ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY
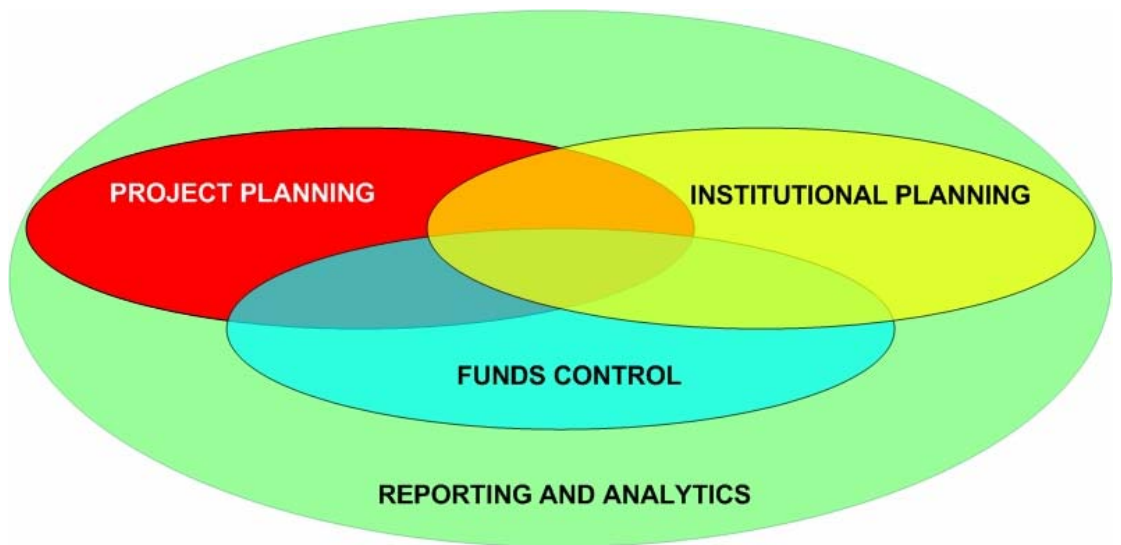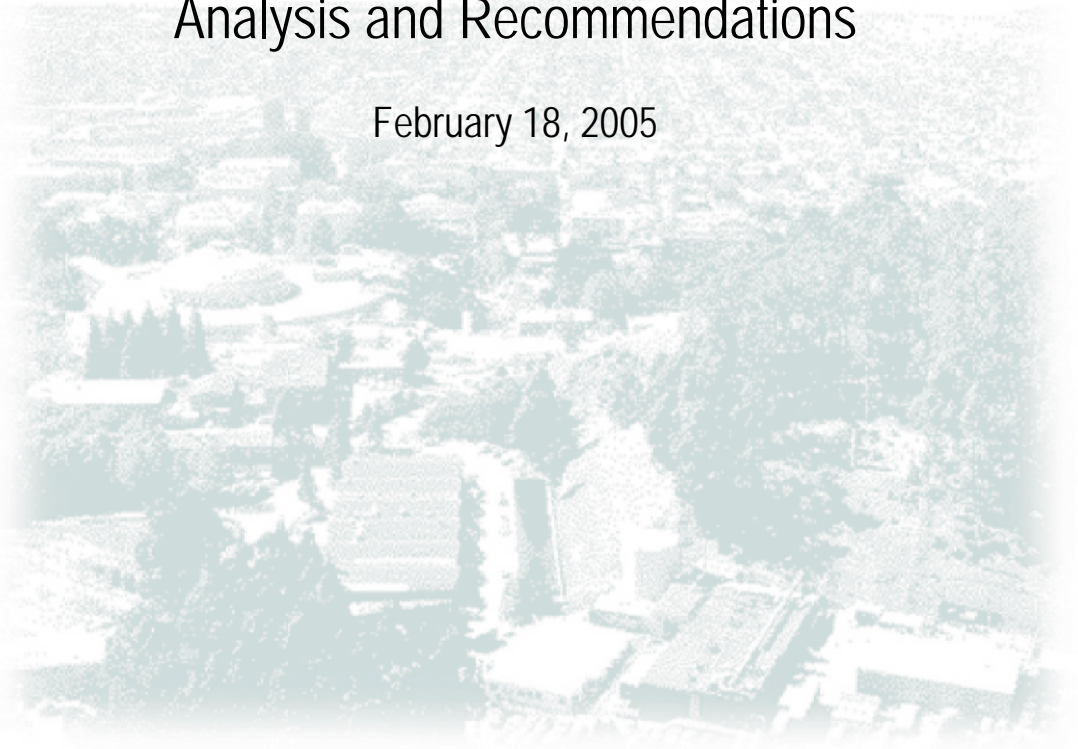
BUDGET SYSTEM ASSESSMENT

Analysis and Recommendations

February 18, 2005

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Executive Summary

LBNL's Financial Management System portfolio needs a comprehensive, centralized, integrated Budget system that includes funds control, project planning, and institutional planning capabilities, combined with powerful reporting and analytical tools.

A Budget System Assessment (BSA) team was chartered in 2003 to reexamine the Laboratory's multifaceted business requirements in the budgeting area, study the available solutions, and make recommendations regarding the best course of action for providing the Laboratory with a comprehensive, integrated budget system.

This team reviewed, validated, updated, and reorganized previously developed budgeting system requirements documentation, including prior RFP's and analyses. They conducted an inventory and business process analysis of the Laboratory's current budgeting business processes and requirements, including process flows, roles and responsibilities, control points, reports, and systems. This was done through a series of interviews with members of the Laboratory Budget Office, as well as a comprehensive series of interviews with representatives from all of the Laboratory's Divisions.

The BSA team reviewed the capabilities of the current PeopleSoft Budgeting application, version 8.8, in order to make a recommendation regarding its current applicability to the Laboratory's budgeting requirements. They also investigated the most promising budgeting systems that are in use at comparable DOE Laboratories, including those in use at Lawrence Livermore National Laboratory, Pacific Northwest National Laboratory, and Brookhaven National Laboratory. The team then conducted a high-level fit-gap assessment comparing the Laboratory's current business systems and the other Laboratories' system solutions with LBNL's desired budgeting functionality.

Based on the characteristics and functionality of the system solutions that were identified and studied, **the BSA team recommends a detailed review of Brookhaven National Laboratory's PeopleTools-based Budget and Forecasting System for potential implementation at LBNL.** The Brookhaven system would be modified and augmented as necessary for its integration into LBNL's enterprise computing environment, and to satisfy LBNL's highest priority functional needs. Advanced reporting and analytical tools would be deployed to enable comprehensive access to budget information, both locally in the budget system, environment and through the Laboratory's data warehouse portal. Additional integration would be provided to facilitate the central aggregation of local project budgeting information from a variety of sources into the institutional repository.

If the detailed fit-gap analysis and system review confirms that the Brookhaven System would meet the Labs budget needs, observed Laboratory priorities suggest deployment of the funds control functionality. This would be followed by the implementation of the system's Local Planning and Institutional Planning components.

These recommendations are documented in detail in this report.

Background

One of the goals of the 1995-1997 Financial Management System (FMS) project was the implementation of the PeopleSoft Budgets module as a component of an integrated financial systems solution. However, during the modeling and testing phases of that project, it became clear that the PeopleSoft Budgets software was not capable of meeting the Laboratory's needs. Specifically, it was incapable of handling the Laboratory's complex burden and overhead structures, and it was insufficiently flexible to adequately address the dynamic nature of project budgeting at LBNL.

In 1998-1999 the Laboratory attempted once again to identify a commercial software system capable of meeting the Laboratory's budgeting needs. In a rigorous and detailed RFP process, a broad-based, cross-functional evaluation committee examined several vendor products, including the newest version of the PeopleSoft Budgets application. The committee concluded that none of the available products satisfied the Laboratory's requirements.

Based on the identified need for a tool for the formulation and execution of project and proposal budgets, Laboratory management recommended the development of an in-house system to provide this functionality. This led to the creation of the Janus system, which is now in moderate use across the Laboratory.

In 2000 and 2001, an effort was undertaken to enhance the Laboratory's budget system automation and improve funds control capability by developing a new institutional Funding database system. This effort led to the development of a functional requirement document and a preliminary system design, but the Funding system project was shelved in 2001 due to changing priorities and limited resources.

Although Janus provides some effective tools for project budget formulation and execution, it addresses only a portion of the original Budget system requirements as documented in the 1995 and 1999 RFP's. In addition, it has not been universally adopted by the Laboratory's Divisions due to its inability to meet some individual operational requirements. There are major areas of budget-related functionality that continue to lack automation and integration with the Laboratory's financial systems, and there is a lack of consistency in budget formulation and tracking processes.

As a result, a Budget System Assessment team was chartered in 2003 to reexamine the Laboratory's multifaceted business requirements in the budgeting area, study the available solutions, and make recommendations regarding the best course of action for providing the Laboratory with a comprehensive, integrated budget system.

The Budget System Assessment Team

The following people participated in the Budget System Assessment project, either by providing management support or by contributing on a weekly basis as members of the core team, during the period between March 2003 and January 2005.

Name	Division / Department	Role
David McGraw	(Business Services Division)	project sponsor
Jeffrey Fernandez	(Chief Financial Officer)	project director
Anil Moré	(Administrative Services Department)	executive sponsor
Rich Nosek	(Information Systems and Services)	project manager
Chuck Axthelm	(Office of the Chief Financial Officer)	core team
André Bell	(Office of the Chief Financial Officer)	core team (2003)
Isabelle Boeddeker	(ASD / Engineering)	core team (2003)
Margretta Campbell	(Information Systems and Services)	core team
Lauretta Corsair	(Office of the Chief Financial Officer)	core team
Bridget Haverty	(Office of the Chief Financial Officer)	core team
Minh Huebner	(Office of the Chief Financial Officer)	core team
Gita Meckel	(ASD / EH&S)	core team
Anne Moore	(Office of the Chief Financial Officer)	core team
Peter Rhoades	(Information Systems and Services)	core team
Ivy Tran	(Office of the Chief Financial Officer)	core team

Process

The Budget System Assessment team's process included the following elements.

A major preliminary objective was to gain a thorough understanding of the Laboratory's budgeting requirements, processes, roles, and responsibilities. For this purpose, we reviewed, validated, updated, and reorganized the previously developed budgeting system requirements documentation, including prior RFP's and analyses. These included the 1995 Financial Management System RFP, the 1999 Budget System RFP, and the 2001 Funding system requirements documentation. The resulting, consolidated hierarchies of desired functionality are included in the "Functionality" section of this report.

We also wished to develop a thorough understanding of existing Laboratory budget-related systems and databases, including shadow systems in use by the Divisions. . To accomplish this, we conducted an inventory and business process analysis of the Laboratory's current budgeting business practices and requirements, including process flows, roles and responsibilities, control points, reports, and systems. We did this through a series of interviews with members of the Laboratory Budget Office, as well as a comprehensive series of interviews with representatives from all of the Laboratory's Divisions. The notes from these interviews are included in the "Functionality" and "Division Interviews" sections of this report, respectively.

We reviewed the capabilities of the current PeopleSoft Budgeting application, version 8.8, in order to make a determination regarding its current applicability to the Laboratory's budgeting requirements. A discussion of our findings in this area is presented in the "Solutions Considered" section of this report.

We also investigated some of the most promising budgeting systems that are in use at comparable DOE Laboratories, including those at Lawrence Livermore National Laboratory, Pacific Northwest National Laboratory, and Brookhaven National Laboratory. A discussion of our findings is presented in the "Solutions Considered" section of this report.

We conducted a high-level preliminary, fit-gap assessment comparing the Laboratory's current business systems, as well as the other Laboratories' system solutions that we considered, with LBNL's desired budgeting functionality. This is discussed in the "High-Level Fit-Gap Analysis" section of this report.

Based on all of this analysis, we evaluated whether any of the solutions under consideration could be an appropriate fit for the Laboratory. If not, a new effort would be undertaken to determine whether the Laboratory should again conduct an investigation of commercial software solutions. If this approach were indicated, we would then develop and execute an RFP for the examination of commercial software solutions. Another alternative approach would be to address some or all of the required budgeting functionality through in-house software development. Our recommendation, to further review and analyze the Brookhaven National Laboratory's PeopleTools-based budgeting system as the core of our solution, is discussed in the "Recommendation" section of this document.

We present a high-level, preliminary software implementation project "road map" for the potential system solution, in the "Implementation Strategy" section.

We discuss how the suggested system will provide benefits and reduce risk in alignment with the Laboratory's needs in the "Return on Investment" section of this report.

An observer may reasonably ask how this new proposed budget system initiative will succeed where earlier attempts have failed or could not thrive. In the section titled "Lessons Learned from Prior Budget System Projects", we review some of the circumstances that led to the previous results (or lack of results), and comment on how these risks will be managed or mitigated in this new effort.

