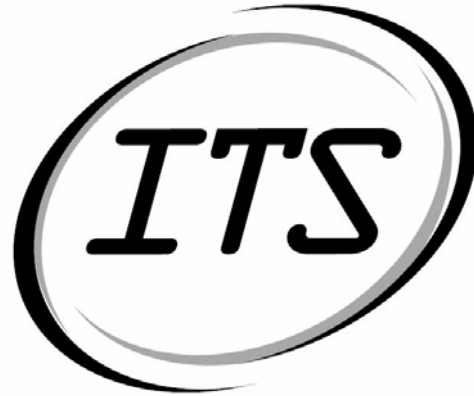


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ITS Graphical Report Maker
Operations Manual



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Team JACT Software
RIT Software Engineering Department

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Revision History

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1	Introduction.....	4
1.1	Purpose.....	4
1.2	Audience	4
1.3	Glossary	4
2	System Capabilities.....	5
2.1	Purpose.....	5
2.2	High-Level Description	5
3	Description of System Functions.....	5
3.1	Graphical User Interface.....	5
3.1.1	Client Startup and Login.....	5
3.1.2	Client Shutdown and Logout	6
3.1.3	Create a Composite Element or Report	6
3.1.4	Preview a Report.....	7
3.1.5	Delete a Composite Element or Report	7
3.1.6	Execute a Report.....	7
3.1.7	Export Report Results.....	7
3.2	Console User Interface.....	7
3.2.1	Client Startup and Login.....	7
3.2.2	Connecting to Server.....	8
3.2.3	Client Logout and Shutdown	8
3.2.4	Execute a Report.....	8
3.2.5	Export Report Results.....	8
3.2.6	Display Server Version.....	8
3.2.7	Display List of Executables	8
3.2.8	Display Help	8
4	Operating Instructions.....	9
4.1	Server Startup.....	9
4.2	Server Shutdown and Restart.....	9
5	Error Messages and Handling.....	9
5.1	Error Messages.....	9
5.1.1	Remote Communication Failure	9
5.1.2	Invalid Data.....	9
5.1.3	Database Connection Error	10
5.1.4	FTP Error	10
6	Appendix A.....	11
6.1	Create Rover Dialog	11
6.2	Create Operation Dialog	12
6.3	Create Generator Dialog.....	13

1 Introduction

1.1 Purpose

The purpose of this document is to provide instruction on the use of the Graphical Report Maker (GRM). It will give detailed instructions on all aspects of GRM functionality. This manual may be used as a reference guide.

1.2 Audience

- Emilio DiLorenzo, ITS, Director of Technical Support Services
- Mark J. Kimble, ITS, System Management and Tools Technical Support Services
- Patrick Saeva, ITS, Program Manager
- Dr. James Vallino, Faculty Advisor
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- Adam Buehler, Development Team
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1.3 Glossary

Console User Interface - The interface utilized by an external program or user using only text.

CUI - See Console User Interface

Element - Building block for defining the characteristics of an executable Report

Element Selection List - List that will contain all of the base and saved Elements within the system.

Generator - An Element with more than one input, and no output. Used to create graphs and tabular reports.

Graphical Report Maker - The name of this software project.

Graphical User Interface - The interface used by a human alone to build the report for execution.

GRM - See Graphical Report Maker

GUI - See Graphical User Interface

Operation - An Element with one or more inputs and one or more outputs. Used to perform manipulations on data.

Report - An Element with no inputs or outputs. Executing a Report Element creates a report.

Rover - An Element with no inputs and one or more outputs. Used to retrieve data from the database.

2 System Capabilities

2.1 Purpose

The ITS GRM is designed to aid in the analysis of collected network data. It is able to retrieve information from a database, perform statistical analysis, and generate graphs. These graphs can be placed in ITS managed websites to provide around the clock network data over the internet. The GRM itself is also available over the internet through a downloadable Java client that is spawned from a website.

2.2 High-Level Description

The main goal of an end-user of the Graphical Report Maker system is to execute a report. A report consists of database queries, statistical analysis over the gathered data, and the information needed to graph the results. The statistical analysis equations are built and edited graphically. After executing a report, the results of that report can be displayed on the client and exported to an external file. This file can reside on the local machine, or through ftp, reside on a remote machine, such as a web server. Reports can also be saved into, or removed from, a database which can be loaded into the server after a restart.

