

**CENTER INITIATIVE MANAGEMENT (CIM) TOOL  
FUNCTIONAL REQUIREMENTS DOCUMENT**

**FOR THE**

**SCIENCE AND ENGINEERING TECHNICAL ASSESSMENTS (SETA)  
PROGRAM**

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## Foreword

This report details the functional requirements for the Center Initiative Management (CIM) Tool as developed for the government by the SETA contractor.

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## **1 SCOPE**

### **1.1 Identification**

The Center Initiative Management (CIM) Tool is a tool utilized by the National Aeronautics and Space Administration (NASA) Independent Verification and Validation (IV&V) Facility for managing the Office of Safety and Mission Assurance (OSMA) Software Assurance Program Center Initiatives (CI). The IV&V Facility is the Delegated Program Manager (DPM) for the OSMA Software Assurance Program and is responsible for ensuring that the quality control standards are met in terms of technical, managerial, and financial control for all aspects of this program.

### **1.2 System Overview**

The CIM Tool was initially developed by Azimuth, Inc in 1997 under the NASA IV&V Facility Science Engineering and Technical Assessments (SETA) Contract. It was developed as a prototype in Microsoft Access to provide a proof-of-concept and remains as such to this date. The CIM Tool was intended to monitor the progress of each CI and track the deliverables, funding, and schedule. It was utilized by a limited group of NASA personnel. The system was developed to be accessible via the IV&V Facility's user desktops.

### **1.3 Document Overview**

Since the CIM Tool inception, it has remained as a prototype. However, the tool has been utilized in the day-to-day management of the OSMA Software Assurance Program. The intent of this document is to capture the functionality of the tool in a CIM Tool Functional Requirements Document. This document will serve as a basis for understanding the system and is not intended for developmental purposes.

Acronyms used in this document are defined in paragraph 5.0. Appendix A contains the Man-Machine Interface (MMI) diagrams for the CIM Tool.

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## 2 ENGINEERING REQUIREMENTS

The paragraphs of this section specify the requirements that the CIM Tool satisfies. The requirements have been directly derived from the CIM Tool currently being applied to the OSMA Software Assurance Program at the NASA IV&V Facility.

### 2.1 External Interface Requirements

There are no external interface requirements applicable to the CIM Tool. Since it was developed as a standalone application in Microsoft Access, no external interfaces exist.

### 2.2 System Requirements

This section specifies the minimum hardware and software required for operating the CIM Tool and the process to initialize the system. Initialization of the system only relates to those items needed to prepare the CIM Tool for initialization and not the initialization of the CIM Tool itself (see section 2.3.1.3, for CIM Tool initialization). Listed below are the hardware and software required for the CIM Tool:

- 300 MHz processor
- 132 Mhz Random Access Memory (RAM)
- Microsoft Windows NT
- Microsoft Access 97

Although the CIM Tool currently operates under a Windows NT environment, the tool is compatible with Windows 95 and 98. This is not the case with Microsoft Access. The CIM Tool has been migrated from Microsoft Access 95 to Microsoft Access 97. Efforts to utilize the CIM Tool under the Microsoft Access 95 version will cause degradation in the performance of the Tool.

#### 2.2.1 Startup Procedure

Once the hardware and software are available, the operator must do the following: a) ensure that power is supplied to the PC; b) power on the system by pushing the "power on" switch; c) ensure that upon a successful boot up Microsoft Windows (95, 98, or NT) and Microsoft Access 97 are loaded. If Microsoft Windows (95, 98, or NT) or Microsoft Access 97 are not loaded properly, the operator should contact his/her network personnel to rectify the problem. The operator is now ready for the CIM Tool initialization (see section 2.3.1.3).

### 2.3 Functional Requirements

This paragraph identifies and describes each segment of the CIM Tool and the functions associated with it. The subparagraphs within this paragraph specify the requirement for each of these segments. Each subparagraph is organized in the following manner: the first two subparagraphs, Inputs and Outputs, list the external and internal interfaces of the segments, the third subparagraph, Processing, describes the functionality and specifies the requirements for the functions. The CIM Tool performs the capability required to:

- Monitor and track all aspects of the CI's.
- Monitor and track all financial aspects of the OSMA Software Assurance Program.
- Generate reports.
- Store data for future processing.

Each segment utilizes a MMI to accomplish the previously mentioned capabilities. The CIM Tool provides the following MMI's:

**Initiatives** – The Initiative MMI provides initialization and overall control of the CIM Tool. This MMI allows the operator to direct the execution of the various segments and functions that comprise the CIM Tool. This includes initiating new initiatives, deleting initiatives, selecting initiatives, initiating the Budget, Point Of Contact (POC), Reports, Deliverables, Strategic Plan, and User Segments, and terminating the Initiative segment. The Initiative MMI can found in Appendix A (Figure A-1).

