INTELLIGENT GATEWAY USER'S MANUAL

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SECTION 1. INTRODUCTION

1.1   Intelligent Gateway Function

The Intelligent Gateway (IG) is a Research and Development (R&D) effort to explore the feasibility of designing an algorithm to provide computer-aided routing of ACP-123/X.400 messages by a United States Coast Guard (USCG) Communications Area Master Station (CAMS). The algorithm has been implemented as an Expert System (ES) (rule-based) incorporating the message routing expertise of various USCG communications experts.

1.2   The intelligent gateway Application

The INTELLIGENT GATEWAY program was developed in LEVEL5 OBJECT PROFESSIONAL. The program uses a scenario-based method of simulating the processing of messages. The scenario is created from a database of messages which the IG application communicates to through ODBC (Open Database Connectivity). Each message in the scenario has a scenario time associated with it in order to script the proper sequence for message evaluation.

1.3   How to Use this Manual

This manual has been prepared for a user with minimal MS Windows® experience. The manual contains information for the inexperienced user as well as additional information for the more experienced user (e.g. Section 6, see below).

The following topics are addressed in this manual:

- Section 2 gives an overview of the intelligent gateway.

- Section 3 describes the intelligent gateway hardware and software requirements.

- Section 4 offers start-up instructions for the system.

- Section 5 provides detailed instructions on running the system.

SECTION 2. INTELLIGENT GATEWAY OVERVIEW

2.1   INTELLIGENT GATEWAY description

The INTELLIGENT GATEWAY's only message routing responsibility is to route messages to underway USCG cutters. For messages destined for shore units, the Message Transfer Agents (MTAs) will automatically route those messages to the appropriate shore destination. Shore units in this sense include any cutter that is in port and capable of sending messages via the Defense Information System Network (DISN).

The Profiling User Agent (PUA) will parse each ACP-123/X.400 message and present the appropriate parameters to the IG for a routing decision. For this proof of concept effort, the IG Message Data Base (IMDB) will be pre-populated with parameter values of hundreds of messages of all types.

The IG only operates on message parameters provided by the PUA and does not directly handle the message. After the IG determines and notifies the PUA of the chosen mode, the PUA must rewrap the ACP-123/X.400 message using an alias identifier that not only identifies the destination, but also the communications mode. The reason for the alias is that the MTA's routing table sends all messages destined for underway units to the CAMS PUA. If an alias was not used, the message would simply loop back to the PUA for routing.

