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Analysis and Implementation of a Financial Budgeting System in a Corporate Environment

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Department of Information Systems

University of North Carolina Wilmington

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Advisory Committee

Dr. Douglas Kline (Chair)

Mr. George Scott (Client)

Dr. Curry Guinn

Dr. William Sackley

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Introduction

The analysis and implementation of a financial budgeting system in a corporate environment was started at an internship at General Electric-Hitachi (GEH) in the summer of 2007. During this internship the author was introduced to a functional leader, who helped establish the background of this project. The project itself turned out to be a great opportunity to demonstrate the knowledge gained as a Master of Science in Computer Science and Information Systems candidate at the University of North Carolina Wilmington. This project included financial budgeting for an information systems management group with whom the author was employed.

To complete the analysis and implementation of the financial budgeting system, it was necessary to discuss financial budgeting and demonstrate the methods being used to conduct financial budgeting. In an effort to portray financial budgeting in this environment details are discussed about the people involved and the systems that were being used.

There are four main software tools used in the budgeting process at GEH: Excel, MS Access, Oracle ERP and Cognos, with additional tools used to enhance usability. These systems collectively enable the Information Management team to better forecast budgets for projects and there is a detailed process mapped out to demonstrate the sequence in which these tools are used. The final process is broken down into three sections: project opportunity identification, budget approval, and Capital Project Approval. A new tool was designed: a budget worksheet to aid the Project Manager in the project opportunity identification stage. Reports were designed for more accurate representation during the budget approval process which also involves the finance section of the business.

At the proposal of this project there were five hypotheses as to the outcome of the project. These hypotheses were: 1) that changing user procedures will be a difficult task, 2) forecasting will become more accurate due to consistency, 3) there will be a technical challenge with Cognos reporting and 4) the completion of this project will result in better decisions for capital allocation. 5) It was also hypothesized that functional leaders and project managers will save time throughout different stages of the project management lifecycle.

During the implementation of this project, notes were taken on the project management methodology used. This methodology leads to specifications being created for the project. A prototype was created for a budget worksheet. A change control board was implemented for the Cognos team to help organize and prioritize the large amount of reports being requested. Specifications were sent through this change control board to the Cognos reporting team.

To better illustrate the entire process, this paper is broken down into four main sections: the background section, the project description, the author's hypothesis and implementation.

The background section will discuss personal history and how the author became involved in this project. It will give a brief description of the corporation with which he interned and explain financial budgeting. The author brings this section to a close by discussing how financial budgeting is done at the corporation.

The project description section describes the project and the motivation for the project. In this section the author opens with a system overview and identifies specific deliverables. A project plan is created to complete this project, and the author identifies areas in which he expects new knowledge to be gained. This section closes with his expected outcomes for the project.

The expected outcomes lead the reader into the hypothesis section, where the author identifies areas in which potential gains may be made and potential problems may occur.

The next and final section is the implementation section, where a project plan is discussed followed by the system design and analysis. The author then reviews his hypothesis and gives some comments about what the future holds for this project.

Background

Personal History

In the summer of 2007, I accepted an internship in the Information Management Leadership Program (IMLP) at GE-Hitachi (GEH). During the summer, I worked on various projects and got to know George Scott, Information Management Leader. In August, I was exploring different topic options for my capstone project. George knew that the financial budgeting process at GEH had inconsistencies and was very time consuming.

Through discussion with George Scott and Dr. Douglas Kline, I recognized that this project interested me in several ways. First, it included both Finance and Information Systems topics which aligned with my B.S. concentrations. Second, it would give me an opportunity to manage an information systems project. Third, I would be able to learn the thorough project management methodology at GEH. Finally, I would be able to create value for GEH by implementing a solution to a business need.

I chose my committee to complement the project. The committee consists of:

- Dr. Douglas Kline, Assoc. Prof. of Information Systems (chair)
- Dr. Curry Guinn, Asst. Prof of Computer Science
- Dr. William Sackley, Assoc. Dean, Cameron School of Business
- George Scott, Information Management Leader, GE-Hitachi

Company Description

General Electric Company (GE) is a top-ranked company on the Dow Jones Industrial Index. It is one of the only companies today that was also included on the original (stock) index in 1896. GE focuses on marketing, manufacturing and utilizing products that relate to electricity. At the time of this paper, the company has a market value of approximately $398.27 billion. General Electric Company is a conglomerate of many different businesses and products. The high-level organization chart can be found in Appendix A.

These different businesses are:

- GE Commercial Finance
    - President: Michael A. Gaudino
    - 2007 Revenue: $34.4billion
    - Number of Employees ~28,500
- GE Healthcare
    - President and CEO: Joseph M. Hogan
    - 2007 Revenue: $17 billion
    - Number of Employees ~47,000
- GE Industrial
    - President and CEO: Lloyd G. Trotter
    - 2007 Revenue: $17.7 billion
    - Number of Employees ~70,000
- GE Money
    - President and CEO: William H. Cary
    - 2007 Revenue: $25 billion
    - Number of Employees ~51,000
- NBC Universal
    - President and CEO: Jeffrey A. Zucker
    - 2007 Revenue: $15.4 billion
    - Number of Employees ~15,500
- GE Infrastructure
    - President and CEO: John G. Rice

- 2007 Revenue: $57.9 billion
- Number of Employees ~106,000

GE Infrastructure is made up of seven different businesses, which include:

- Aviation
  - President and CEO: Scott C. Donnelly
- Commercial Aviation Services
  - President and CEO: Henry A. Hubschman
- Oil & Gas
  - President and CEO: Claudi Santiago
- Transportation
  - President and CEO: John M. Dineen
- Water and Process Technologies
  - President and CEO: Jeff R. Garwood
- Energy Financial Services
  - President and CEO: Alex Urquhart
- Energy
  - President and CEO: John Krenicki Jr.

Wilmington, NC is the location for two businesses within GE Infrastructure: Aviation and Energy. GE-Hitachi (GEH) is a subdivision of GE Energy, and its headquarters is located in Wilmington. One section of GEH is New Plant Projects (NPP) and within that section is a unit called Information Management.

Information Management (IM) is a work group that focuses on the business process as well as the control, distribution and availability of the core information for GEH. The IM area has one executive leader and five functional leaders who oversee many project managers.

Financial Budgeting

This project involves financial budgeting, which is needed for capital allocation. Capital allocation will be described first, followed by Financial Budgeting, and why these are important to an organization.

Capital allocation is the allocation of working capital to investment options to maximize return. Given many projects that could be funded, managers must select a portfolio of projects that will provide the highest return.

Capital allocation is complex and subtle. The value of each project is generally evaluated with financial metrics such as internal rate of return (IRR), net present value (NPV), or the equivalent annuity method (EAM). In addition to these quantitative measures, a manager must take into account many qualitative aspects. Furthermore, external forces (like current political issues), the mission of the business, and future possibilities must be considered.

Financial budgeting is the process that supplies information to the capital allocation decisions. Financial budgeting involves capturing forecasted costs at a detailed level. Detailed costs are aggregated from project-level to company level. These costs are the basis of NPV and IRR. They are also used for budget approval, day-to-day resource allocation, and for budget management during project implementation.

Financial budgeting is important as the basis of capital allocation, which determines shareholder value. Inaccurate financial budgeting leads to sub-optimal capital allocation. Without accurate financial budgeting, actual costs at project implementation vary greatly from budgeted amounts. This leads to management issues and potentially to project failures. Furthermore, management of an inaccurate budget is time-consuming. With accurate financial budgeting information, managers can focus on more value-added activities.

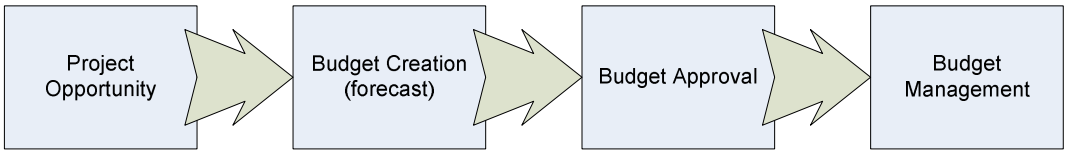


Figure 1

The financial budgeting process is shown in Figure 1. First, a project opportunity is identified informally. With organization support, the project will move forward to budget creation. This involves detailed itemization of tasks and resources. After completion, the budget must go through an approval process. This typically is done at multiple levels at several levels of aggregation: project level, functional level, and executive level. Once approved, the project moves to implementation, where the budget must be managed. This involves comparing actual to budgeted amounts, and adjusting the budget through the project life cycle.

Financial Budgeting at GE

<u>People</u>

The main people involved in financial budgeting at GEH are:

- Project Manager
- Functional Leader
- Executive Leader
- General Manager

Project Managers are directly responsible for managing individual projects. They estimate the resources needed for the successful completion of the project. This includes *when* the resource is needed as well as *how much* of the resource is needed. The estimated resources are the basis of the budget for the project, which they provide to their Functional Leader.

Functional Leaders are responsible for the projects of multiple project managers. They oversee the project managers and allocate budgets for projects under them. They take the budgets provided by the project managers, aggregate them, and provide them to their Executive Leader.

Executive Leaders manage multiple functional leaders. Executive leaders and General Managers are concerned with capital allocation, choosing which projects are funded, and which are not. Their strategic vision is expressed in the portfolio of projects funded. The General Manager (GM) is responsible for completing the projects of the entire unit (business section). The GM often works directly for the Chief Executive Officer (CEO) or President of the business. The GM's signature is required on any project that is to be done, or a budget will not be created for that project, and because all employees work for the GM, the GM must approve an allotment of resources to the project in order for the project to be completed. The GM's goal (on a high level) is to create a profit for the business, and ensure that the business remains profitable throughout its duration. In order to do that, the GM must expect projects to be completed timely and must be confident that the budgets given are accurate. The General Manager oversees a large number of projects and needs to ensure that all are accounted for.

This project specifically deals with the Information Management (IM) area. In this context the Functional Leader is the IM Leader, and the Executive Leader is the Chief Information Officer (CIO).

Systems

When this project was started there were four different software tools being used to complete the financial budgeting process. These tools were an Excel spreadsheet, IProGEct, Oracle ERP and Cognos. The general process is shown in Figure 2.

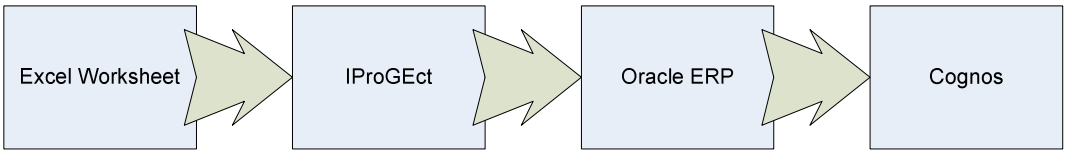


Figure 2

The Excel Spreadsheet is a tool created by an IM Leader. The spreadsheet is to help track the budgets for which the IM Leader is responsible. This spreadsheet is self-created to aid the IM Leader throughout the year, with the status of the IM Leader's budgets. The Excel Spreadsheet is not regulated or standardized by the company and methods differ from IM Leader to IM Leader. Figure 3 represents an example of what one IM Leader's Spreadsheet may look like.

Figure 3 represents an actual example that has been slightly altered to insure privacy and confidentiality.

			2007 Costs											
				Q3			Q4					2007 Total		
Project	Description	Go Live	Jul	Aug	Sep	Oct	Nov	Dec	Cap	Exp	Total			
Programs														
Project 1		**Total -**	**$ 135.0**	**$ 128.0**	**$ 264.3**	**$ 175.0**	**$ 104.6**	**$ 98.6**	**$ 283.6**	**$ 256.0**	**$ 416.6**			
Task Group 1	Contracted				$ 33.6	$ 40.3	$ 26.9	$ 26.9	$ 63.8	$ 63.8	$ 127.7			
Task Group 2	Designer Software				$ 96.7	$ 6.7	$ 6.7	$ 6.7	$ 96.7	$ 20.2	$ 116.9			
Task Group 3										$ -	$ -			
Task Group 4	HW - Design, Build, Run		$ 123.0	$ 123.0	$ 123.0	$ 123.0	$ 60.0	$ 60.0	$ 123.0	$ 123.0	$ 123.0			
Task Group 5	_HW - Design, Build,								$ -		$ -			
T&L			$ 12.0	$ 5.0	$ 11.0	$ 5.0	$ 11.0	$ 5.0		$ 49.0	$ 49.0			
Project 2			**$ 32.0**	**$ 32.0**	**$ 32.7**	**$ 68.5**	**$ 68.5**	**$ 87.2**	**$ 160.5**	**$ 160.5**	**$ 320.9**			
Deployment			$ 32.0	$ 32.0	$ 32.7	$ 68.5	$ 68.5	$ 87.2	$ 160.5	$ 160.5	$ 320.9			
Task Group 1														
Customer Deliverables / Training														
Project 3			**$ -**	**$ -**	**$ -**	**$ -**	**$ 13.4**	**$ 13.4**	**$ 26.9**	**$ -**	**$ 26.9**			
Area 1							$ 13.4	$ 13.4	$ 26.9	$ -	$ 26.9			
Area 2														
Area 3														
Project 4				**$ -**	**$ -**	**$ -**	**$ -**	**$ 11.0**	**$ -**	**$ 11.0**	**$ 11.0**			
Software	Reference Data /									$ -	$ -			
Design and Development								$ 11.0		$ 11.0	$ 11.0			
Interfacing										$ -	$ -			

Figure 3

IproGEct is the tool used to input the information from the Excel Spreadsheet into Oracle ERP (will be discussed next). Figures 4, 5, and 6 give examples of forms within the IProGEct tool. IProGEct is a tool created that interfaces directly with the ERP system. It is very similar to an Excel spreadsheet, but has functionality and rules that provide a strict guide to entering the budgets and forecasts accurately. IProGEct is also used to limit users from being able to enter corrupt data. It prevents the wrong data from being entered by allowing users to enter data only in specified fields. There is no requirement for an IM Leader to use IproGEct, but it is currently being the standard tool.

Project Number/Name:102222/45678-KD23D																			
Project Manager: Renninger, Ryan M.																			
For the Period as of : 03-JUN-07																			
			Summary										Forecast						
					Current Forecast												Oct-07		
			Actuals for the Period		ETC		EAC		V Prev EAC		V to As-Sold Total			Actuals		Forecast		Actua	
Task Name	Task Number	Resource	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Open Commitments	Qty	Amt	Qty	Amt	Qty#	
PL&M																			
Contracted Services	2	Retainers & Consulting		83,200		41,960		125,160		125,160		125,160							
Variable Cost																			
T&L	1	Travel & Living - Non-Billable		6,752				6,752		6,752		6,752							
Maintenance	5	GEE Assessment				25,000		25,000		25,000		25,000							
TotalPLM				83,200		41,960		125,160		125,160		125,160							
TotalVC				6,752		25,000		31,752		31,752		31,752							
Total Job Cost				89,952		66,960		156,912		156,912		156,912							
CM Hurdle Rate																			

Figure 4

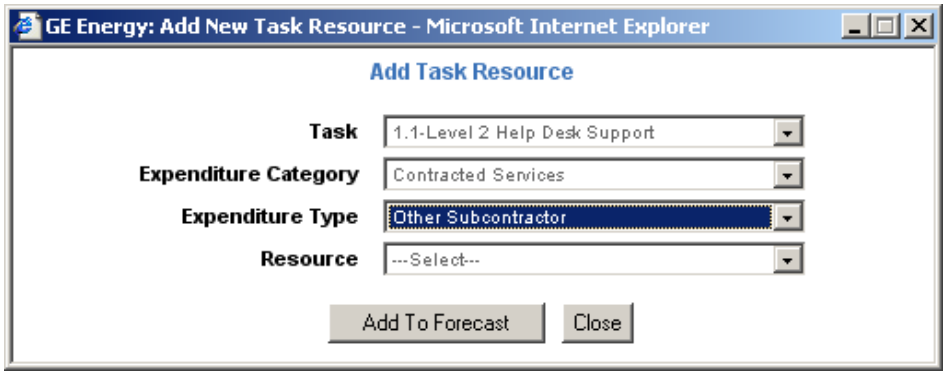


Figure 5

Demonstrated in Figure 5 and Figure 6 are pop-up windows that show when adding a new task or budget line into a project through IproGEct. There are drop-down lists of acceptable responses to each question. Each response has a different meaning or each expenditure category can only be used in a certain way on a project. Entering the wrong information here may result in the purchase order not being created or the recipient not receiving payment as promised.

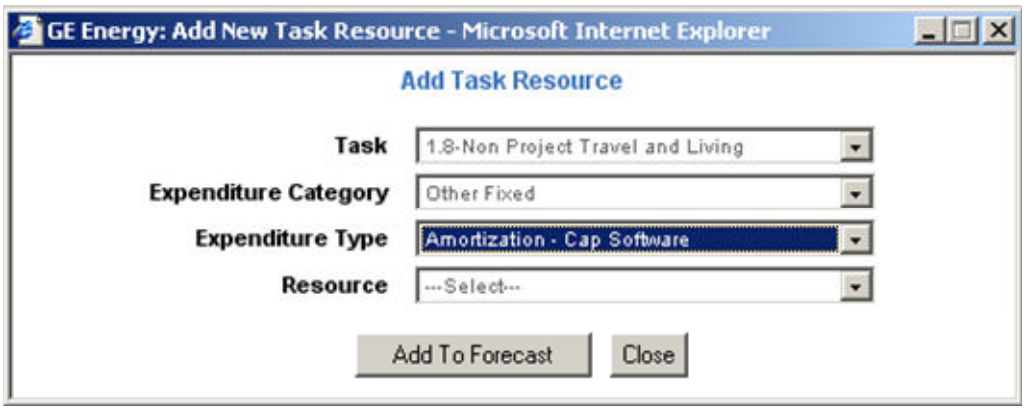


Figure 6

The information entered into IproGEct becomes the baseline budget for the project. The baseline budget stays with the project through its lifecycle. Actual resources needed are compared with the baseline, and budget variances are calculated.

Figure 7 is an example of Oracle ERP. IproGEct provides a user-friendly interface for Oracle ERP. The ERP system is responsible for tracking all costs and budgets for GEH in its entirety. Oracle ERP is a resource tracking and planning tool that incorporates the planning and budgeting with purchasing and procurement. As soon as the budget is placed into Oracle ERP, the budget can be used to procure the resources required to complete the project.

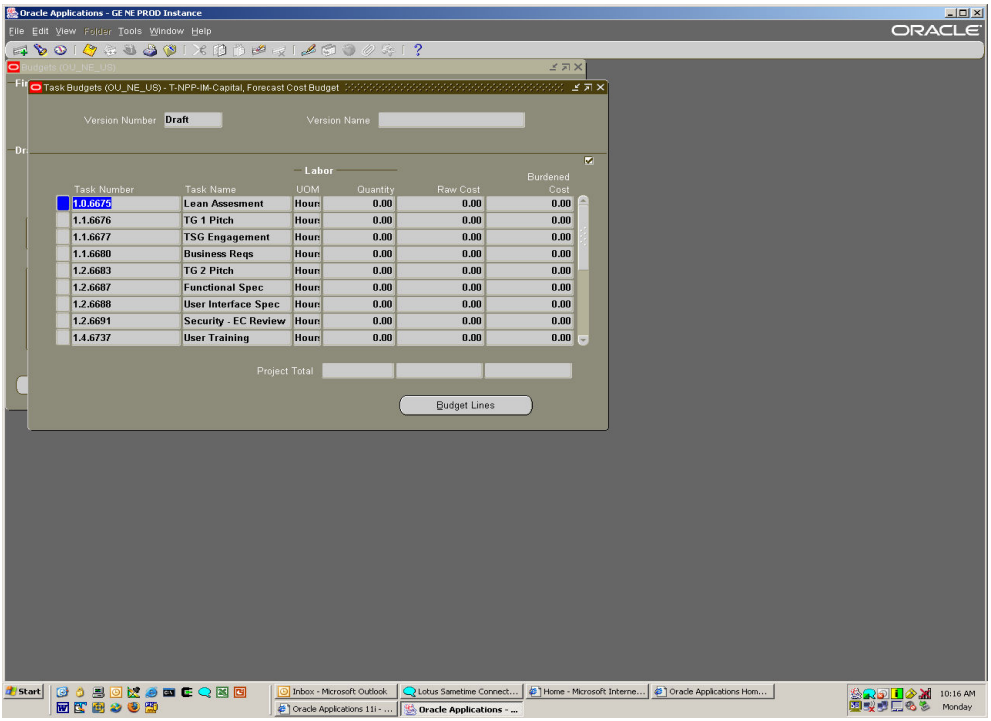


Figure 7

Cognos is an intermediate application that directly retrieves data from Oracle ERP and reports this data in a consistent format. The CIO and IM Leader will be able to obtain print outs, view the reports on the screen, and track the finances of their organization at a glance.

Process

The financial budgeting process at GE had several problems. Specifically, the process was:

- Inconsistent
- Time consuming
- Potentially inaccurate

The financial budgeting process was inconsistent because each project manager and functional leader had their own way of financial budgeting. There was no consistent process defined. Some project managers used project management software such as MS Project, while others used ad hoc spreadsheets. The level of detail varied greatly from manager to manager. Functional leaders had their own methods for aggregating budgets from project manager projects.

The financial budgeting process was time consuming, especially for the functional leaders. Because of the inconsistent information from their project managers, they had to decipher, organize, and sum the many different budgets. One functional leader estimated that he spends 80 hours on aggregating the many project budgets. This is done in an ad hoc manner with no tool or consistent process. Because there is no common language or tool, the functional leader had to repeatedly verify and clarify each budget with each project manager. Furthermore, the functional leader had to translate various budgets to a common format.

The financial budgeting process had many opportunities for inaccuracies. Because of the many inconsistencies, the communication issues, and manual nature of the translations, the functional leader was called upon to make many interpretations of the budgets, leading to human error. No tools were used to validate or ensure consistency or accuracy in the forecasts. Functional leaders had doubts about the accuracy of forecasts.

The problems above could result in:

- Suboptimal capital allocation
- Problematic budget management
- Suboptimal resource planning

Executives make their capital allocation decisions based on the financial budgets supplied by the functional leaders. If the financial budgets are inaccurate, the capital allocation decisions could result in lowered return on investment. With more accurate financial budgets, executives can make better decisions about project portfolios. If capital allocation is not good, projects can result in budget shortfalls, and the business is not making efficient use of funds.

Project managers must manage their projects based on their original budgets. If the forecasted budgets are inaccurate, they must report the variances and adjust accordingly. In the worst case,

projects may fail. Otherwise, project managers may have difficulty obtaining appropriate resources to complete their projects. In short, the project is more difficult to manage. This can also cause problems for the functional leader who is also responsible for the projects.

Inaccurate forecasts can lead to suboptimal resource planning. Project budgets that over or under forecast needed resources affect other projects. If a project manager under-budgets a resource, they must find those resources at the last minute. On the other hand, if a project manager over-budgets a resource, they take resources that could be used on other projects.