**Budget** – The Budget MMI provides overall control of the financial aspects of each CI. This MMI allows the operator to view or input financial data for any given CI. The Budget Segment MMI can be found in Appendix A (Figure A-2).

**Point of Contact (POC)** – The POC Segment MMI provides the operator with all relevant information for each POC: CI Manager, Technical Point of Contact (TPOC), and Administrative Point of Contact (APOC) for any given CI. This MMI allows the operator to generate reports and modify data as necessary. This POC Segment MMI can be found in Appendix A (Figure A-3).

**Reports** – The Reports MMI provides overall control for the generation of reports for the OSMA Software Assurance Program. The operator can select from a variety of reports to generate. The Reports Segment MMI can be found in Appendix A (Figure A-4).

**Deliverables** - The Deliverables MMI provides initialization and overall control of the deliverables for any given CI. This MMI allows the operator to direct the execution of the various functions and data entry field that comprise the deliverable segment. This includes initiating new deliverables, deleting deliverables, editing deliverables, and viewing the deliverable history. The Deliverable MMI can found in Appendix A (Figure A-5).

**Strategic Plan** – This Strategic Plan MMI provides the operator with overall controls to view and edit the Software Strategic Plan goals and strategies. When the operator selects this control, the Strategic Plan Segment MMI will be displayed. This MMI allows the operator to direct the execution of the various functions and data entry fields that comprise the Strategic Plan Segment. This MMI will allow the operator to select which goal and the corresponding strategies to view or edit. The Strategic Plan MMI can be found in Appendix A (Figure A-6)

**Users** - This User MMI provides overall control to edit user information for the CIM Tool. When the operator selects this control, the User Segment MMI will be displayed. This MMI will be populated with the information specific to that user.

## 2.3.1 Initiatives

### 2.3.1.1 Inputs

1. Operator\_Actions
2. Execution\_to\_Budget
3. Execution\_to\_POC
4. Execution\_to\_Reports
5. Execution\_to\_Deliverables
6. Execution\_to\_Strategic Plan
7. Execution\_to\_Users
8. Execution\_to\_Database

### 2.3.1.2 Outputs

1. Operator\_Displays
2. Initiative\_to\_Budget Segment
3. Initiative\_to\_POC Segment
4. Initiative\_to\_Reports Segment
5. Initiative\_to\_Deliverables Segment
6. Initiative\_to\_Strategic Plan Segment
7. Initiative\_to\_Users Segment
8. Updated Segment

### 2.3.1.3 Processing

The Initiative Segment provides for overall control of the CIM Tool. The Initiative Segment capability consists of initializing the CIM Tool and the presentation of an MMI to the operator to initiate and control the various functions of this segment. The CIM Tool initialization begins after the operator completes the login procedure to enter the Initiative Segment through the CIM Tool provided login window. This login window will be displayed after the initialization of the database file. This login procedure includes entering a valid CIM Tool username and a corresponding password. Once this has been verified, the CIM Tool is initialized by executing a process to manage each function known to the segment. The Initiative Segment MMI, as shown in Appendix A (Figure A-1), is then displayed on the operator console.

After the CIM Tool initialization, this segment shall provide an MMI to provide the operator with controls to:

- **Terminate the Initiative Segment [01]**

This MMI will provide a control to terminate this segment as well as logout of the CIM Tool account. When the operator selects the Initiative Segment logout control, all processing to terminate the segment will occur. Additionally, the operator will be logged out of the CIM Tool account, upon operator confirmation, and returned to the CIM Tool provided login window. Terminating the Initiative Segment will be accomplished by properly terminating all active segments currently executing within the Initiative Segment capability. The OS software will not be affected by selecting the segment logout control.