3 Description of System Functions

3.1 Graphical User Interface

3.1.1 Client Startup and Login

To login into the GRM system:

1. Navigate to the ITS GRM client launch website.
2. Enter username/password.
3. Select Login.

If the login is was successful, the Java client interface will load on your computer.

3.1.2 Client Shutdown and Logout

To shut down the system:

1. Select 'Exit' from the 'File' menu.

The Java client interface will close, as well as the browser used to launch it

3.1.3 Create a Composite Element or Report

To create a Composite Element:

1. Select 'New' from the 'File menu.
2. Place an Element on the drawing frame
To place a Basic Element on the drawing frame:
 - a. Select 'Create Basic Element' from the 'Elements' menu.
 - b. Enter the desired Element name and type.
 - c. Select 'OK' and an attribute dialog will appear.
 - d. Enter the desired values into the dialog, overwriting the default ones (Details on the fields of particular dialog can be found in Appendix A).
 - e. Select 'Insert' and the new Element will be displayed on the drawing frame.To place a Composite Element on the drawing frame:
 - a. Select 'InsertComposite' from the 'Elements' menu.
 - b. Select the desired Element from the list and it will be placed on the drawing frame.
3. Place as many Elements as desired.
4. Place connections between the Elements
To connect two elements:
 - a. Select the 'Connect' tool from the tool bar
 - b. Select the starting Element and drag the mouse pointer to the destination Element and release. A dialog will be displayed.
 - c. Select which output and input from each Element need to be connected to each other.
 - d. Select 'Make Connect' and an arrow representing the connection will be placed on the drawing frame.To delete a connection:
 - a. Select the connection to be removed.
 - b. Press 'Delete' on the keyboard and the line will be removed.
5. Select 'Save Composite' from the 'Elements' menu.
6. Enter the desired name for the new Composite.
7. Select 'OK' and the drawing frame will close.

A Report, instead of a Composite Element, is created if the saved Element has no unattached inputs or outputs.

3.1.4 Preview a Report

Previewing a Report can only happen during its creation. To preview an element:

1. Select 'Preview Element' from the 'Elements' menu. The system will display the result of executing the report as is.

If a non-Report Composite is previewed, a dialog giving its type (Rover, Operation, Generator) is displayed.

3.1.5 Delete a Composite Element or Report

To delete a Composite Element or Report permanently:

1. Select 'Delete Element' from the 'Elements' menu.
2. Select the desired Element from the dialog shown.
3. Select 'OK' and the Element will be removed permanently from the server.

3.1.6 Execute a Report

To execute a report that has been created and saved:

1. Select 'Execute Report' from the 'Elements' menu.
2. Select the desired Report from the dialog
3. Select 'Execute'.

Results will be displayed once the Report has finished execution in the format as dictated by the Report's Generator.

3.1.7 Export Report Results

An export can only take place immediately after a successful execution of a Report. To export Report results:

1. Select 'Export' on the Report result window. A dialog will appear.
2. Select either a 'Local' or 'FTP' export.
To export locally:
 - a. Enter the desired path and file names.
 - b. Select 'OK'.To export using FTP:
 - a. Enter the desired hostname, path and file names, username, and password.
 - b. Select 'OK'

The results are now saved to the desired location.

3.2 Console User Interface

3.2.1 Client Startup and Login

To start the console interface:

1. Enter '`java edu.rit.se.grm.client.GRMConsole`' from a command line while in the GRM directory.

3.2.2 Connecting to Server

To connect to the GRM Server

1. Enter 'connect <server>' where '<server>' is the hostname of the computer running the GRM Server.

3.2.3 Client Logout and Shutdown

To logout from the GRM Server:

1. Enter 'disconnect'.

To close the console interface:

1. Enter 'quit' or 'exit'.

3.2.4 Execute a Report

To execute a report:

1. Enter 'execute <reportID>' where '<reportID>' is the unique ID of the report to be executed.

3.2.5 Export Report Results

An export can only take place immediately after a successful execution of a Report. To export Report results:

1. Enter 'FTP' or 'Local' to indicate an ftp export or a local file system export.

To export locally:

- a. Enter the desired path and file names.