In the next section, the entire project is described. It begins with a system overview followed by the specific deliverables for the project. Next the project plan is discussed. The learning objectives and expected outcomes follow.

Project Description

System Overview

Appendix B shows an example As-Is process map obtained through an interview with one functional leader. This is one example of a process that one functional leader used to submit a request for next year's budget. The process flows from left to right. The process chart is divided up into horizontal rows called "swim lanes". Each of these lanes identifies the owner of each step. Within each swim lane are steps that make up the overall process. Each item is either an action item (rectangle) or a decision item (diamond). Terminators (ovals) signify the beginning and end of the process.

The As-Is process map shown in Appendix B describes how the IM Leader collects the data used to submit to the business for the SII (GE's term) process. The SII process is the process in which the business uses to forecast out the next year's expected budget. The process follows the following steps:

1. Forecast out current Ready-To-Serve costs (RTS).
2. Get detailed information about completed programs (from Headquarters Finance).
3. Add fees or expenses for continuing licenses.
4. Add amortization of completed Capitalized programs.
5. Add travel and living expenses.
6. Add miscellaneous costs/expenses (not previously included).
7. Input information into Excel spreadsheet.
8. Gather "rough" estimates of new upcoming projects.

9. Modify new project needs (ensure accuracy).
10. Submit rough estimates to leader.
11. Create PowerPoint for review/approvals.
12. Review PowerPoint for accuracy.
13. Gain approval.
14. Make adjustments as required.
15. Gain approval of IM Leader
16. Gain approval of CIO.
17. Gain approval of GM.

A second example As-Is process is included in appendix C. The second example was obtained via an interview with another IM Leader. This As-Is process map is not complete and does not show what happens after the SII budget is approved by the business. This As-Is also demonstrates that different IM Leaders have different perspectives and complete the SII with different levels of detail. This process is condensed in comparison, but is a process that is currently being used.

1. Meet with IM Staff
2. Present what the IM Leader currently knows.
3. Ask the Engineering Staff if they agree (Get feedback from the Engineering Staff)
4. Engineering Staff adds projects and the budgets they expect for the projects.
5. IM Leader compiles a list of upcoming projects.
6. Manual breakdown of these estimates by quarter (fiscal).
7. Enters the estimates into Oracle by project.
8. Considers the SII completed.

The objective of this project is to form a standardized process for budget approval. The standardized process will be reviewed in detail in the implementation section of this paper. The To-Be process map for the standardized process can be viewed in Appendix C.

Specific Deliverables

This project will result in the creation of three specific deliverables. These deliverables are:

- a complete budget approval process
- a budget worksheet
- report(s)

The budget approval process identified in the As-Is process maps are inconsistent. This project will focus on creating a process that is standard for all project managers. This process will include creating a budget worksheet that the project managers can use as a tool to identify project costs and resources. The process will also include reports derived from the information entered into Oracle ERP.

A business requirements document (BRD) is a requirement at GEH when implementing a project. It is part of the digitized project management methodology (dPMM), which is the project management methodology chosen by GE. The business requirements document will tell the business leaders what the intent of the project is and how it will benefit the business. The BRD generally describes what resources are expected in order to complete the project.

For this project, the project charter, the project scope and the benefits to the business were the portions of the BRD that were required for this project. The BRD can be found in Appendix F.

Another required document was the MD. 200- Module Functional and Technical Design document. This document is required for completing the budget worksheet. The MD200 is a document that demonstrates (specifies) the requirements or expectations of a program to be completed. The MD200 can be located in Appendix G.

Budget Worksheet

The budget worksheet is a tool that will be created to help guide Project Managers in creating accurate forecasts for the projects they are responsible for.

The budget worksheet will follow the rules created by dPMM, which will allow a project manager the ability to follow the project management methodology chosen by General Electric, and allow them to forecast budgets more accurately by following the tasks presented by that process. At General Electric, any project that is taken on by the IM organization requires that the Project Manager follow a process called dPMM. dPMM stands for Digitized Project Management Methodology. Again, this process is a standardized process that all Project Managers should be using (but not all managers use this method to date). This process breaks each project down into what is called 'tollgates'. A tollgate is a step taken towards the completion of a project. The tollgates are as follows:

The tollgate process (dPMM)

Tollgate 0: Project Kickoff

This is the very initial step in a project, and requires no work. This step is simply a milestone for the project to demonstrate and log the beginning of the project.

Tollgate 1: Initiate Project

During this tollgate, the project manager must acquire approval and acceptance of the project. The PM can do this with a 'pitch' to the executives of the business.

Tollgate 2: Requirements

During this tollgate, the project manager must research the project assigned, and complete the systems analysis of the project. This tollgate should result in a Business Requirements Document being completed as well as the As-Is and To-Be process maps being identified. This tollgate is essential to the completion of the project.

Tollgate 3: Design

The Design phase of the project falls in this tollgate. After the requirements have been gathered, the project manager must design the solution to the challenge being faced. Documents such as the technical specification document, or the design of the user interface fall into this tollgate. It is also necessary to develop a test plan for the project to ensure the project is completed as described in Tollgate 2.

Tollgate 4: Build and Test (Implement)

After completing the test plans in the previous tollgate, and the designs both functional and technical from Tollgate 3, the fourth tollgate is to build the project as designed. During this tollgate is when the actual implementation of the design comes into effect, as well as the tests being performed.

Tollgate 5: Deploy

Until this tollgate, the project has been completed except for the final "go live" of the project. Tollgate 5 is when it is then put into what is called "production". At this point the testing should be completed, and the project owners (or business section requesting the project) should sign off on the project confirming the project is completed as requested (in the business requirements). Often times the ownership is removed from the development team, and given to a support team to run and maintain the project.

Following the dPMM Process as described, the Project Manager should be able to break each project down into task level steps. These steps can then have a duration and resource attached to it. Given the resource, and the amount of time a resource is expected to work on a task, a dollar amount can be issued for that task. Once all the tasks are identified for a project, a total can be created for each project and submitted as a forecast in Oracle ERP. Once submitted into Oracle ERP, the IM Leader can print out a report from Cognos and review all the forecasts entered. This is the information the IM Leader requires to forecast next year's budget (called the SII).

The budget worksheet can help the Project Manager by identifying each Tollgate that is required. Because we know the tollgates 0 through 5 (as identified above) we can code that into a worksheet for the Project Manager to use. Under each tollgate there are tasks and subtasks.

The following is the initial design of the worksheet to be used.

The initial design of the budget worksheet was drawn out on a napkin as shown in Figure 8. This design was created with the input of an IM Leader involved in the project.

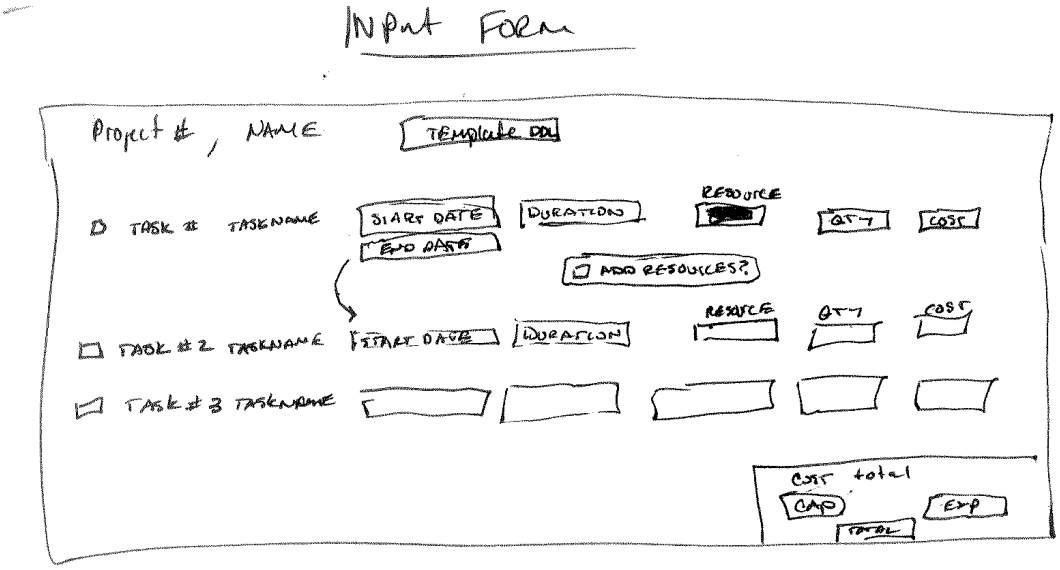


Figure 8

The design was then translated over to a notebook, and then scanned.

Following this hand-written drawing, designs were created in more detail. Specifications were set and the next step was to create a prototype. At the conception of this project, it was necessary to identify some of the main goals of completing this worksheet and how it would be used.

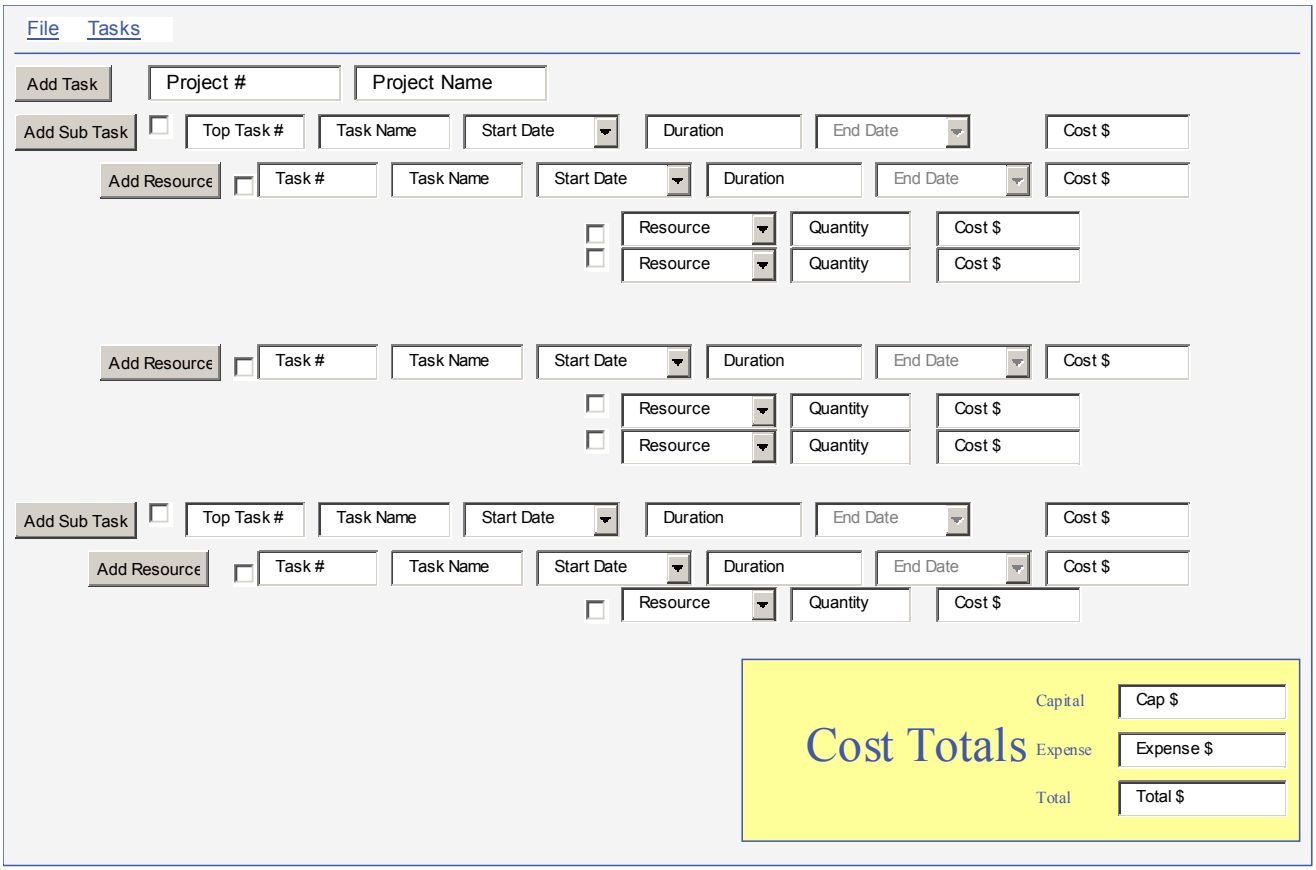


Figure 9

Figure 9 is the expected or planned user interface for the completion of this project. Given that it is accomplishable, and no other critical changes arise, this interface is the agreed upon resolution to our problem. The project manager will need to follow a process to use the decision support tool shown above. This process should lead all project managers through the forecasting step of the budgeting scenario, enabling each of them to produce near-accurate forecasts. The process for this budget worksheet will be as follows in Figure 10:

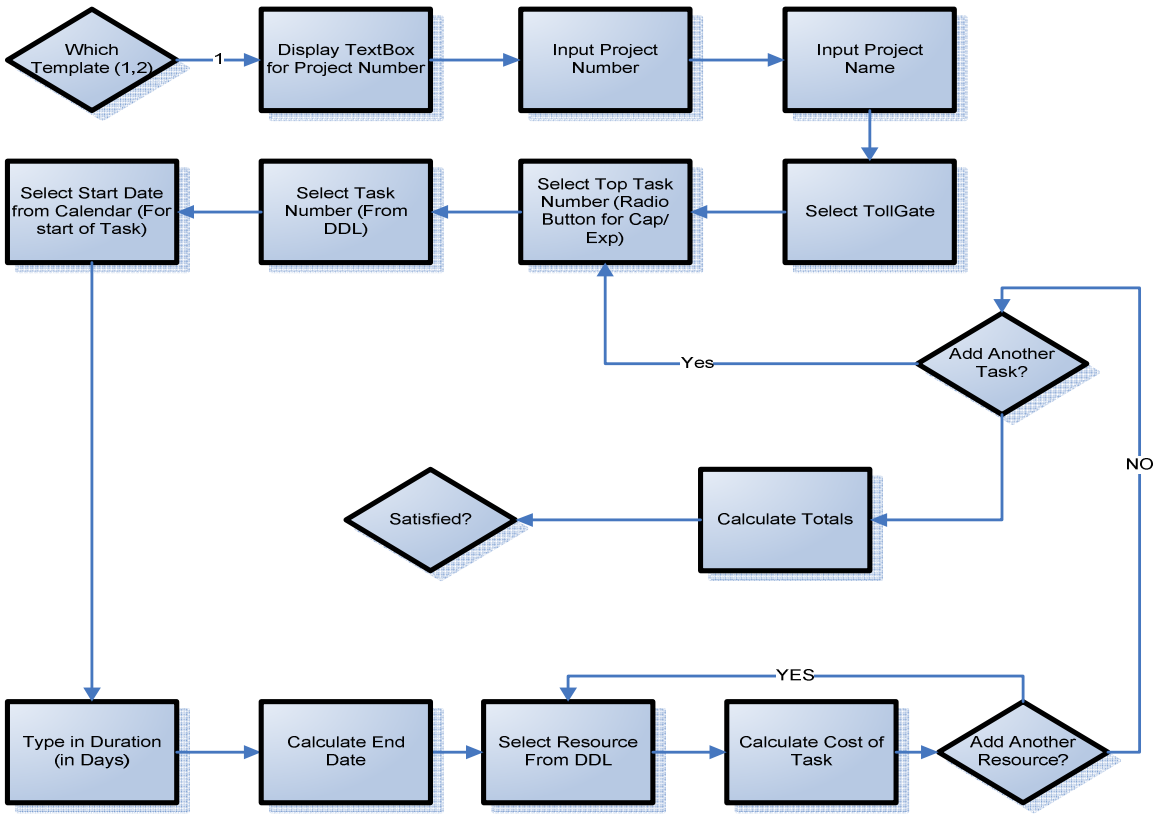


Figure 10

Figure 10 demonstrates the workflow of how to use the budget worksheet.

The user will need to select a template from which the outline of a normalized dPMM project plan will be created and turned into a project. The template(s) will be pre-constructed for the users, by a super user. This super user will be able to create other project templates as deemed necessary by the user group.

The next step is to identify the project number for the project being forecasted. This number can be received from the Oracle ERP system as soon as a location is reserved in ERP for this project's details to be placed.

The user will need to identify which tollgate they wish to begin applying resources to, and select the appropriate tollgate.

The following step would be to identify which top task (normally the tollgate name). The decision support tool is to ensure the appropriate top tasks are completed.

The Project Manager is to be using a template created (for standardization) a list of task numbers (including task names) will be given. This list of task numbers is for the user to select which task they will be assigning resources to. The user must select which task, and then select to a start date.

Following the start date of the task, the user should enter either the end date, or duration. Dependent upon which he enters, the remaining selection will be automatically identified. For each task selected, a resource must be identified, as well as the duration and start date. The user may repeat these steps until all tasks are identified under the top task as is necessary to complete the project.

Once the resource is selected, the decision support system (by retrieving information from a database) will calculate the total cost for that task.

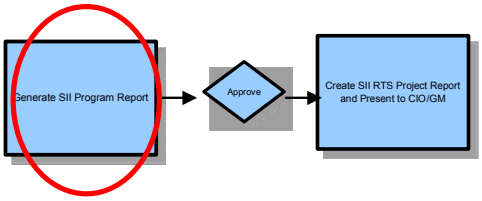
At the end, the decision support tool will calculate the total cost of each task, and roll them up to a total for each top task. This top task information is the information that is required by IproGEct when entering the forecasted budget into the Oracle ERP system.

Report(s)

The SII Report is a key component in this process. One benefit received from the process is the ability to pull a report from Cognos that gives the IM Leader, CIO, CFO and CEO the information they require to maintain the finances of the business. This process is to result in similar information being entered into Oracle ERP, and that information is to be available at any time to the business leaders.

The SII Report is to identify what budgets need to be set aside for the business in the upcoming (next) year. To identify these budgets it is required to break out by month how much is expected to be spent on each project. The IM unit will also need to be able to identify whether the costs being incurred are expense costs (they hit the cash flow at time of receipt) or if the items will be capitalized. A capitalized item will help to smooth the cash flow of the business out by not incurring the cost of the item immediately. Capitalized items get amortized over either a three year basis or five year basis depending upon the project and the rules and principles of GAAP. GAAP stands for General Accepted Accounting Principles and are the rules that all well kept businesses follow today.

SII Program Report



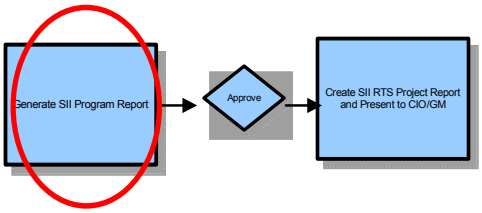
REPORT OF PROGRAMS FOR YEAR of 20XX

Project Manager	Project Name	Yr XXX Total		January		February		March		April		May	
		Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital
											Total Expense	$0.00	
											Total Capital	$0.00	
											Total Cost	$0.00	

Figure 11

The SII program report (Figure 11) is for future costs that the company will expect to incur. These costs are derived from the information the Project Manager inputs into Oracle. This report will connect to that information through Cognos and create an easily readable view for the CIO or CEO. This report provides more detail in that it expresses the costs on a month by month basis. This creates flexibility for the business leaders when prioritizing what projects to undertake.

SII Program Report



REPORT OF PROGRAMS FOR YEAR of 20XX

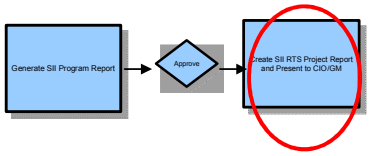
Project Manager	Project Name	Yr XXX Total		January		February		March		April		May	
		Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital	Expense	Capital
John Thomas	ESB/VR	$27,057.00	$248,083.00	$13,022.00	$121,002.00	$14,045.00	$127,081.00						
Jonathan Peters	SP Utility	$30,557.00	$0.00		$0.00	$12,757.00	$0.00	$800.00		$16,800.00			
Jonathan Peters	Dev & Test	$22,874.00	$993,128.00	$22,874.00	$248,282.00		$248,282.00		$248,282.00		$248,282.00		
George Scott	Primavera	$16,522.00	$71,552.00	$16,522.00	$17,888.00		$17,888.00		$17,888.00		$17,888.00		
George Scott	Design Enabler	$1,231.00	$0.00	$1,247.00		$1,800.00		$22,000.00		$27,000.00			
George Scott	Material Managem	$182,675.00	$0.00									$182,675.00	
		$0.00	$0.00										
		$0.00	$0.00										
		$0.00	$0.00										
											Total Expense	$280,916.00	
											Total Capital	$1,312,763.00	
											Total Cost	$1,593,679.00	

•The data displayed in this report is for example purposes only.

Figure 12

As demonstrated in Figure 12, the projects are listed with dollar values in place. The business leaders can then look at what projects are expecting how much money each month in the upcoming year. The total columns at the lower right demonstrate a yearly divide of expense items versus capitalized items.

RTS Report



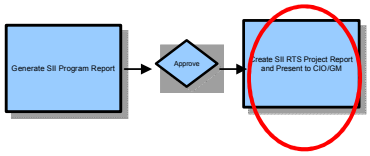
REPORT OF RTS COSTS FOR YEAR of 20XX

		Today's Date	September X 20XX							
Project Manager	Project Name	Year 20XX Total	Year 20XX Total	Months Amortized	January	February	March	April	May	June
Current Projects		Already Spent	Remaining							
		$0.00	$0.00							
Costs Carried Forward From Previous Year(s)										

Figure 13

Figure 13 demonstrates the original idea of the second report derived from Cognos. This report is to show the Ready-To-Serve (RTS) costs of the upcoming year. RTS costs are costs that are known and are expected in order to maintain the functionality of the current system(s). Costs such as paying the Internet Service Provider (ISP) or renewing licenses and maintenance agreements with vendors are included in RTS costs.

RTS Report



REPORT OF RTS COSTS FOR YEAR of 20XX

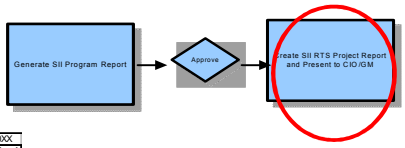
			Today's Date	September X 20XX							
Project Manager	Project Name	Year 20XX Total	Year 20XX Total	Months Amortized	January	February	March	April	May	June	July
Current Projects		Already Spent	Remaining								
John Thomas	ESBWR	$379,198.00	$39,066.00	N/A	$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00
Jonathan Peters	SPUtility	$2,380,874.00	$786,000.00	N/A	$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00
Jonathan Peters	Dev & Test	$222,388.00	$68,622.00	N/A	$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00
George Scott	Primavera	$149,945.00	$49,566.00	N/A	$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00
George Scott	DesignEnabler	$13,052.00	$3,741.00	N/A	$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00
George Scott	MaterialManagement	$16,461.00	$5,487.00	N/A	$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00
		$0.00	$0.00								
		$0.00	$0.00								
Costs Carried Forward From Previous Year(s)											
George Scott	Project Completed Long ago	$45,000.00	$5,000.00	59/60	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00
George Scott	Project Completed 2005	$136,937.88	$33,771.96	27/60	$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32
George Scott	Project Completed 2006	$336,857.00	$106,866.00	16/60	$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00
George Scott	Project Completed this year	$81,295.00	$48,777.00	5/60					$16,259.00	$16,259.00	$16,259.00
George Scott	Project Just recently Completed	$42,770.34	$42,770.34	2/60							

•The data displayed in this report is for example purposes only.