- **Add a “New” initiative [02]**

This MMI provides the operator with a control to initiate a new CI. When the operator selects the “New Initiative” control, all fields are emptied for data entry. Upon successful completion of the required fields, a new record will be placed within the database.
- **Delete an Initiative [03]**

This MMI provides the operator with a control to delete a given CI. The operator selects the CI to be retrieved from the database and displayed in the Initiative Segment MMI. When the proper record is displayed, the operator can then use the control to delete the CI. Upon operator confirmation, the CI will be removed from the database.
- **View budgetary information for each CI [04]**

This MMI provides the operator with a control to view the budgetary information for a given CI. When the operator selects this control, the Budget Segment MMI will be displayed. This MMI will be populated with the information specific to that CI. Refer to section 2.2.2 in this document for information concerning the Budget Segment MMI.
- **View POC information for each CI [05]**

This MMI provides the operator with a control to view the POC information for a given CI. When the operator selects this control, the POC Segment MMI will be displayed. This MMI will be populated with the information specific to that CI. Refer to section 2.2.3 in this document for information concerning the POC Segment MMI.
- **Generate Reports [06]**

This MMI provides the operator with a control to generate various reports. When the operator selects this control, the Reports Segment MMI will be displayed. This MMI will be populated with a list of possible reports that can be generated. Refer to section 2.2.4 in this document for information concerning the Report Segment MMI.
- **View initiative deliverables [07]**

This MMI provides the operator with a control to view the deliverable information for a given CI. When the operator selects this control, the Deliverable Segment MMI will be displayed. This MMI will be populated with the information specific to that CI. Refer to section 2.2.5 in this document for information concerning the Deliverable Segment MMI.
- **View Strategic Plan [08]**

This MMI provides the operator with a control to view the Software Strategic Plan goals and strategies. When the operator selects this control, the Strategic Plan Segment MMI will be displayed. This MMI will allow the operator to select which

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goal and the corresponding strategies to view. Refer to section 2.2.6 in this document for information concerning the Strategic Plan Segment MMI.

- **Edit Strategic Plan [09]**

This MMI provides the operator with a control to edit the Software Strategic Plan information. When the operator selects this control, the Strategic Plan Segment MMI will be displayed for editing purposes only. This MMI will be populated with all the goals and strategies. Refer to section 2.2.6 in this document for information concerning the Strategic Plan Segment MMI.
- **Edit Users [10]**

This MMI provides the operator with a control to edit user information for the CIM Tool. When the operator selects this control, the User Segment MMI will be displayed. This MMI will be populated with the information specific to that user. Refer to section 2.2.7 in this document for information concerning the User Segment MMI.
- **Ability to Select CI information [11]**

This MMI provides the operator with a control to retrieve a specific CI. When the operator selects this control, the Select Initiative Segment MMI will be displayed. This MMI will be populated with all possible selections available to the operator.

After the CIM Tool initialization, the Initiative Segment MMI shall display the following information:

- **Unique Initiative ID number [12]**

The display format for the identification number shall [26] be nnnn, where nnnn is a sequentially auto-generated number by the CIM Tool.
- **Center from which the CI originated [13]**

A CI can originate from any NASA Center. This MMI shall [27] allows the operator to select one of the NASA Centers as the originator of the CI. Furthermore, this field aids in the querying for Center specific information.
- **Initiative Title [14]**

The Initiative title is specific to each CI. It gives a general description of the intent of the CI. The operator merely types the information into this field.
- **Status of the Initiative [15]**

This MMI shall [28] provide the operator the ability to select the status of the initiative to include “New”, “Existing”, and “Augmentation”. The operator will select, via a toggle button, one of the three statuses for any given CI. “New” identifies a CI as being a newly proposed initiative. This term is specific to a CI that has not been previously funded through the OSMA Software Assurance Program. “Existing” identifies a CI as being a CI that has been previously funded and is being

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resubmitted for follow-on funding. "Augmentation" identifies a CI as being one that has been funded in previous years but has been modified for one reason or another. This augmentation could mean that the research has been redirected, the proposed research team has changed, or a variety of other reasons.

- **Fiscal Year (FY) initiative proposed [16]**

The OSMA Software Assurance Program generally funds CI via FY. The FY represents the period from October through September of the following year. Although proposals are submitted in the current year, they reflect the following FY. Work on the CI is not initiated, if approved, until that FY begins and funding is received. This MMI shall [29] identify the FY in which the work is to be performed.

- **Initiative start date [17]**

This MMI shall [30] provide the operator the ability to enter the start date of the CI. The short date format will be utilized when displaying a date. Generally, this date is October 1 of the FY proposed. However, this may not be the case for a CI funded via a university, an industry partner, or an organization outside of NASA.

- **Initiative end date [18]**

This MMI shall [31] provide the operator the ability to enter the end date of the CI. Generally, the end date is September 30 of the FY proposed. However, this may not be true for a CI funded via a university, an industry partner, or an organization outside of NASA.

- **CI manager [19]**

This MMI shall [32] provide the operator the ability to select the government representative, at the IV&V Facility, who is responsible for managing the CI.

