Department of Software Engineering **Building 9 # 1590** **Phone: (585) 475-5461**	**Senior Project Proposal** **UNDERGRADUATE**

Project Title:	Graphical Report Maker
Organization:	RIT – ITS Systems Management
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Background Information

ITS' Systems Management is responsible for the generation of real time and historical data, graphs and reports on the capacity, availability and responsiveness (CAR data) of ITS supported services. This data is used to show ITS system performance to customers, support staff and RIT leadership to assist in making technical and business decisions about the supported technology.

ITS uses many commercial off-the-shelf (COTS) software products for the monitoring and data creation on supported systems. Though these products are nearly adequate for technical and engineering staff use, they lack the ability to show system wide status and performance in a method deliverable to end-users and management.

Project Description

ITS has an obligation to collect, analyze and publish data on supported system and service performance. These systems and services are on a variety of platforms. This variety makes it hard to find a "one size fits all" solution for monitoring and managing these systems – let alone reporting on the overall service performance. This has lead to the purchase and development of many disparate COTS packages to monitor and manage these systems. These packages collectively are known as Systems Management tools within ITS.

With the great variety of Systems Management tools lies an inability to show system performance from the perspective of the system – a *system* like *email* for example. The RIT Exchange email system is made up of multiple Windows 2000 front-end and backend servers, running Exchange and the appropriate Web services. There are data stores associated with and connected to the Exchange applications on these servers via fibre channel connections to an EMC Symmetric Storage Area Network (SAN). All of these communicate to each other and the client-end user via network connections which include fiber optic and copper cable through Cisco edge switches, and distribution routers. If RIT management or the end user were to ask "How is email performing?" the answer is the sum of the parts – not just the Exchange application.

No single tool owned by ITS nor available COTS is directly capable of meeting the requirements ITS has for analyzing and communicating this data. The major goal of this project is to develop such a tool set which would allow end users to create a report containing self-selected or canned data elements and presenting them in the manner the user sees fit. The project will be the nuts and bolts of extracting from a database, analyzing with appropriate statistical libraries, and

graphing the data against the appropriate independent variable(s) and publishing to a file and/or the web in a graphical or tabular format.

Technical Constraints & Assumptions

- Generated reports will be displayed in a client web browser

- Report data must be savable (based on permissions?) to the user's local computer or to the server as needed.

- Tabular report data must be savable, exportable and printable in common ASCI data formats (e.g. csv)

- The graphical representation of the report data will be on-screen zoom-able and adjustable in scale. That is to say the end user should be able to select (via the mouse) a certain subset of the graphed data and zoom to that subset's graph.

- The graphs will allow for multiple dependent and independent variables on the two axes. Distinction as to the association of these axes to the graphical representation of the data on the graph shall be by color, data point or line type and shall be configurable by the end user.

- The format of the graph shall be of such that is functionally and esthetically configurable.

- There must be the capability to script or automate each and every function the web tool in order to facilitate the automation of certain repeatable and required reports.

- There should be the capability to save or print the graph or report in certain common formats (e.g. jpeg, bmp etc.).

- Graphical data should have the capability of being indicated on the graph by different colors as represented by certain thresholds and be configurable by the user.

- Common statistical functions as applied to the raw data shall be allowed for and graphed

- Database tables and data will be provided by ITS (most likely mySQL)

- Application Server (Web Server) most likely to be Solaris

- Clients are common clients found on campus (Windows and Macintosh and Unix)

- Certain security policies and guidelines must be adhered to. Further detail as project unfolds in cooperation with the ITS Systems Group

- Certain application and language constraints (based on ITS production support) will be adhered to – though there is flexibility

Project Scope

The goal of this project is to develop a tool set which will allow users to create reports containing self-selected or canned data elements and presenting them in a manner the user sees fit. Reports will be displayed on a web browser.

The project will not include the data gathering or database tools. These are the responsibility if ITS.

Expected Deliverables

Following a Project Management methodology, the team shall follow through with the following phases with the listed deliverables:

1. Analyze Phase
   - o Statement of work
   - o Project schedule
   - o Requirements
   - o Issues log
   - o Phase gate

2. Design Phase
   - o Technical design document
   - o Identify testing methods
   - o Propose design
   - o Phase gates

3. Develop Phase
   - o Operations manual
   - o Phase gates

4. Test Phase
   - o Launch plan
   - o Success failure criterion
   - o UAT
   - o Issues Review
   - o Phase gate

5. Implement Phase
   - o Sign off
   - o Phase Gate / Final presentation