To export using FTP:

- a. Enter hostname.
- b. Enter username.
- c. Enter password.
- d. Enter full path and file name.

The results are now saved to the desired location.

3.2.6 Display Server Version

To display the version number of the GRM Server being run:

1. Enter 'version'.

3.2.7 Display List of Executables

To display a list of all the executable reports currently available:

1. Enter 'list'

3.2.8 Display Help

To display the help menu:

1. Enter 'help'

4 Operating Instructions

4.1 Server Startup

The server is started by executing the GRM Server Java class file using a command line or script to execute:

1. Enter 'java edu.rit.se.grm.server.GRMServer <boolean>' where '<boolean>' is "true" if the server should display list of the available fields from the ITS database, and is "false" if it should not.

This can only be called from the root directory of the GRM package.

4.2 Server Shutdown and Restart

The server can only be shut down using the provided console interface To shut down the server:

1. Enter 'shutdown'

5 Error Messages and Handling

5.1 Error Messages

5.1.1 Remote Communication Failure

The "Remote Communication Failure" error message can be displayed because of the network communication between the client and the RMI server was lost. This could be caused by a several reasons. During runtime, the server can encounter some fatal error and it would be forced to shut down. The client therefore will be looking for the failed server, which would result in a communication failure. The physical network communication between the client and the server can be lost due to external reasons. The GUI client application will be forced to shutdown and the user should try to restart the application after the communication problem is resolved.

5.1.2 Invalid Data

The "Invalid Data" error can be displayed if the GUI Client has sent invalid data to the server. The GRM Gateway will perform consistency check and elements integrity check upon any request from the client. These checks will prevent any client application from entering inappropriate input data to the server. If such error was caught by the server's gateway, the request from the client's application will be discarded.

5.1.3 Database Connection Error

The “Database Connection Error” error can be displayed if the database is currently being overloaded or it’s unavailable at the time. The error will not cause any runtime error on server nor on the client.

5.1.4 FTP Error

The “FTP Error” error occurs anytime there is a problem with the FTP protocol. Details will accompany any errors that are thrown so the problem may be addressed.

6 Appendix A

6.1 Create Rover Dialog

Database Parameters

Source – Use the drop-down box to select the value for the ‘src’ attribute in the SQL query. If the desired value is not in the drop down, type it into the text box.

Category – Use the drop-down box to select the value for the ‘cat’ attribute in the SQL query. If the desired value is not in the drop down, type it into the text box.

Parameter – Use the drop-down box to select the value for the ‘para’ attribute in the SQL query. If the desired value is not in the drop down, type it into the text box.

Instance – Use the drop-down box to select the value for the ‘inst’ attribute in the SQL query. If the desired value is not in the drop down, type it into the text box.

Time Extraction Options

Start Time – The top radio button will allow the entry of a static start time. The field lay out is YYYY-MM-DD hh:mm:ss. The lower radio button will allow the setting of a dynamic start time. Specify the value in the text box and the units using the drop-down box

End Time – The top radio button will allow the entry of a static end time. The field lay out is YYYY-MM-DD hh:mm:ss. The lower radio button will allow the setting of a dynamic end time. Select which criteria are desired from the drop-down box.

field lay out is YYYY-MM-DD hh:mm:ss. The lower radio button will allow the setting of a dynamic end time. Select which criteria are desired from the drop-down box.

6.2 Create Operation Dialog

Attribute	Value
TimeInterval	0
TimeAllowance	0

Attribute

These are the attributes that are associated with this Operation. At this time, only three are implemented:

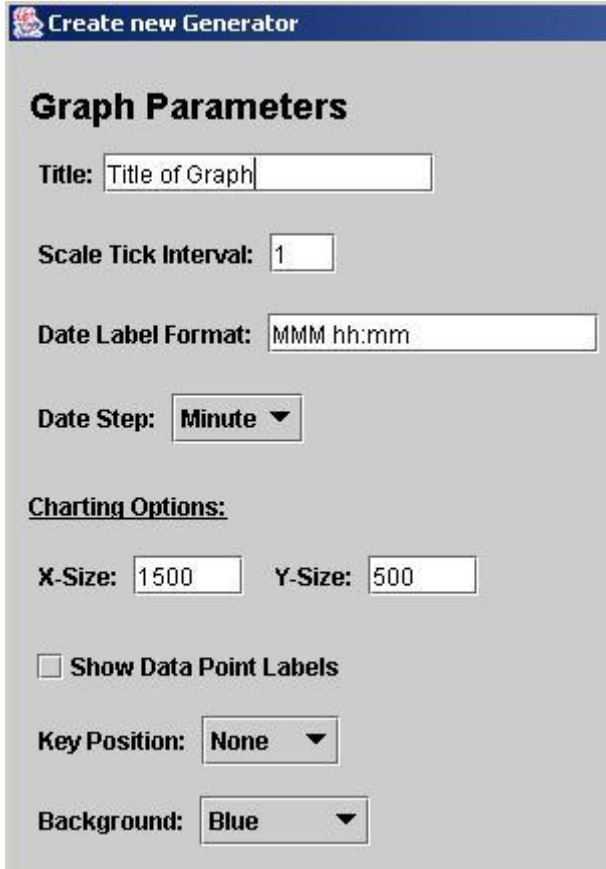
TimeInterval - This attribute specifies the desired amount of time between data points for the TimeFilterOperation and the TimeCorrelaterOperation in milliseconds. For example, set to '1000' for a second interval or '60000' for a minute.

TimeAllowance - This attribute is associated only with the TimeFilterOperation. It represents the amount of flexibility allowed, in milliseconds, when reassigning a data point to a clean timestamp. For example, if TimeInterval is set to '60000' (1 minute), a TimeAllowance of '3000' will take any data point with 3 seconds of the minute mark and use to represent the data at the minute.

MultipleApplication – This boolean value is in all mathematical operations. It determines how the operation should handle the inputs it is given. For example, if it is set to 'true' for an AddOperation, the operation will iterate through the data values, adding any data points that have matching timestamps. If set to 'false', the operation will add all the data points in all the data sets into a single value, regardless of timestamp. This single value cannot be passed into anymore operations and is only useful in tabular reports.

Value – The value assigned to the corresponding Attribute.

6.3 Create Generator Dialog



Create new Generator

Graph Parameters

Title:

Scale Tick Interval:

Date Label Format:

Date Step:

Charting Options:

X-Size: Y-Size:

Show Data Point Labels

Key Position:

Background:

Title – The title of the graph.

Scale Tick Interval – Number of units between each tick mark on the graph's x-axis.

Date Label Format – Specify the format for the label on the x-axis.

Date Step – Specifies the unit for the Scale Tick Interval.

Charting Options

X-Size – Width of the image produced in pixels.

Y-Size – Height of the image produced in pixels.

Show Data Point Labels – Check to display the values of the data points on the graph.

Key Position – Position of the legend for the graph, with respect to the graph.

Background – Color of the background of the graph.

X-Axis Parameters:

Label:

Color:

X-Min: X-Max:

X-Grid X-Log Scaling

Y-Axis Parameters:

Label:

Color:

Y-Min: Y-Max:

Y-Grid Y-Log Scaling

X-Axis Parameters

- Label** – The label for the x-axis.
- Color** – Changes the color of the x-axis.
- X-Min** – the minimum value on the x-axis.
- X-Max** – The maximum value on the x-axis.
- X-Grid** – Check for gridlines on the graph.
- X-Log Scaling** – Check for logarithmic scaling on the x-axis.

Y-Axis Parameters

- Label** – The label for the y-axis.
- Color** – Changes the color of the y-axis.
- Y-Min** – the minimum value on the y-axis.
- Y-Max** – The maximum value on the y-axis.
- Y-Grid** – Check for gridlines on the graph.
- Y-Log Scaling** – Check for logarithmic scaling on the y-axis.

Data Set Options:

New Data Set Name:

New Data Set Color:

DataSet	Color

Data Set Options

- New Data Set Name** – The name to be assigned to the data set.
- New Data Set Color** – The color for the line that represents the data set on the graph.
- Add Data Set** – Add an expected data set to the graph
- Remove Data Set** – Remove the selected data set from the graph.