A discussion of the activities that are planned for the upcoming months is presented in the "Path Forward" section of the document.

During the Budget System Assessment effort, we realized that a key element for a successful implementation of a common, institutional approach to budgeting at the Laboratory would be a clear, common understanding of the complex and sometimes obscure terminology that is used in the budgeting process. For this reason, we reviewed and consolidated the available existing information and developed a new "Glossary of Budget Related Terminology" for use at LBNL. This glossary is presented at the end of this report.

Functionality
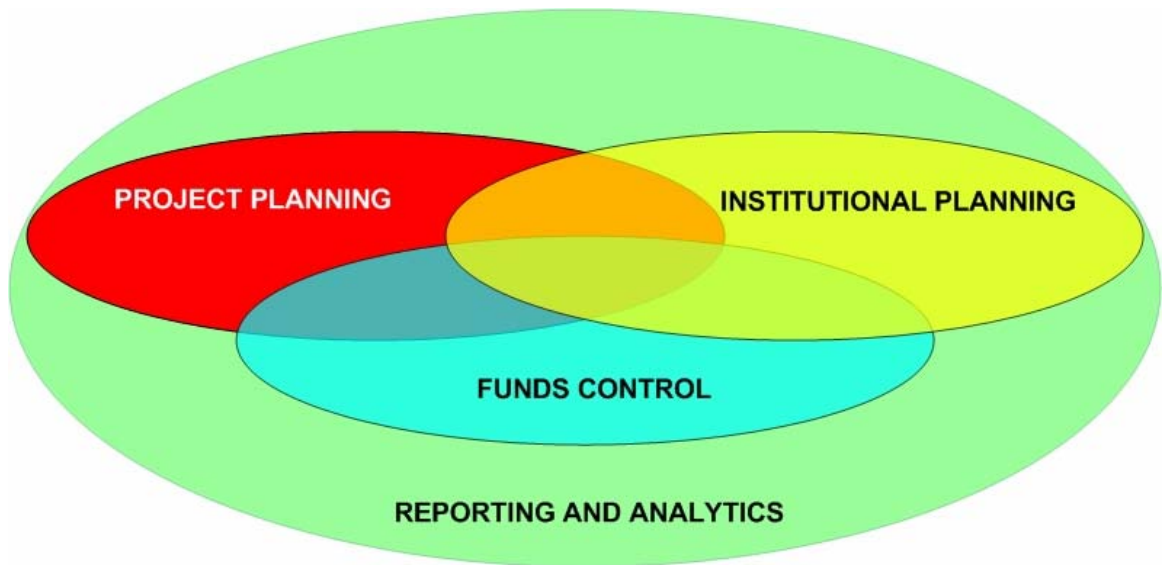
This section contains a discussion and compilation of the various elements of functionality that have been identified and proposed for a comprehensive, integrated Budget System at LBNL.

This material comes from a variety of sources. Source materials such as the 1995 and 1999 RFP documents and the 2001 Funding system requirements documentation have undergone extensive re-validation and revision to ensure that the desired functionality, as specified, is aligned with the current LBNL environment and business practices. In addition, we conducted interviews with members of the LBNL Budget Office to discuss the broad set of business practices that they conduct on behalf of the institution.

We gathered many business-specific insights from representatives of the Laboratory's Divisions through a series of interviews. These interviews, covering the entire spectrum of budgeting functionality, are presented in detail in the "Division Interviews" section of this report.

We organized this material according to the functional framework represented by the diagram above, into separate sections for Project and Institutional Planning, Funds Control, and Reporting and Analytics. In addition, we identified a number of system characteristics that are architectural and operational in nature rather than pertaining to specific functionality. As one would expect, some of the elements span multiple categories. In those cases the BSA team made a determination as to which category was most relevant.

Architecture and Operational Characteristics
Summary of Desired Functionality

This section contains a series of system elements that are architectural and operational in nature rather than pertaining to specific functionality.

First, it is required that the Budget System be able to operate in the LBNL enterprise computing systems environment. The system must be capable of being hosted in the Laboratory's Sun Solaris (Unix) environment, and its data repository must be compatible with Oracle relational database technology. The system must be accessible over the Web, via a standard Web browser, on Windows based desktops.

The Budget System must be well integrated with our other LBNL institutional systems, including our PeopleSoft financial and human resources system suites, our enterprise Data Warehouse, and must be capable of interchanging information with other institutional systems such as MAXIMO and Gelco. In addition, the Budget System must be well positioned for interacting effectively with future DOE systems such as STARS, I-MANAGE, and ePME. A common theme that came up repeatedly in our conversations with representatives from the Laboratory's Divisions is that the system must be capable of importing and exporting budget information to and from Microsoft Excel for ease of ad hoc analysis and data manipulation.

The system should provide a robust security functionality, allowing for security administrators to define, manage, and assign privileges. The system should provide security functionality to ensure that users only see the budget information for which they are authorized.

There are several ease-of-use considerations that cross the functionality boundaries, and should be available throughout the system, including the ability to organize information, the ability to add comments, the ability to copy information and paste it elsewhere, error messages for user assistance, the ability to purge information, etc.

These system characteristics are described in a hierarchical format, beginning on the next page.

Functional Hierarchy
Architecture and Operational Characteristics

A   **ARCHITECTURE AND OPERATIONAL CHARACTERISTICS.**

A.0   **ENVIRONMENTAL CHARACTERISTICS.**

A.0.1   Compatible with LBNL's enterprise computing environment: Oracle RDBMS, Sun Solaris, Microsoft Windows.
A.0.2   Web-based accessibility.
A.0.3   Accessibility to non-Windows desktops (e.g., Mac, Linux, Unix).

A.1   **INTEGRATION WITH OTHER LBNL AND DOE SYSTEMS.**

A.1.1   General Ledger (PeopleSoft Version 8.8).
A.1.2   Project Costing (PeopleSoft Projects) (version 8.8).
A.1.3   Personnel/Payroll (PeopleSoft Version 8.3).
A.1.4   Purchasing/AP/AR/Billing (PeopleSoft Version 8.8).
A.1.5   RAPID - PeopleSoft Grants management (Version 8.8).
A.1.6   Field Budget System (FBS)
A.1.7   BLIS.
A.1.8   STARS and I-MANAGE.
A.1.9   MAXIMO.
A.1.10 Gelco Travel Manager.
A.1.11 Ability to import/export data in standard formats to and from external systems.
A.1.12 Ability to import and export budgets to and from Microsoft Excel.

A.2   **SECURITY REQUIREMENTS.**

A.2.1   Ability for the user to establish the owner of a budget. This owner has certain data security privileges. Ownership can be reassigned.
A.2.2   Budget Administration functionality, such as maintenance of group administrators.
A.2.3   Ability for the user to set Read-only access for budgets to groups of users (based upon existing User Groups functionality).

A.3   **USER INTERFACE**

A.3.1   Ability to enter budgets at a detail level by resource.
A.3.2   Ability to provide comments in association with budget data at each level of the budget.
A.3.3   Ability to assign discrete attributes to a project or subproject, such as funding source, principal investigator, B&R Code, funding status, and so on.
A.3.4   Ability to maintain various budget versions to identify and analyze changes that have been made between versions.
A.3.5   Ability to purge budget planning versions in total or at the detail level, with security controls.
A.3.6   Ability to easily organize budgets, versions, in a tree like structure.
A.3.7   Ability to have budgets carry a status such as prelim, approved, etc.
A.3.8   Ability to modify prior year budgets, at least to be able to change the Budget

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Owner and which User Groups have access to the budget, the end date.

A.3.9   Ability to copy the results of one line into another, e.g. take the Total Labor costs line and copy it to the revenue line.

A.3.10   Ability to sort line items and remember the order from session to session.

A.3.11   Error messages for user assistance.

A.3.12   Flexible work flow capabilities which support routing, reviewing, and approving processes. These can vary by Division, by call, and by sponsor.

A.3.13   Ability to easily access information about a budget, including summary project information (who, what, when), the project timeline, detailed resource cost estimates, and other planning assumptions (overhead rates, inflation/escalation rates).

A.3.14   Ability to enter detailed resource costs and to later retrieve and change these details.

A.3.15   Ability to proportionately scale proposed project resource cost levels to fit the actual funding received.

Project and Institutional Planning
Summary of Desired Functionality
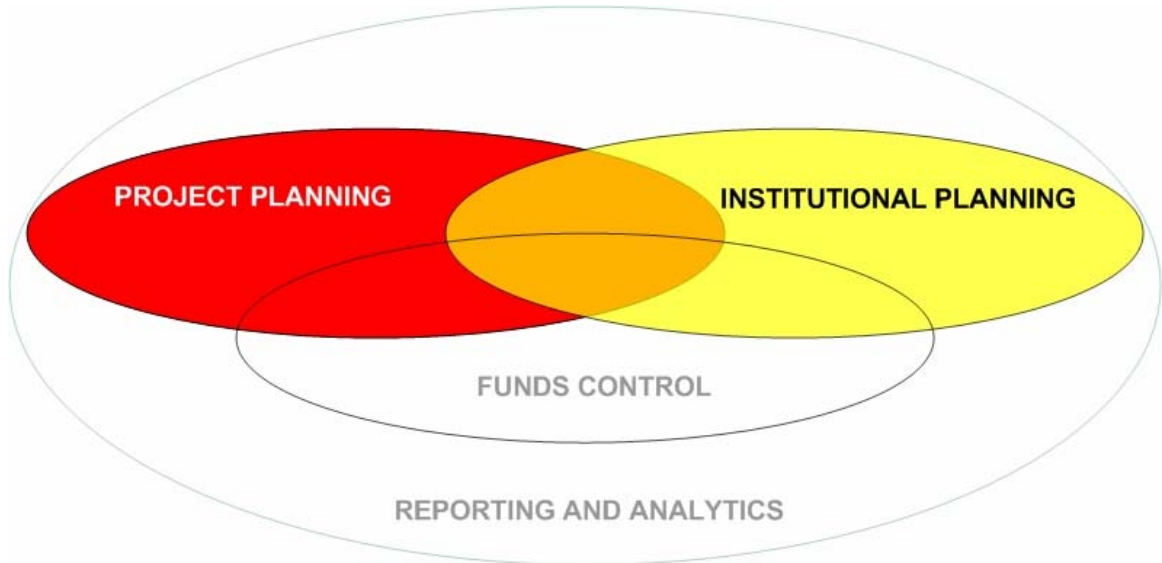
Introduction

Budgeting at Berkeley Lab is a complicated process, the requirements of which vary between Divisions, budgets, budget calls, and projects. Laboratory management believes that budgeting processes could be made more effective and efficient by implementing a single budget management system that would be accepted and used by all stakeholders. This section provides a brief overview of the Laboratory's current budgeting environment and outlines the main requirements for each of the Laboratory's primary budgeting processes. Specific detailed system requirements are outlined separately.

Project Planning Environment

Prior attempts at finding a commercial software package to meet all of the Laboratory's needs have been unsuccessful. One primary reason for this is that commercial packages are focused on automating the central coordination of an annual enterprise-wide budget cycle including consolidation of budget input from various operating units. This kind of functionality addresses institutional budgeting activities, but does not support the budget planning activities that are required in the Laboratory's local operating units. Because the Laboratory's scientific research mission is organized around a project management environment, its requirements are far broader and more complex. For example:

- The Laboratory is not funded by one single, large funding source. Rather it is requested and provided in many smaller pieces from multiple sponsors.

- The timing of when projects begin and end varies widely. While DOE funded projects are typically based on a September 30 ending fiscal year, funding may be provided at various points during the year. Non-DOE projects start whenever the sponsor provides funding, and may need to be tracked on a non-federal fiscal year basis.

- The funding for specific research projects is obtained by ongoing informal discussions, followed up by formal proposals and funding requests, between Laboratory principal investigators (PI's) and sponsored research program managers.

- Requesting funding from a sponsor may involve the PI developing multiple draft or what-if budget proposals before the final budget request is set.

- Specific project budgeting requirements can vary by the type of project and sponsor, including the timing for submitting budget requests, the level of resource cost detail, the time-span and level of detail, and the amount of supporting documentation.

- The Laboratory has many Federal and non-Federal funding sponsors. As a result, a variety of budget processes related to funding requests occur throughout the year. Some of these are large scale budget calls which require central coordination and consolidation, while others do not.

- The Laboratory has chosen to account for all of its activities, both research and support, as projects using the PeopleSoft project accounting application. These activities include both mission-related research and construction activities (also referred to as direct activities or directly-funded activities), as well as administrative, executive and operations management activities (also referred to as support, overhead, or indirect activities).