Figure 14

Figure 14 is more defined illustrating possible costs and numbers. Placing numbers in a report helps the viewer to better understand the concept being portrayed. These names, numbers and projects are made up for demonstration purposes.

RTS Report



			Today's Date	September X 20XX
Project Manager	Project Name	Year 20XX Total	Year 20XX Total	Months Amortized
Current Projects		Already Spent	Remaining	
John Thomas	ESBWR	$379,198.00	$39,066.00	N/A
Jonathan Peters	SPUtility	$2,380,874.00	$786,000.00	N/A
Jonathan Peters	Dev & Test	$222,388.00	$68,622.00	N/A
George Scott	Primavera	$149,945.00	$49,566.00	N/A
George Scott	DesignEnabler	$13,052.00	$3,741.00	N/A
George Scott	MaterialManagement	$16,461.00	$5,487.00	N/A
		$0.00	$0.00	
		$0.00	$0.00	
Costs Carried Forward From Previous Year(s)				
George Scott	Project Completed Long ago	$45,000.00	$5,000.00	59/60
George Scott	Project Completed 2005	$136,937.88	$33,771.96	27/60
George Scott	Project Completed 2006	$336,857.00	$106,866.00	16/60
George Scott	Project Completed this year	$81,295.00	$48,777.00	5/60
George Scott	Project Just recently Completed	#REF!	$42,770.34	2/60

May	June	July	August	September	October	November	December
$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00	$13,022.00
$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00	$262,000.00
$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00	$22,874.00
$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00	$16,522.00
$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00	$1,247.00
$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00	$1,829.00
$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00	$5,000.00		
$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32	$11,257.32
$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00	$35,622.00
$16,259.00	$16,259.00	$16,259.00	$16,259.00	$16,259.00	$16,259.00	$16,259.00	$16,259.00
			$14,256.78	$14,256.78	$14,256.78	$14,256.78	$14,256.78

•The data displayed in this report is for example purposes only.

Figure 15

Figure 15 expands the concept of the report of RTS costs to demonstrate when the costs will be incurred. Each of the RTS costs incurred are expense costs that are paid out during the month shown. Breaking out these costs by month will aid Executive Leaders in their decisions of capital allocation.

Project Plan

Figure 16 demonstrates the original project plan created for this project. This project plan was at the time of the proposal. Changes to this plan did occur and are explained throughout the implementation section of this paper.

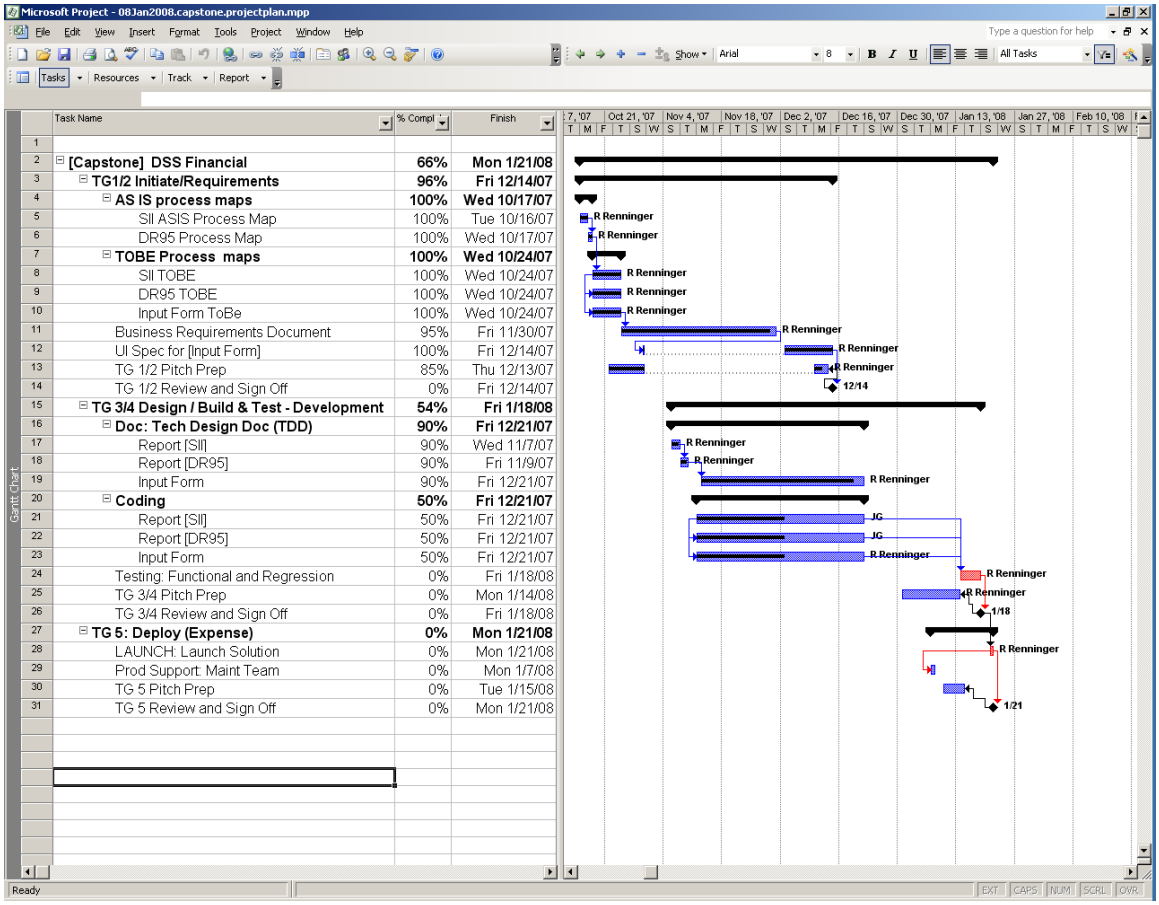


Figure 16

Learning Objectives

This project will create an opportunity to learn and experience many new scenarios in regard to IM Project Management. This project covers many different aspects of project management in Information Systems Management. What I expect to be exposed to during this project are broken into four categories: Systems Analysis, Systems Specific Knowledge, Project Management and

Finance. Below is a list of each category, and under each category are listed areas in which I expect to gain knowledge.

Systems Analysis

- Client Interaction
- Project Requirements/Analysis
- Documentation
- Process Maps
- Deliverables

System Specific Knowledge

- Microsoft Access
- Microsoft Project
- Oracle ERP
- IproGEct
- Cognos

Project Management

- Methodology
- Communication (Customer, Client, Team)
- Project Plan / Project Planning
- Time Management
- Status Updates / Report outs
- Change Control (Scope / Scope Creep)
- Terminology
- Budgeting

Finance

- Forecasting
- Growth Playbook (3-5 years out)
- SII (next year)
- Budget Approval

- Capitalized vs Expense Items
- Amortization

As you can see this project will be a learning experience. It will expose many different areas or aspects in Information Systems Management. The four categories are each specialized and this project will afford the opportunity to experience and connect each category in a real life, business situation.

Expected Outcomes of the Project

The expected outcome of this project will be to:

- Reduced time for functional leaders
- More consistent budgeting process
- More accurate financial reports and tracking

This project is expected to help clarify the process with which Project Managers will be able to successfully complete the financial budgeting process. As a result of this project, it shall reduce the time required for all steps of the financial budgeting process: budget creation, budget approval, and budget management. This project should also create a more accurate account of the financials required for budget allocation allowing for more efficient use of funds. This project will save the corporation time and money.

Hypotheses

Here are my expectations through the completion of this project.

1. Changing user procedures will be difficult.
2. Forecasts will be more accurate due to consistency.
3. Cognos reporting will be a technical challenge.
4. Capital allocation will be improved.
5. Functional leaders and project managers will save time.

Changing user procedures will be difficult. It is unknown whether or not the Information Management staff will be amendable to change. Change is difficult in a work environment, and many of the already established IM Leaders and staff may reject change. This decision support system in essence forces the staff to follow the same set of rules. Currently the rules are somewhat lenient and less applied, allowing the IM Staff to forecast their budgets in whichever way they see fit.

I expect higher accuracy as a result of this project. Having consistency in the reports produced should provide for more accurate data, and also afford the CIO and IM Leader a means to track the forecasts entered. This ability will allow these executives a method to apply more rigors to the accuracy of budgets and scheduling of projects.

Cognos reporting will be a technical challenge. The Cognos reporting system may or may not be capable of handling the reports required. This is doubtful from a technical perspective, but from the perspective of creating new reports (with the intended meaning) may contradict some of the reports already created in the Cognos system. This may require more work or may cause re-work on the part of the Cognos experts.

Improved forecasts will allow for better capital allocation. It is my assumption that this tool will create a more accurate forecast of financial budgets for the organization. Executive leaders should be able to make better capital allocation decisions based on the more accurate budgets. This accuracy could possibly save the company a significant amount of money in the long run, due to not over-budgeting or under-budgeting for a project, and allowing the money to be used more efficiently. This accuracy could also prevent project failure and allow the company to actively pursue more projects at any given time.

The improved process will save time for functional leaders and project managers. This tool will save hours of time for the IM Leader and CIO so that there will be less labor involved to create the required reports they must have to track the financial status of their units. The tool should also reduce the amount of time required to submit the SII forecast for the upcoming year. The dPMM process should create a more accurate delegation of resources, freeing up resources where they can be better used and creating a more efficient company, overall. This tool will create a system for the staff to use that can be modified to better suit the business, one piece at a time, helping to ensure the system will eventually be modified to its most efficient standard.

The visibility this project provides to the functional leaders, executive leaders and general managers of their budgets, should give them an awareness and provide them a way of preventing a loss of funds.

Implementation

Project Plan

At the time of the capstone project conclusion, the current project plan is in Figure 17. This project plan varies from the initial project plan by:

- The budget worksheet has gone through many revisions, and is still being revised.
- The Cognos reports took longer to implement than expected.

The programming of the budget worksheet was originally scheduled to be completed February of 2008, and is still in process (as of April 2008). This reflects multiple changes to the specifications. It is also due to this project being a lower priority than other projects at GEH.

The Cognos reports were originally scheduled to be completed in January of 2008, and are still in process (as of April 2008). Again, the Cognos reports specifications were changed based on

user feedback and comments from the change control board. As mentioned this project competes with other projects for programming resources and is a lower priority than other projects.

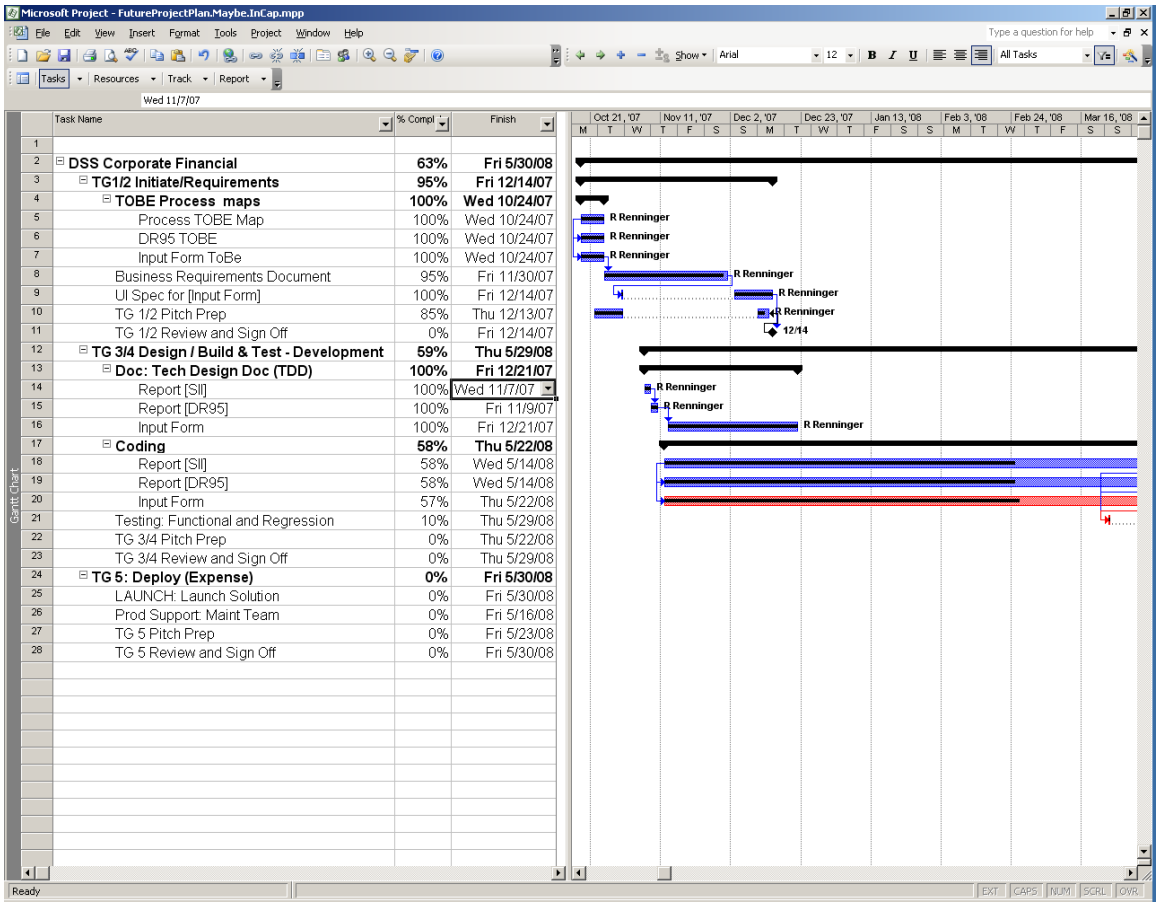


Figure 17

System Design / Analysis

As mentioned above, both the budget worksheet and the Cognos reports underwent revisions and a change control process through the implementation phase. There were also minor changes to the overall financial budgeting process.

Budget Approval Process

The flow chart shown in Appendix D demonstrates the full process for submitting the information required for the SII forecasts. This process map shows the IM Staff using the budget worksheet to create the forecast. This map is better shown broken down into three sections: Project Opportunity Identification, Budget Approval, and Capital Project Approval.

The flow chart shown in Appendix E illustrates where the three sections will take place.

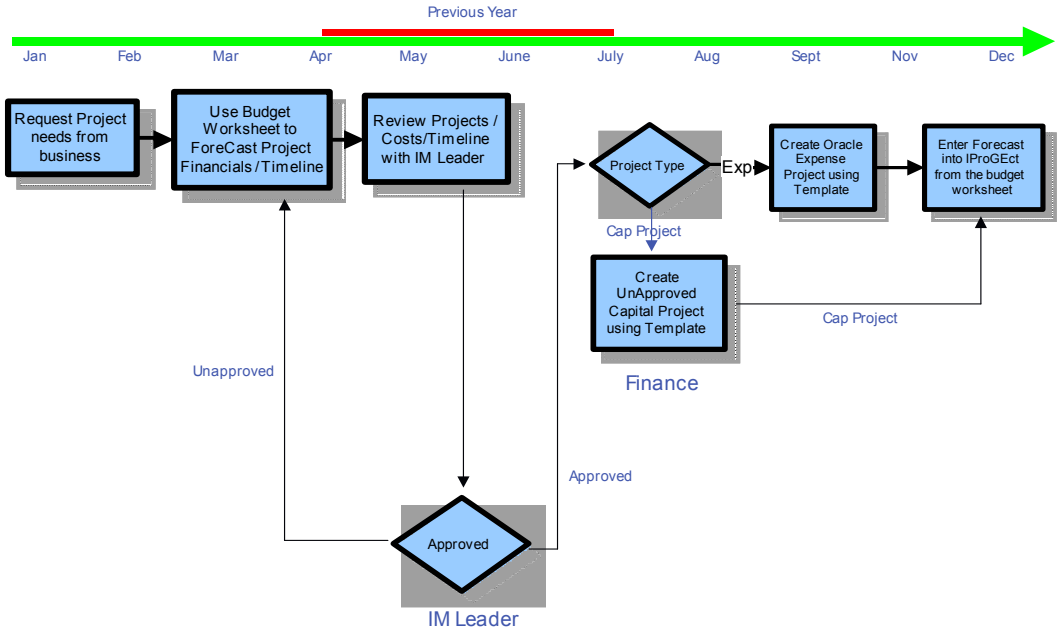


Figure 18

The project opportunity identification section (shown in Figure 18) of the overall process contains steps that are done continuously throughout the year. The goal is to have this phase completed between the months of April and July the previous year. This will allow an accurate forecast to be carried through the approval process resulting in the appropriate budgets being set aside to complete the project as planned. The steps agreed upon for this section of the SII process are:

1. Request project needs from the business. (What exactly does the business need completed in the upcoming year?)
2. Use the budget worksheet to forecast project financials and create a timeline. (Create an accurate forecast of the resources needed to complete the project)
3. Review project costs and timeline with IM Leader (to ensure it fits the needs of the business still, and verify that the results were approximately what the IM Leader estimated).
4. IM Leader signs off.
5. Create the project in Oracle ERP.
6. There are two avenues that the path can take, dependent upon if it is an expense project or a capital project.
    a. Finance personnel have access in Oracle ERP to create a cap project.
    b. Project Managers have access in Oracle ERP to create an expense project.

7. The project outline (basic identification including the project number, name and owner) needs to be created in Oracle ERP prior to actually submitting the budget with IproGEct.
8. Enter forecast for the project into IproGEct.

Completing these steps for all projects (business needs) will then provide the necessary data required to fund the project for the upcoming year. Once all the steps in the Project Opportunity Identification stage are completed, the IM Leader will be able to access Cognos, and create reports identifying what he expects the next year's budget will be. This begins the budget approval section of the SII process.

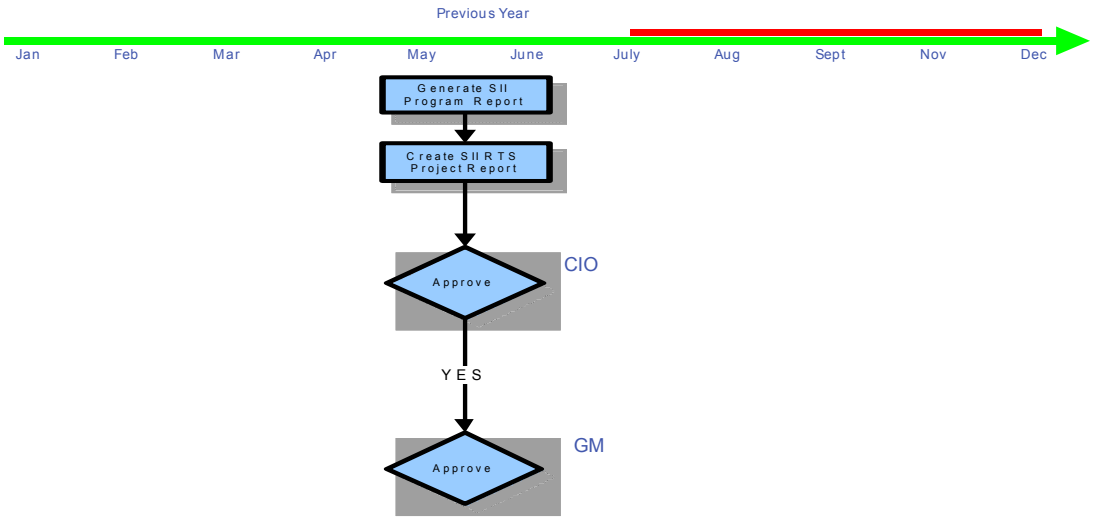


Figure 19

The budget approval process (shown in Figure 19) is typically done in September of the year before the budget is to go into effect. The proposed SII process should reduce the amount of time required to complete the approval process, by gathering all the required information into two concise reports that can be presented to the Chief Information Officer and the General Manager. Currently the approval process takes months to complete.

During the budget approval process, the IM Leader will login to Cognos and select the report with the budgets to be approved. Once approved, the SII process enters the Capital Project Approval phase.

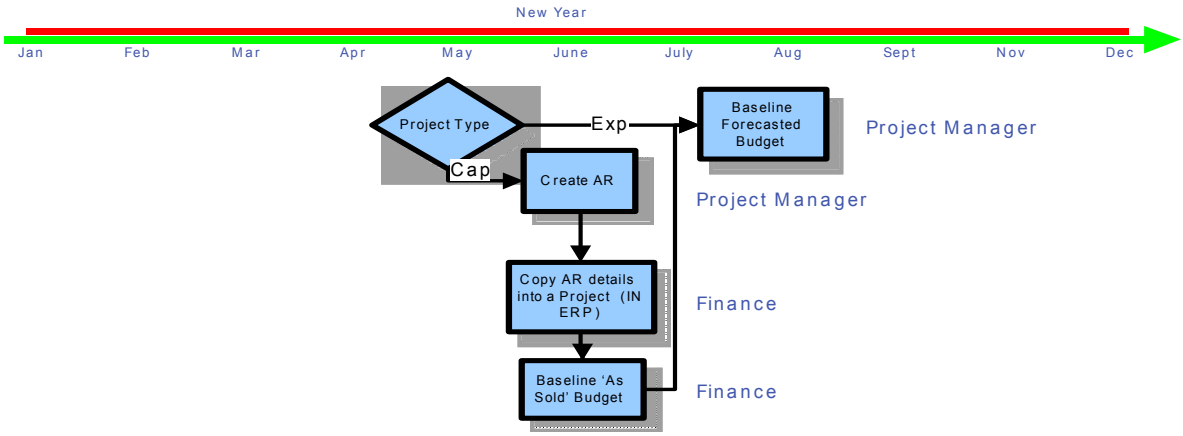


Figure 20

Figure 20 shows the Capital Project Approval phase. During the Capital Project Approval phase of the SII process is when the project is implemented and completed. There are two avenues (in terms of finance) a project can take, dependent upon whether the asset (developed as a result of the project) is an expensed item or a capitalized item. If the project type is expense and the project is approved, the Project Manager can then login to IproGEct and submit his previous estimates as an actual. This is called base lining the forecasted budget. This is required before purchase orders can be placed against the budget.

If the project can be capitalized, the project must be capitalized. In order to capitalize the project, the Project Manager must create an AR or Asset Request. The asset request is submitted to Finance. Once reviewed by finance, they have the authorization to baseline a capitalized project.