- **Technical Point of Contact [20]**

This MMI shall [33] provide the operator the ability to select the government representative who is responsible for technically managing the CI. This individual may be at the Center, University, or Industry.

- **Administrative Point of Contact [21]**

This MMI shall [34] provide the operator the ability to select the government representative who is responsible for managing the administration of the CI. This individual handles the financial aspects of the CI and is generally the Resource Manager at the Center,

- **Deliverables [22]**

This MMI will reflect the deliverables identified for any given CI. This MMI does not provide the capability of altering the deliverable information, except through the Deliverable Segment MMI (See paragraph 2.2.5).

- **Related Software Goals and Strategies [23]**  
This MMI will reflect the Software Goals and Strategies identified for any given CI. This MMI does not provide the capability of altering these goals and strategies, except through the Strategic Plan Segment MMI (See paragraph 2.2.6).
- **Notes [24]**  
This MMI provides a section that the operator or user/manager can make comments related to the CI.
- **Identifies the state of the Initiative [25]**  
This MMI shall [35] provide the operator the ability to select the state of the initiative to include “Cancelled”, “Closed”, and “Approved”. The operator may select, via a toggle button, any one of the three states for any given CI. “Approved” identifies a CI as being approved for funding through the OSMA Software Assurance Program. “Closed” is a term reserved for those CI that have successfully completed their initiative and has delivered all specified products. “Cancelled” identifies a CI that has been terminated for a variety of reasons. For example, research objectives were not met, schedule overruns, lack of performance/no deliverables, or budget overruns. The authority to select one or more of the states resides with the DPM of the OSMA Software Assurance Program.

## 2.3.2 Budget

### 2.3.2.1 Inputs

1. Operator\_Actions
2. Execution\_to\_Database

### 2.3.2.2 Outputs

1. Operator\_Displays
2. Budget\_to\_Initiative Segment
3. Updated Database

### 2.3.2.3 Processing

The Budget Segment provides for overall control of all financial aspects for any given CI and the OSMA Software Assurance Program. The Budget Segment shall [01] provide the capability to monitor, track, and edit financial data. Upon initialization, from the Initiative Segment MMI, the Budget Segment MMI begins executing a process to manage each function and data field known to the segment. The Budget Segment MMI, as shown in Appendix A (Figure A-2), is then displayed on the operator console. This MMI shall [02] provide the operator the ability to enter data to include “Planned”, “Actual”, and “Difference” funding for each CI. This MMI shall [03] provide the ability to identify the FY to which the initiative is proposed. This MMI shall [04] provide the operator the ability to enter data to include: “Carryover funding”, “First quarter

follow-on dollars”, and “Collateral funding”. This MMI shall [05] provide the operator the ability to delete financial information, if necessary. This MMI shall [06] automatically calculate the total funding for each CI. Financial data shall [07] be defined on a quarterly basis.

### **2.3.3 Point of Contact**

#### **2.3.3.1 Inputs**

1. Operator\_Actions
2. Execution\_to\_Database

#### **2.3.3.2 Outputs**

1. Operator\_Displays
2. Updated\_Database
3. POC\_to\_Initiative Segment

#### **2.3.3.3 Processing**

The POC Segment provides for overall control of the POC information. Upon initialization, from the Initiative Segment MMI, the POC Segment MMI begins executing a process to manage each function and data field known to the segment. The POC Segment MMI, as shown in Appendix A (Figure A-3), is then displayed on the operator console. This MMI shall [01] provide the operator the ability to enter contact information for each CI. This MMI shall [02] provide the operator the ability to enter data to include: “Name”, “Phone number”, “Fax number”, “E-mail address”, and “Mailcode” for each POC. This MMI shall [03] automatically generate the POC report and update the POC list. This MMI shall [04] provide the capability for the operator to identify a POC as one of the following: “CI Manager”, “TPOC”, or “APOC”.

### **2.3.4 Reports**

#### **2.3.4.1 Inputs**

1. Operator\_Actions
2. Execution\_to\_Database

#### **2.3.4.2 Outputs**

1. Operator\_Displays
2. Generated\_Report
3. Reports\_to\_Initiative Segment

### 2.3.4.3 Processing

The Reports Segment provides for the overall control of the report generation capability. Upon initialization, from the Initiative Segment MMI, the Reports Segment MMI begins executing a process to manage each function known to the segment. The Reports Segment MMI, as shown in Appendix A (Figure A-4), is then displayed on the operator console. This MMI shall [01] provide the ability to auto-generate reports. This MMI shall [02] provide the operator the ability to select a report for generation from a pre-defined list. This MMI shall [03] provide the operator the capability to input criteria to generate reports.