Ideally, each mode has four queues, one queue for Flash, Critic, and ECP precedence, and one queue each for Immediate precedence, Priority precedence, and Routine precedence. Queues are handled external to the IG. Queue delay values are reported back to the LMDB.
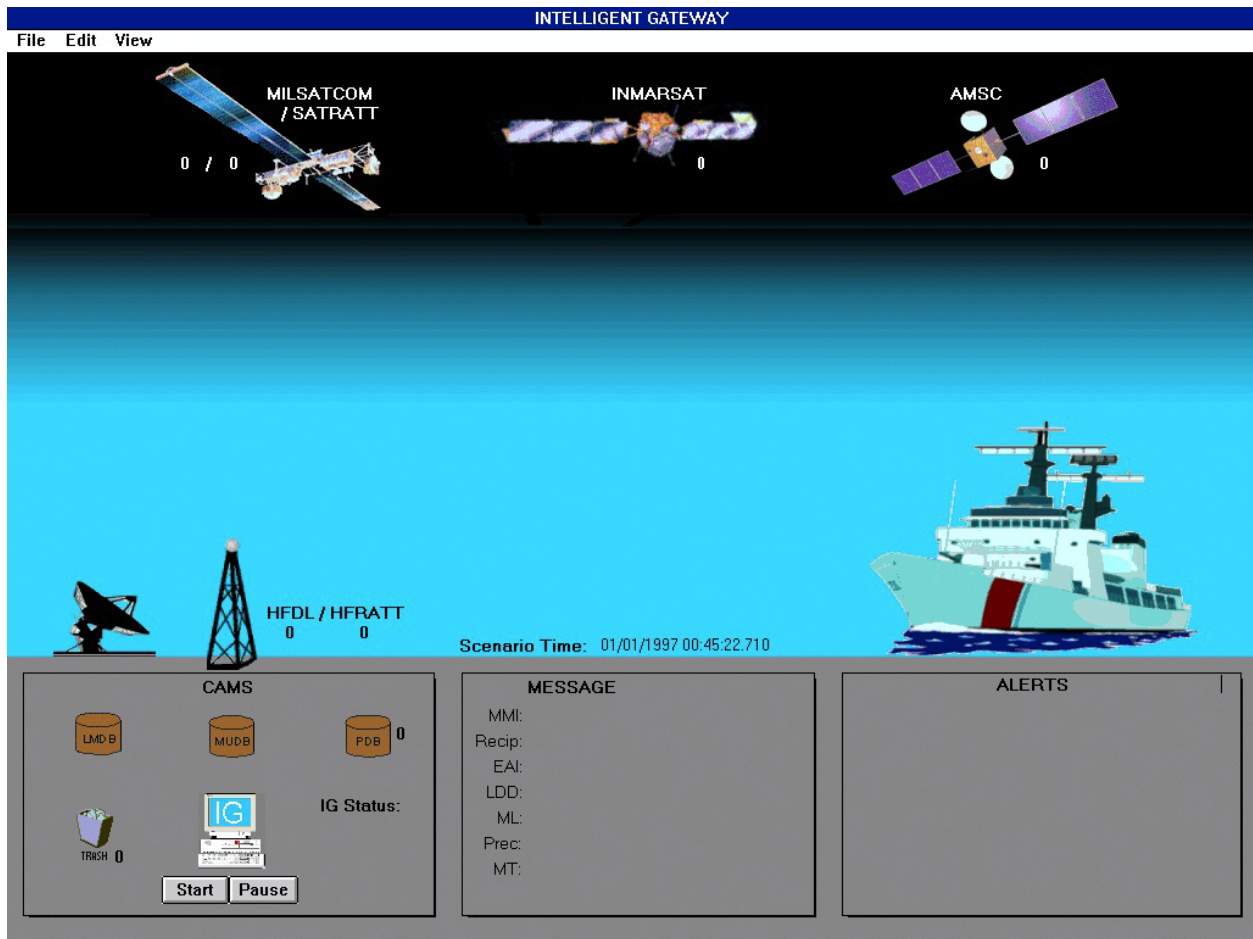
Figure 2-1 Typical INTELLIGENT GATEWAY Display

SECTION 3. SYSTEM REQUIREMENTS

3.1   Minimum Hardware Requirements

- IBM PC compatible (PENTIUM 120 or higher)

- One 3.5" Floppy Disk Drive, 1.4 Mbytes

- Hard Drive (approximately 20 MB disk space required for installation)

- 17" SuperVGA Color Monitor capable of 1024 x 768 resolution and 16 bit color.

3.2   Operating System Requirements

- MS Windows® 3.1, MS Windows® 95, or MS Windows® NT

- ODBC support with MS Access 2.0 ODBC driver

3.3   Software Requirements

- LEVEL5 OBJECT Professional Release 3.6 with Add-On Packs 1 and 2

  or

- LEVEL5 Agent (Run only) with Add-On Packs 1 and 2

- INTELLIGENT GATEWAY Application and IGMSG database.

SECTION 4. GETTING STARTED

4.1 Making a Backup Copy

It is recommended that you make a backup copy of the INTELLIGENT GATEWAY disk. To make your backup copies, simply copy all files from the INTELLIGENT GATEWAY disk to your blank disk using the DOS Backup A: B: command. If you only have one disk drive, follow the screen prompts after you have started the copy procedure.