Budget Worksheet

There was a brief discussion within the organization of whether the budget worksheet would be better made by customizing an off-the-shelf product such as Microsoft Project. It was decided that although many of the functionalities could be obtained with some in-depth customizations, the organization would be better suited creating the budget worksheet on its own. A few comments noted were:

1) Microsoft Project does not have the ability to place bought items as resources. Such as: software or hardware components.

2) Creating the budget worksheet in house will allow for better customization or adaptation to the methods needed to forecast the budget.

3) Using an off-the-shelf product may confuse the user as to what the functionality of the budget worksheet is to be. The functionality of the budget worksheet may be masked by the label of the off-the-shelf product and the final-result may be less than desired.

Creating the budget worksheet from scratch is a task that the organization is completely capable of doing. The overall difference of budget worksheet is that the worksheet is used as a financial tool, where as Microsoft Project is for managing the project schedule. The budget worksheet is not a scheduling tool, it is to aid the project manager in forecasting the budget of a project.

In the context of this tool among other tools, it is necessary that the final version of this tool have the capability of integrating with other tools or systems already in use. Using an off-the-shelf program to build the forecasts of projects; creates a dependency on that particular off-the-shelf product. The future of the worksheet is to also create specific outputs that can be transferred or migrated to other programs. In particular: the goal is to have the output of the budget worksheet be automatically transferred into IproGEct.

The data gathered in this tool may help the project manager create schedules in project management tools. Currently the organization uses a number of scheduling tools but is attempting to identify one tool as being the company standard. The implementation of this tool took many of these points into consideration.

During the implementation (post-proposal) phase of this project there have been numerous versions of the budget worksheet. After submitting an initial design in the MD200 Technical Specification Document to the programmer, there was a need for revisions. The following explains revisions that occurred thus far in the project.

I suggested changes to the prototype immediately and sent back a work request. As a result (and unimagined by myself), the second version resulted in the inability to open or view the first version. This resulted in no screen shots being formally taken of the prototype at that time. This was not discovered until the next attempt was submitted. At that time I coordinated the changes that I requested with a shared screen, and a telephone conversation asking for specific changes. This was a great method for disseminating the request, but it was found not to be optimal because there was no means for tracking the changes being requested.

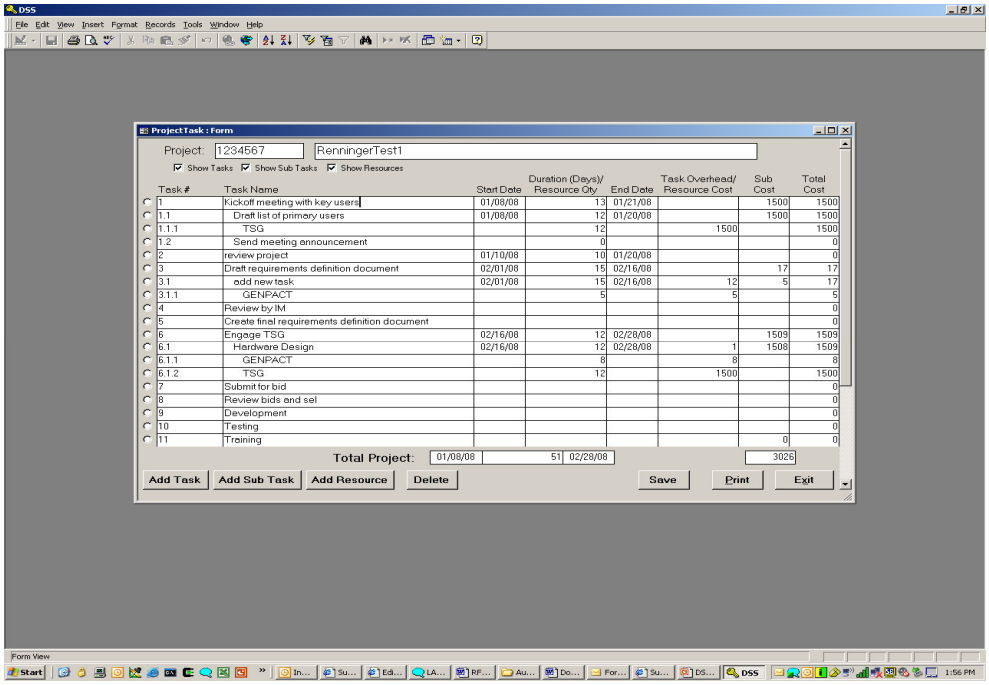


Figure 21 (15 February 2008)

The second version received from the programmer is demonstrated in Figure 21.

In response to this revision, it was noted that some more adjustments needed to be made. Having discovered at this time that a screen shot would be a great reference to both the programmer and the client, a screen shot was taken and made into a PowerPoint slide with areas of concern "spotlighted". The following picture is a screenshot returned (after meetings and review) to the programmer to have the next revision completed.

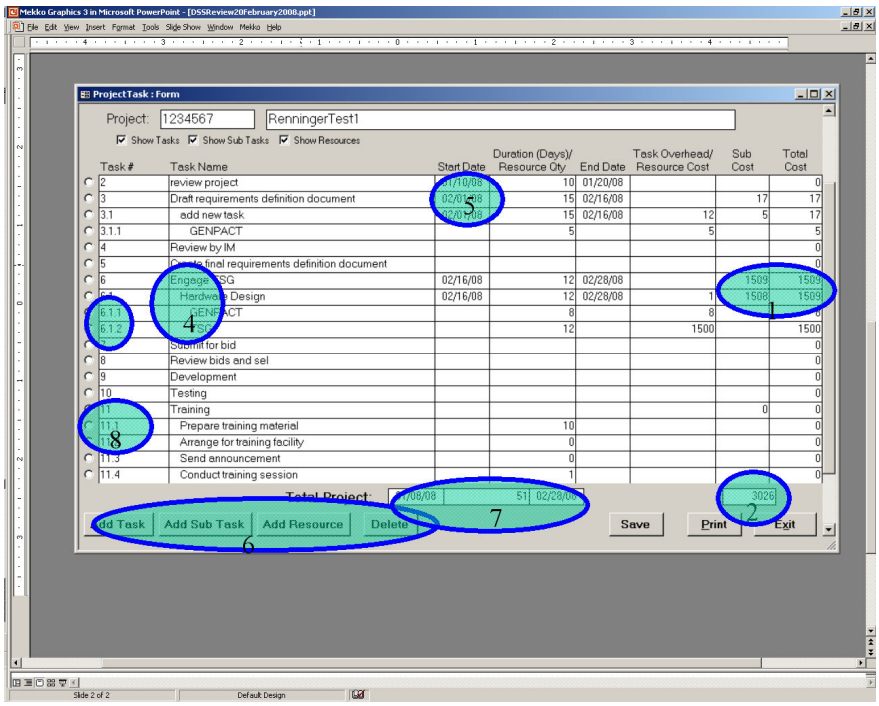


Figure 22

These spotlights were sent with notes that were an attempt to alleviate any confusion. The highlighted areas in the picture were numbered and each number a note was added. These notes can be found in appendix H.

1. There was confusion with the totals of each task versus subtask. This was very confusing, because it was hard to distinguish between what was a calculated total, and what was being used to calculate the total.

2. There was no label denoting the total for the project. There was a request to add cosmetics to the sheet to better display the totals of each project.

3. In this version, the numbers were sequential in order of what task was being added, or the subtask. These numbers were required to keep the tasks ordered for the system, but the user of the system might want to create their own set of task numbers.

    a. For identification purposes, such as what is demonstrated in the dPMM table found in Appendix I.

    b. To allow the results of this worksheet to better fit into IproGEct.

    c. Because there are numbers in Oracle ERP that are somewhat standard.

4. Area 4 was highlighted to complement the formatting created by the programmer. The indentation helps the user understand the type of information being held in that row.

5. The method for inputting the start date into the schedule is difficult. Suggestions were made to add the calendar function or another function to make the use easier.

6. Was a hint to let the programmer know that the buttons he added were a good idea. They may need adjustment but the style he was using fit the requirements of the prototype.

7. The totals column in this version left a lot to be desired. The information was difficult to understand. As a result it was requested that time was spent to create and better identify these totals, and what meaning the totals have.

8. In this version, I was considering ways of making the interface easier on the user. If a program is too difficult for the user to use, there will be limited success with this program. Suggestions were made here that were later changed to make it even more user friendly.

These remarks were taken by the programmer and acted on. After giving the programmer a chance to make the changes, the programmer sent the updated revision. The return from the programmer is demonstrated in Figure 23.

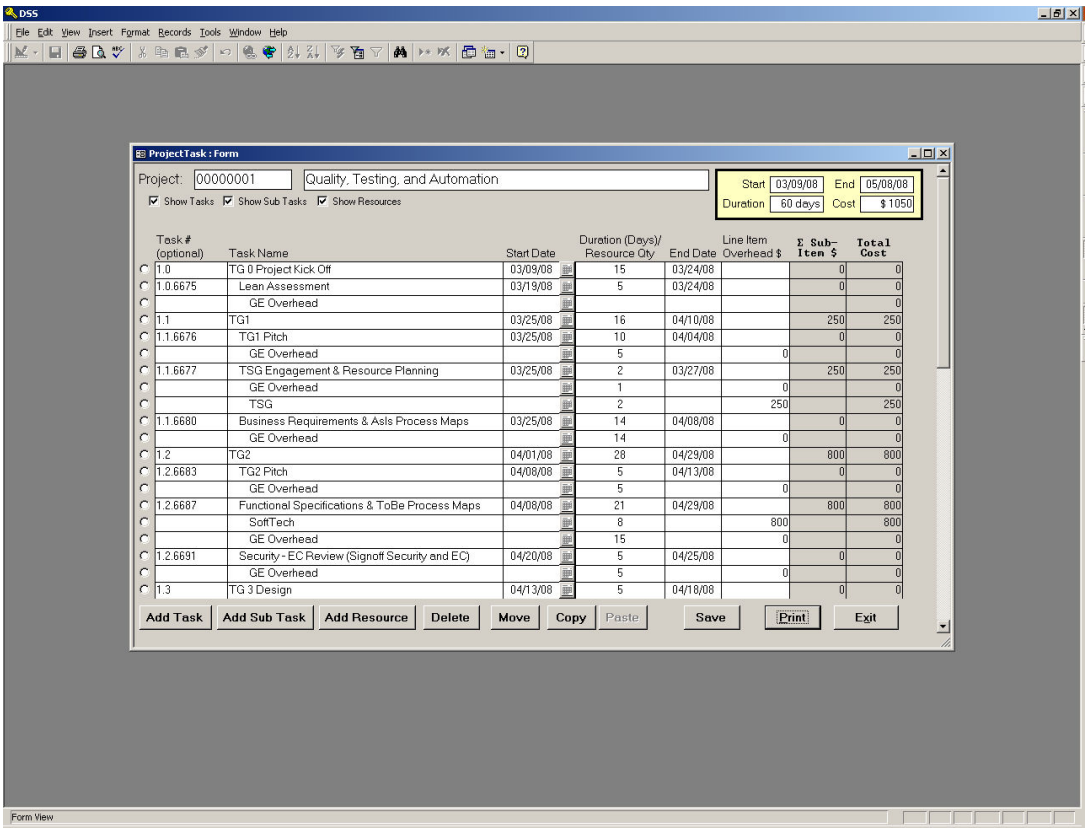


Figure 23 (12 March 2008)

Figure 23 is the third revision received from the programmer. This version of the budget worksheet had added functionality and was at a level where the worksheet could be run through with a test scenario. To test the functionality and to give more comments to the programmer, information was entered during this version that could represent real data. This helped identified problem areas.

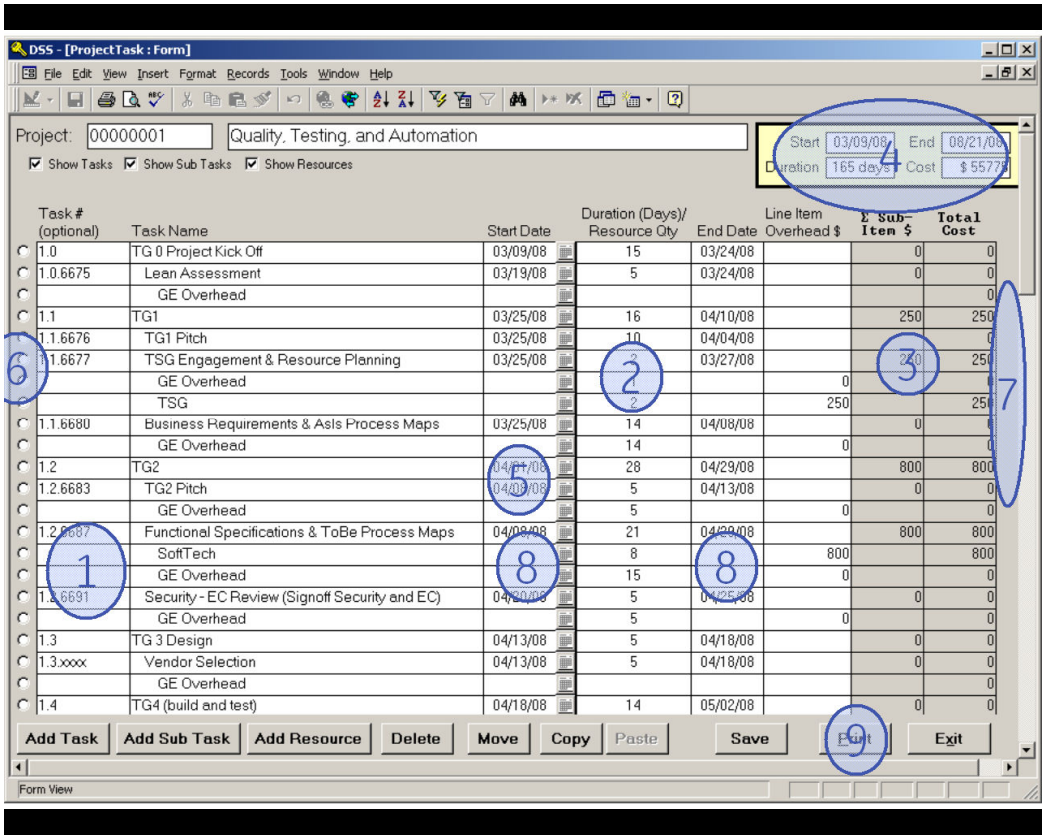


Figure 24

Figure 24 is highlighted in areas where changes were requested. The changes requested are as follows. More information about the changes can be found in appendix H.

1) Highlighted to request that the color be changed or grayed out when this row is a resource and not a task.

2) The numbers of resources were not adding up correctly.

3) It was noted that the calculations are in need of work. Also, the duration is in days, while the rate for the duration is in hours.

4) Request the totals section be moved to the bottom of the worksheet.

5) Looking for automation of the start date. Start dates of the next task should begin at the end of the previous task.

6) There seemed to be an error, that when doing a function with the radio buttons, it would not click off the radio button, or would cause the user to click off the radio button and then back onto the radio button to reset it.

7) This area is highlighted to request that a checkbox is added to each task, to identify whether the item is a capitalized item or an expense item.

8) Requested that columns that aren't being used be filled in or grayed out. There is no start or end date for a resource, just the task. This should make it easier for the user to read and follow the process of the worksheet.

9) Noted that the print function was not properly working. Requested attention be brought to the print function. Also noted to the programmer: we will request the report out in a particular format in the future.

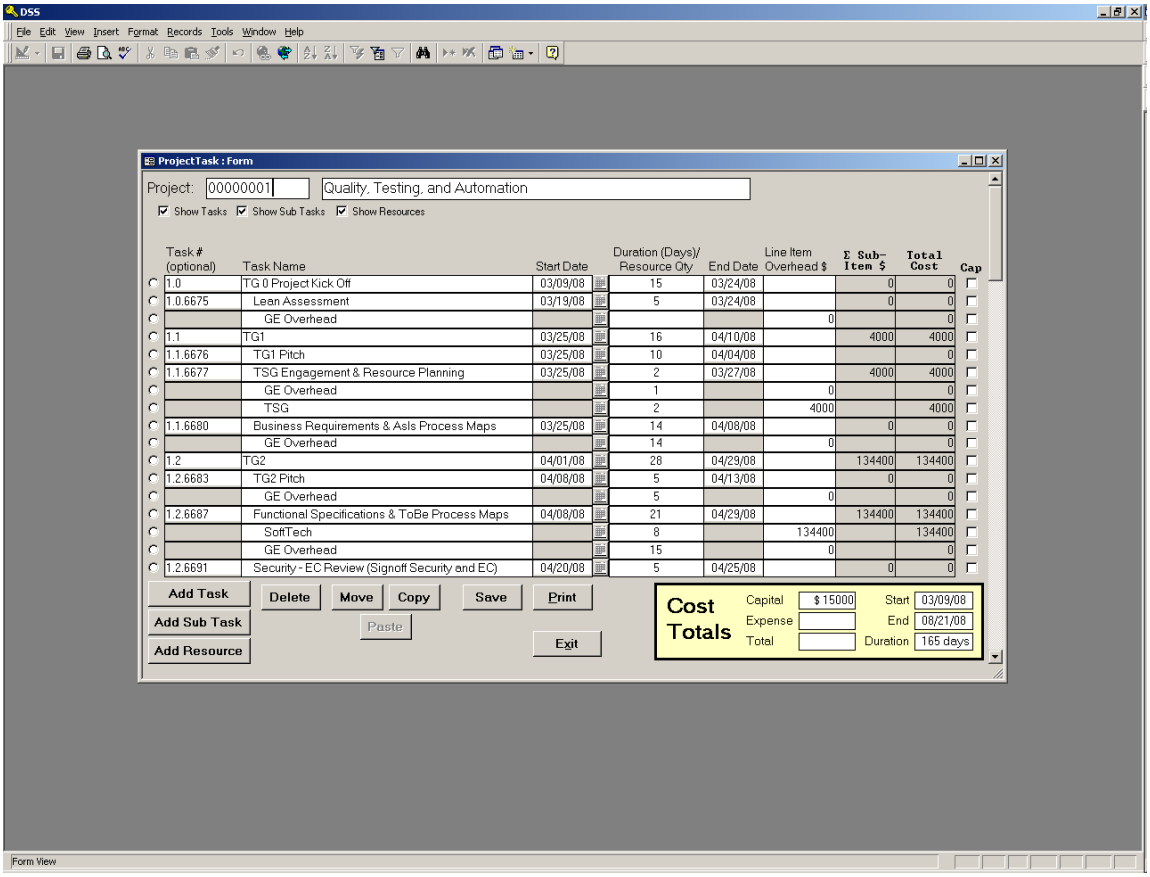


Figure 25 (2 April 2008)

Figure 25 represents the current version. This version is currently under review with the users. It is expected that more changes will be requested and sent to the programmer.

Cognos Report Specifications

As time approached to submit specifications to the team of personal authorized and responsible for making changes, or creating reports from Cognos, it was discovered that there was no formal process created. A co-worker was given the responsibility to oversee this process and create a formal process for Cognos reporting. There was no established method with which to present the specifications to the team nor was there a way to prioritize the number of reports being requested.

As a result, a change control process was created. The specifications I created for the reports I was requesting were done prior to a change control process being created. This wasn't originally planned in the project plan, but it turned into a good experience. After waiting for the change control board to be formed, I was subject to the board, and presented my specifications. I was one of the first to present to the board. Priorities were given to each request based upon the importance to the business. Due to when the reports were being requested, it was deemed less important to have these reports created immediately. There were other priorities ahead of these reports, like ones dealing with regulatory issues.

One experience gained was in helping to create a workflow that will be used by the change control board to submit requests for Cognos reports. This workflow was used to submit the request for a report(s). The problem statement I submitted with this workflow was:

In order to forecast and keep a constant eye on the status of projects, when concerned with budgeting, it is requested that a report be created to show by month the breakdown of capitalized and expense charges. It is also requested that the "committed" amount be displayed in accordance to what is listed in Oracle 'ERP'. This information may be found/listed in the Budget Forecast Actual Cube, but the format of the output may need to be adjusted.

As the project progressed and became more visible to the business and future users, the scope of the reports increased. As demonstrated in the To-Be process maps, there are two reports being requested as a result of this project. Specifications of these reports were submitted individually, and the change control board (as well as the users) suggested that both reports be combined into one report. The workflow had exchanged comments between the requestor, the Cognos team, Change Control Board (CCB) and myself. These comments can be found in appendix J.

Review Hypotheses

At the time of proposal, my hypotheses were:

1. Changing user procedures will be difficult.
2. Forecasts will be more accurate due to consistency.
3. Cognos reporting will be a technical challenge.
4. Capital allocation will be improved.
5. Functional leaders and project managers will save time.

My hypothesis that changing user procedures could be a difficult task has proven true. Because there is an overall agreement to the budgeting process it shows there is a need for a consistent process. Each person involved had their own suggestion as to how the process should end up, most wanting it so that their current process was changed the least.

It is yet to be determined whether or not the forecasts will be more accurate due to consistency. The system has not been placed into production. It is obvious that there is user buy-in at the functional leader level, and even the executive level. Based on a perceived value the users all expect that it will become more accurate after implementation, or product release.

The hypothesis that Cognos would be a technical challenge has proven to be the most true or accurate. The Oracle ERP system needed changes in order for the Cognos team to capture the data being requested in the reports. These changes required programming changes in Oracle, and entailed adding a field in the Oracle database to support the concept of the reports. There were challenges with communication to the Cognos reporting team because the team was in its infancy. A change control board was constructed, and the team received many specifications from the business. There wasn't an established method of specifying report requirements and simply getting the reports approved deemed challenging.

It is unknown yet whether the capital allocation decisions made by executives will be improved. This is also due to the system not being released into production. There is a perceived value that the standardized data and reports will allow for better decision making. I think the executive leaders are eager for the system to be implemented, and to have the information at hand, so that they can improve their decisions when it comes to capital allocation.

Another hypothesis that is yet to be fully determined is the idea that this system will save the functional leaders and project manager's time. This is unknown also due to the system not being placed into production yet. The Project Manager's will most likely spend more time upfront, on forecasting and creating budgets. They will likely save time when it comes to managing their budgets though. The systems analysis process of this project has helped educate both project managers and functional leaders in areas of the financial budgeting process that they may not have been aware of. It has brought to light the need the business has to have accurate information, and has also shown some aspects of GAAP that were previously not clear.

The improved information provided to IM Leaders will help them track the financial spending throughout the year. With the Cognos reports giving a breakdown of capitalized expenses, the IM Leader can tell when the IM organization is approaching the cut off (of what was forecasted in the SII). The next few paragraphs will describe hypothetical situations that could save the business hundreds of thousands of dollars.

Suppose an IM Leader forgot to add the amortization of an asset that was created in the previous year. The amortization is an expense this year, and will need to be accounted for. If the amortization is not accounted for in the SII, the IM organization will need to adjust their entire budgets for the year causing projects to not be funded. Most projects in this particular organization are funded with many hundreds of thousands of dollars, and having to displace the funds for a single project could have significant consequences. This situation is common practice and can be prevented with accurate visibility to the expense breakdown.