## 2.3.5 Deliverables

### 2.3.5.1 Inputs

1. Operator\_Actions
2. Execution\_to\_Database

### 2.3.5.2 Outputs

1. Operator\_Displays
2. Updated\_Database
3. Execution\_to\_Initiative Segment

### 2.3.5.3 Processing

The Deliverables Segment provides for overall control of the deliverables for all the CIs. The Deliverable Segment capability consists of initializing the data for a given CI and the presentation of an MMI to the operator to initiate and control the various functions of this segment. Upon initialization, from the Initiative Segment MMI, the Deliverable Segment MMI begins executing a process to manage each function and data field known to the segment. The Deliverable Segment MMI, as shown in Appendix A (Figure A-5), is then displayed on the operator console.

After segment initialization, this MMI shall provide the operator with controls to:

- **Terminate the Deliverable Segment [01]**  
This MMI will provide a control to terminate this segment. When the operator selects the "Close" control, all processing to terminate the segment shall [7] occur. Terminating this segment will be accomplished by properly terminating all active functions currently executing within the Deliverable Segment capability. The OS software shall [08] not be affected by selecting this segment control. All data changes shall [09] be saved to the database.
- **Add a "New" deliverable [02]**  
This MMI provides the operator with a control to initiate a new deliverable. When the operator selects the "New Deliverable" control, all fields are emptied for data

entry. Upon successful completion of the required fields, a new record will be placed within the database.

- **Delete a deliverable [03]**

This MMI provides the operator with a control to delete a given deliverable. The operator selects the deliverable from the database and displays it in the Deliverable Segment MMI. When the proper record is displayed, the operator can then use the control to delete the record. Upon operator confirmation, the record shall [10] be removed from the database.
- **Edit a deliverable [04]**

This MMI provides the operator with a control to edit a deliverable. When the operator selects this control, the Deliverable Segment MMI executes a process to track all changes to the existing record. Changes to the record shall [11] be instantaneous and without operator confirmation.
- **View deliverable history [05]**

This MMI provides the operator with a control to view the history for a given deliverable. When the operator selects this control, a complete change history will be presented to the operator. In addition to the changes, the deliverable history shall [12] capture the username, action, and date of change. This MMI shall [13] provide the action taken by the operator to include "New", "Edit", or "Deleted".

After the Deliverable Segment initializes, the Deliverable Segment MMI shall display the following information:

- **Unique Initiative ID number [14]**

The display format for the identification number shall [15] be nnnn, where nnnn is a sequentially auto-generated number by the CIM Tool. This number shall [16] be consistent with that displayed on the Initiative Segment MMI (See paragraph 2.2.1 for further details).
- **Unique Deliverable ID number [17]**

The display format for the identification number shall [18] be nnnn, where nnnn is a sequentially auto-generated number by the CIM Tool.
- **Deliverable Title [19]**

The Deliverable title identifies each deliverable within the CI. It gives a general description of the intent of the deliverable. The operator merely types the information into this field.
- **Fiscal Year deliverable funded [20]**

The field identifies the FY in which the deliverable was funded. This MMI shall [21] provide the operator the ability to select the appropriate fiscal year.

- **Deliverable original due date [22]**

This MMI displays two fields to capture the deliverable's original due date: the "Original FY Due" and the "Original Qtr Due". The display format for the due date shall [23] be yyyy and [24] qq, where yyyy is the year and qq is the quarter respectively. These due dates are established by the Center submitting the proposal. Upon successful data entry for the original due date, both FY and Qtr, these fields shall [25] not be altered. This acts as a baseline for monitoring/tracking the progress.
- **Deliverable current due date [26]**

This MMI displays two fields to capture the deliverable's current due date: the "Current FY Due" and the "Current Qtr Due". The display format for the due date shall [27] be yyyy and [28] qq, where yyyy is the year and qq is the quarter respectively. These due dates are established by the Center submitting the proposal. Initially, these dates are consistent with the "Original" due dates. However, as time progresses, Centers may need to adjust their delivery schedules. This provides the CI Manager the ability to identify planned vs. actual delivery schedules. Unlike the original due dates, the current due dates shall [29] be modifiable.
- **Status of the deliverable [30]**