- Because the work scope of funding requests to sponsors is related to the Laboratory's direct, mission related activities, these requests must include not only an estimate of the direct cost for these activities, but also an estimate of the indirect cost allocations. To pay for the Laboratory's support activities as the costs of the direct activities are incurred (charged/debited to project accounts), these direct costs are associated with pre-set overhead and burden rate assessments. The costs of these overheads and burdens are also charged (debited) to the project accounts. The credits, recovery, or income from this indirect recovery process is accumulated in income project accounts and used to offset the costs of support activities.

- One of the primary budget process challenges is creating accurate detailed bottoms-up resource cost estimates, which must include the direct costs of labor, procurements, and other expenses, and all applicable burdens and overheads.

- The Laboratory's structure of burdens and overheads is complex, especially since they are often applied in a compound fashion (i.e., burdens on burdens). The specific combination of burdens applied to a project depends upon a number of factors, including the source of project funding, the nature of the project work, and the type of expense being incurred.
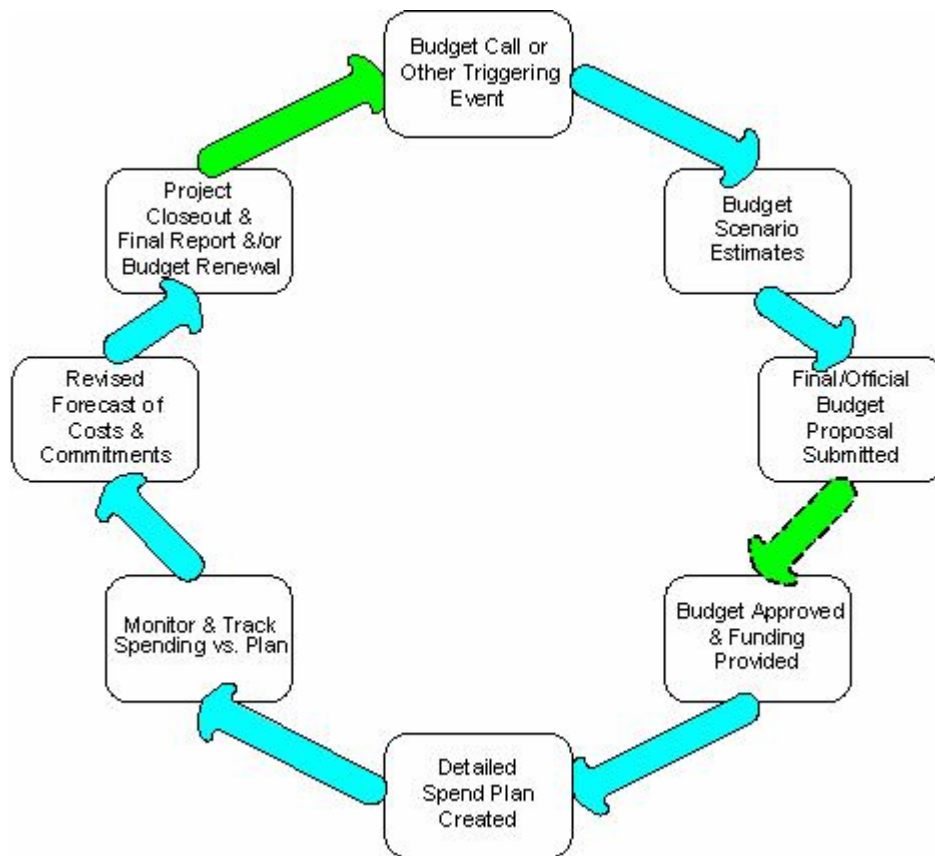
Figure 1. Typical Project Planning (Budgeting) Life Cycle

Current Budget System Solutions

The Laboratory presently uses several project budgeting systems, including the enterprise Janus budget estimating system and several other locally developed systems that the Divisions have developed in Excel, Access, FileMaker Pro, and Focus. While many of the existing budgeting systems have strong aspects, no one system incorporates all of the desired functionality. For example, whereas Janus is very useful for developing bottoms-up detailed proposal budgets and spending plans, its output options and interfaces with other systems are limited. On the other hand, while the Division planning models can tap into the flexibility of Excel or Access, and can be tailored to meet the needs of a specific organization, most are used as stand-alone systems, and none are scalable for Lab-wide use or tend to have the level of controls required in an enterprise solution.

Several challenges are created by the current multi-system environment:

- Integration and standardization of systems and output is made more difficult.

- System maintenance costs are higher and less effective than in a shared, one-system environment.

- There is little assurance that all budgets are being created with best budgeting practices.

- The process of collecting the source data used in building a budget (e.g., salary rates, overhead rates, liens, historical costs, etc.) is complex and can be time consuming.

- There is no automated assurance that the rate data used in budget formulation has been appropriately updated.

- Consolidation of individual budgets for Institutional purposes is difficult and vulnerable to error and misinterpretation.

- Division models lack the sophistication to automate many complex budget and cost accounting processes, and contain few, if any, controls to ensure accurate planning assumptions.

- Business support personnel become less effective if they have to learn new systems when transferring from one Division to another.

Stakeholders

- PI's, project managers, organizational managers, and business support staff are all involved in creating budgets and in budget execution.

- The Office of the CFO coordinates budget calls, and consolidates and summarizes the budgets that are submitted. In addition, the OCFO uses spend plans based on budget forecasts to project institutional revenue collection.

- The DOE, other sponsors, and Laboratory budget review committees at one time or another receive and review budget requests.

Institutional Planning
Budget Office Business Functions
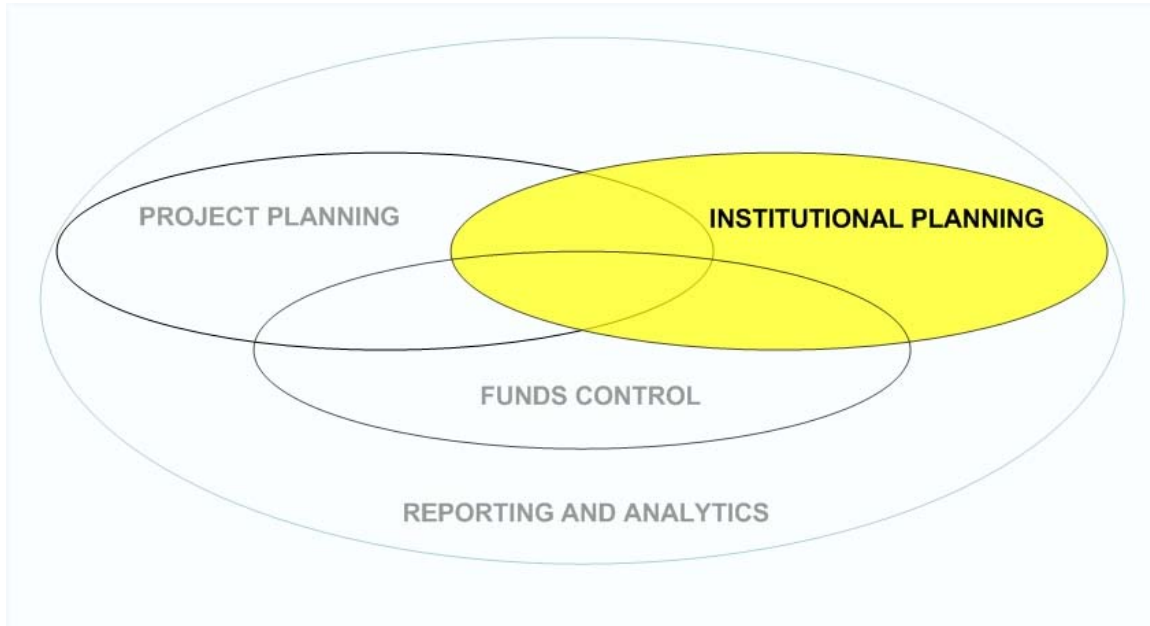
Introduction

The LBNL Budget Office manages a variety of business functions that involve the consolidation of planning information from the project level up to the institutional level. These processes include the following:

- The Spend Forecast

- The Rate Model

- The Payroll Burden Forecast

- Budget Formulation

- The Institutional Budget Call

- The Organization Burden Call

- The Recharge Call

- The LBNL Operations Budget

These processes are described in detail in the following pages.

The Spend Forecast
(Formerly known as the Management Report)

This standard report is an Excel spreadsheet created by the Budget Office, and is primarily used for two purposes. The first purpose is to help the Budget Office provide consolidated information to the Laboratory's senior management, including projected overhead recovery. The second purpose is to help the Indirect Budget Office group create, forecast and revise the Institutional Rates based on the projected spending pattern of the Divisions.

Over the course of a fiscal year, Laboratory Management wants to periodically see an up-to-date consolidated Lab-wide spending plan. Divisions are requested to provide spending estimates for all directly-funded activities detailed by type of resource (labor, procurement, recharge, etc.), and by source of funding (by B&R for DOE, and by major sponsor for WFO). Beginning in FY05, Divisions will also be asked to provide FTE information to help validate and improve the quality of their forecasts. [NOTE: While presently focused on directly funded activities, it could be expanded to all areas including those that are funded out of indirect revenues.] Indirect rates are assumed to be those currently in place.

This exercise provides Management with important information on projected indirect recoveries and anticipated total spending by source of funding. It presents a further opportunity for the Office of the CFO to perform overhead rate "what if" analysis. It also allows for various analyses to take place including a comparison of projected spending by funding source against actual funding received, and changes in spending plan trends from prior Spend Forecasts for the fiscal year or previous years.

For several reasons Excel is currently used instead of Janus:

- The use of Janus for budget development has not been mandated, and not all Divisions use Janus to develop their budgets.

- Janus cannot produce a budget based on YTD actual costs plus out month spending projections.

- Janus cannot easily identify and consolidate budgets related to this process.

- Janus has no ability to perform "what if" analysis on indirect rates. It only uses the latest DOE-approved rates.

The Spend Forecast is an elaborate Excel "database" template that provides a vehicle for creating an institutional spending forecast, and a consolidated Division spend plan.

There are 15 Division templates and one "big giant" Laboratory-wide template. Three Divisions have "customized" templates.

It serves as a basis for the Indirect Budget Office's rate modeling and analysis, and enables the Laboratory to report indirect recovery at an institutional level.   The Rate Model is used for "what-if" rate analysis based on the Spend Forecast data.

It is used by Operations and by the Budget Office to perform ad-hoc forecasting.

It reports spending by selected Resource Categories.

The Institutional Spend Forecast is based on Divisional forecasts of direct spending funded by the DOE or outside sponsors, and estimates of indirect spending provided by the Budget Office.

Divisional analysts provide direct spending data in an individual Excel template. The data is re-keyed into a central Excel workbook by the Budget Office. Although the re-keying is labor intensive, it provides an opportunity for each data element to be initially reviewed for reasonableness, and prevents data from being fed incorrectly into the centralized workbook as a result of changes made to the templates in the Divisions.

The key purpose of the Spend Plan is to assist the Budget Office with forecasting institutional revenue. In addition, this information is used by Laboratory and Divisional management in strategic analysis and decision making.

Most of the Divisions enter fully loaded costs, and Excel formulas "back out" the overheads to yield estimated direct costs. For example, Division X receives $1,000,000 from B&R Category AT. The Lab says that we will spend $1,000,000. The $1,000,000 is entered by Resource Category as fully loaded numbers. Then calculations back out the overheads, and the derived overhead revenues are then associated with overhead activities.

The Divisions have different methodologies to arrive at these projected costs - some use Janus and (IRIS reports), some use Excel, and some use a combination of the two. Note that the submission usually requires fully loaded costs, and it also requires costs to be aggregated based on the burden treatment of those costs. No tool can currently assist in gathering the data in this way, hence the home grown solutions to meet this request.

The Divisions do have the option to submit unloaded numbers in a customized template. Burden rates are applied to the unloaded costs, and overhead revenue is then backed out. AFRD is currently the only Division that utilizes this capability.

Various ad-hoc analyses and presentations must be derived from the data.

All of the Divisions that receive direct funding (program funding) are required to prepare this report at the Budget Office request and return it to them. The typical schedule for submission of Spend Forecast data is as follows:

- November (current year) (This was done ad-hoc in 2003.)
- January (current year)
- April (current year and next year)
- June (current year and next year)
- August (current year and next year).

The August call is based on changes only, and is done by a manual update by the Budget Office to the June numbers.

The financial scenario represented by the data is the best estimate for institutional planning.

Numbers are annualized. Based on the timing, data from the current year and the following year are required. If the data sets differ from what was previously submitted, a commentary or variance analysis is also required.

The granularity of data describing the work scope is typically, the B&R Category, at the 2-character or 4-character level. For Work For Others, the B&R Categories are at the 6-character level. (This level defines the sponsor.)   Additional granularity of data may be required when explaining a significant variance.

