Appendix C

Interface Control Documents

1. Introduction

The Contractor shall create an interface document that provides the following information using the same organizational format as this appendix. This document must include, for each interface, a table of correlated data elements, any conversions of data types, algorithms and sizing constraints on data fields. It must also include the following information as described immediately below and in Sections 2 through 6 inclusive.

1.1 Goals and objectives

A description of the desired outcome of each interface. Interface descriptions shall include detailed information on data and message exchanges between the VLU and

- each on-board modular software component,
- each on-board subsystem's software, and
- all fixed-end systems at the transit bases and computer facilities.

1.2 Software required

A definition of all software required for each interface to other systems, including all subsystems and database connectivity.

1.3 Major constraints

The inclusion, with each interface, of a document showing which parts of the chosen TCIP standards are utilized, when applicable as per requirements of the contract.

2. Data design

The Contractor shall include details of the data-element mapping for each of the required and optional inputs and outputs of the system, including the following:

2.1 Internal software data structure

A description of the layout of the data and tables that are utilized for each interface.

2.2 Global data structure

A description the data impacts of each interface and any correlated operating conditions that will be impacted by the interface success or failure.

2.3 Temporary data structure

A description of all interim tables, files, etc., that are created for or during processing, including information on what to do in case of interface failure.

3. Architectural and component-level design

The Contractor shall provide a high-level and detail-level description of the program architecture, including the following:

3.1 Program Structure

A detailed description of the program process and flow charts with conditionals where decisions are made inside the program module. A pictorial representation of the system architecture shall also be included.

3.2 Description of Software Component

A detailed description of each software component contained within the architecture shall be provided and include the following information:

3.2.1 Component interface description.

A detailed description of the input and output interfaces for the component.

3.2.2 Component processing detail

A detailed table that outlines the following information:

Algorithmic model (e.g., PDL)

Restrictions/limitations

Local data structures

Performance issues

Design constraints

3.3 Software Technical Interface Description

A description of the technical support information shall be provided and include the following information:

3.3.1 External machine interfaces

Detail on interfaces to other machines (computers or devices).

3.3.2 External system interfaces

Detail on interfaces to other systems, subsystems, products or networks.

3.3.3 Human interface

An overview of any human interaction with interfaces to be designed for the software.

4. Restrictions, limitations, and constraints

The Contractor shall describe all special design issues which impact the design and/or implementation of the software and its interfaces.

5. Testing Issues

The Contractor shall describe all test strategies and provide preliminary test cases, including the following:

5.1 Classes of tests

A description of the types of tests to be conducted. Each test shall include as much detail as is possible at this stage. Emphasis here is on black-box and white-box testing.

5.2 Expected software response

Specifications for samples of expected testing results.

5.3 Performance bounds

A description of how test results meet specified performance requirements.

5.4 Identification of critical components

Identification of those components that are critical and demand particular attention during testing.

6. Appendices

The Contractor shall present information that supplements the design specification, including the following:

6.1 Requirements traceability matrix

A matrix that traces stated components and data structures to software requirements.

6.2 Packaging and installation issues

Detailed descriptions of all special considerations for software packaging and installation.

6.3 Supplementary information (as required)