This MMI shall [31] provide the operator the ability to enter the status of the deliverable to include "Delivery Completion", "Delivery Date", and "Deliverable Location". "Delivery Completed" is activated when a deliverable is delivered to the DPM. "Delivery Date" identifies the actual date the deliverable was delivered to the DPM. This date can be found in the e-mail containing the document, if the document is sent electronically delivered, or on the cover page of the hardcopy. "Deliverable Location" identifies the filename and location that the document can be located. This MMI shall [32] provide the operator the ability to select the state of the deliverable to include "Cancelled" and "Operating Plan". The operator may select, via a toggle button, any one or both of the states for any given deliverable. "Operating Plan" identifies a deliverable as being approved for inclusion into the OSMA Software Assurance Program Operating Plan. "Cancelled" identifies a deliverable that has been terminated for a variety of reasons. For example, research objectives were not met, schedule overruns, lack of performance/no deliverables, or budget overruns. The authority to select one or more of the states resides with the DPM of the OSMA Software Assurance Program.
- **Deliverable format [33]**

This MMI shall [34] provide the operator the ability to enter the status of the deliverable to include "Hardcopy", "Electronic", and "Software". "Hardcopy" will be selected if the deliverable is sent by the postal carrier. "Electronic" will be selected if the deliverable is sent via e-mail or other electronic means. "Software" will be selected to identify the deliverable as being source code or a developed tool. Any or all of the fields may be selected depending on the form of delivery.



- **Notes [35]**  
This MMI provides a section that the operator or user/manager can make comments related to the CI.

## **2.3.6 Strategic Plan**

### **2.3.6.1 Inputs**

1. Operator\_Actions
2. Execution\_to\_Database

### **2.3.6.2 Outputs**

1. Operator\_Displays
2. Updated\_Database
3. Execution\_to\_Initiative Segment

### **2.3.6.3 Processing**

The Strategic Plan Segment provides for overall control of the Software Strategic Plan goals and strategies. The Strategic Plan Segment shall [01] provide the capability to edit and view the goals and strategies. Upon initialization from the Initiative Segment, the Strategic Plan Segment MMI begins executing a process to manage the data fields known to the segment. The Strategic Plan Segment MMI, as shown in Appendix A (Figure A-6), is then displayed on the operator's console.

When the operator selects this control, the Strategic Plan Segment MMI will be displayed. This MMI will allow the operator to select which goal and the corresponding strategies to view.

## **2.3.7 Users**

### **2.3.7.1 Inputs**

1. Operator\_Actions
2. Execution\_to\_Database

### **2.3.7.2 Outputs**

1. Operator\_Displays
2. Updated\_Database
3. Eceution\_to\_Initiative Segment

### **2.3.7.3 Processing**

The User Segment provides for overall control of the user information. Upon initialization, from the Initiative Segment MMI, the User Segment MMI begins executing a process to manage each data field known to the segment. The User Segment MMI is then displayed on the operator's console. This MMI shall [01] provide the operator the ability to enter user information for each individual. This MMI shall [02] provide the operator the ability to enter data to include: "Name", "Password", "Userlevel", and "Special Access" for each user.

## **2.4 Internal Interfaces**

There are no internal interfaces for the CIM Tool.

## **2.5 Data Element Requirements**

There are no data element requirements for the CIM Tool.

## **2.6 Adaptation Requirements**

There are no adaptation requirements for the CIM Tool.

### **2.6.1 Installation Dependant Data**

The CIM Tool will not require modification due to site specific implementation. However, the site will need to be running the same version of MS Access that the tool was developed in.

### **2.6.2 Operational Parameters**

There are no operational parameters for the CIM Tool.

### **2.7 Safety Requirements**

There are no safety requirements for the CIM Tool.

## **2.8 Design Constraints**

The CIM Tool shall [01] be developed with sound engineering principles and in accordance with a quality standard set forth by the NASA IV&V Facility. Constants shall [02] be stored as parameters. Parameters that are likely to change as the CIM Tool develops shall [03] be stored as CIM Adaptive Parameters (CAPs) that are easily modified.

## **2.9 Software Quality Factors**

Critical performance requirements are defined in paragraph 2.2 and its subparagraphs. Failure to meet any critical performance requirement is a critical failure. Any failure, which may be corrected within ten minutes, is considered not a critical failure. However, five or more related failures are detected within a 24 hour period is considered critical. All data files shall [02] be protected from software failure.

### **2.10 Human Performance/Human Engineering Requirements**

The CIM Tool shall [01] be designed and built using principles of human engineering design and shall [02] conform to the requirements set forth by the NASA IV&V Facility. Display format and terminology shall [03] be selected for readability and ease of information transfer and shall [04] be consistent from display-to-display.

This CIM Tool shall [05] be designed and implemented to prevent computer program failures induced by operator input. All operator input shall [06] be checked for legal ranges of values. When the operator has entered an illegal value, this CIM Tool shall [07] inform the operator and not use the input. This CIM Tool shall [08] respond to operator errors with a message that describes the error and provides guidance for correcting the error. This CIM Tool shall [09] allow the operator to correct the error or to return to the previous condition.