The summarized work scopes presented in the Spend Forecast do not typically exist as projects in FMS, since B&R Categories, including those at a high level, are not consistently set up as projects in FMS. (Note, however, that the full 9-character B&R Category is a separate chartfield in FMS.)

The Resource Category granularity is at the "Functional Grouping" level, mapped to the FMS Resource Categories in a prescribed way. This mapping is documented in the Cookbook.

The Rate Model

The rate Model is a report based on the Spend Forecast, used by the Budget Office (Indirect Group) to perform what-if analysis. It represents the submissions of the Spend Forecast merged manually into one master sheet.   It takes the information provided in the Spend Forecast and backs out the burdened amounts, arriving at a base.   It then forecasts what the recovery will be based on the five different cost pools (procurement, travel, G&A, site support, space). The projected recovery is then compared against the projected costs of each cost pool.   An additional factor is LBNL's requirement to comply with DOE's policies and disclosed accounting practices of being "on budget – by budget". This is referred to as the "zero variance" by cost pool policy.

The Rate Model process is viewed as somewhat flawed, as it doesn't get at the true distribution base, because the source data in the Spend Forecast submission consists largely of fully loaded numbers. It is, however, the best methodology currently available based on system constraints, and historically established Divisional practice.

The Payroll Burden Forecast

Payroll Burden budgets are prepared by the Budget Office. The budget contains various employee benefit costs and costs for paid leaves. Payroll Burden rates are developed for various classes of employees and the rate is applied to each employee's delivered labor.

The purpose of the Payroll Burden data capture is to forecast the annual payroll burden spending, and to manage the payroll burden rate.

Most of the information is gathered in the Indirect Budget Office (IBO) from various sources, including costs in the Ledger, information from the HR system, and information from the UC system. The IBO provides additional information based on trends, actual costs, labor plans,

and salary increases. It requires a lot of judgment. The Divisions supply some of the data, e.g., information about severance.

The data are collected in an Excel workbook with many tabs for all of the various cost elements (e.g., severance, worker's comp.) Each cost element tab contains historical information and detailed calculations for that cost element.

It would be useful if a method were developed whereby this process could automatically be linked to FMS for actual costs and FTE's.

All of the data collection is coordinated by the IBO.

Various calculations and analyses are required. Each cost element has its own unique sophistication. The algorithms can change from year to year, and the IBO needs to understand these and what the drivers are.

Some reports must be derived from the data, including graphs and FTE counts for Senior Management, and Overhead Recovery reports for payroll burden.

Payroll Burden forecast data are collected every month. The required time frames are the current fiscal year, and, beginning in June, the coming fiscal year. Each year, forecasting for the coming fiscal year begins in June.

The scenario represented by the data is the best estimate for Payroll Burden rate planning.

The process is mostly concerned with full year (annualized) numbers, but is based in part on month-by-month actual costs. Estimates are developed by month.

Rather than by project, the data is gathered on a Laboratory-wide basis for each Employee Class (e.g., career, post-doc, etc.)

Jim Norwood, the former Indirect Budget manager, observed that calculating the Payroll Burden is difficult because of the inability to join and match information from the HRIS and FMS tables. There may also be data integrity issues, as oftentimes the data in the two systems for the same Division is contradictory.   Jim also pointed out the employee 'Type' from HRIS is something foreign to FMS data. As a result, HR must tell them what they expect the cost pools to be.

Budget Formulation

The Budget Formulation has two major categories of activity:

1. On-cycle proposals. This activity is performed in response to the DOE Unicall, and is typically done from January through March, for the second fiscal year in the future. For example, the budget formulation that was conducted from January 2004 through March 2004, was for FY2006.

2. Off-cycle proposals. These proposals are submitted at other times of the year, or for other budget years. These proposals are submitted in response to a direct call from the DOE program (due, for example, to the availability of funds), or, sometimes, are initiated by the researcher in order to draw the DOE's attention to a new proposal.

The Budget Office estimates that there are currently about 400 on-cycle DOE proposals and up to 100 off-cycle DOE proposals in a typical year.

For the Unicall, the proposals are printed and bound into books, typically organized by the DOE funding program. One book may contain many proposals, or sometimes just a single proposal. Additional books are created for summarized, Lab-wide data.

Various sample FY2006 FWP books are on file for the project team's reference, including:

- Basic Energy Sciences, Material Sciences (B&R KC02)
- Information and Computational Sciences (B&R KJ)
- Nuclear Physics (B&R KB)
- Weatherization and Intergovernmental Programs (B&R WI)
- Reimbursable Work and Cost of Work For Others
- Construction Project Data Sheets
- Budget Summary Schedules

Off cycle proposals are sent to the DOE on an individual basis.

DOE Programs for which LBNL performs work include the Office of Science, EERE (Energy Efficiency and Renewable Energy), Fossil Energy, NNSA (National Nuclear Security Administration), and a few others. The Office of Science accounts for approximately 80-90% of the dollars, but about 70% of the volume.

The programs are typically identifiable by a high level B&R. For example, Basic Energy Sciences is KC, Material Sciences is KC02, but smaller programs within Material Sciences (KC02xx) could also issue a call. The calls come from the lead scientists of the DOE programs at Headquarters.

A proposal typically consists of a Field Work Proposal (FWP) document, a detailed attachment describing the work (which can be several pages in length), a Human and Animal Use (HAU) review, and an environmental (NEPA/CEQA) review. The EERE requires Field Planning Proposals (FPP's) instead of FWP's.

PMTS can produce an FPP or FWP document for a proposal.

PMTS can produce the detailed attachment in many cases, but has certain text formatting limitations that make it unsuitable for many proposals.

Some Divisions don't use PMTS to produce the FWP's. The reasons for this include:

1. The formatting limitations described above;

2. For certain long-running, block-funded projects, the Divisions prefer to re-use the previous year's FWP, because it is already stored externally from PMTS, and entering it into PMTS would take too much effort; and

3. Many Divisions have their own systems that produce FWP's.

PMTS cannot produce the HAU and NEPA/CEQA review documents, and those forms require manual signatures.

PMTS also produces reports showing various crosscuts, such as by B&R, and funding for the Lab as a whole. In practice, these reports, produced by the system as Word documents, need to be manually massaged before they are sent to the DOE. This can be due to data entry errors, combined with bugs in the PMTS system, and the ongoing difficulties with having system changes made.

In addition to DOE research and development proposals, the Lab must also report on various types of construction projects, and work for others (WFO).

Work for others is submitted initially at the sponsor level, but, for analysis purposes, data must be captured at the project level. The main purpose for entering WFO into PMTS is to produce the summarized "crosscut" reports. For this reason, the PMTS data entry requirements for WFO projects are much fewer than those for DOE projects. In addition to the plan numbers, typically only the sponsor name and project name are required.

It is important to submit realistic but optimistic estimates for work for others, because these estimates are used for setting ceilings by fund type for funding.

The Construction book submitted to the DOE includes a summary report (produced by PMTS) and a series of construction project data sheets (not produced by PMTS.)

In 2004, on April 19, four days before the April 23 deadline, the DOE suddenly asked for data in electronic format. This was impossible due to the short time frame, and because the FWP books are assembled from various sources, including Word documents, Excel spreadsheets, and hard copy documents. This highlights the need for the Laboratory to be responsive to changing DOE requirements.

Annually, the maintenance of PMTS, plus the cost of assembling and printing the Unicall books, totals about $15K-$20K not including Direct Budget or Divisional labor.

The DOE's response to a Budget Request is a Work Authorization Statement (WAS). The WAS is one form of funding guidance that the Laboratory receives from the DOE.

Currently, WAS's cannot be linked directly to proposals. The WAS authorization amount from a DOE program may not be equal to the total of the FWP requests, and the DOE program does not always provide specific information about which proposal should be cut (or supplemented). In this case the LBNL Division must determine how to allocate the difference among its proposals. ePME Phase 2 will institute a 1-to-1 relationship between WAS's and FWP's, which will eliminate this ambiguity.

Budget Formulation and ePME

The Electronic Portfolio Management Environment (ePME) system is a new funds administration system that will automate various aspects of proposal management and

funding in the DOE. The ePME system is being deployed in the Office of Science under the DOE's broader I-MANAGE umbrella project. Module one of the rollout of ePME will address budget formulation, which is referred to from the ePME point of view as "R&D Lab Proposal Receipt & Review." The DOE's eventual objective will to track all phases of funding through ePME.

The ePME system is currently in test deployment among a few selected DOE Laboratories. The current plan calls for an optional production deployment of ePME across the DOE complex on June 1, 2005. It is anticipated that the use of ePME will become mandatory for all of the DOE Laboratories for the March 2006 budget call.

The ePME system will support either direct data entry or batch data entry for submission of LBNL proposal data to the DOE.

In the Direct Entry methodology, the data will be keyed into a public web portal that interfaces with the Office of Science ePME system.

Direct entry would ensure our data is in sync with ePME, since no formulation data would exist in other systems. If we used the direct entry option exclusively, there would be no need (or cost) for developing or building a separate system.

However, using this methodology, we would not have the control over the data that we would like to have. In addition, the generation of internal reports would likely require additional keying of data into our own database. The Laboratory's users would like to have the ability to download from ePME to Excel for analysis purposes.. This will not likely be directly supported.

In the batch entry methodology, data would be collected elsewhere, such as in a LBNL-based system, and then transmitted via a standard XML schema directly into ePME.

The need for an LBNL data collection system poses three possible choices:

- Build a new ePME data collection system.

- Upgrade and modify the existing PMTS.

- Maintain an "ePME clone" on LBNL servers.

If we could "clone" ePME, then we could theoretically transmit directly to the ePME. However, this is not likely to be a practical alternative, since the DOE is not providing this option.

Upgrading PMTS would allow the Lab more control over our submissions and the system. However, PMTS is not a robust system, lacks much of the current desired functionality, and is written in an obsolete programming methodology. PMTS only supports 20 of the 27 data fields required by ePME, and it is not capable of managing historical data. Modifications to it would be costly and risky. There would be time lags between ePME system changes and PMTS system changes. We would also have XML data transmission issues to resolve. For these reasons, keeping and refurbishing PMTS is not a feasible option.

We have decided to move ahead with the development of a new ePME data collection system. This system will be based on PeopleTools technology.

Collecting data in an LBNL-based system will provide us a greater degree of control over the data, as well as further possibilities for integration with other Laboratory systems.

There are 27 required fields in the ePME system. There are an additional 33 non-required fields.   However, some of the "non-required" fields may, in fact, be required by individual DOE programs. These fields need to be considered in the system design.

When we implement ePME, we will want to convert at least one year of historical budget formulation data from PMTS.

In the 2004 budget formulation exercise, 80% of the FWP's needed to be corrected before they could be submitted. These were clerical corrections.   The Budget Office received hard copy FWP's with original signatures.

The most important concerns are quality control of underlying information and managing the original signatures.

The ePME team's current scope includes the Office of Science, and there is the possibility that other Assistant Secretarial Program offices will also use this system for DOE programmatic work. Currently, ePME does not consider or contain any Work For Others data.

Institutional Budget Call

The institutional budget call is a component of budget formulation and tracking for Operations. It is the procedure for accumulating and consolidating Operations' Activity Based Budgets (ABB) and quarterly reports. This provides Operations management with the ability to oversee the budget planning and execution.

The Budget Office consolidates the budgets by Division and by Pool (G&A, Procurement, Travel and Space). Rates are developed with the budgets as the numerator and the relevant costs in the Spend Plan as the base or the denominator. The rates are applied to costs incurred and are charged to appropriate projects. The Budgets are consolidated into the "Blue Book", which contains a short narrative and dollar amount for each consolidation level. A monthly execution report is prepared which compares the budgeted amount to costs by category.

Institutional budget data is also used, on a highly summarized basis, by the Indirect Budget Office for estimating overhead cost pools. During the year, the IBO compares plans to actuals in these pools in order to detect any variances that might be occurring.

The IBO also contributes to the oversight of the overhead budgets.

Most of the Operations detailed ABB budgets are built in Janus. Different Divisions and departments submit ABB data at different levels of summarization. One has 6 ABB's, some have dozens.

ABB budgets frequently change.

The Operations Divisions and departments create the ABB data. The budgets are submitted to the Operations office. After the ABB budgets are put together, they are tracked on a quarterly basis.

The Interview with the representatives of the HR Department provided the project team some useful sample ABB data for review.

The ABB methodology is relatively new, and there is a sense that "the jury is out" on it. If it is short-lived, then the benefit of automating it will be limited.

It may be helpful for the ABB activities to be nodes on the FMS project tree, but, in many cases, they are not represented in that fashion.