The completed budget approval process now ensures personnel from the Finance department are included in the forecasting of budgets. Previously, it was common for a project manager to consider an item a straight expense item, rather than a capitalized expenditure and vice versa. This caused problems for the project manager or functional leader in the upcoming years.

As another example: Suppose a functional leader receives a ten million dollar budget to cover all projects expected in the next year. Suppose sixty percent of a ten million dollar budget is going to be capitalized. This would mean that the functional leader can expect four million dollars of costs to hit the books this year, meanwhile the other six million would be amortized in the upcoming years. With the six million dollars of capitalized expenses, there could be many projects. For example purposes lets identify one project as being a three million dollar capitalized project.

Prior to the completed budget approval process, the functional leader could accidentally consider the project to not be a capitalized expenditure. The IM team could go throughout the entire year, completing the project using three of the four million dollars set aside for straight expense. This would leave the team with one million dollars to cover the ready-to-serve expenses, which includes the amortized costs of the previous years' capitalized projects. At the completion of the project (when an asset is created), HQ Finance would realize this mistake and create the project as capitalized. This would cause the functional leader to over-spend the capitalized budget, and would cause the functional leader to lose the straight expense budget (what isn't spent gets returned to corporate). In the next year the functional leader will be hit with an unexpected monthly amortized cost of the three million dollar capitalized project. If the functional leader wasn't made aware of this new expense there is the possibility that the funds aren't set aside to cover it. This will cause the functional leader to need to cancel projects that were promised, because this will reduce the amount of straight expense money available in that year's budget. Re-adjusting the budget for the year causes a lot of work for all members of the organization. Projects won't get completed and funds won't be available to pay for the appropriate resources. The new budget approval process will help to avoid these situations, by including finance in the approval process.

Another benefit of this project is a reduction in time spent by the functional leader. An example of this is as follows:

Let's say that a change in the market conditions creates a need for the business to reduce spending for the current fiscal year. The GM may challenge the Executive Leaders to reduce their budgets by a large amount of money. For instance, say the GM asks the CIO of the IM section to reduce this year's straight expense budget by five-hundred thousand dollars, and the capitalized expenses by one million dollars. The CIO would then ask the functional leaders to reduce portions of their budgets considerably to achieve this goal. In order for the functional leaders to cut spending from their budgets they would need to know what projects are a priority, and how much in each expense type they are spending per project. The functional leader would then ask the project managers to give the details of their project forecasts. The functional leader

would need to add up the expenses of each project and distinguish between capital and expense. The functional leader would then make a decision as to what projects could be cut in order to reduce the amount spent. This process has recently taken the functional leader weeks to accomplish.

With the complete budget approval process, the budget worksheet and the Cognos reports as tools, the functional leader can now accomplish this task in just a few short hours. Given that the process is followed, the functional leader should be able to know what is being spent in each type by simply loading and printing out a report. This report will break down exactly how much each project is spending in each expense type, and when the expenses are expected to incur. The functional leader can now spend time making more educated decisions about the priority of the projects, and less time trying to accumulate the data necessary to make the decision.

Learning Objectives

Overall, this project has been an enormous learning experience for me. Because of this project I have gained a functional knowledge of many systems and many new processes. The project management aspect alone has taught me how to treat people, how to organize, create project plans, gather resources and create documents that prior to this experience I might not have thought were important.

This was my first experience in doing a complete systems analysis of a project. I saw first-hand what a business requirements document was, and the reason that it was needed. This project has enabled me to venture down the path of a particular project management methodology, proving to me that having a system or methodology for completing and empowering a project is very necessary.

I learned that detailed specifications are necessary. I understand from the viewpoint of the programmer receiving the specifications how much easier it is to program the request, when it is detailed. I also understand now how much work goes into creating detailed specifications that are easily translated from "user request" to deliverable.

The standard methodology for systems analysis is essential. Repetition is a key to learning, and the only way to get better at doing something is to do it over and over again. This can only be accomplished if you establish (or borrow) a system. Trying to be specific and ensuring you see all points of view as an analyst is difficult if you don't have a pattern to follow.

It is important to have clear roles defined throughout the project life cycle. One difficulty I faced while implementing this project was that the roles of my client versus my employer were mixed. These two roles were the same in many aspects (not all) and it made it challenging to distinguish how to approach the situation. Clear roles lead to clear requirements. Clear requirements lead to a better understanding of the project at hand.

This project has given me system-specific knowledge. As stated above, I have in-the-least a functional knowledge of many systems now. I've discovered that MS Access is not just a filler

program taught in college. Until now, I never realized the potential that MS Access has in the prototyping of forms. I also learned to be careful about using MS Access prototyping. Often if a prototype is created in MS Access, it never moves past MS Access.

Oracle ERP is truly a huge concept. It provides a business an organized means of communicating, all aspects of the business. This project, although large to me, was very small to the business, but due to Oracle ERP it has the potential to affect the entire business. Oracle ERP is necessary in the eyes of accounting, and keeping account of all the detailed financials. This project was my first experience with an implemented ERP system.

Throughout project management methodology process, I came upon Tollgate 3, where it was necessary to communicate more thoroughly with the coding specialists. Not only did I learn the methodology, but I was fortunate enough to experience what not to do when communicating with the programmers. I realized early on that it was important to establish a system to review, edit, and send comments back and forth with the programmer. I also realized that email isn't always the best option when attempting to get projects done. If you want something done, go straight to the source.

In general, this project has taught me to make a process wherever possible. Creating a workflow to get an approval and creating a change control board to get many approvals are tools that I will carry with me. I was able to see how a section of a business functioned without a change control process enabled, and then I was able to see how it functioned with the change control process established. I saw the change control process get created, and I was one of the first participants. It's never easy at the beginning, but it's worthwhile in the long run.

This project has exposed me to financial aspects and processes that seemed to "always be taken care of." The textbooks said to ensure you pay attention to forecasting and cash flows, but it doesn't really sink in until you experience it in real life. This project also demonstrated how little some people know, about what goes on behind the scenes. A little oversight in the beginning could result in a huge payoff at the end.

Future

The next step in this project is to get the reports from the Cognos team. This step is imminent. Once these reports are received there will be more value to the budget worksheet, and the project overall. The future of this project depends on the executive leaders seeing benefit. This benefit can be seen immediately with the reports being requested.

My prediction is that it is reasonable to expect this project to be finished by September of 2008. The project will be motivated by the annual SII reports. Between July and September of the current year, the functional leaders will be forecasting what they expect to spend in the upcoming year. In July there is likely to be a strong push to get this project completed, and if it is not completed by September there is a likelihood this project may never be completed.

In the long term I would like to see this project get integrated from MS Access to IproGEct. I would actually like to see MS Access not being used anymore, and the project become a more polished implementation in a standard windows client. I have strong feelings about the ability of this project to improve the decision making for capital allocation.

References

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8 Our Businesses. 2008. January 2008. General Electric Company. 18 January 2008 <http://www.ge.com/company/businesses/index.html>

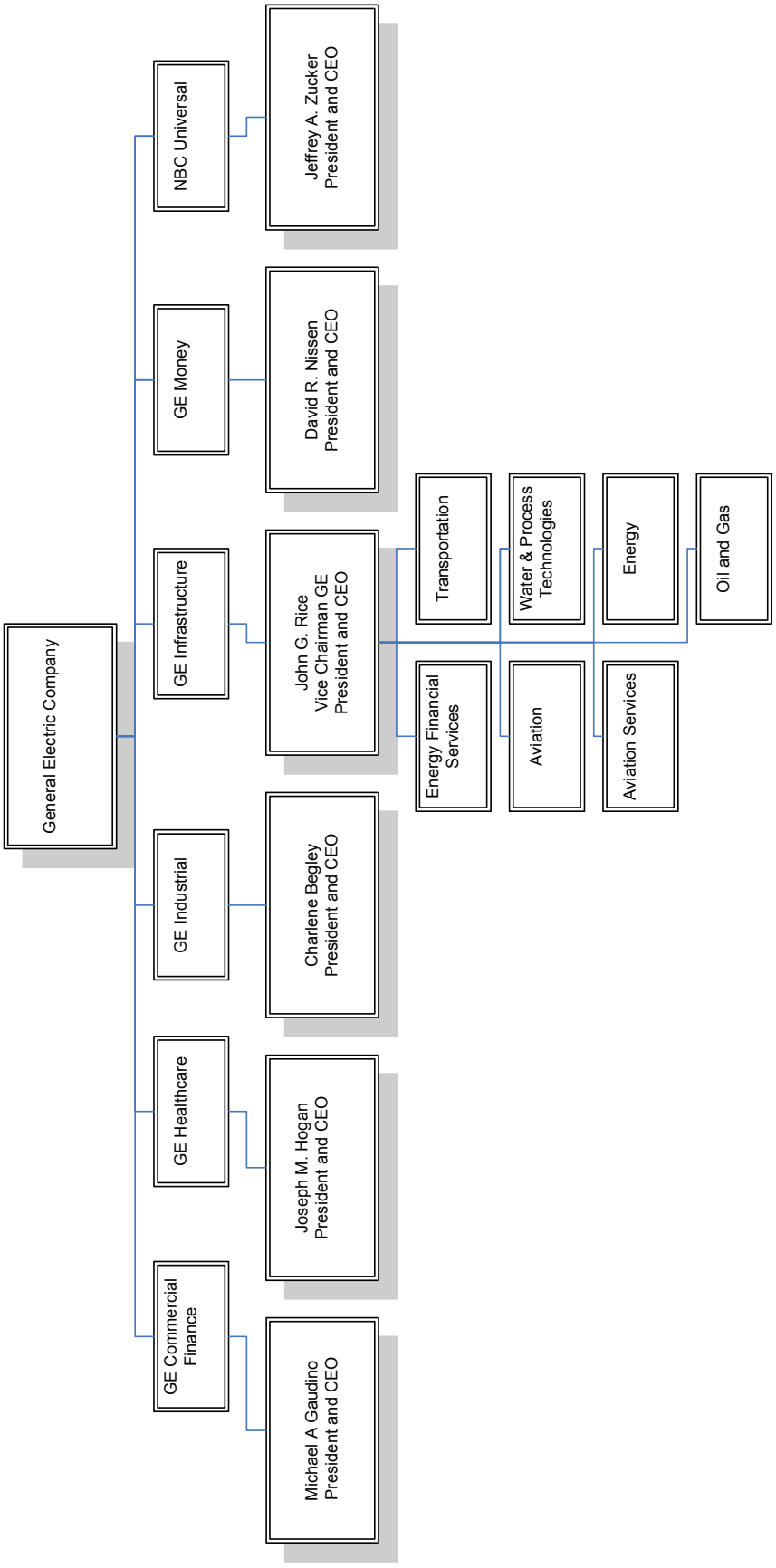
9 Scott, George. Multiple personal interviews. June 2007 – April 2008.

10 Worldwide. 2008. April 2008. General Electric Company. 23 April 2008 <http://www.ge.com/worldwide/index.html>

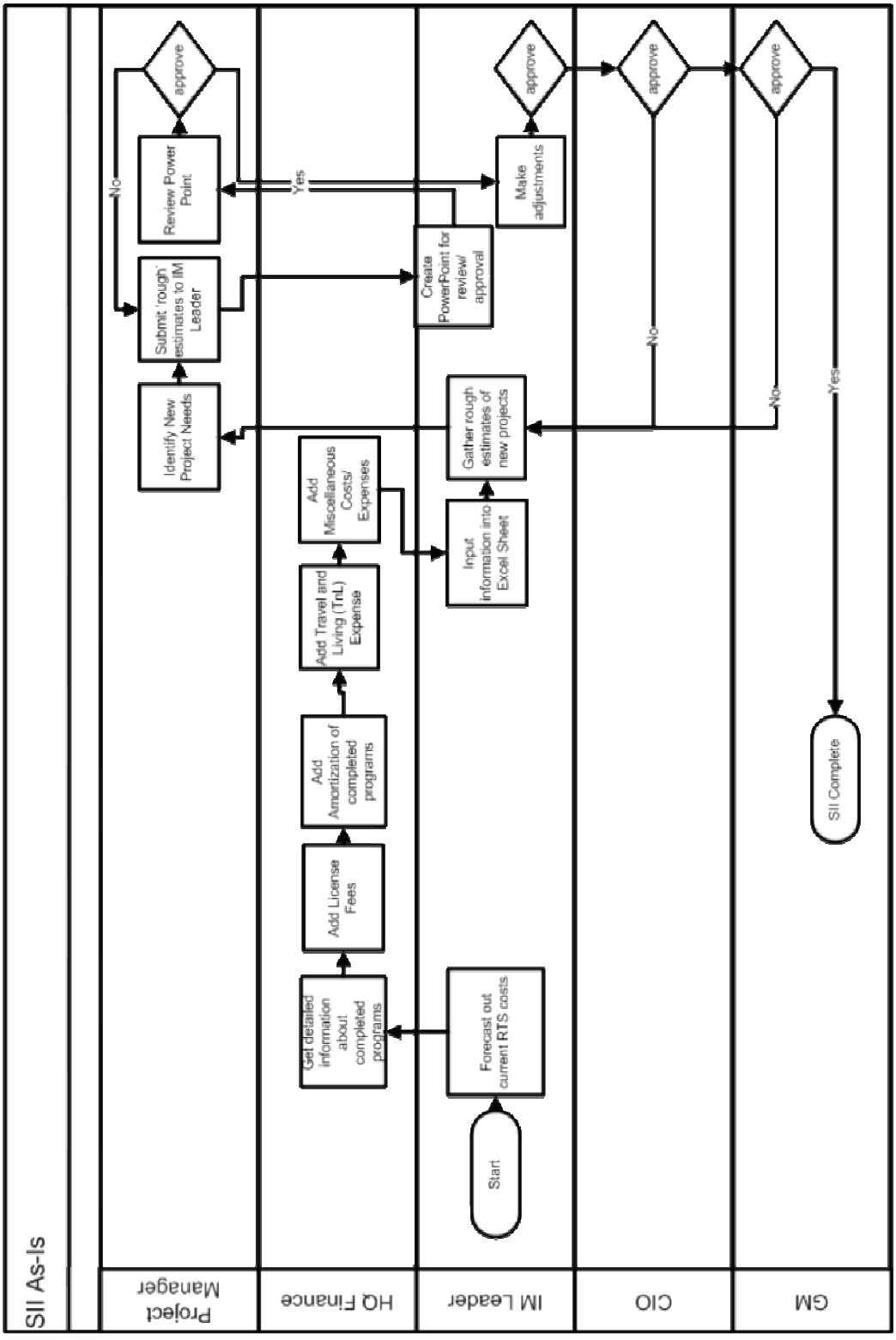
The processes described in this context are attributed to an internship at General Electric Company, 2008.

Appendices

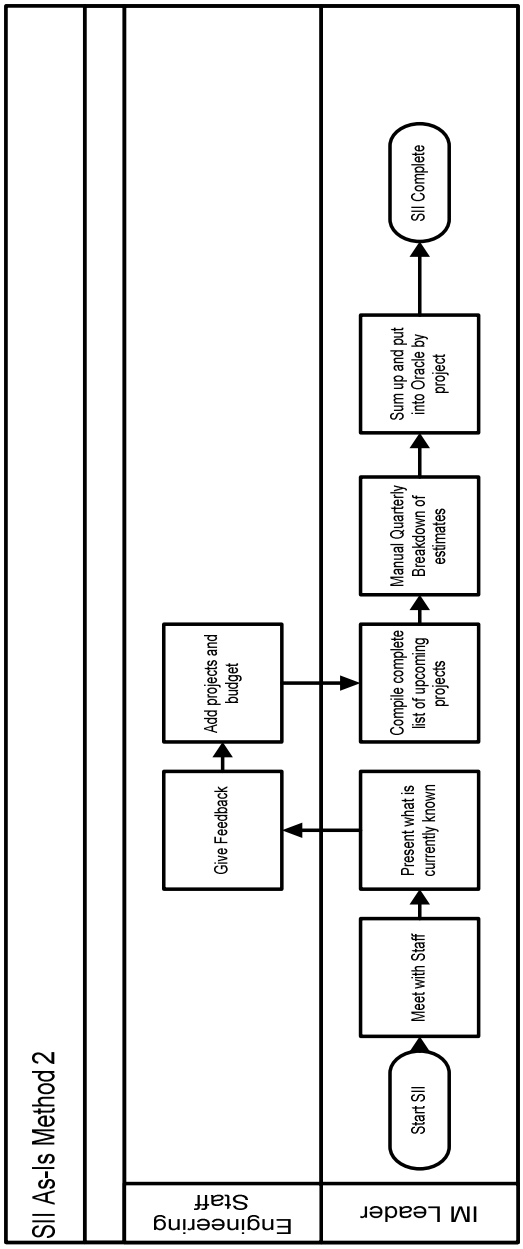
Appendix A: GE Organization Structure



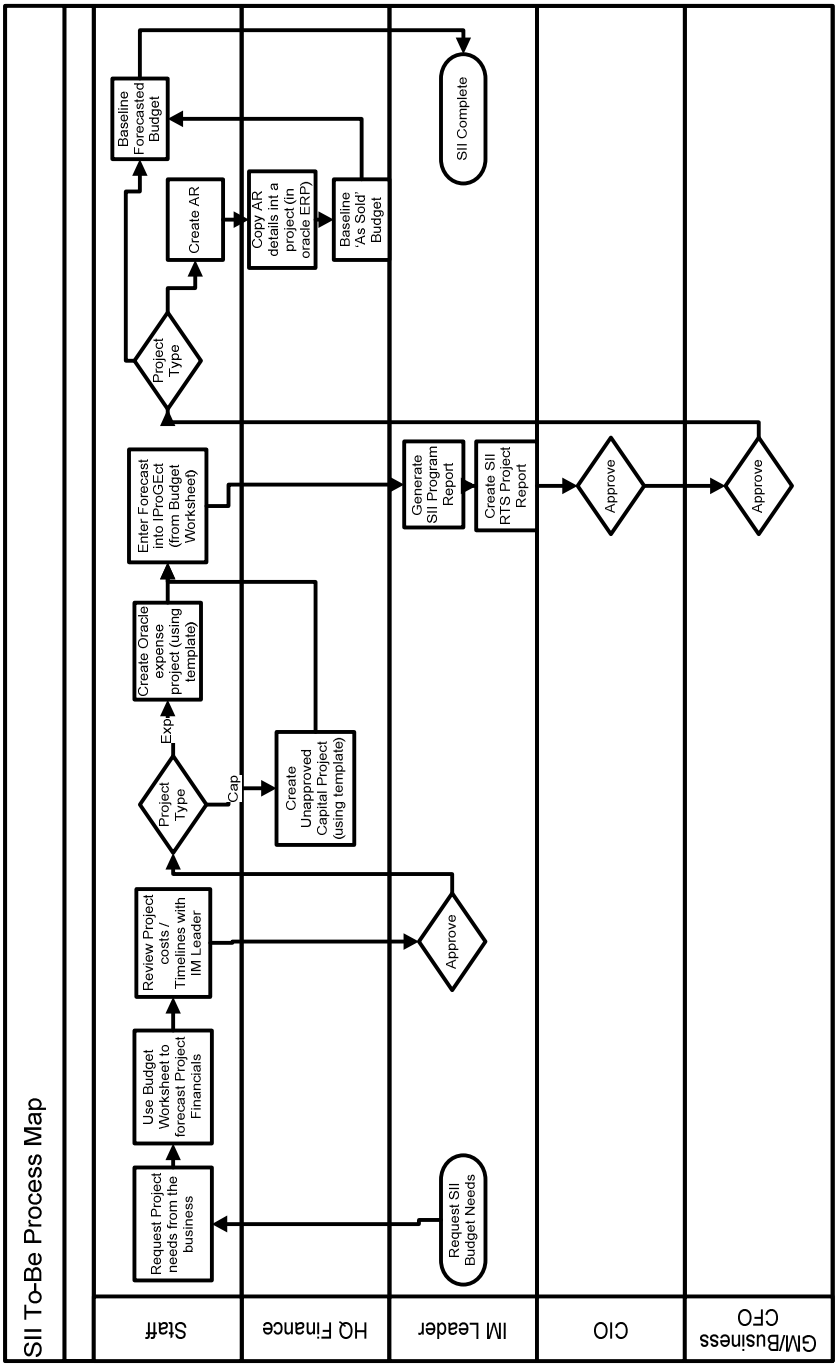
Appendix B: As-Is Process Map of SII Process (method 1)



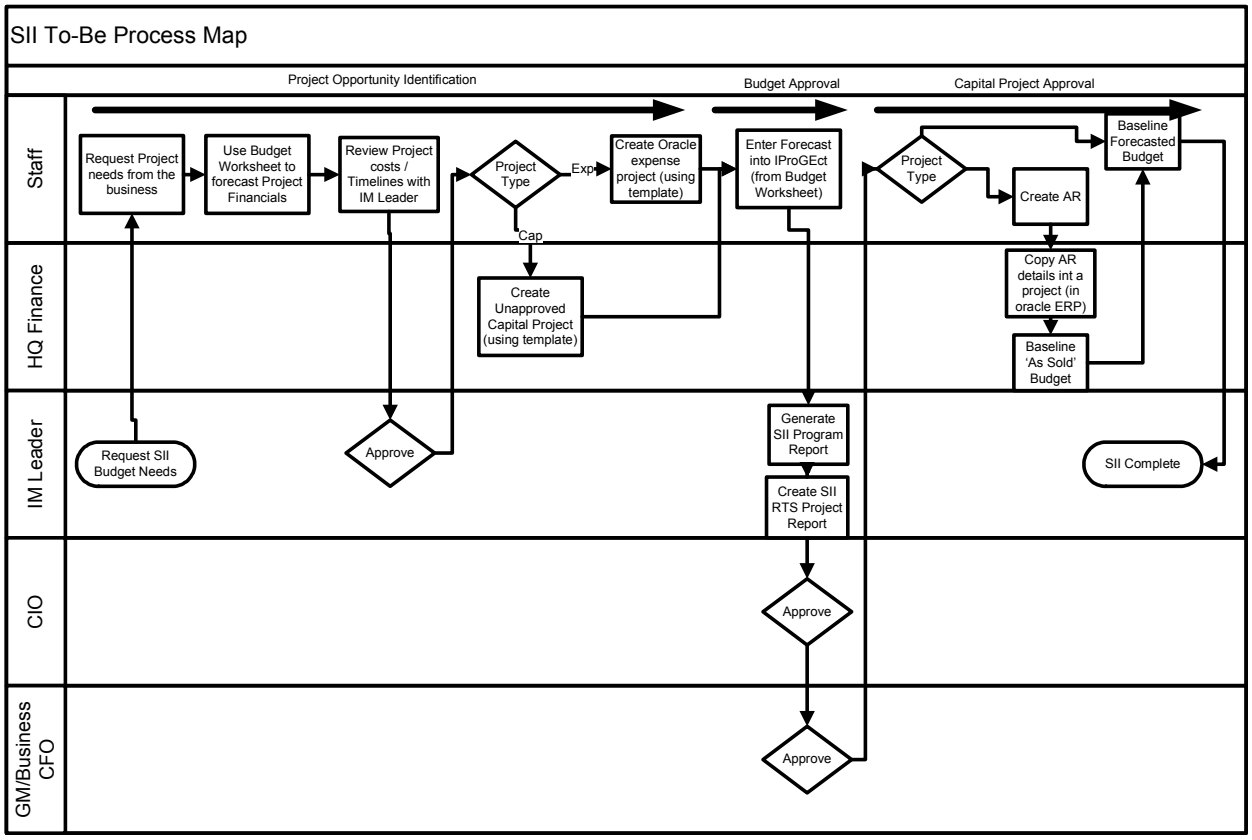
Appendix C: As-Is Process Map of SII Process (method 2)



Appendix D: To-Be Process Map of the SII Process



Appendix E: To-Be Process Map of the SII Process Broken into Three Sections: Project Opportunity, Budget Approval, Capital Project Approval



Appendix F: Business Requirements Document

Financial Decision Support System Business Requirements

Version: 1.4

Published:

Author: Ryan M. Renninger

GE Hitachi Nuclear Energy

New Plant Projects Planning

Revision History

Date Appvd	Author	Version	Description of Changes
09/19/2007	RenningerRM	1.1	Create Document, Added Revision History, Contents, Purpose, Section 1.2 Definitions, Acronyms and Abbreviations
09/26/2007	RenningerRM	1.2	Added Section 1.3, 2.1, 2.2, 2.3, 2.4
10/05/2007	RenningerRM	1.3	Created Customer CTQs
10/18/2007	RenningerRM	1.4	Added 2.3 Project Dependencies, 3.1 Customer Matrix, 3.2 Customer Environment, Integration and Data Requirements

Contents

Introduction

Purpose

This document is intended to provide the Business Requirements on the standardization of the Growth Playbook process, and SII budgeting forecasts for the IM Leader of New Plant Projects, following IM guidelines and policies to ensure a secure, accurate and reliable system that enforces Generally Accepted Accounted Principles (GAAP). This document is to describe the requirements given by the client, who is the Information Management Leader for New Plant Projects for GE Energy.

