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**Technical Document**

**GSM PROTOCOL STACK**

**G23**

**MUX\_HLS-UART MULTIPLEXER SYSTEM**

**DESIGN**

**HIGH LEVEL DESIGN SPECIFICATION**

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1. Initial version
2. New Template/English Check

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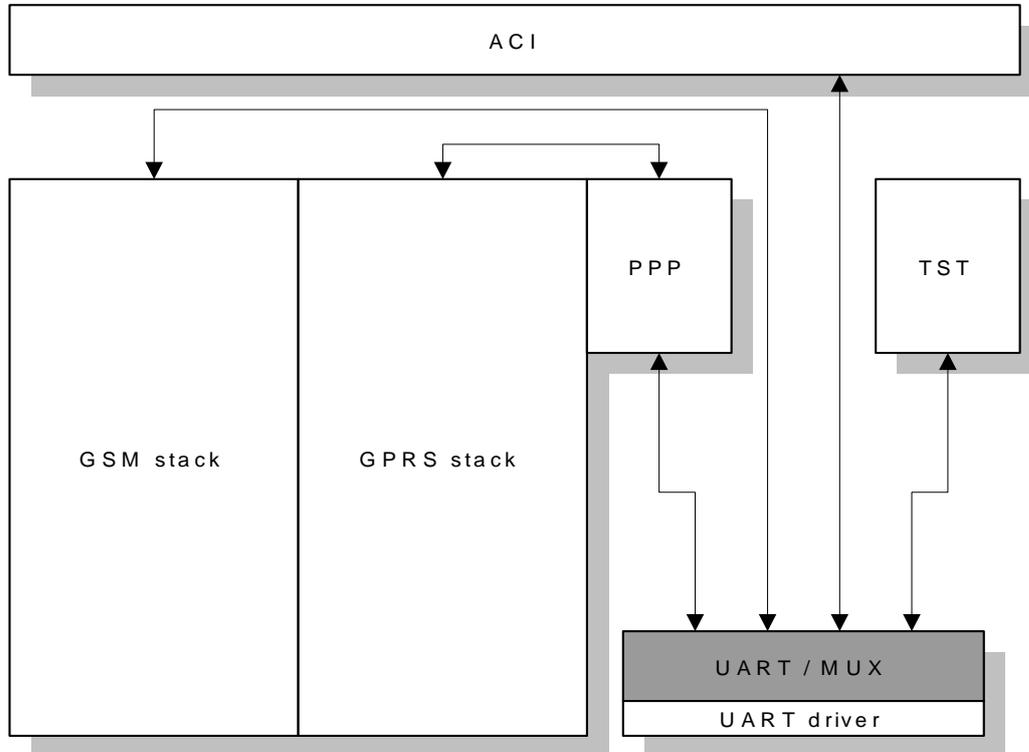
## List of References

- [ISO 9000:2000]** International Organization for Standardization. Quality management systems - Fundamentals and vocabulary. December 2000

# 1 Introduction

The present document is the high-level system design of the UART entity. The document is to be regarded as last step in the development process before drawing the first SDL diagrams given the implemented design and is therefore intended to hold the information not visible in the SDL diagrams.

The environment of the UART entity is illustrated in Figure 1.



**Figure 1: Block diagram of UART/Multiplexer environment**

The UART entity is used to transmit information over one or more serial links. An additional multiplexer functionality is provided for each serial link. The several physical/virtual serial channels can be connected to other parts of the mobile software, i.e. ACI (AT Command Interpreter), TST (Test Interface) or GSM (circuit switched data).

The UART entity uses the UART driver to send data over a serial link.

## 2 Multi-instance Capability

If the UART driver can handle more than one physical serial link, the UART entity is able to run in more than one instance. Each instance is used for one physical serial link.

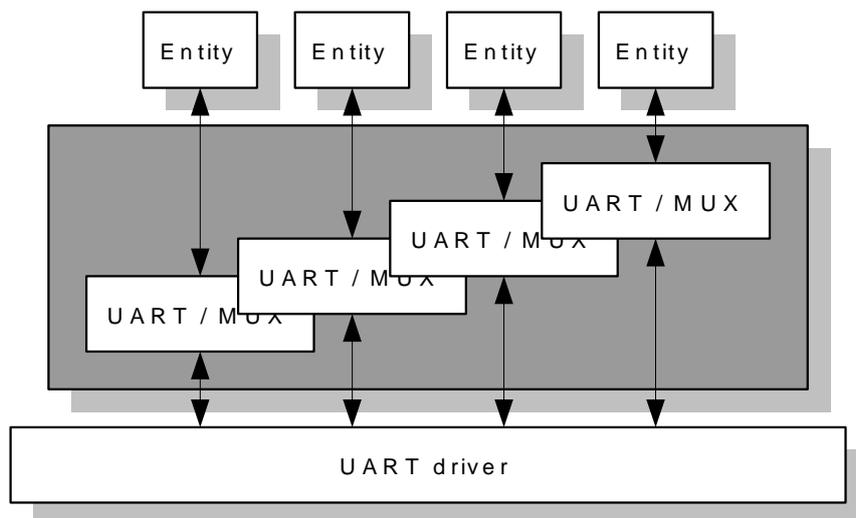


Figure 2: Multi-instance of UART/Multiplexer

### 3 Interfaces of UART Entity

#### 3.1 Service Access Points

The SAPs of the UART entity are shown in the following diagram.