Organization Burden Call

Organization Burdens (Org Burden) are budgeted by the individual Divisions. The Org Burden contains the management and administration costs of running the Division. The budget becomes the numerator, and the Divisional staff salaries are the denominator in establishing a rate. The rate is applied to the Divisional labor, and is charged as a burden. The Org Burden budgets and the base to which the Org Burden rate is applied are submitted to the Budget Office for review and consolidation.

Each scientific Division (except EH&S) has its own organization burden to cover its management expenses. Each Division manages its org burden a little differently. Each Division has a cost pool forecast and a distribution base forecast. Accumulating this information centrally allows the Indirect Budget Office to provide oversight over these burdens.

The Division resource analysts initially create the data via a standard Excel template. The Divisions aren't required to build their org burden budgets in Janus. About half do. The collected data are submitted to the Indirect Budget Office.

(One shortcoming of Janus is its inability to incorporate a distribution base forecast in addition to the expense cost pool forecast. The distribution base can be very difficult to get, e.g., in Engineering, because their employees are highly matrixed.)

Each year, the Divisions are asked to compare their numbers to those of the previous year, and to calculate their own burden rates.

In addition, the Divisions need to manage their own budgets, both the cost side and the distribution side. At the end of the year, costs should equal recovery. The IBO reviews the Divisional information to ensure that the Divisions are on track. Near to the year-end close, the IBO looks closely at this; at year-end, extremely closely.

The IBO needs to report on variances to the DOE. Policy exists for managing these variances.

Organization Burden summaries are sent as spreadsheets to the Director of Operations. For Operations Divisions, this is part of the ABB process.

The organization Burden call is an annual exercise, usually conducted in the May-June time frame for the coming year.

The scenario represented by the data is the best estimate for planning.

The time dimension is currently annual. Having access to the numbers on a monthly basis would enable more effective forecasting.

Numbers are summarized at the Division level for particular Project Types. (Org burden projects have Project Type 'OHORG'.)

(Project Types are an excellent way to get at the cost pools. However, Project Type is not an effective-dated field in FMS.)

Cost pool data is grouped by "major category" (e.g., labor, supplies, travel, miscellaneous.) The distribution base includes labor only.

The mapping between Resource Categories and "major categories" is documented in the Cookbook. This mapping is also used for the Management Report.

Indirect costs are bundled into the major categories. For example, procurement burden is bundled in with supplies, payroll burden is bundled in with labor, and travel burden is bundled in with travel.

The Divisions would like to have more "what-if" capabilities in this area.

Recharge Call

Recharge Budgets are submitted by the Divisions to the Budget Office for review and consolidation. Also included in this submission are the activities to be recharged, the bases to which the recharges will be applied, and the corresponding rates. There is no standard form due to the uniqueness of each recharge.

Each Division that collects recharges submits their planning information for these recharges. Accumulating this information centrally allows the Indirect Budget Office to provide oversight over these burdens.

The Divisions initially create the data via Excel spreadsheets. The information for each recharge is submitted in the format that best suits it. (e.g., the animal colony recharges on rats and mice, Engineering shop recharges, etc.) All of them are different, and are calculated differently. Some are General Ledger feeders; some are handled via Resource Adjustments.

"Recharge Centers" are projects with Project Types 'OHRCH'. Recoveries are credited to these projects. Costs should equal recovery.

Some organizations are funded by a combination of recharges and overhead.

(The ALS Store Room is not a recharge center. It's more of a "pass-through".)

The data are submitted to the Indirect Budget Office. The IBO generally relies on the Divisions to manage their own recharge budgets. The IBO monitors these at the end of the fiscal year, keeps tabs on rates, and provides information to the Director of Operations.

The Recharge Call is an annual exercise typically conducted in the May-June time frame for the coming year.

The scenario represented by the data is the best estimate for planning.

The distribution bases for the recharges is often very difficult to predict. Statistics are often not captured in the central financial systems.

The LBNL Operations Budget

The LBNL Operations Budget is a report used by the Indirect Budget Office showing the breakdown by each of the five Cost Pools vis-à-vis the operating budget for each of the Operating Divisions and Departments. These operating budgets are captured in the ABB Institutional Budget Submission and Quarterly Review Calls.

Other Business Functions

Other Budget Office business functions related to institutional planning that were not explored in detail include the following:

- The PACE Budget Call

- The Director's Review

- The Institutional Plan

The development of a comprehensive institutional budget system will likely create additional opportunities in these areas.

Functional Hierarchy –
Project and Institutional Planning

B   **PROJECT AND INSTITUTIONAL PLANNING.**

B.1   **GENERAL PLANNING FUNCTIONALITY.**

B.1.1 Ability to enter budgets with non-valid LBNL project ids, ABB numbers or other identifiers.

B.1.2 Ability to conduct budget processing at times independent of the accounting close and other financial reporting processing.

B.1.3 Ability for the users to define a hierarchy of budgets.

B.1.4 Ability to allow the users to open more than one budget at a time.

B.1.5 Ability to perform consolidations of budgets based on the project tree or on other hierarchies as needed.

B.1.6 Ability to update budgets any number of times.

B.1.7 Ability to create an unlimited number of versions of a budget.

B.1.8 Ability to easily manage various versions of a project budget.

B.1.9 Ability to enter a target number and observe the draw down against that number as resources are added to the budget.

B.1.10 Ability to associate line item input with resource categories.

B.1.11 Ability to group resource categories into either the institutional hierarchy or user defined hierarchies.

B.1.12 A workflow architecture for review and approval.

B.1.13 Administrative level maintenance features.

B.1.14 Ability for the Budget Office to control budget calls, and their preparation and submission.

B.1.15 Ability to delete multiple budgets at one time.

B.1.16 A "most recently used" capability for retrieving files.

B.1.17 A standard file management and archiving system for the users to maintain their budgets.

B.1.18 When available, the funding information corresponding to a plan should be easily accessible.

B.1.19 Ability to indicate the probability of approval for a proposed budget for a specific project (i.e., success factor).

B.1.20 Ability for the user to update a budget's sponsor to another sponsor.

B.1.21 Ability for the user to create a special kind of "what-if on the fly" budget that is very fast to create, requiring minimal information, such as source and use of funds and burdens - Default source & use to DOE - Operating Onsite. Also sponsor defaults. Allow set up of these defaults by user - "user preferences".

B.1.22 Ability to store project budget resource data in a way that permits reporting and analysis at any level of detail. For example, even though labor may be input in FTE, it should be retrievable as hours.

B.1.23 Ability for the preparer to remove an individual or all detail budget items.

B.1.24 Ability to easily create a new budget based on another project budget or earlier version of the same project budget.

B.1.25 Ability to make proposal budgets identifiable with specific budget calls, if applicable, to enable roll ups and consolidations.

B.1.26 Ability and flexibility to meet a variety of sponsor requirements.

B.1.27 Ability to add resource costs to a budget at a general, high level (i.e. summary

level or consolidation level), or at a very detailed level.

B.1.28 Ability to automate processes that extrapolate prior expense trends, analyze known commitments, and take into consideration the characteristics of and interrelationships between various categories of costs (e.g., how recharges tend to vary with the level of staffing).

B.1.29 A "Quick Calc" functionality that allows PI's and Managers to quickly and accurately estimate project costs based on their assumptions about resource requirements, accessible from any location. While not needing to be perfect, this functionality should make reasonably accurate calculations with minimal inputs.

B.1.30 Ability to create user-definable budgets to facilitate planning. For example, provide the capability to build a detailed list of budgeted items into a summarized "resource category" so that reagents, test tubes, etc., roll up to a budget for Supplies (and so on for Labor, Travel, and other categories).

B.2　　TIME-RELATED FUNCTIONALITY.

B.2.1 Ability to manage flexible annual, quarterly, monthly, daily or other defined period budgets - for time periods other than fiscal years, or for multiple years (time periods) over the life of a project.

B.2.2 Ability to create and store multiple-year budgets, including past and future years. For example, two years past, five years future. "Past budgets" would be based on actuals, future budgets would be forecasts. This needs further exploration.

B.2.3 Ability to allow for specific start and end dates for budget items. Is this needed down to the day? By whom? [If we want to expand system usage to, say Facilities estimators, the system needs to be more precise or detailed in this regard.]

B.2.4 Ability to create executive level long range plans.

B.3　　RATE-RELATED FUNCTIONALITY.

B.3.1 Ability to model the Lab's compound burden structure. Automatically calculate appropriate overheads and burdens cumulatively and in real time for each forecasted effort estimate and other types of direct costs, based on the project's source of funds (viz., operating, LDRD, capital, etc.). Provide ability to also express total overhead and burden recovery over the entire project in specific overhead categories (site support, G&A, etc.). (See Appendix B: FY98 CAS Cookbook for Operating Project, and Typical Example).

B.3.2 Ability to globally update the escalation rates of several selected budgets.

B.3.3 Ability to exclude space recharges from escalation.

B.3.4 The system shall provide the ability to define sets of burden or other rates or factors, and allow the user to select which set of rates to apply to a budget.

B.3.5 The option to apply custom Paid Leave Factors to labor line items on either an annual or monthly basis.

B.3.6 Ability to maintain Lab wide rates and charges in a "Master" database table which tracks when changes to rates are made. Individual budgets may be refreshed from this table.

B.3.7 The ability to compare a budget's individual custom rates versus the master rates on a date basis.

B.3.8 The ability to notify the users when the master rate table changes.

B.3.9 The ability for specified users to apply "What-if" scenarios, changing burden rates.

B.3.10 Flexible allocations logic to accommodate our current rate structures.

B.3.11 When planning assumptions change, the ability to create a spending plan with

updated assumptions for the work scope, performance period, overhead rates, inflation, resource availability and/or resource cost issues.

B.3.12   Ability to automatically update spend plans to reflect changes in burden and overhead rates.

B.4   LABOR PLANNING FUNCTIONALITY.

B.4.1   Ability to accept entry of labor resource costs in two ways: manual user entry of labor cost or by modeling labor costs based on number of time units (hours, days, weeks, months, years) multiplied by labor cost rate.

B.4.2   One or more mechanisms for modeling seasonal variations in costs (such as the Paid Leave Factor ("PLF").

B.4.3   The option of adding a specific dollar amount of miscellaneous labor. The user may choose to apply or not apply FTE, PLF, or burdens.

B.4.4   The ability to enter labor resources based on a generic position or specific employee. The system shall provide the ability to replace a generic labor position with the actual individual or vice versa.

B.4.5   A wildcard option to adding multiple employees by org code: ie. ABCD% would get everyone whose first 4 org code characters were ABCD.

B.4.6   When list of names by org code is provided (when adding multiple employees), the ability to sort it alphabetically when added to budget.

B.4.7   Ability to display the Total cost and total FTE (or Hours) across all years for each line item Display FTE on summary grid without having to expand the labor items.

B.4.8   Accommodation for the special requirements of paid Guests.

B.4.9   Accommodation for the special requirements of Campus Labor.

B.4.10   Accommodation for the special requirements of Joint Faculty.

B.4.11   Accommodation for the special requirements of Contract Labor.

B.4.12   Ability to calculate the cost of overtime.

B.4.13   Accommodation of shift differential pay rates.

B.4.14   Ability to enter negative FTE's.

B.4.15   Ability to reflect the effective dates of actual salary changes.

B.4.16   Ability to correctly reflect start or term dates in filling in monthly salary amounts.

B.4.17   Ability to enter a name when entering a Job code item.

B.4.18   Ability to change the payroll burden percentage of an employee over the course of a budget.

B.4.19   Ability to view employee information from HRIS.

B.4.20   Ability to automatically update spend plans to reflect changes in employee salaries.

B.4.21   Ability to analyze the allocation of planned employee effort across multiple project budgets for a Division or Department and for a specified period of time.

B.4.22   Ability to highlight where employees are allocated more or less than 100%.

B.4.23   Ability to accept input of labor details in effort hours, and output project cost estimates to the Engineering and Facilities project management systems.

B.5   NON-LABOR PLANNING FUNCTIONALITY.

B.5.1   Ability to incorporate open encumbrance balances from the general ledger into a budget.

B.5.2   Ability to distinguish current-year commitments from future-year commitments for multiple-year PO's.

B.5.3   Ability to distinguish between legal commitments and pre-encumbrances.

B.5.4   Ability to automatically pick up room dimensions from the Odyssey space database, given the building and room number.
B.5.5   Ability to display information about a PO when the PO number is entered.
B.5.6   Ability to calculate CAD recharges and Shop recharges.

B.6   **FORECASTING FUNCTIONALITY.**

B.6.1   Ability to create several sets of forecasts, with no limit in the number of forecast scenarios.
B.6.2   Ability to create a forecast for new project ID's, whether or not those project ID's already exist in the ledger system, and whether or not an original budget has been created.
B.6.3   Ability to forecast budget data based on user-defined models for spreading costs by period and type of resources.
B.6.4   Ability to use actual detailed costs and budgets in determining future budgeted amounts.
B.6.5   Ability to analyze the allocation of employee effort across multiple projects and verify that employees are not overallocated. Could be used for staff planning at a high level and verifying that funding exists for the people.