Definitions, Acronyms, and Abbreviations

Amortization – Allocation of costs when applied to intangible assets.

Cap- Capitalized Expenditure – Capitalization means putting the asset on the balance shedet rather than immediately expensing its cost in the income statement.

CTQ – Critical to Quality – These are areas that the customer deems as necessary for the product to be functional and complete. Without these measurable areas being satisfied, the project will not be considered a success.

Cognos – A reporting tool that pulls data from the enterprise system

Depreciation – Allocation of costs when applied to tangible assets.

DPMM – Digitized Project Management Methodology.

DR95 – Data Request 95, a commonly used operations planning report

ERP – Enterprise Resource Planning.

Exp – Expense—Financial term concerning the outflow of cash.

GAAP – Generally Accepted Accounted Principles.

GEH – GE Hitachi Nuclear Energy.

GPB – Growth Playbook.

IM – Information Management.

NPP – New Plant Projects.

Op Plan – Operations Plan relative to the mission of the business

PMM - Project Management Methodology.

RTS – Ready to Serve.

SII – The one year budget forecast.

SIT – System Integrated Testing.

TG – Tollgate used as a milestone marker for the PMM.

Tollgate – The milestones used for project management. GE has a specific process for initiating a project, through to finishing a project and presenting it to the business. The tollgate process is part of the DPMM and is required by GE for any project being done.

Tollgate 0 – Project Kickoff

Tollgate 1 – The initial step in project planning. It is normally considered an expense

Tollgate 2 – Requirements – This is where the requirements documents are written up to explain, coordinate and organize the project and what is needed to get the project done/completed.

Tollgate 3 – Design - This is the design phase of the project. This is where the documents go from the “as is” to the “to be” process. This will help lead the project team towards creating and completing the project.

Tollgate 4 – Build and test—After the design is done, the next step is to implement the project. In Tollgate 4, we are constructing the environment, followed by running the environment (project) through a series of tests. Some of the tests are UAT (user acceptance test)

Tollgate 5 – Deploy – This is the completion of the project.. This is where the project has already passed tests and is ready for production, or normal use. During this stage, the project is often switched over from development to the actual group of people who will be responsible for maintaining the environment and keeping things running.
UAT – User Acceptance Test

Project Overview

Project Charter

The process required to accurately state and report the financial budgets (expectations) in the GPB, SII, and the Op Plan is very labor intensive. There is an opportunity to increase productivity, increase accuracy, create a standard reporting process and standardize the method by which reports are generated for the New Plant Projects unit of GE Energy.

As is, the financial forecasting requires an abundant amount of time to maintain accurate forecasts that are valid and verified enough to submit and project the future capital and expense spending done by the IM unit of NPP.

There is currently no standardized system established by the business unit to force all projects to have similar reporting qualities. The current system is done manually with little to no automation.

The objectives for this project include:

- Standardize the input of budgets from the Project Managers (Project owners) to the Oracle ERP system.
- Create reports for viewing the required information (through Cognos) which are to ensure reliable results that accurately, securely, and concisely display the necessary information requested by the client.
- Document the workflow process as well as the business process that will become the standard for the financial budgeting of NPP.
- Validate the information entered, and verify the integrity of the information from which the reports will be generated.
- Improve communications within General Electric, and allow common techniques to be brought into practice.

Employing a standardized, inclusive project will increase the accuracy of reports and budgets as well as systematically enforce rules and regulations that may be required by the finance section of NPP.

Project Scope

In Scope

- This project will be created for the NPP IM (as the pilot).
- This project focuses on the needs of the IM Leader and Project Managers for financial budgeting.
- This project will create reports that can be viewed as charts that clearly define the forecasted capital and expense spending for the IM Leader for NPP IM.
- This project will result in the implementation of a standardized input process for Project Managers within the IM NPP unit.

- Automation of RTS costs being carried forward, as determined necessary, verified and validated by the client as a method that will reduce the redundant tasks required to generate accurate budgets.
- The project will be implemented for the future rollout to other business units.

Out of Scope

- The current scope of this project does not include any other business units within GE.
- This project does not require any new technology or hardware.

Project Dependencies

There are currently no other projects impacting the completion of this project.

Project Name	Project Description	IT Project Leader	Business Project Leader	How does the project impact this project?

Baseline CTQs

CTQ Type	CTQ	CTQ Definition	Spec Limits	Measurement **Tool/ Process**
Process	Productivity	Time to create SII budget.	Upper: 120 Lower: Target: 40	*Hours*
Process	Accuracy	Budget Reporting (How Long)	Upper: Lower: Target:	*Hours*
Data	Accuracy	Capital Versus Expense Budgets	Upper: Lower: Target:	*Percentage*
Data	Accuracy	Schedule Accuracy	Upper: Lower: Target:	*Days*
Data	Accuracy	Budget Versus Actuals	Upper: Lower: Target:	*Percentage*

Process	Control	Budget Revision Control	Upper: Lower: Target:	

Benefits

Internal Benefits

- Reduction in rework due to corrupt or lost data files.
- Reduction in manual labor required to produce the reports expected for budgeting.
- Reduction in time spent in verifying and validating information submitted by project managers, which is fundamental in the forecasting process.
- Reduction in time required to make changes to forecast (to maintain accuracy).
- Dependable results as a result of automation.

External Benefits

- Improved working process with NPP IM and GEH.
- Reduction in errors when reporting, or maintaining forecasted budgets.
- Expedited project deployments and DPMM process.

Customer Profiles

Customer Matrix

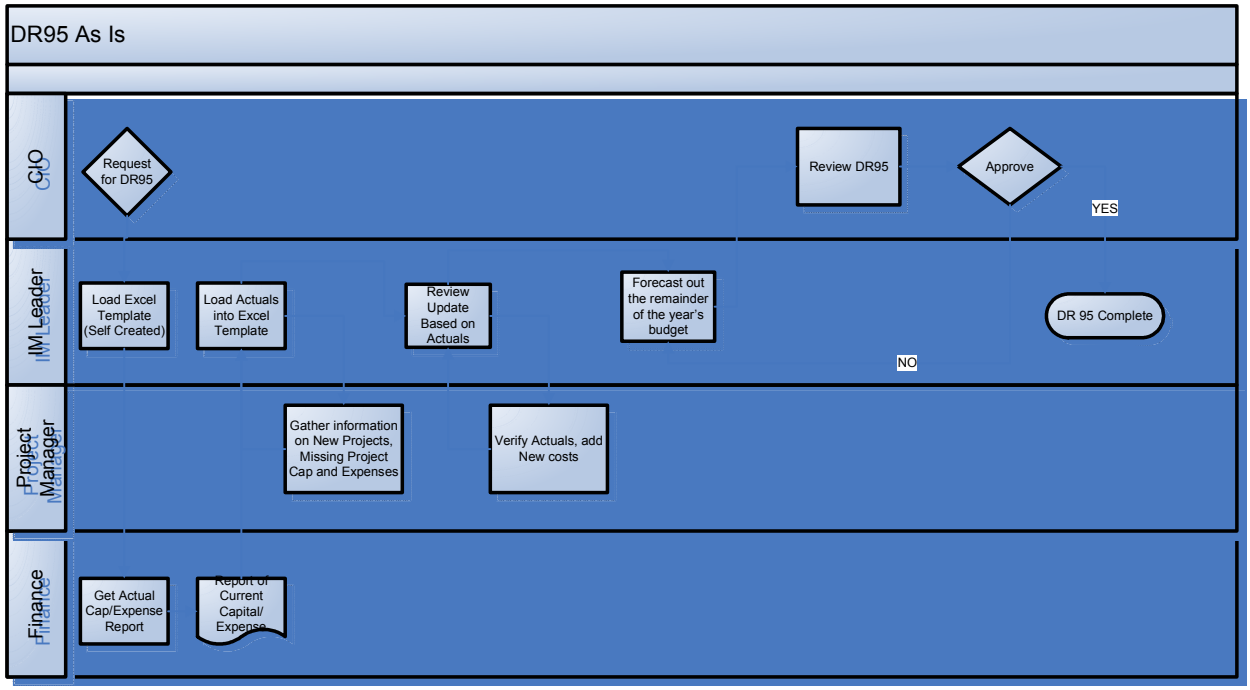
Customer Group	Description	Responsbilities	Areas of Input	Issues or Concerns
IM Leaders	Owners of budgets.	Overall responsible for IM Team's budget	Inclusive (DR95, SII, GPB)	
Project Managers	Owners of project specific budgets	Reporting project budgets and actuals to IM Leader		
Finance	Approvers of budgets	Financial controllership	AR, Capital projects, Inclusive	
CIO	Owner, Approver of budgets	Consolidating budgets		

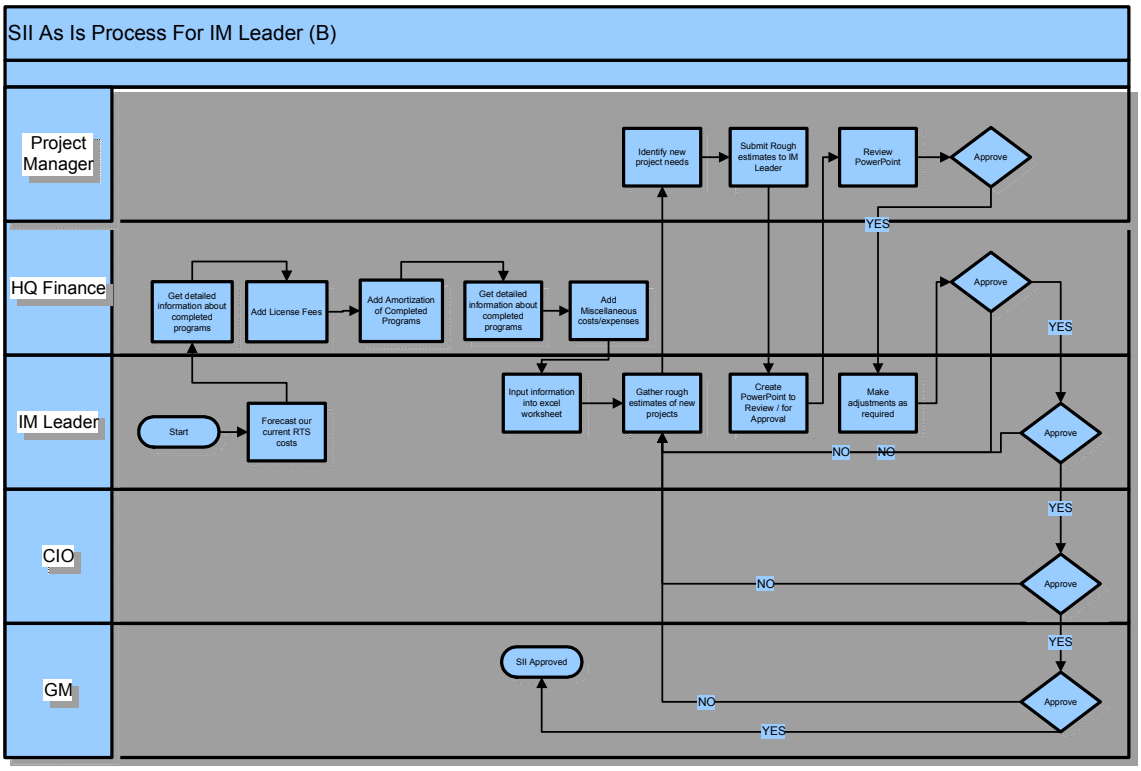
GM	Owner of projects and tasks needing budgets	Consolidating budgets		

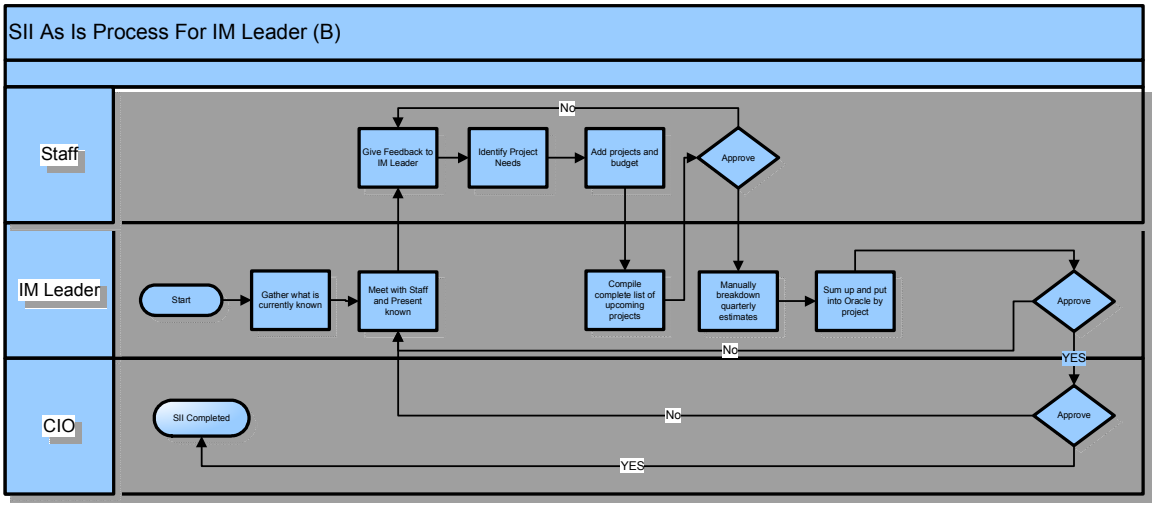
Customer Environment

The environment must support access to IM Leaders from multiple locations, allowing for secure access to confidential information from within the GEH network. Users within the GEH network should have access and be able to immediately draw information from the reports at all times.

As Is Process Maps




SII As Is Process For IM Leader (B)
Project Manager
HQ Finance
IM Leader
CIO
GM
Identify new project needs
Submit Rough estimates to IM Leader
Review PowerPoint
Approve
YES
Get detailed information about completed programs
Add License Fees
Add Amortization of Completed Programs
Get detailed information about completed programs
Add Miscellaneous costs/expenses
Approve
YES
Start
Forecast our current RTS costs
Input information into excel worksheet
Gather rough estimates of new projects
Create PowerPoint to Review / for Approval
Make adjustments as required
Approve
NO
NO
YES
Approve
NO
YES
SII Approved
Approve
NO
YES


SII As Is Process For IM Leader (B)
Staff
IM Leader
CIO
No
Give Feedback to IM Leader
Identify Project Needs
Add projects and budget
Approve
Start
Gather what is currently known
Meet with Staff and Present known
Compile complete list of upcoming projects
Manually breakdown quarterly estimates
Sum up and put into Oracle by project
Approve
No
YES
SII Completed
No
Approve
YES

Requirements Matrix

Req #	Req Category	Priority	Customer Groups	Description of Requirement (Customer Need)	Targeted Phase	Requestor

Release Plan

Integration & Data Requirements

Interface Name	New or Existing Interface?	System Sending Data	System Receiving Data	Type of Data Being Passed	Frequency of Data Flow	Comments
Budgeting tool to IproGEct	New	Budgeting Tool	IproGEct	Resources, Durations, Costs, Capital/Expenses, Task Numbers, Project Numbers, Project Names	As Required	
Cognos	Existing	Oracle ERP	Cognos	Budgetary information	As Required	

Reporting Requirements

Standard Gantt Chart

Resource Loading

Resource Spread

Time and Resource Requirements

Desired Completion Dates

Phase #	Phase Description	Desired Due Date	Comments
TG 1	Toll Gate 1 Sign Off and Review	December 15, 2007	
TG 2	Toll Gate 2 Sign Off and Review	December 15, 2007	
TG 3	Toll Gate 3 Sign Off and Review	February 1, 2008	
SIT	System Integration Test	February 1, 2008	
UAT	User Acceptance Test	February 2, 2008	
Training	End-User Training	March 1, 2008	
TG 4	Toll Gate 4 Sign Off and Review	March 10, 2008	
Roll-Out	Go Live!!!!	April 1, 2008	
TG 5	Toll Gate 5 Sign Off and Review	April 5, 2008	

Resource Requirements

Resource Role	Full or Part-time?	Start Date	End Date	Skills Needed

MD.200 - MODULE FUNCTIONAL AND TECHNICAL DESIGN

DSS Corporate Financial Budgeting

Author: Ryan M. Renninger
Creation Date: December 05, 2007
Last Updated:
Control Number:
Version: 1

Document Control

Change Record

Date	Author	Version	Change Reference
12/05/07	Ryan M Renninger	1	No previous document

Reviewers

Name	Tollgate	Position

Distribution

Copy No.	Name	Location
1		
1		
1		
1		

Contents

Functional Design Approval

Approvals:

<Approver 1>	_____
<Approver 2>	_____
<Approver 3>	_____

Functional Topical Essay (Tollgate 4)

This document defines the strategy for developing a Decision Support System (DSS) for forecasting budgets that relate to IM projects being created by the business units.

The DSS will follow the Project Management Methodology (PMM) that is currently practiced by the business, allowing Project Managers the ability to more accurately and efficiently forecast out the costs and expenses associated with each project.

As a result the business will be better informed of the costs incurred by IM to develop and maintain the programs and tools that are required or used by the business.

This document contains information needed by technical and functional team members to understand and implement the interface.

Scope

The scope of this document is limited to NPP IM and the SII forecasting process.

Definitions

SII

The one-year budget forecast.

TG

Tollgate, used as a milestone marker for a project. Commonly used as a top-task.

Assumptions

- None.

Basic Business Needs

The Decision Support System is responsible for:

1) Providing a method for Project Managers to follow to systematically forecast and represent the costs (Capital and Expense) associated with a project.
2) Allowing the responsible owner a means by which he/she can create/update/delete/record changes to the budget of a project.
3) Standardizing the process by which budgets are reported and submitted into Oracle ERP.
4) Ensuring thorough accurate forecasts are created and approved prior to submittal.

Functional Details

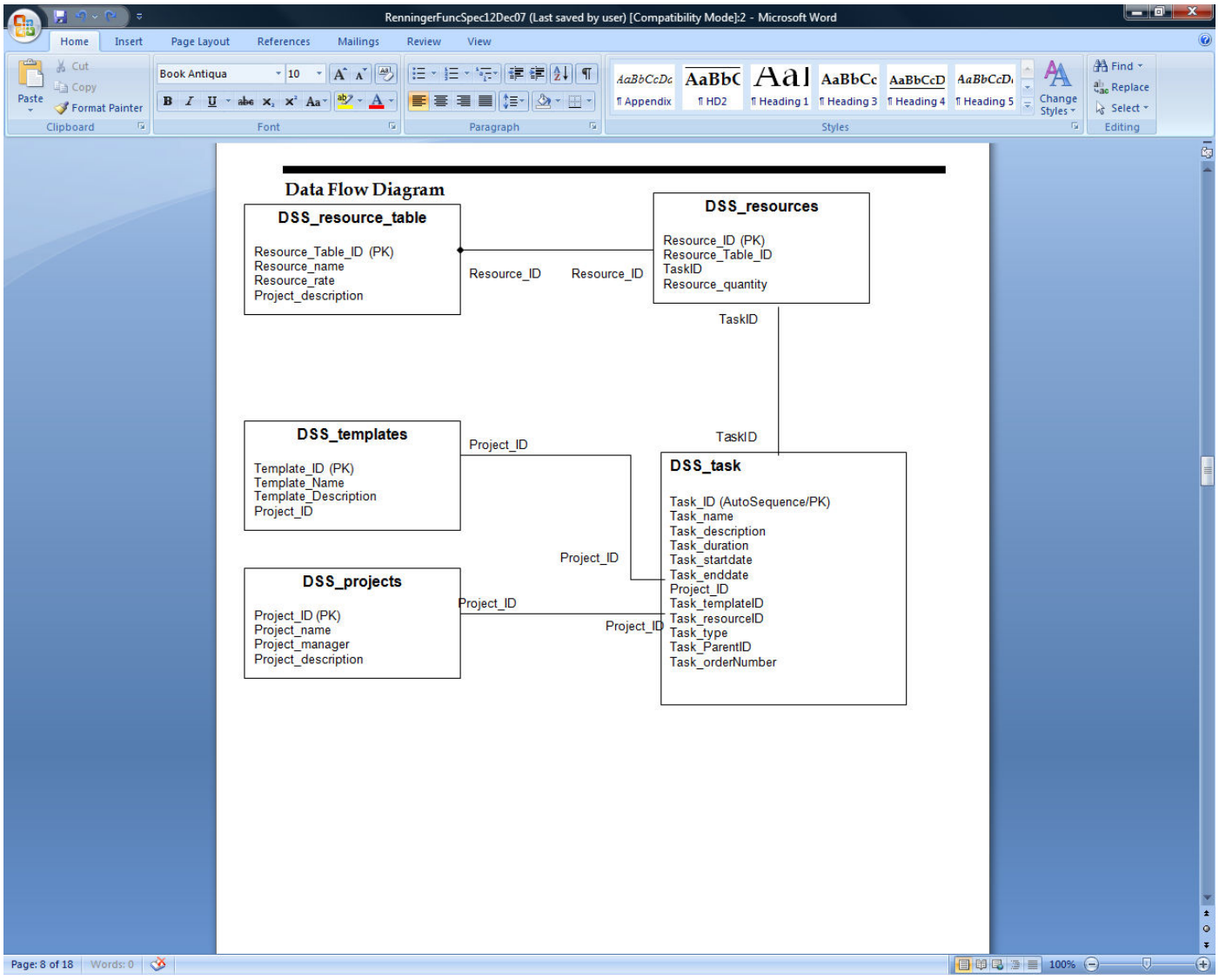
This section outlines the functional details required for the interface and explains the setups, business rules, data elements and data transformation and translation.

