.3.2. MM IDLE and GMM READY
7.2.5.3.3. MM READY

7.2.5.4. PDP Context Deactivation Initiated by NW
7.2.5.4.1. From GMM READY , RRC Dedicated CH
7.2.4.5.1.1. To GMM STANDBY, RRC Dedicated CH
7.2.4.5.1.2. To GMMSTANDBY, RRC RACH/FACH
7.2.4.5.1.3. To GMM STANDBY, RRC IDLE
7.2.4.5.1.4. To GMM READY , RRC Dedicated CH
7.2.4.5.1.5. To GMM READY , RRC RACH/FACH
7.2.5.4.2. From GMM READY , RRC RACH/FACH
7.2.5.4.2.1. To GMM STANDBY, RRC RACH/FACH
7.2.4.5.2.2. To GMM STANDBY, RRC IDLE
7.2.4.5.1.3. To GMM READY , RRC RACH/FACH
7.2.5.4.3. From GMM READY , RRC RACH/PCH
7.2.4.5.3.1. To GMM STANDBY, RRC IDLE
7.2.4.5.3.1. To GMM READY, RRC RACH/FACH

7.2.5.5. SMS Release by NW(PS side) *(F.F.S.)**
7.2.5.5.1. GMM STANDBY and MM IDLE
7.2.5.5.2. GMM STADNBY and MM READY
7.2.5.5.3. GMM READY
7.2.5.6. Anonymous Access PDP Context Deactivation by Network
7.2.6. Emergency Call in Wireless*
7.2.6.1. Emergency call setup
7.2.6.2. Emergency call release
7.2.7. Data communication and multimedia services*
7.2.8. Other call control related information flows
7.2.8.1. Codec Bypass
7.2.8.2. Echo Canceller
7.2.8.3. PDP Context Modification by NW
7.2.8.3.1. Radio Access Bearer Reconfiguration (DCH-DCH) applied
7.2.8.3.2. Radio Access Bearer Reconfiguration (DCH-CCH) applied
7.2.8.3.3. Radio Access Bearer Reconfiguration (CCH-DCH) applied
7.2.8.3.4. Radio Access Bearer Reconfiguration (CCH-CCH) applied
7.2.8.4. PDP Context Modification by UE
7.2.8.4.1. Radio Access Bearer Reconfiguration (DCH-DCH) applied
7.2.8.4.2. Radio Access Bearer Reconfiguration (DCH-CCH) applied
7.2.8.4.3. Radio Access Bearer Reconfiguration (CCH-DCH) applied
7.2.8.4.4. Radio Access Bearer Reconfiguration (CCH-CCH) applied
7.2.8.5. Circuit Switched Service Modification by NW
7.2.8.5.1. Radio Access Bearer Reconfiguration (DCH-DCH) applied
7.2.8.6. Circuit Switched Service Modification by UE
7.2.8.5.2. Radio Access Bearer Reconfiguration (DCH-DCH) applied
7.2.9. Packet specific information flows according to communication level
7.2.9.1. Traffic Density Increase
7.2.9.1.1. Physical CH Reconfiguration (CCH-DCH) applied
7.2.9.1.2. Transport CH Reconfiguration (CCH-DCH) applied
7.2.9.1.3. Transport CH Reconfiguration (DCH-DCH) applied
7.2.9.2. Traffic Density Decrease
7.2.9.2.1. Physical CH Reconfiguration (DCH-CCH) applied
7.2.9.2.2. Transport CH Reconfiguration (DCH-CCH) applied
7.2.9.2.3. Transport CH Reconfiguration (DCH-DCH) applied
7.2.9.3. Timer out in RACH/FACH state (URA Timer Expiry)
7.2.9.4. Timer out in RACH/PCH state (READY Timer Expiry)
7.2.9.5. Uplink access in RACH/PCH state
7.2.9.6. URA Paging

Note – the sections with * marks will be provided by the end of January 1999.

7.3 Handover Related Information Flows

7.3.1 General
7.3.2 Information Flow Diagram for Process 2, 3 and 4
7.3.2.1 Non-diversity Handover
7.3.2.1.1 Anchor Method
7.3.2.1.2 Non-Anchor Method (Streamlining)
7.3.2.1.3 Inter System Hard Handover
7.3.2.2 Handover Radio Link Addition
7.3.2.3 Handover Radio Link Deletion
7.3.2.3.1 Case of deletion by Network side first
7.3.2.3.2 Case of deletion by Mobile Terminal side first
7.3.2.4 Intra-RFTR Non-diversity Handover
7.3.2.1 Anchor Method
7.3.2.2 Non-Anchor Method
7.3.2.5 Intra-RFTR Radio Link Addition
7.3.2.6 Intra-RFTR Radio Link Deletion
7.3.2.6.1 Case of deletion by Network side first
7.3.2.6.2 Case of deletion by Mobile Terminal side first
7.3.2.7 Handover Radio Link Addition & Deletion
7.3.3 Power Control
7.3.4 Outer-Loop Control
ANNEX 1 Information Flows

ANNEX 2 Another scheme for Diversity Handover Addition