B.7   **REVENUE CENTER FUNCTIONALITY.**

B.7.1   Ability to plan revenue with negative numbers.
B.7.2   Ability to assist in calculating organizational burden recovery by providing current salary base for a specific Division, adjusted for by a portion of labor to be paid by that Division's org burden and applying proper payroll burden.
B.7.3   Ability to input monthly planning assumptions about the anticipated distribution base volume(s) and recovery/chargeback rate(s), and then multiply these two together to calculate expected revenues.
B.7.4   Ability to update planned volumes and income to match actual levels as the year progresses.

B.8   **INSTITUTIONAL PLANNING.**

B.8.1   Ability to support the institutional Spend Forecast (Management Report) process.
B.8.2   Ability to support the institutional Rate Modeling process.
B.8.3   Ability to support the institutional Payroll Burden Forecast process.
B.8.4   Ability to support the institutional Budget Formulation process including support of the Unicall and integration with ePME.
B.8.5   Ability to support the Institutional Budget Call process.
B.8.6   Ability to support the institutional Organization Burden Call process.
B.8.7   Ability to support the institutional Recharge Call process.
B.8.8   Ability to support the LBNL Operations Budget (ABB) process.

Funds Control
Summary of Desired Functionality
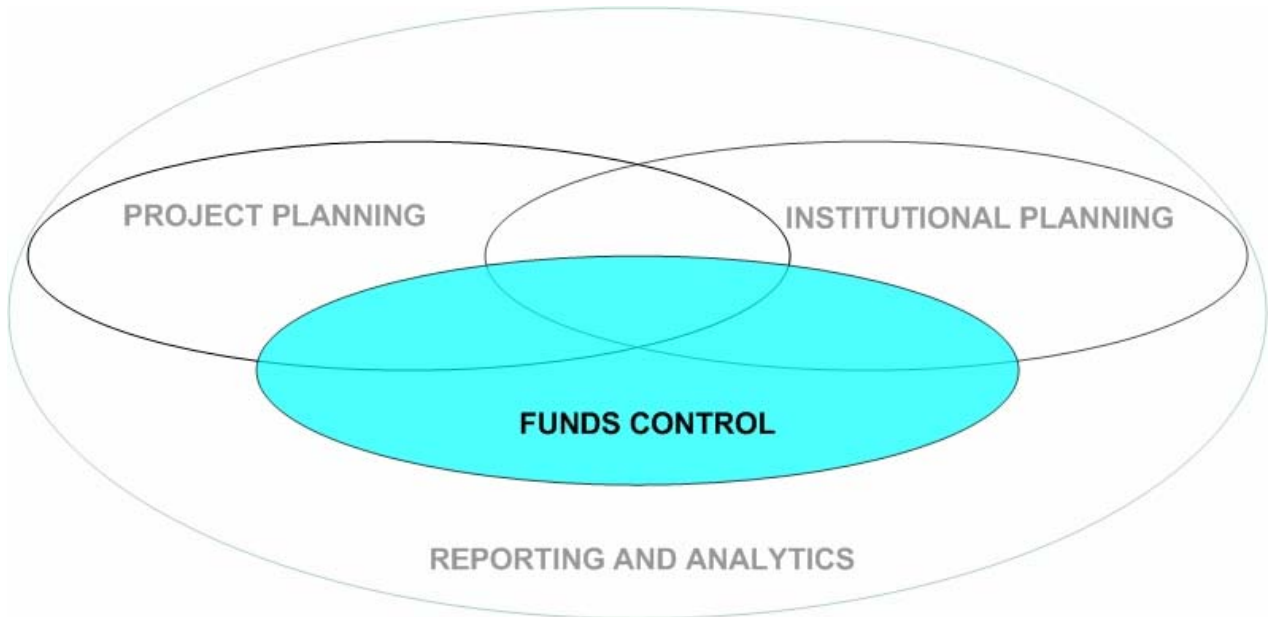
Introduction

This section defines the desired functionality for a centralized, Laboratory-wide Funds Control system. It is based primarily on work that was conducted in 2000-01 in preparation for the development of a Funding database and system, and was revised in 2004 to reflect changes in the Laboratory's business and systems environments in the intervening years. This material is intended to form the foundation to identify and design the necessary components and scope the programming effort to build the system. It is not a design specification, but rather a document to facilitate and guide the programming detailed designs.

The need for a centralized automated funding system is not new, and several iterations of gathering requirements have been undertaken. As mentioned above, the development and implementation of a Funding system was a high priority in 2000-01, but the effort was shelved in favor of other priorities. Earlier, the need for a funding database was identified as a follow-up item during the Janus System development effort in 1999-2000.

Primary Objectives

The primary objective of a Funds Control system is to deliver an information repository that identifies the authorized funding position of the Laboratory. Such a system will:

- Contain current and historical information on funds available to spend;

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- Facilitate communication between the Office of the CFO and Divisions on funding status;

- Eliminate redundant Divisional and Budget Office funds tracking systems;

- Integrate efficiently with other Laboratory financial systems; and

- Provide a reporting function to monitor fund balances.

Funding Control and Tracking Process

Berkeley Lab's mission related research activities are funded primarily through appropriations from the Department of Energy, with additional external funding coming from other government and private sources (Sponsored Research Funding). Since external funding for research is virtually the only way that money comes into the Lab, research budgets must include not only an estimate of direct costs but also an allowance for a share of the Lab's cost of internal management, administration and site support activities. Funding for these activities is derived via overhead and burden rates applied on direct research costs.

Funding Process - DOE

The establishment of external funding for the Laboratory is determined through a series of two-way communications with DOE and other funding sources. In the case of requests from the U.S. Department of Energy (DOE), these processes occur over a two year period: starting with the formulation of research requests (i.e., proposal budgets) presented by scientists; reviewed by DOE; and then submitted for consideration in the budget process of the U.S. Congress.

Once appropriation legislation has been approved, funding commitments are communicated to the Laboratory from funding authorities (guidance). Actual spending authorization is provided by the DOE Chicago Operations Office on a monthly basis through "Contract Modifications" or "Mods". DOE earmarks funding according to its intended types of research and appropriation categories.

The Lab's Budget Office works with guidance documentation from DOE and with the Division personnel to precisely determine the distribution of funds among the Laboratory's various Divisions. DOE funding is currently managed via an Excel workbook, using complex formulas to marry funding and costs. During execution, the Budget Office tracks the progress of spending against funding and alerts Divisions when funding has been exceeded at the Divisional level. The Divisions are responsible for allocating funds to principal investigators, project managers and projects (per guidance).

Funding Process - Sponsored Research

The Sponsored Projects Office (SPO) is responsible for coordinating requests for funding from all non-DOE funding sources. SPO reviews and endorses proposals to external

sponsors on behalf of the Laboratory. If the Laboratory is favored with an award, then SPO negotiates terms and conditions with sponsors.   Once the sponsor approves the agreement, SPO executes the funding on behalf of the Laboratory and authorizes the project, notifying the performing Division(s). SPO provides alerts to the Divisions when a project is nearing the end of the performance period or available funding.

It is the Divisions' responsibility to track and manage project costs against available funding, whatever the source.

Funds Control

The Budget Office, SPO and the Divisions currently record and maintain documentation about the various types of funding and sources of external and internal funding information. This information is tracked on a series of spreadsheets and reporting tools, which provide the basis for funding tracking and control.

As noted above, the funding commitments and spending authorizations (Contract Mods) from DOE and other external funding agencies, as obligated under Contract 98, represent the fully "loaded" spending amounts (direct + allocated indirect costs) which the Laboratory may not exceed. The Laboratory supports a process of monthly expense forecasting beginning in the research Divisions. This process provides the Budget Office and the Divisions with a means to regularly compare spending plans, based on fully loaded costs, against available funds. These estimates are typically adjusted with formal and informal information received about future funding adjustments. The overall goal of the Lab's budget control processes is to ensure that overall spending is maintained within funding limits and that sufficient overhead costs are recovered to fund the Laboratory's management, administrative and support activities.

DOE Funds Control

The Laboratory is obligated to control costs plus commitments within authorized funding levels. The funding available for the Lab to spend at any time is equal to the sum of the unspent balances from prior years plus new funding received on the current year DOE Contract Mod Report. The Laboratory's current "Funding of Record" document for DOE projects is the B&R Status Report. This report, produced in the Budget Office, includes YTD funding balances. It compares funding to YTD costs to come to an "Uncosted Balance" total.

Sponsored Research Funds Control

DOE tracks funding and controls the costs of Sponsored Research Funding at the contract level as obligated under Contract 98. The DOE defines that level as a Reimbursable Work Order. A RWO Status is a result of a DOE requirement to track Sponsored Research Funding and costs at a detail level.

Divisional Funds Control

The Divisions track/control funding versus cost at the project level and in some cases at the budget category level (if required by the sponsor).

In addition to supporting funds tracking and control on a DOE fiscal year basis, the Divisions track funding on a "Contract Year" (sponsor defined timeframe) for a portion of Sponsored Research Funding.

Problem Definition

For DOE Funding, there is no one centrally controlled database system for entering, allocating, tracking and controlling funding data as obligated under Contract 98. Presently this information is contained in several sources including Excel spreadsheets, other databases, e.g., the B&R Status Report and various Divisional systems. The result is higher maintenance costs due to duplicate effort (rekeying, multiple files of documentation) and increased risk of errors being made.

DOE funding status data is currently provided by the B&R status report. The ability to provide this on a timely basis is limited due to the manual effort involved. As a result of timing differences in the receipt of guidance, an inefficient confirmation process (by phone, e-mail, various reports) is a continuous process. The current process limits accessibility of DOE funding detail to all stakeholders. For example, published data from the Contract Mod is at the year-to-date Laboratory level only. Incremental data at a Divisional level is tracked manually in different reports.

Divisions want to compare and report on project budgets, budget revisions, project funding and actual costs. Obtaining and tracking DOE funding information at the project level for comparison purposes is a manual and time consuming process.

Analysis of DOE funding history is limited by the difficulty of gathering data. A consolidated analysis of anticipated funding and the probability of receiving it is a difficult and imprecise process.

Changes in DOE funding information (deobligations, B&R recasts, and reprogramming) are difficult to handle and track.

Calculation of carryover GSO is a duplicative effort and, depending on the data source, can result in a difficult and imprecise reconciliation process. This process then requires a complicated communication between the central office and the Divisions to ensure a complete understanding of the DOE funding that is available to spend.

Different levels of Laboratory Management focus on different funding levels. At an institutional level, the focus is on the DOE Program or B&R. At a Divisional level, it is on project (or lower level, depending on sponsor requirements). A funding database system needs to support each view and reduce the effort needed to manually reconcile them.

The Sponsored Research Obligational Control level has been recently defined by DOE as the RWO level. This is a level of funding detail that the Lab has to track. Currently there are approximately 900 active Reimbursable Work Orders.

Internal Lab sources of funding (Bridge, LDRD, UCRD, Overhead) should be part of a centralized funding database system with the same functionality and accessibility that external funding sources have.

Database System

Objectives

The Lab needs an automated, centralized database system that will enable it to identify its obligations under Contract 98 (funding position) at any given time. It should contain timely, accurate and easily accessible information at the appropriate level of detail so that it becomes the Lab-wide source for funding data.

It should be the authoritative source of funding data used for Laboratory reporting and controlling within major funding levels.

The database should contain historical, current and anticipated funding information from multiple sources, and should facilitate electronic and online user data input.

The database system should provide calculated funding amounts:

- It should calculate GSO for DOE funding (to meet DOE tracking requirements). When the current fiscal year ends, current funding data should be decremented so that new carry forward balances are generated.

- It should enable a reconciliation of DOE GSO and LBNL calculated GSO.

- It should calculate a "Do Not Exceed" funds total (i.e. GSO plus BA).

- It should accept monthly funding data and track annual totals.

- It should accommodate the Federal Administration Charge (FAC) vs. Non-FAC.

- It should support calculation of the LDRD Equipment Tax

The database should "balance" at all times. The sum of the detailed Divisional funding allocations must equal the total funding (institutional allocation) at each iteration of the 6 funding fields. At each level of allocation, there should be a reconciliation to ensure the amount authorized is not exceeded. For example, if the Budget Office allocates $100K to a Division, the Division should not be able to allocate more than $100K to their projects.

The funding database system should include the ability to freeze funding balances during the closing process.