Application Setups

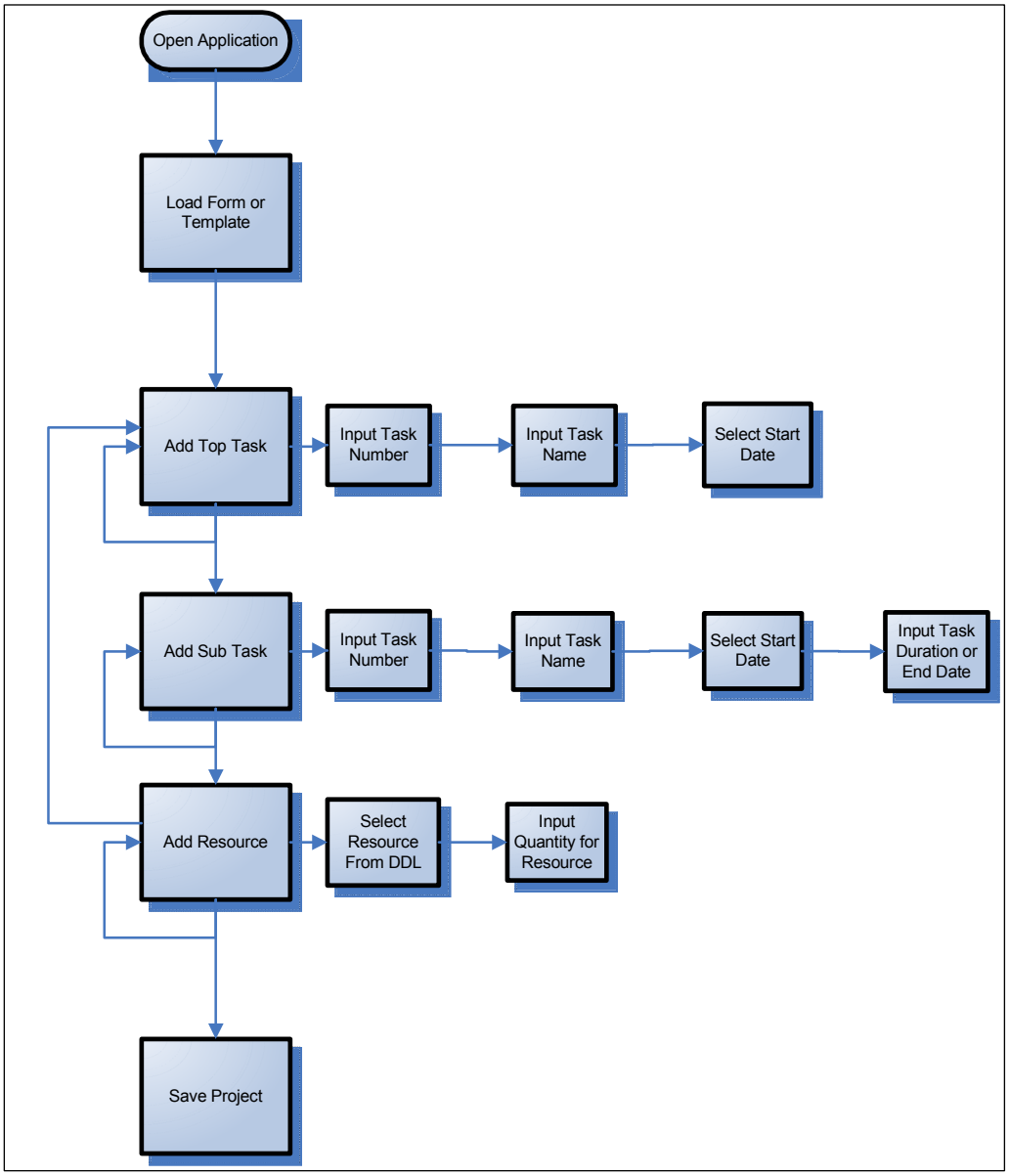
- **Capital Expenditure Templates (DB)**
- **Expense Templates (DB)**
- **Expense Types and Rates (DB)**
- **Project Detail Storage (DB)**

Selection Criteria

Data Flow Diagram



Process Flow Diagram



User Procedures

Program Navigation

- The Project Manager uses the decision support system as a tool to identify the resources required to implement a project.
- The Project Manager uses the decision support system as a tool to schedule and predict the timeline needed to complete the project.
- The Project Manager uses the decision support system as a way of targeting the costs required to complete a project.

Input Parameters

- Task level resource requirements.
- Project identification.
- User identification.
- Labor rate chart/information.
- Resource identification.
- Capital / Expenditure identification.

Error Handling/Troubleshooting

N/A

User Test Plan

1) Open the DSS and log into the system.
2) <New Project> Select from the drop down list, a template that is relavent to the project, or select previously started project from list of available projects.
3) Identify and select the resources required to complete a task.
4) Identify and schedule the time required to complete a task.
5) Submit information.
6) Review results.

Technical Design Approval

Approvals:

<Approver 1> _____

<Approver 2> _____

Technical Overview

Assumptions

- None.

Approach

Module List

Table and View Usage

Program Logic (pseudo code)

```
[Load Project]
      Check if Project_ID exists in DSS_projects
            While Project exists
                  While Task exists for project
                  Display Task
                  Parent_ID = Task_ID
                  While Task_ID with Parent_ID exists
                        Display Task (child task)
                        While Resources Exist
                              Get Resources for Task
                              Display Resources
                              Cost = quantity * duration * resource rate
                              Display Cost
                        Next
                  Next


[Task Duration Change]
**Change End_date of current task
      Find taskID
      Find Start_date
      Date = Start_date
```

```
      Direction = Forward
      NumOfDays = Duration
      DateShifter <Date,NumofDays,Direction> [Call Function]



**Change Start_date of next tasks

Function ????  Needed for any date traffic

While task.orderNumber is NOT greater than Max(task.OrderNumber)
      OrderNumber = OrderNumber (of changed task) + 1
      Find TaskID with new orderNumber
      While TaskID Exists
                  DateHolder = Start_date (before it changes)
                  Start_Date (current task) = End_Date of previous Task
                  Difference = DateHolder – StartDate
                  If Difference > 0
                        NumofDays = Difference
                        Direction = Forward
                        DateShifter <Date,NumofDays,Direction> [Call Function]
                  Else
                        NumofDays = Difference
                        Direction = Backwards
                        DateShifter <Date,NumofDays,Direction> [Call Function]
                  EndIf
      Loop

Loop
```

[Date Change]

```
[Function]  DateShifter <Date, NumofDays, Direction>
            DayofWeekStart = Find from DB which day of the week we are starting.

            If DayofWeekStart = "Monday" then DOW = 1
            If DayofWeekStart = "Tuesday" then DOW = 2
            If DayofWeekStart = "Wednesday" then DOW = 3
            If DayofWeekStart = "Thursday" then DOW= 4
            If DayofWeekStart = "Friday" then DOW = 5
            If DayofWeekStart = "Saturday" then DOW = 6
            If DayofWeekStart = "Sunday" then DOW = 7

If Direction = Forward
      From 1 until NumOfDays
            If DOW < 6
                  Date = Date + 1
            Else
                  Date = Date + 2
                  DOWS = 0
            End_If
            DOW = DOW + 1
      Loop
      EndIf
      If Direction = Backwards
      From NumOfDays until 1
            If DOW > 0
                  Date = Date - 1
```

```
            Else
                  Date = Date - 2
                  DOWS = 6
            End_If
            DOW = DOW - 1
      Loop
      EndIf

[End Function]
```

Tables, Indexes, Sequences

Webmethods Design

Publish Specification

N/A.

Subscribe Specification

N/A

Open Issues

None.

Closed Issues

None

Product Delivery Approval

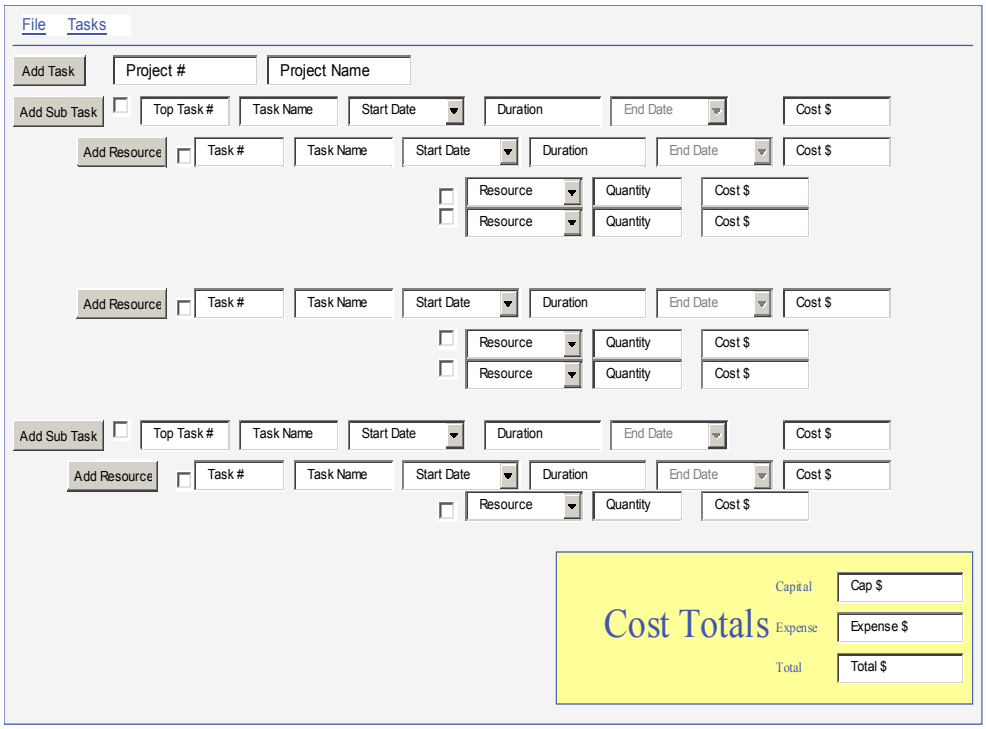
Approvals:

<Approver 1> _____

<Approver 2> _____

<Approver 3> _____

Appendix H: Notes, Updates and Comments to/from Programmer of the Budget Worksheet



Version 1

These comments were returned with the initial version of the prototype of the Budget Worksheet. The initial version of the budget worksheet was due to the specifications sent in the MD200, Functional Specification Document.

<No Screen Shot Available of Version 1>

Notes from the Programmer

I have completed development of a first draft for a prototype for DSS. Here are some notes:

1. This first draft provides a working model for the fundamental database structure you envisioned. The entry screens are in a structure, which was quick to implement in MS-Access. I implemented a report in a structure similar to what you presented in your MD.200 document.

2. After you load the interface to your PC and run it the first time, I need to authorize you as an administrator. Until then, you will see only a limited portion of the prototype.

3. I believe you will find the prototype more operationally complete than what you had described in the MD.200 document. I included some administrative functions, and I am certain there will be other administrative functions desired.

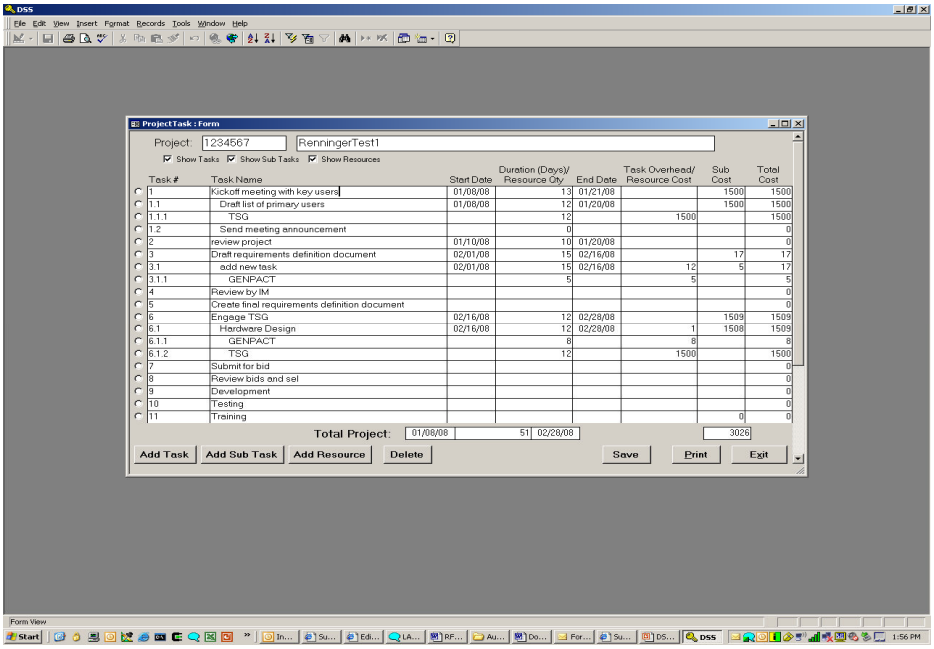
4. The prototype is connected to a central database server. You may forward this message to others to try if you desire, and all share the central database.

5. To get a view of what a non-administrator will see, you will need to either add a dummy person, or use another user who has loaded the prototype, then use the DEMO/TEST button to emulate their functionality. Once you select a user via the DEMO/TEST button, you adopt both the screens and functionality of that user. You will notice some of the administrative buttons do not appear (such as resource definition). Also note, that only an administrator can create and update template projects. Also, only an administrator can delete a project.

6. The administrative user creates a template project using the create new project button, then checking the template checkbox on the definition screen. Then use the define project tasks button to create the tasks and subtasks for the template. I left one test template in the database for illustration. You will want to create your own templates, and eventually delete the one I created.

7. This first draft is lacking in the area of "capital cost" vs. "expense. This will have to evolve a bit.

Budget Worksheet Version 2



Notes from the Programmer

I have modified the DSS prototype so that the definition of project tasks, subtasks, and resource assignments is maintained in a single view.

Here are some design implementation notes, limitations, and assumptions of the current application design:

1. *The project breakdown has up to three levels: (a) tasks, (b) subtask assigned under a tasks, and (c) resource assignments. This is inherit in the prototype implementation, and would require significant effort to alter (such as adding a 4th level).*

2. *I took your suggestion of marking a line to be deleted and having a single button at the bottom of the screen instead of a button on each line. In fact, I extended this concept to the Add functions as well.*

3. *I implemented the n.n.n structure you suggested for task#. These numbers are automatically changed. Whenever a line is added or deleted, the system resequences, so these numbers may not provide a stable reference throughout the life of a project.*

4. *For updates to start/duration/end-date, I implemented the following functionality (arbitrary):*

a. If start date is modified, end is recalculated based on new start and duration.

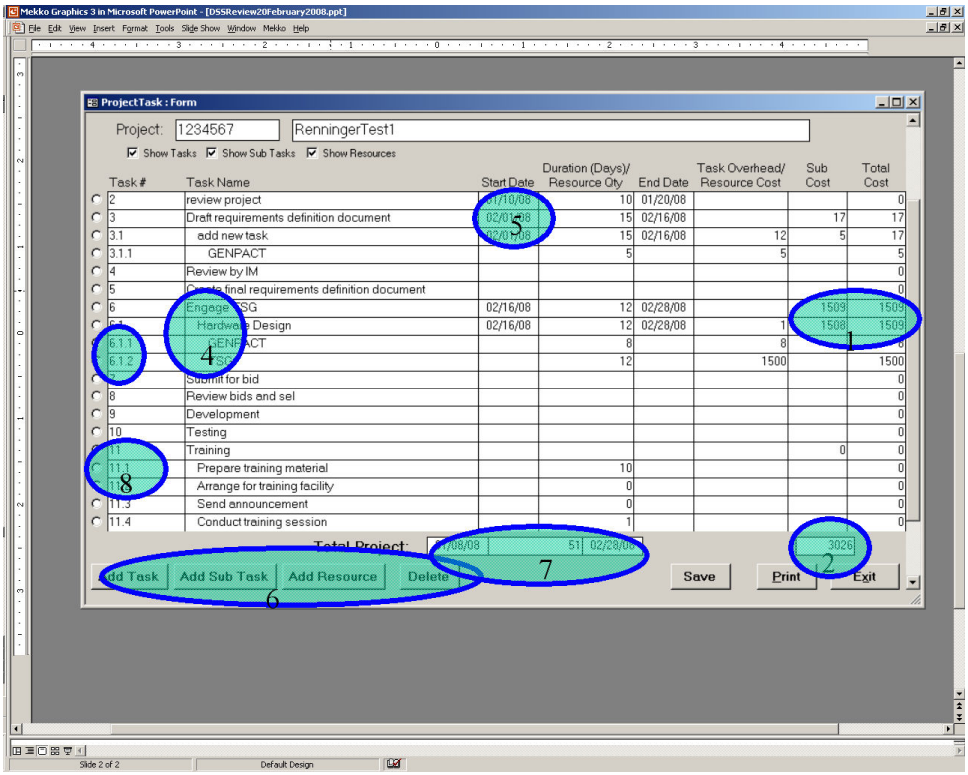
b. If end date is modified, start date is recalculated based on new end and duration.

c. If duration is modified, end is recalculated based on start and new duration.

5. Currently, the units for Duration is calendar days. It could be changed to calendar weeks. It could not be changed to work days without significant effort.

6. I added "view" checkboxes to allow a user to show tasks, subtasks, and/or resource assignments. This allows a user to generate a printed list for only the top-level tasks, a list withing showing the resources, etc. However, all three boxes must be selected to be in a maintenance mode where updates are allowed. Upon entry, all three boxes are checked by default.

Version 3



1) This area is confusing. We need to remove the sub cost of the task, if it's a top task. Need to remove the total cost of the task if it's a sub task… or clear this up so that it has meaning. Somehow distinguish between what is a total, and what is a single line item. Bold? Indent?

2) The total down here. I assume it's the project total, can we label this field, and maybe make it a different text? Just try something to make it look professional in appearance.

3) I like the task order list. This is good. BUT I am concerned of this: We have certain task numbers that we use for certain items in the DPMM (project management methodology).. The ordering is good.. Maybe hide this number but allow another number to be displayed that is inputted. IOW– we want this for organizational of this tool, but when it transfers into IProGEct or Oracle, we have numbers defined. I know a template can be made, but we need some method to make the task numbers the pre-defined oracle task numbers. Maybe call this sequence, and hide the column. Add a column for inputting a task number… allow both to be toggled…?

4) Indentation is good. I like the way this is. Good job!

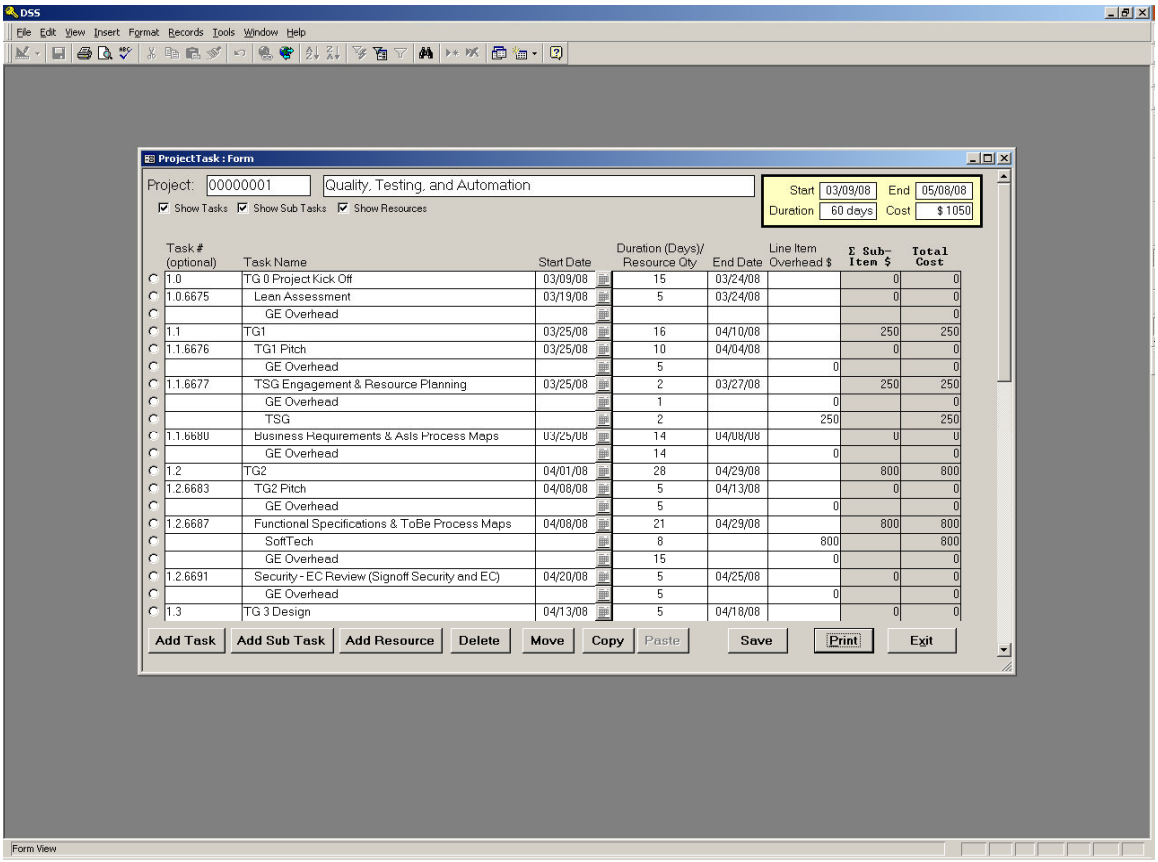
5) Start Date is too hard to input. Any other alternatives? Maybe automatically start with today, and give a way (calendar function?) to pick a new date? Trying to come up with ideas here. Should not allow nulls.