### **2.11 Requirements Traceability**

The mapping of the engineering requirements in this document to a System or Software Requirements Specification is not provided within this document. The CIM Tool was developed as a proof-of-concept and as such no formal requirements documentation was ever produced.

### 3 NOTES

#### 3.1 List of Acronyms

APOC	Administrative Point of Contact
CAPs	CIM Adaptive Parameters
CIM	Center Initiative Management
DPM	Delegated Program Manager
FY	Fiscal Year
IV&V	Independent Verification and Validation
MMI	Man-Machine Interface
NASA	National Aeronautics and Space Administration
OS	Operating System
OSMA	Office of Safety and Mission Assurance
POC	Point of Contact
RAM	Random Access Memory
SETA	Science Engineering and Technical Assessments
TPOC	Technical Point of Contact

## **Appendix A**

### **Man-Machine Interface (MMI) Diagrams**

**INITIATIVES**

Buttons: New Initiative, Delete, Undo, Select an Initiative

InitiativeID: [ ] Center: [ARC]  Cancelled  Closed  Approved

Initiative Title: Software Safety in the Maintenance Phase

Status:  New  Existing  Augmental

FY Proposed: 1997

Start Date: 8/1/96

End Date: 9/30/97

Manager: Professor-Hwa Ann

Technical POC: Lutz Dr Robin

Administrative POC: Chang, Hyo

Buttons: Budget, POC Graph, Edit, Generate, View SW Strat Plan, Edit SW Strat Plan, Edit Users

Deliverables: (Select Deliverable to Edit)

Record: 111 of 114

Notes: [ ]

Goals and Strategies (Select Goals/Strategies Supported)

Goal	Strat
1	1.4
1	1.7
2	2.5

SubPrograms and Thrusts (Select Subprogram/Thrusts Supported)

Subprog	Thrust
S1	7.06

Record: 111 of 114

Figure A-1. Initiative Segment MMI

**CIM - Budget Menu** Delete Close

**Budget**

**Initiative: Software Safety in the Maintenance Phase**

**Budget information for Fiscal Year**

	Planned	Actual	Difference
Q1	\$0.00	\$0.00	
Q2	\$0.00	\$0.00	\$0.00
Q3	\$0.00	\$0.00	\$0.00
Q4	\$0.00	\$0.00	\$0.00

Current Carryover from prior year

First Quarter Following Year Dollars

Current Budget Remaining

Collateral Funding

FY Requested Funding

Record:  of 1

**Figure A-2. Budget Segment MMI**

The screenshot shows a window titled "IPocDetails . Form". The main heading is "POC Details". Below this, it specifies the "Initiative: Software Safety in the Maintenance Phase". The form contains three columns of contact information:

- CI Manager:** Fields for Name, Phone, Fax, Email, and Mailcode.
- Technical POC:** Fields for Name, Phone, Fax, Email, and Mailcode.
- Administrative POC:** Fields for Name, Phone, Fax, Email, and Mailcode.

At the bottom of the form, there are two buttons: "View Report" and "Close".

Figure A-3. POC Segment MMI

The screenshot shows a window titled "Reports . Form". The main heading is "Reports". Below the heading, it says "Select a report to View/Print". A list of report options is displayed in a scrollable area:

- Deliverables List for ALL Initiatives
- Deliverables List for Selected Initiative
- POC Details for ALL Initiatives
- POC Details for Selected Initiative
- Program Plan Mapping - Deliverables to Activities
- Program Plan Mapping - Initiative to Thrusts
- SW Strategic Plan Goals & Strategies
- SW Strategic Plan Goals & Strategies for Selected Initiative

At the bottom of the form, there are two buttons: "OK" and "Close".