The database should accommodate DOE recast, reprogramming and deobligation of funding data. The terms recast and reprogramming are generally defined as a change in a funding field code. For example, if the Lab receives $200K in WA-KA050103-EQU, the system should be able to maintain an audit trail if those funds are recast by the DOE to WA-KB0202030-OPE. A deobligation results in a decrease in funding.

The database should facilitate comparison of funding vs. costs vs. budget information, and expedite "available" funding reporting. It should integrate efficiently with other financial systems, and should be flexible enough to accommodate a DOE mandated change or addition of a funding field.

The database should allow drilldown online viewing functionality and crosscut reporting capability on database fields. The database system should use automation to facilitate timely communication. For example, it may be possible to institute electronic notification of funding changes to customers.

The database system should accommodate fiscal year and non-fiscal year views of funding. While most projects are funded for twelve months at a time, some may be funded for more than 12 months or for periods that don't correspond to the DOE fiscal year. The system should support the easy switching between timing views. The database should support Contract Year reporting.

The funding database should provide a software solution that can be used throughout the Lab. Use of a standard application will eliminate inconsistencies and redundant effort. Users should be able to move between Central level and the Division level and from Division to Division, and not need to relearn how funding is tracked.

The funding database system should replace the functionality of the B&R Status Report. While most people understand the B&R Status Report to be a "report", the B&R Status Report functions like a funding database system for DOE funding. (See "B&R Status Report" for additional detail.)

The funding database should support Sponsored Research funding vs. cost tracking. (See "Sponsored Research Funding" for additional detail.)

The funding database system should provide for efficient electronic input of each type of funding data at the appropriate level of detail. The need to rekey data should be eliminated. Data that is already electronically available in another Laboratory System should be accessed by the funding database system.

The funding database system should replace the functionality of the Guidance Reports. It should allow for the input of appropriate Guidance data to support the allocation of funding to the Divisional level. It should accommodate the reconciliation of the Contract Mod to guidance documentation by calculating the variance between these two funding sources. It should take advantage of appropriate technological solutions to handle the distribution of Guidance documentation.

The database should replace the manual tracking of Work Order Authorization System documents. It should provide the ability to input WAS data as data elements.

A Phased Approach

In 2001, it was anticipated that the Funding Database System would be developed in phases. The initial effort was to address DOE funding and Sponsored Research funding. (These are shown as "Phase 1" in the table below). Other external sources of funding and internal funding were to be targeted in future phases.

It was expected that, at completion, Phase 1 would provide the basic set of required features of a funding database for the largest segments of the funding dollars at LBNL.

Funding and Phase of Implementation

> *EXTERNAL FUNDING*
> * DOE – Programmatic   Phase 1
> * DOE – Integrated Contractors   Phase 1
> * DOE – LDRD EQU Tax   Phase 1
> * All Sponsored Research   Phase 1
> * Royalty
> * Conferences
> * Workshops
>
> *INTERNAL FUNDING*
> * LDRD Operating
> * UCDRD
> * Bridge
> * Overhead, Recharge, Organizational Burden

Phase I

Fiscal Year Funding – DOE:

* Ability to enter initial GSO data (B&R, Divisional and Project.)

* Ability for the Budget Office to input Contract Mod data at the B&R level by Division or as "unallocated" (BO and BA).

* Ability for Division analysts to input allocated Divisional funding at the B&R level by project or as "unallocated"   .

* For each level of detail (B&R, Divisional and Project):

  * The database would "balance". Divisional allocations would be equal to the institutional amount allocated to each Division.

  * Would include calculation of "Do Not Exceed" totals.

  * Linkage to FMS for actual costs, project detail, contract value and dates.

- Ability to perform funding vs. cost calculation resulting in Uncosted Balance. (Liens would not be addressed in phase 1.)

- Ability to view in B&R status format with drill down capability

- Automated Guidance tracking

  - Ability to input Guidance data online, at the Divisional and project level.

  - Automatic calculation and reporting of Guidance funding variance to Contract Mod funding Received.

- Automated WAS tracking – ability to input WAS data and track to Guidance received.

Contract Year Funding – Sponsored Research

- Further follow-up effort was needed to determine which requirements would be part of the Funding Database system, and which would be addressed by RAPID.

Contract Mods

Bridge Funding

Sponsor Funding

Guidance

WAS Authoriz.

Janus

RAPID

Other Systems

FMS

User interface to input funding data at appropriate allocation level
OCL, Division, Project, Budget Category

User interface to deobligate/recast/reprogram funding amounts
at appropriate allocation level

Year End Uncosted Balances calculated/carried at appropriate allocation
level - at the end of each year funding records are updated to
reflect ending uncosted balances and rolled over to become next
years beginning balances

"Do Not Exceed" funding calculation provided at appropriate levels

Accessible incremental data

Drilldown online viewing

Funding Balance information can be queried and referenced in other
reports and systems

*Funding Status Rpt.

Excel

Other Reports

Guidance vs. Mod

* B&R Status Report

Figure 2.   Some Funding System Relationships.

LBNL Funding Data Sources

DOE Programmatic

The Contract Mod

The DOE issues LBNL programmatic funding using a combination of five funding attributes on a monthly document called the Contract Modification. Funding available to spend (or cash on hand) are categorized as Goods and Services on Order (GSO) or Budget Authority (BA). The Laboratory is not authorized to spend more than what is reported on the Contract Mod in the GSO and BA categories. The GSO and BA data from the Mod is uploaded using Excel macros and lookup formulas into the B&R Status Report for tracking purposes.

The third category of funds "available" information provided on the Contract Mod is BO (Budget Obligation). BO is the authority provided by the DOE (and sometimes specified by Congress) to issue checks, incur payments, or otherwise commit the U.S. Treasury to pay for a commitment made by the DOE regional office and the Laboratory. The actual disbursement of funds from the U.S. Treasury cannot exceed the total BO Available (per the Contract Mod) at any time. BO is also viewed as a cost ceiling. It is rare that BA exceeds BO, but it can happen. If there is more BA than BO available, the BO is the "Do Not Exceed" cap. Although BO information was provided by the Oakland Operations Office, it has not been included in contract mods provided by the Chicago Operations Office. The Laboratory is not currently managing or tracking BO, but may be required to do so in the future.

DOE Guidance

Guidance refers to written documentation produced for the purpose of authorizing and controlling work performed by M&O (Management and Operating) contractors. It is produced by appropriate DOE Program Secretarial Offices. At a minimum it includes a project title, B&R code, statement of work, funding level and period of performance.

Initial guidance documents can take various forms. These forms range from formal programmatic memos to informal e-mails. The guidance document format varies from DOE program to program.

A guidance document can be considered to be a "promise" by the DOE to fund work. A guidance document does not constitute authorization to spend.

Usually, guidance documents represent anticipated funding, and are most often received in advance of the Contract Modification. However, due to various timing issues, guidance is sometimes received at the Lab lagging the receipt of funding in the Contract Mod.

The Budget Office has three main roles pertaining to guidance:

1. Reconciliation of the Contract Mod to guidance Received - The Budget Office is required to have hard copy, written guidance on file supporting every dollar received in the Contract Mod. If guidance has not been received for dollars on the Mod, the Budget Office contacts DOE to obtain that guidance. Conversely, if guidance is received and no

funding arrives on the Mod, DOE is contacted to track down promised funding. This reconciliation is currently maintained on a report (Excel spreadsheet) produced by the Budget Office, which shows the Mod vs. Guidance variance. The variance must be zero at year-end. The Contract Mod funding comes in at a nine-digit B&R level. Guidance may come in at this level, but often comes in at higher consolidated levels. The Budget Office process also involves the step of identifying the guidance funding down to the nine-digit B&R level.

2. Allocation of dollars received to Divisions - The Budget Office is responsible for officially allocating dollars received on the Contract Mod (which are received at the nine digit B&R level) to the executing Division level. This process is done via the B&R Status Report using guidance documentation. The detail shown in the B&R status report is the result of this allocation process, and represents the official funding position of the Lab. (See the section on the "B&R Status Report" for more information.

3. Notification of Guidance Received - The Budget Office is responsible for notifying / copying the Divisions on every piece of guidance received. This is accomplished by mailing, faxing or e-mailing the documents.

WAS Documents

Work Authorization System (WAS) Documents are the final, official funding authorization documents received by the Lab. The responsible Program Secretarial Office of DOE generates the documents. They also include Headquarters, field element, and contractor signature blocks. The DOE regional office must have a signed copy of each WAS sent to LBNL as evidence of acceptance of the work authorization. The Budget Office faxes signed WAS's back to the DOE regional office.

Each WAS has a unique, standardized identifying number. This number remains the same for the life of the work assignment. However, if supplemental funds are provided, the 7- digit number is augmented by a revision number.

The Budget Office is required to have a signed WAS on file for each piece of guidance and dollar received.

DOE Integrated Contractors and Other Operations Offices

Due to a change in DOE policy in July 2004, work for other Laboratories and offices is now handled as cash work through purchase orders, and is out of the scope of the funding component of the budget system.

Sponsored Research Funding

Introduction

Sponsored Projects work is the performance of research and services for non-DOE entities by DOE/contractor personnel, and/or the utilization of DOE facilities that is not directly funded by DOE appropriations.

Sponsored work is performed for Non-DOE sponsors. These include other federal agencies: state, regional and local governments; private or commercial firms; not-for-profit organizations; international organizations and foreign governments.

Sponsored Research Funding Categories

Sponsored Research Funding is categorized as follows:

- Reimbursable Work – Federal
- Work for Others – Non-Federal work with advance
- Cost of Work for Others – Non-Federal work without advance
- Cooperative Work – with advance
- Cooperative Work – without advance
- Users
- Fellowships

Reimbursable Work

Reimbursable work is supported by the funds of the Federal customer. Cash advances are not required when work is performed for other Federal agencies. An interagency agreement is negotiated. Full funding for the current fiscal year plus the first three months of the following fiscal year is required to meet the full funding criteria of DOE. Incremental funding is allowed by DOE when certain criteria are met.

Work for Others

Work for others is supported by advances and invoice payments from Non-Federal customers.

Specifically, for Non-Federal sponsors, DOE requires the receipt of at least a 90-day advance before work may begin. The 90-day advance of funds must be maintained during the life of the project. The Lab invoices the sponsor after the initial advance of funds for costs incurred. Full funding is required before beginning work on Non-Federal reimbursable agreements that have an estimated cost less than or equal to $25K, or that will be completed in fewer than 90 days.

Cost of Work for Others

Exceptions to the requirement for advances from Non-Federal sponsors are permitted under certain circumstances. This exception is made for work for state or local government bodies that have statutes or other legal requirements prohibiting advance funding for reimbursable work. In this case, work can begin once a contract is fully executed without an advance, and the sponsor is billed as costs are incurred. In effect, the DOE is financing the costs of these projects until the sponsor is billed and DOE is reimbursed.

Cooperative Research and Development Agreement (CRADA)

A Cooperative Research and Development Agreement (CRADA) is an agreement between one or more Federal facilities and one or more Non-Federal parties under which the Government, through its facilities, provides personnel, services, facilities, equipment, intellectual property, or other resources with or without reimbursement and the Non-Federal parties provide funds, personnel, services, facilities, equipment, intellectual property, and/or other resources toward the conduct of specified research or development efforts which are consistent with the mission of the facility; except that such terms do not include a procurement contract or cooperative agreement to the Partner.

Funds-in CRADA's (Cooperative Research and Development Agreements) are subject to the same advance payment requirements as other non-Federal Sponsored Research, except when the participant cannot provide a cash advance (state and local government entities).

B&R Table for Sponsored Research

Sponsored Research Budget and Reporting Codes	B&R
Federal	40XXXXXXX
Work for Others Non-Federal (Advance Funding Required)	60XXXXXXX
Cost of Work Program (Non-Federal without advance funding)	WN02190XX
Cooperative Work:	
CRADA's with Advance Funding	65010XXXX
CRADA's without Advance Funding	WN650XXX

When User's funds or Fellowship funds are obligated under Contract 98, they fall within the B&R categories as defined by Sponsored Research activities.

Sponsored Research Funding Process

The Sponsored Projects Office (SPO) is responsible for submitting proposals and negotiating contracts with Sponsors. It is also responsible for obtaining final Sponsor and DOE approval of Sponsored Research contracts. Once a Sponsored Research award is approved, funding for it is actually received in various ways:

- Sponsor Funding – The Sponsor Funding is the amount of funding authorized by the contract between LBNL and the sponsor. It should be considered as separate and distinct from funding obligated under Contract 98, which DOE defines as the "Do Not Exceed" amount of funding.

- Total Project Estimate – The sponsor may include currently funded research and an estimate of future funding in a contract.

- Full Funding - A Non-Federal sponsor funds the entire award by an advance for the entire amount. In the case of Federal sponsors, DOE approves full funding for the current fiscal year plus three months or incremental funding.