4.2 Installation Instructions

To install the INTELLIGENT GATEWAY on your hard drive you must first be running under Windows 3.1®, Windows 95®, or Windows NT®. LEVEL5 Object must be installed first. Refer to Section 2 of the LEVEL5 Object for Windows Getting Started Guide Release 3.6 for the installation instructions. If this will be a run-only installation you should unselect the LEVEL5 Object application program and select the LEVEL5 Agent (run-only) program. Both add-on packs must be installed.

To install the INTELLIGENT GATEWAY application, first create a directory on your C drive titled "IG". Next copy the IG.zip file to this directory. Set your current directory to the IG directory and uncompress the file by typing "A:\pkunzip ig.zip" at the prompt. The file ig.knb and any default databases with the .mdb extension should now be in the directory.

Next, create a new program group titled IG, and open it. Then create a new program item titled "INTELLIGENT GATEWAY" and enter "C:\L5O36STD\L5RO.EXE ig.knb" for the command.

The next step is to add the MS Access 2.0 ODBC driver to the system. To do this you must have the Microsoft Office Professional Version 4.3 CD-ROM. Run Setup from the CD-ROM and if MS Office was previously installed, then select the Add/Remove button, otherwise select the Install button. After clicking on the appropriate button, highlight the "Converters, Filters, and Data Access" line and click the Change Option button. Then highlight the Access 2.0 Driver and click the OK button. Click OK on the next screen and then click Continue on the last screen and follow the prompts until the driver is successfully installed.

Once the driver is installed, the data source name must be configured. The data source is the name that is made visible to other applications (in this case the IG application) that points to the database file (igmsg.mdb). To do this, go to the control panels and double click on the ODBC control panel. Click on the Add button and highlight the "Microsoft Access Driver" line. Click the OK button.

The following screen is where the data source name is set and configured to point to the IG message database. In the space for Data Source Name enter "IGMSG", there is no need to enter a value in the Description field. Next click on the Select button and navigate to the C:\IG directory. Select the IG message database (typically titled "igmsg.mdb") and click OK. Click OK on the

ODBC Microsoft Access 2.0 Setup screen and Close on the Data Sources screen. The IG message database is now properly configured to work with ODBC.

4.3 Starting the INTELLIGENT GATEWAY

INTELLIGENT GATEWAY should be run from your hard drive. If you have performed the installation procedures provided in paragraph 4.2, you are now ready to startup and use the INTELLIGENT GATEWAY. The installation steps created a new directory on your hard drive named IG; all INTELLIGENT GATEWAY application and data files are located in this directory. Perform the following procedure to access this new directory and start the INTELLIGENT GATEWAY application.

- Start your computer.

- Ensure you are running under MS Windows® 3.1, MS, Windows® 95, or MS Windows® NT.

- Double click on the program group IG.

- Double click on the program item INTELLIGENT GATEWAY to start the application.

The INTELLIGENT GATEWAY title screen should appear briefly. If INTELLIGENT GATEWAY main menu does not appear, it is possible that the INTELLIGENT GATEWAY application did not correctly load during the Install procedure or the igmsg.mdb database is not setup via ODBC correctly. If this is the case, you should re-install the INTELLIGENT GATEWAY following the procedures contained in paragraph 4.2.

4.4   Exiting the INTELLIGENT GATEWAY

To exit INTELLIGENT GATEWAY at any stage, select FILE|EXIT from the left hand corner pull-down menu.

SECTION 5. USING INTELLIGENT GATEWAY

5.1   Introduction

This section gives you the information needed to use the INTELLIGENT GATEWAY application by walking through the menu items and describing their actions. The FILE, EDIT, and VIEW menus are discussed below.

5.2   The FILE Menu

The FILE menu is used to start a scenario, pause a scenario, or stop a scenario. Also, the FILE menu is used to configure the INTELLIGENT GATEWAY and exit the application.

To start a scenario, select FILE|Start Scenario. This will initiate the scenario by reading in the first message and processing it through the rules until a transmission mode has been selected. This sequence repeats until all the messages have been processed. To pause a scenario in progress, select FILE|Pause. The scenario will pause after the next message until the user selects FILE|Start Scenario again. The FILE|Stop Scenario menu item ends the scenario after the next message is processed.