Figure A-4. Reports Segment MMI



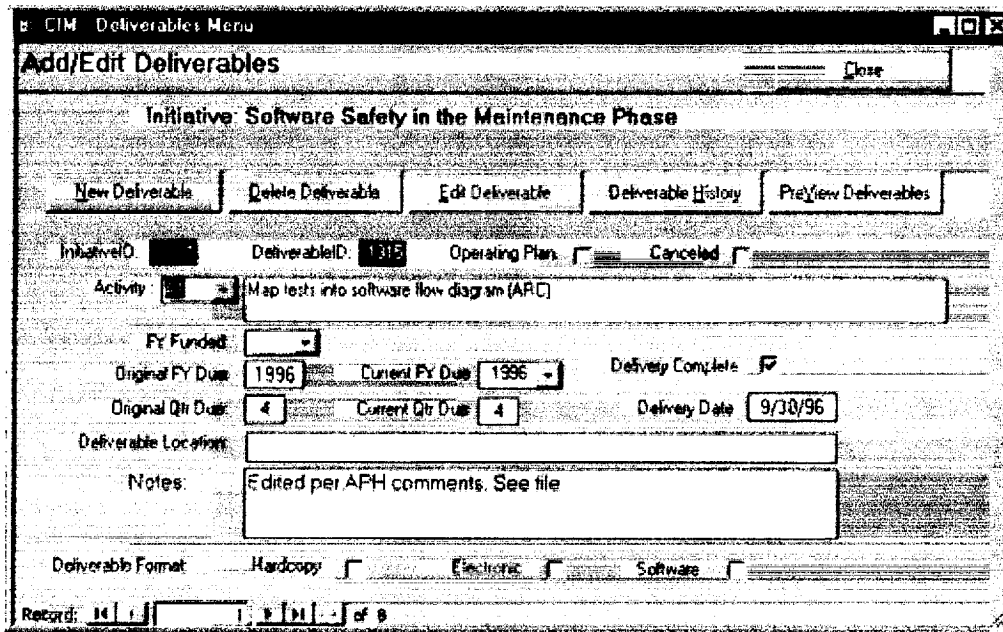


Figure A-5. Deliverables Segment MMI

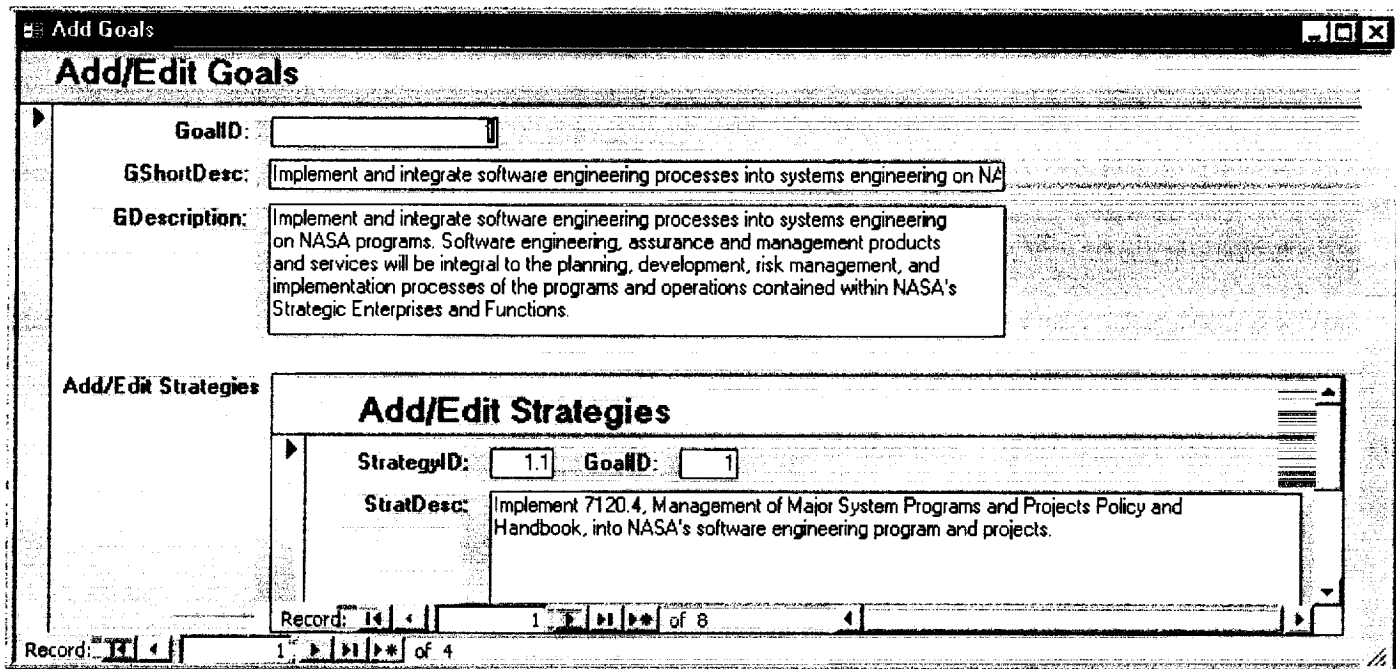


Figure A-6. Strategic Plan Segment MMI

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