*6) *I* am good with these buttons. I think they do what we want them to do. I do not know if this will change at all, but currently "GREAT"*

7) The totals and project summary at the bottom here are hard to follow. Maybe it's the spacing, or maybe its because they lack labels. This information is not useful in its current state. Please identify better what each of these mean, label or formatting concerns here..

8) Say I wanted to move a row from 11.1 to 11.2.5 - - is there a way I can type in the new number and have that move? Added functionality… should make for ease of use.

Can we also center the inputted information, IE the duration column, the costs/overhead column, the subcost and total cost columns?



Notes from the Programmer

I have modified the DSS prototype in attempt to address the concerns you expressed in your last email.

Here are some design notes (refer to numbers you sent).

1) There are 3 cost fields. The overhead cost is the only entry field. For a top-task, the user enters any $ for the task not covered by its sub-task, such as administration of the top-task. For a sub-task, the user enters any $ not covered by the resources under it. For a resource line, this field is calculated and not an entry field.

The sub-cost field is not an entry field. For a top-task, it is calculated by summing the total cost of the sub-tasks under it. For a sub-task, it is calculated by summing the cost of the resources under it.

The total cost field is not an entry field. It is calculated by adding the overhead cost to the sub-cost.

I have relabeled the 3 cost fields in hope to clarify their purpose, and shaded the non-entry columns. If it still seems confusing, we could hide the sub-cost field.

2) Moved total to top-right of screen.

3) I hid the original task-number. The column now labeled task number is an entry field. The user may enter any text string he/she desires up to 20 characters. It is optional, and for used for reference purposes only.

5) I added a calendar button by Start Date to allow date selection from calendar. If user knows date, nowever, typing 3/12 is probably faster than using the button. If user types 3/12 without year, current year is assumed.

During project task definition, nulls must be allowed for several reasons: (a) typical planning defines tasks, sub-tasks, resources before defining schedule. (b) top-tasks are entered before sub-tasks, but can inherit earliest start and latest end from subsequent sub-tasks. (c) Template projects will likely never have any dates.

I believe what needs to be defined is the process layer beyond entry of the project task definition. Is there a turnover point when a user submits the project for review and acceptance? Is this turnover before or after a schedule has been established? There probably is some point in time when nulls should not be allowed.

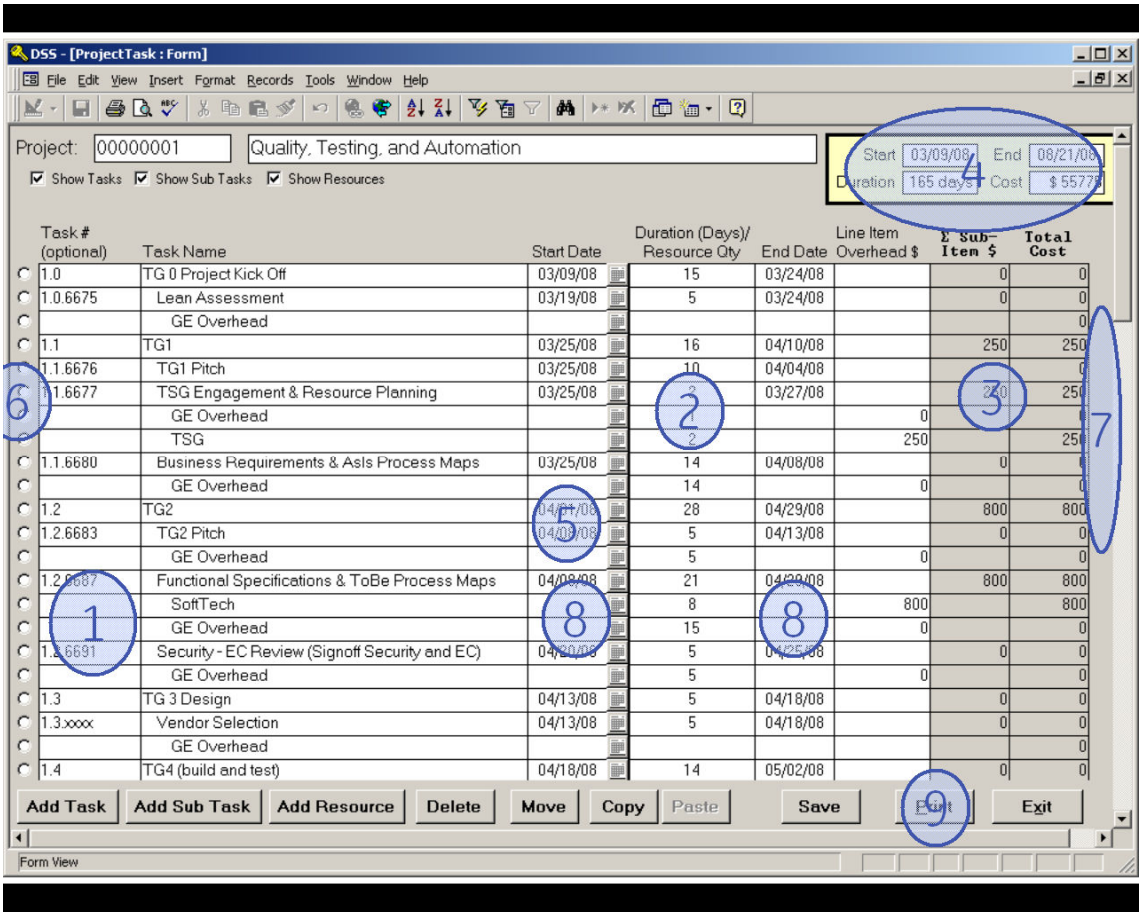
8) I addded new functions for move/paste and copy/paste.

9) I centered date and duration columns, left $ columns right justified. I could center $ columns if you want, but seems unusual not to keep $ aligned for multiple rows.

Please review, and let me know if additional adjustments are needed. To upgrade to the new version of the protype follow the procedure described below.

Thanks

Version 4



Attached to this screenshot, with spotlights were additional comments to help direct the programmer to the specific changes being requested. These comments were as follows:

1)When there is a resource in this spot. Can we change the color to gray next to resources.

*2)The numbers don't add up. What we want to do: For each task(subtask) we want to list each group of resources we need. For instance at this spot.. We have TSG Engagement &Resource planning, we we want to list each resource type once then list the number of people that each resource will provide. For instance 1 from GE overhead.. Will be used for the WHOLE duration. Meaning– 1 * Rate * Duration will equal rate at Number 4.. Then Add 2 (TSG) * rate * Duration.. Get that number and add it to the total at number three also.*

3) There is a lot of work needing to be done on the calculating. Also, the duration is in DAYS, and the rates are in Hours.. We need to convert from 1 day to 8 Hours, then multiply the rate, before we total. Or 2 Days to 16 hours, etc.

4)George's preference is to have the totals at the bottom of the screen. Also show what is capital, what is expense, and what the total of both is. As well as the start/end and duration..

5)Can the start date of this task automatically start with the end date of the last task, but give us the option to change the date if we need to (parallel tasks)?

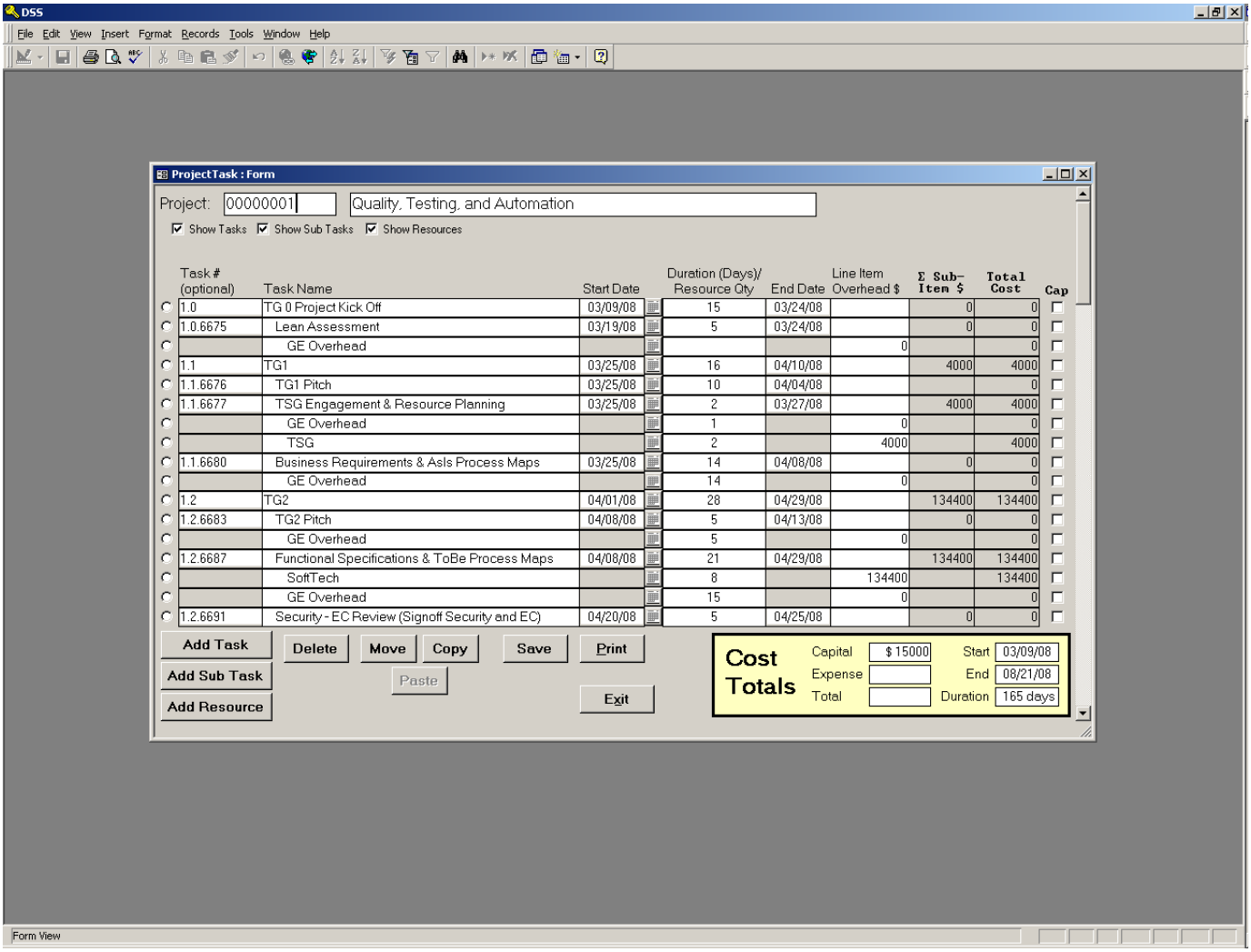
6) Selecting a radio button on the left side, to identify which line we are on is pain-staking. Can we have the ability to know where we are by clicking anywhere in the appropriate row? With that. Right now, if you add a task, or a resource– the radio button stays on that task, but doesn't include it as being that row, so you need to unclick and reclick it

7) We would like to add a checkbox on each row.. To distinguish whether that item is a cap item or not. Check if it's a cap, unchecked if its expense

8) Fill in or blank out the columns that are not pertinent. There is no start or end date to a resource. The resources need to go in accordance to the duration set above at the task level.

9) The print function doesn't print out properly. Close! But there are items missing, or lines cut off. We need print options too. Like just the tasks, or just the subtasks, or just a resource list. Or just the cost.. Report outs.. Don't focus too much on this right now, just prepare for us to come back with guidelines concerning this. We're going to want it to print out a sheet that we can transfer directly into oracle…. (To be researched in the near future)

Version 5



Notes from the Programmer

I have created a new version of the DSS prototype. I addressed the requests in the last PowerPoint you sent, except for item 5.

Notes (reference to numbers you sent in the PowerPoint):

For item 1, I did the best I could. You may notice a tiny grey bar near the box border some places. MS-Access does not really allow dynamic borders which change from row to row, so I had to switch to cleaver mode via overlapping controls, and the screen painting is not perfect.

For item 4, a total is left blank if it cannot be calculated. This is primarily caused by a missing Resource Qty for a resource line item, or by a missing duration for a task or sub-task that contains a resource assignment under it. With the algorithm you described in item 2, these are now essential in order to derive the resource cost.

For item 5, I sent you an email yesterday to help clarify. Please review that email and let me know your ideas on how to proceed.

Please review, and let me know if additional adjustments are needed. To upgrade to the new version of the protype follow the procedure described below.

Thanks

Appendix I: dPMM Project Template for use as template in Budget worksheet.

TG 0: PMM Project Kickoff		
6675	Lean First - Assesment	This step is required only if you need additional resources to perform data quality assessment for your application. Data Architect COE will review your project and provide a cost estimate for the assessment
TG 1: Initiate		
6676	TG1 Initiate: Presentation	Complete the relevant sections of the "PMM TG Review Presentation". Completion of each applicable section of the pitch will signify your readiness for the Gate Review. NOTE: There is a separate section at the end of the presentation with conditional/best-practice slides. Your project's size, complexity and risk combined with IM and Quality management's input should determine which of these conditional slides are relevant for you.
6680	Doc: Business Requirements & Asis Process Maps	Document the needs or requirements of the business. If you already have an existing Business Requirements, then just update the document to reflect the scope of work you will be doing.
TG 2: Requirements		
6683	TG2 Requirements: Presentation	Complete the relevant sections of the "PMM TG Review Presentation". Completion of each applicable section of the pitch will signify your readiness for the Gate Review. NOTE: There is a separate section at the end of the presentation with conditional/best-practice slides. Your project's size, complexity and risk combined with IM and Quality management's input should determine which of these conditional slides are relevant for you.
6687	Doc: Functional Specification & To Be Process Maps	Complete detailed Requirements or Use Cases. This includes providing "Acceptance Test Criteria" for each requirement or use case.
6688	Doc: User Interface Spec	Write the UI Specification or if

		you are enhancing an existing application and already have a UI spec, then just update that spec.
6693	SW License review and Purchase (Cap)	2.6693
6697	Doc: Tech Arch Doc (TAD) & Order Initial Hardware (Cap)	2.6697
6691	Signoff: TG 2 Security & Export Control	Complete a preliminary security review with the TSG Security Team. The TSG Security team will also review your Export Control Checklist.
TG 3: Design		
6701	Slides: Design Gate	Complete the relevant sections of the "PMM TG Review Presentation". Completion of each applicable section of the pitch will signify your readiness for the Gate Review. NOTE: There is a separate section at the end of the presentation with conditional/best-practice slides. Your project's size, complexity and risk combined with IM and Quality management's input should determine which of these conditional slides are relevant for you.
6702	Doc: Tech Design Doc (TDD)	This specification describes the initial technical design of the application (UML Diagrams, ER Diagrams, UI prototypes, etc). The document template is owned by IT, specifically the Application Architect. The Application Architect is accountable for the quality of the technical design, the product engineers are responsible for the execution and actual implementation of the design.
6705	Doc: Test Strategy	The System Test Plan defines the goals and objectives of testing within the scope of the project, the items being targeted, the approach to be taken, the resources required and the deliverables to be produced.
6706	Doc: UAT Test Cases	Write User Acceptance Test Cases for each requirement.
TG 4: Build & Test		
6709	Slides: Build/Test Gate	Complete the relevant sections of the "PMM TG Review Presentation". Completion of each applicable section of the pitch will signify your readiness for the Gate Review. NOTE: There is a separate section at the

		end of the presentation with conditional/best-practice slides. Your project's size, complexity and risk combined with IM and Quality management's input should determine which of these conditional slides are relevant for you.
671	Doc: Config Guide	Document whether specific configuration is needed for any of the software components listed for this application.
6714	HPSD: RFC to Setup Dev Environment	This activity involves setting up and installing the environment for development. IM Project Mgr needs to Initiate the Dev Environment setup through an HP Service Desk Request for Change (RFC). NOTE: For Energy Infrastructure Changes submit request using HPSD. Energy Application Changes will continue with current process until further notice.
6722	Coding: 100% of the Application	Complete product is built as defined by requirements, CTQs, etc.
6723	Code Review: 100% of App Written	The Chief Architect or another member of the Architecture Team will conduct a formal code review, checking that coding standards have been met and providing guidance for non-compliant code.
6724	Testing: 100% Unit & Integration	Complete applicable unit & inegration testing based on 100% development.
6725	HPSD: RFC to Setup: QA Environment	This activity involves setting up and installing the environment for QA. IM Project Mgr needs to Initiate the QA Environment setup through an HP Service Desk Request for Change (RFC). NOTE: For Energy Infrastructure Changes submit request using HPSD. Energy Application Changes will continue with current process until further notice.
6727	Doc: Performance Test Scripts	Identify and/or create test cases that will be used to validate the performance of the application.
6729	Testing: Functional and Regression	Full integration that all pieces of the system operate correctly together, the system sends and receives the right information to and from external systems, navigation between windows or screens functions correctly, and

		the system is consistent in operation, look, and feel in the same or equivalent data center.
6730	Testing: UAT	Users will verify their application requirements are met and the application is ready for production in a production like environment that is in the same or equivalent data center.
6733	Testing: Performance	Execute Performance Testing. The purpose of this task is to ensure that critical or high volume/ load transactions meet the performance requirements when operating in a production like environment. A good performance test should simulate production like activities under expected volume along with ensuring infrastructure capabilities. This may either be done by the TSG QC team or by the project team.
6736	Guide: Prod Support Guide	Complete the Production Support Guide.
6737	Training: End-Users	Conduct End-User Training
6739	Doc: BPRA (Business Production Readiness Assessment)	The purpose of the BPRA is to assess the Production Readiness of the Business and IT for the release into production. The BPRA also provides additional information regardint potential risk to the Leadership Team making the GO/NO GO decision to release the application into production.
TG 5: Deploy		
6743	Slides: Deploy Gate	Complete the relevant sections of the "PMM TG Review Presentation". Completion of each applicable section of the pitch will signify your readiness for the Gate Review. NOTE: There is a separate section at the end of the presentation with conditional/best-practice slides. Your project's size, complexity and risk combined with IM and Quality management's input should determine which of these conditional slides are relevant for you.
6744	LAUNCH: Launch Solution	This is the Production Deployment of the Project. The deployment will be implemented through the request for change and according to work order instructions and implementation plans.

6745	Prod Support: Maint Team	Ensure production support for warranty period and ongoing RTS support of the initiative.
1	T&L Costs	All Project T&L Costs

Appendix J: Comments via workflow between the Cognos Reporting Team and I.

[By Saha, Ranjit on November 15, 2007 3:54:19 PM.]
Can we get screenshot from Oracle of what data is to be shown in the report and the prompts required to do further analysis

[By Hsieh, Jerry on November 16, 2007 8:42:03 AM.]
Per Ryan's notes:

This report should look almost like iProGEct. We are comparing the forecasted to the actuals, and then we want to also show the commitments that are left. (What we've already budgeted into Oracle, that hasn't happened yet).

Ryan is in progress of seeking out Oracle/iProGEct screen shots.

[By Saha, Ranjit on November 20, 2007 1:18:04 PM.]
Appears like this request can be merged with request # 13250522

[By Granger, James on November 25, 2007 8:07:25 PM.]
Ranjit,

I am trying to cleanup a bunch of workflows. Can you review and let me know if this has already been worked or, if not, what the appropriate release date should be?

Thanks!

[By Granger, James on November 27, 2007 3:11:05 PM.]
Ranjit, do we still need screenshots for this?

[By Hsieh, Jerry on January 30, 2008 10:05:48 AM.]
Per Ryan Renninger --

Specs updated (see this comment for attachment)
Updated Specification Requirements for the Rep.msg

[By Saha, Ranjit on March 31, 2008 12:20:53 PM.]
Hey Ryan,
In Budgets, what would be the criteria to identify Capital Vs Expense? Could you please provide a couple of test cases?

[By Renninger, Ryan on March 31, 2008 1:19:47 PM.]
In Oracle ERP there is a flag for capitalizing a task.

Please review the attachment.

RMR
CapFlag.PPT

[By Saha, Ranjit on April 07, 2008 11:50:31 AM.]
Hi Ryan,
We have one more request in queue for PO Commitment Report. So we are planning to provide a link to that report from this on a Project Number and not show "Committed" amount in here as this will be from Purchasing subject area and the other metrics is from Projects. If we provide a link, we can maintain data integrity and avoid confusions. Let me know if this will work.

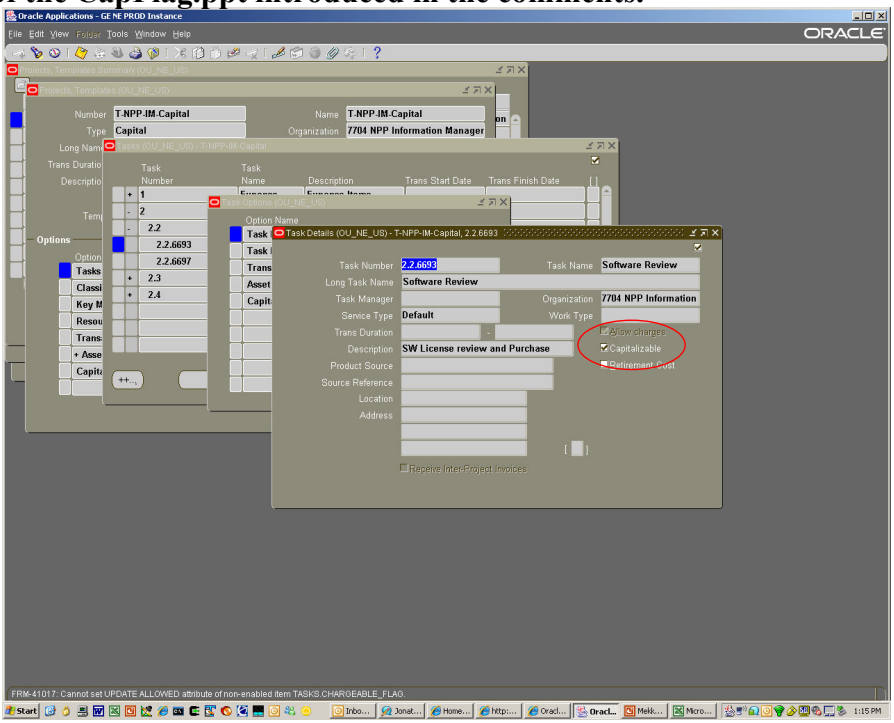
Thanks,

[By Renninger, Ryan on April 09, 2008 8:59:21 AM.]
Lets run with what you have. I'm not 100 percent sure I follow what you are saying now. Once we see the report, we can review it and get back to you with comments. We may require changes, but we also want to ensure this report is not confusing to the viewer.

[By Renninger, Ryan on April 09, 2008 12:42:50 PM.]
I wanted to add:

Committed should be Open Committments. These are line items that have open purchase orders / purchse req's attached to them.

Screenshot of the CapFlag.ppt introduced in the comments.



Appendix K: Updated specifications sent for Cognos report.