FILE|Configure brings up a dialog to set user options. The Use Random Time option enables the user to generate random date-time-groups (EAI) for messages. The random times are based on the current time and precedence of the message. The Show ODBC Errors option is for debugging purposes and should normally remain unchecked. The Show History File Errors is also for debugging purporses and should normally remain unchecked. The Batch Flash, ECP, and Critic option is provided to turn off the batching of messages with Flash, ECP, and Critic messages. This option is normally left enabled for rules processing according to the latest specifications.

The FILE|Exit menu item quits the INTELLIGENT GATEWAY application.

File   Edit   View
Start Scenario
Pause Scenario
Stop Scenario
Configure
Exit

The FILE Menu Figure 5.2-1

5.3   The EDIT Menu

The EDIT menu (Figure 5.3-1) is used to edit the values of the Local Media Database, Mobile User Database as well as the values of messages stored in the external IG message database.

To edit the values of the MUDB, select the EDIT|MUDB menu item. The Edit MUDB screen (Figure 5.3-2) will appear displaying the current values of the database. To edit the values of the LMDB, select the EDIT|LMDB menu item. The Edit LMDB screen (Figure 5.3-3) will appear displaying the current values of the database. The values are editable within the table and are updated upon entry. These values are not saved upon exiting and are valid until overwritten by the user or by an update message from the database (i.e. UPD message).

To create or modify an IG message, select the EDIT|Edit Messages menu item. The Edit Message window (Figure 5.3-4) will appear with all of the IG Messages contained within a scrolling list. The window contains buttons for NEW, SAVE, DELETE, and CLOSE. The new button creates a new message with default values. These values should be overwritten with the values for the message to be created. The SAVE button will save the message to the IGMSG database. The DELETE button deletes the highlighted message from the database. The CLOSE button closes the window.

To create or modify a LMDB or MUDB message, choose the appropriate message category from the Select Message Category menu item. The window will change to display the appropriate fields for the type of message chosen and all the messages of that type will be displayed within the scrolling list.
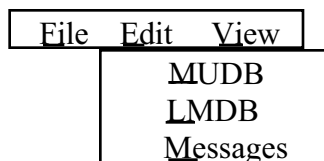
```
 File    Edit    View
            MUDB
            LMDB
            Messages
```

Figure 5.3-1 The EDIT Menu

Mobile User Data Base

Ship Name	OR Name	Hull Number	HF Data Rate	AMSC Status	INMARSAT Status	MILSATCOM Status	MILSATCOM Data Rate	AMSC Data Rate	INMARSAT Data Rate	RATT Option	SAT RATT Data Rate	Time To Inport
	Dallas	716	2400	FALSE	FALSE	FALSE	9600	4800	64000	None	300	
Polar Star	Polar Star	10	2400	TRUE	TRUE	TRUE	9600	4800	64000	HFDL	300	
Dauntless	Dauntless	624	2400	TRUE	TRUE	TRUE	9600	4800	64000	HFDL	300	
Juniper	Juniper	201	75	TRUE	TRUE	FALSE	9600	4800	64000	HFRATT	300	
Mustang	Mustang	1310	2400	TRUE	TRUE	FALSE	9600	4800	64000	SATRATT	300	
Mohawk	Mohawk	913	2400	TRUE	TRUE	TRUE	9600	4800	64000	HFDL	300	

Figure 5.3-2 The Edit Mobile User Data Base Display

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Figure 5.3-3 The Edit Local Media Data Base Display

Figure 5.3-4 The Edit Message Display

5.4   The VIEW Menu

The VIEW menu (Figure 5.4-1) allows the user to view the history (or log file) to review the decisions made by the INTELLIGENT GATEWAY. Selection of this menu item launches the Write application with the "iglog.txt" document.
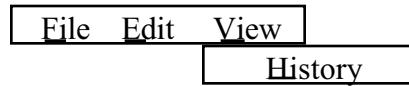
```
File   Edit   View
                History
```

Figure 5.4-1 The VIEW Menu