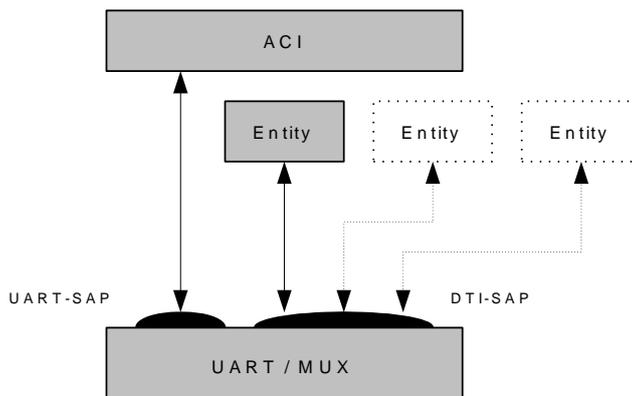


Figure 3: Service Access Points of UART/Multiplexer

The UART SAP is used for control purposes. ACI uses this SAP to set UART specific parameters and to determine to which entity the DTI SAP must connect.

The DTI SAP is used for data transfer. More than one entity can use this SAP. Each DTI link is connected to one serial channel (physical or virtual).

#### 3.2 Function Interface

The UART entity uses the function interface provided by the UART driver to transmit data over the physical serial links. Virtual channels will be handled by the Multiplexer included in the UART entity.

## 4 Internal Structure

There are two modes in which the UART entity can be used - multiplexed mode and non-multiplexed mode.

### 4.1 Non-multiplexed Mode

In non-multiplexed mode, the UART entity simply converts the function interface of the UART driver to a DTI link. The structure is shown in the following diagram.

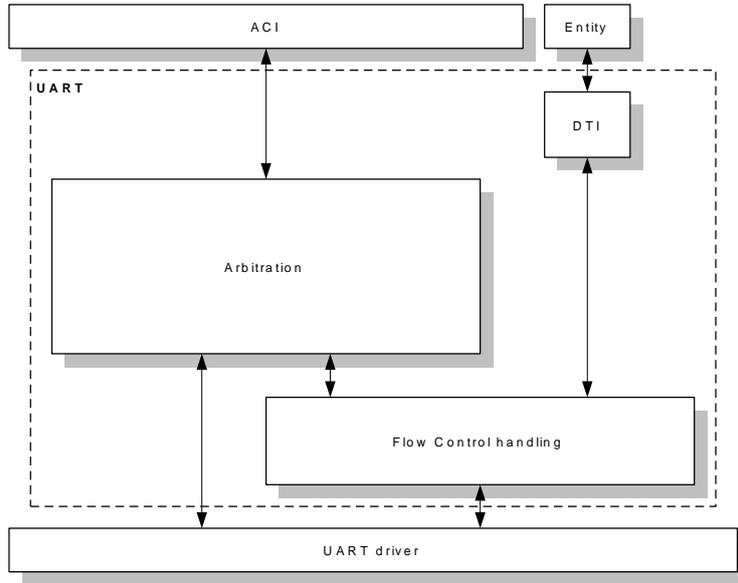
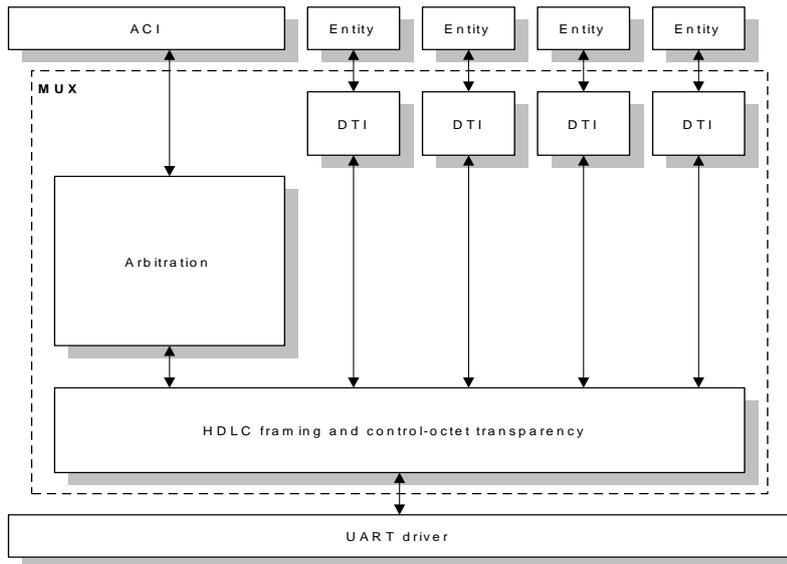


Figure 4: Structure in non-multiplexed mode

### 4.2 Multiplexed Mode

In multiplexed mode, the UART entity provides multiplexer functionality as described in [3G TS 27.010 V3.30]. Each virtual serial channel is connected to a DTI link. The structure is shown in the following diagram.



Figure

## Appendices

### A. Acronyms

**DS-WCDMA** Direct Sequence/Spread Wideband Code Division Multiple Access

### B. Glossary

**International Mobile Telecommunication 2000 (IMT-2000/ITU-2000)** Formerly referred to as FPLMTS (Future Public Land-Mobile Telephone System), this is the ITU's specification/family of standards for 3G. This initiative provides a global infrastructure through both satellite and terrestrial systems, for fixed and mobile phone users. The family of standards is a framework comprising a mix/blend of systems providing global roaming. <URL: <http://www.imt-2000.org/>>