- Partial Funding - A sponsor funds the award with an initial advance, and then is invoiced monthly over the life of the project.

- Cost of Work for Others Funding - In this case the award is approved, but the sponsor is not required to fund an advance. DOE funds the total contract value less FAC (Federal Administrative Charge), if applicable. This amount is recovered by invoicing the sponsor over the life of the project.

Sponsored Projects – DOE Fiscal Year Funding

When Berkeley Lab receives an advance, an invoice payment or the appropriate approval on a Federal award, the DOE is notified. The DOE then includes that payment/approval as funding on the Contract Mod.

The RWO (Reimbursable Work Order) is at the contract level. Individual RWO costs, provided by LBNL, are tracked by the DOE monthly against the funding amounts shown in the Contract Mod.

The DOE has mandated that Sponsored Research costs plus commitments cannot exceed the RWO Obligational Cost level in the Contract Mod. This now becomes the DOE definition of authorized funding and "Do Not Exceed" funding levels.

Awards are authorized when appropriate approval is in place, and the required advance funding has been received. Projects are open subsequent to the award.

Sponsored Projects - Contract Year Funding

A significant portion of the Sponsored Project Research funding has a performance period that is different from the DOE fiscal year. This alternate funding timeframe is referred to as the "Contract Year" (e.g., a 12-month period from April 1, 2006, through March 31, 2007). Most funding is received in one-year increments. (Sponsors may award funding for up to five years at a time.) The entire contract period (made up of multiple contract years) is most often two to five years.

Many sponsors require annual and final fiscal reports by the contract year.   Carryover funding from one contract year to the next, revisions in funding, and changes in the performance period must be tracked. (This includes CA BCRP, CA TRDRP, and CACRP - about 25 to 30% of Sponsored Research funding.)

The Lab is required to track Sponsored Research Funding by Contract Year as well as by DOE fiscal year. The Divisions currently utilize RAPID SPAA documents, the 737 report, and various Excel spreadsheets to track Contract Year funding and compare the funding to costs.

The data elements and functionality shown below will allow for easier management of Contract Year Funding.
- Contract value.

- Direct, indirect and total dollar award down to detailed level required by the sponsor.
- Sponsor performance period – annually and for the total performance period.
- Changes in performance period (no-cost extensions).
- Changes in funding (incremental).
- Contract year carry-forward.
- Ability for Divisions to allocate funding for large program projects at the sub-project level.
- Alerts as to restricted funding.
- Amount of award withheld by the sponsor.
- Capital Equipment.
- Ability to view related data online (SPAA format).
- Generate various reports (cross-cuts).

Sponsored Research Funding in the Funding System

The Sponsor funding included in the Funding Database should be net of the Federal Administrative Charge (FAC). The RWO funding balance in the Mod is net of FAC.

The funding component of the budget system must accommodate the application of bridge funding as approved by Lab management.

The Divisions are responsible for the allocation and input of data below the RWO level. Further breakdowns of funding may need to be tracked below project level if such breakdowns are required by sponsors. (e.g., NIH requires funding be tracked by budget category).

The funding database should support Contract Year reporting / non-DOE fiscal year reporting.   (See "Sponsored Projects - Contract Year Funding.")

Funding Reporting

Viewing Data

The user should have the option of viewing funding data on screen. The funding database should provide several basic layouts.

It is anticipated that more sophisticated reporting would be accomplished with Web reporting. An ability to query funding database information and download it to an Excel spreadsheet is essential.

The funding database system should support the printing of funding data. This feature would provide a simple printout of funding details as defined by the user.

The ability to export or mail funding data (electronically) is required.

B&R Status Report

The funding database should replace the current process for producing the B&R Status Report.

The B&R Status Report is the primary tool for tracking and reporting DOE funding balances for the Laboratory. Essentially, it functions as a database system. The main focus of the B&R Status Report is to reconcile LBNL's funding balances with DOE records. In addition, the B&R Status Report tracks funding allocations received at an institutional level down to the Divisional level. The DOE allocates funding to LBNL in five unique funding fields. They are:

- Fund Type
- B&R – Budget and Reporting Code
- BRN – Budget Reference Number
- BRN Sub – Budget Reference Number Sub
- Program Task Number

Each combination of these five fields is allocated to either a Division or an unallocated pot until the appropriate Division can be identified

The B&R Status Report currently performs multiple functions:

- Tracks DOE funding allocations as reported on the contract mod.
- Tracks Divisional funding allocations.
- Tracks Unallocated funding amounts (Contract mod less Divisional allocation).
- Tracks YTD cost and commitments obtained from FMS.
- Identifies FMS transactions against invalid FMS chart field combinations.
- Summarizes various levels of funding and cost information, including OCL.
- In B&R's that are shared by more than one Division, identifies cost differences between two FMS tables (MARS_YTD and ZW_MR_L1).
- Generates Divisional reports.
- Calculates uncosted trends based on "what if" scenarios.

Each of the five funding fields is a unique funding attribute, and costs are applied against these fields in various combinations. When LBNL transmits costs to DOE, there is one additional field used called the MARS Code. While the MARS Code is not a funding attribute, one of the many uses DOE has for the MARS code is to organize transactions into specific types of costs (EQUIP, OPEXP, PLANT). In fact, this is how DOE categorizes its funding also known as the "color" of funding. Each color of funding has specific rules for the types of costs that are applied against it. The B&R Status Report ensures that the proper color of funding is aligned with the proper type of cost prior to the transmission to DOE.

The B&R Status Report compiles data from spreadsheets using either a lookup function or a direct link. It also functions as a unique data source as well. For example, GSO is manually entered for both LBNL and DOE data sources and various calculations for run rates and expected uncosted balances are housed in the report.

The B&R Status Report is designed to function at the L1 or Divisional level. If more detail is required below the L1, a separate report is developed and maintained.

Reporting Issues

There is a need to be able to identify and provide specific report requirements (layouts, priority, etc.). Several reports were identified in the 2000-01 draft document. A reporting subcommittee was proposed to address what common reports would be handled as part of the Funding Database System and in what phases they would be addressed.

The ability to produce the B&R Status report at a project level (vs. the current L1 Division level) needs to be scoped.

The RWO status report, contained in the Funding Database requirements, will need to be defined and developed.

The number of years of historical data the system will accommodate needs to be defined. For example, should all funding be accumulated and tracked from the inception of a project? How would this be done?)

The ability to report out on summary-level B&R categories (e.g., 2-digit B&R's, 4-digit B&R's) needs to be further defined.

Further Exploration

Consolidations and Rollups

The Divisions have cited a need to do rollups of funding data to various levels. A link between a project in the funding Database and the system where the rollup is defined (e.g., to the project trees in FMS) will be necessary to produce automated consolidations. If a rollup is "special", i.e., doesn't correspond to the FMS project tree, the user must define the rollup "key" as a data element in the database or pursue designing custom reports.

Security and Access Requirements

Considerations include: How do the Divisions want the security to be organized in the Funding Database System? Should owners of funding choose who can see that funding data (view, print, edit, rollup)? Further feedback from the Divisions will be needed.

Other Sources of Funding

Other external and internal sources of funding will need to be reviewed in greater detail. These include royalties, conferences, workshops, LDRD operating, UCDRD, Bridge funding, Overhead, Recharges, and Organization Burdens.

Sponsored Projects Mod Request

The functionality to sweep the BAR system and RAPID and produce a Sponsored Project Mod Request Report (to forward to the DOE regional office) has been implemented with BAR, Grants, and FMS. It has been proposed that this process should be included in the Funding Database system rather than in RAPID.

Project Opening

We want to have FMS check the funding database for funding before a project can be opened. Another functionality under consideration is whether we want an automated check of the project ID to verify open status in FMS before funding data can be allocated to that project.

Funds Control
Budget Office Business Functions
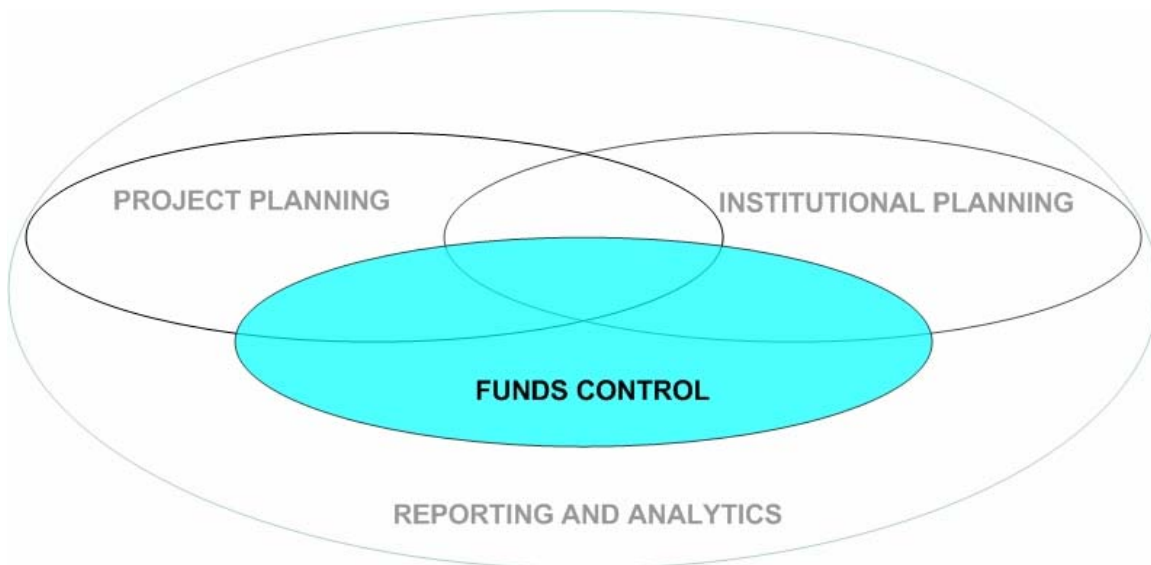
Introduction

The LBNL Budget Office manages a variety of business functions in the area of Funds Control. These processes include the following:

- The B&R Status Report

- The LDRD Capital Equipment Revenue Calculation report

- The LDRD Monthly Cost Report

- The General Purpose Equipment (GPE) Report

- The Technology Transfer Report

- The NA-22 Uncosted Balances Report

- Guidance

- Work For Others

- Bridge Funding

These processes are described in detail in the following pages.

The B&R Status Report

The institutional B&R Status Report is just one part of several interlinked Excel spreadsheets. These spreadsheets are extremely complex, with many underlying macros and comments.

The Excel B&R Status workbooks contain tracking data on Guidance, GSO (Goods and Services Outstanding), New Funding (BA), Costs, Uncosted Balances, Liens and Uncommitted Balances.

Data security is an issue. Currently, Divisions are only able to see their own funding allocations, and funding information is not given out by the Budget Office unless authorized by the applicable Division. (However, actual costs, which imply funding to a certain degree, are visible in IRIS.)

Divisional Crosscuts showing each Division their available funding and ledger activity are published through a password-protected web site. The Divisional reports are published after the receipt of a contract mod, after the final monthly soft close, and after the monthly hard close. These Divisional reports are created by an Excel macro that filters out valid Divisional funding sets from the larger institutional report.

Changes in circumstance may require a funding allocation to be removed from a Division. These funds remain in the institutional report but are removed from the individual Divisional report. This can occur if funds are deobligated by the sponsoring program, if the funding allocation was made in error, or if guidance is no longer available to support the allocation.

There are two main types of funding data to track. Guidance is provided in the WAS (Work Authorization), and Budget Authority is provided in the Contract Mod. Guidance is issued by the sponsoring program manager, but corresponding budget authority is provided from the program's budget office. As a result, there is the possibility for the data to become out of sync. Costs cannot be appropriately incurred until both the Work Authorization and the Budget Authority have been received.

Guidance and funding information are tracked at the lowest level as required for funds control. This includes the Fund Type, the 9-character Budget and Reporting code, the Budget Reference Number, the sub Budget Reference Number, and the Program Task. This unique funding combination also includes the Reimbursable Work Order number, but for valid DOE Direct funding that field should always be blank.

Excel is not the optimal database for containing the B&R Status Report, due to the amount of data being tracked and the multi-dimensionality of the views required. There is also narrative information currently included in the B&R Status Report through Excel comment functionality, but this is unwieldy and difficult to track. The Budget Office feels that they have reached the limit of Excel's capacity, and that any additional macros or data relationships could crash the already fragile system. This creates a high institutional risk, as this report is essential for institutional funds control.

There are many filters on the main spreadsheet so that Budget can find exceptions, such as recasts requiring special attention.

Note: As of September 2004, DOE Chicago has implemented the FCDS system, which provides contract mod information in a database format. FY05 contract mods have been provided by Chicago from the FCDS system. However, there are ongoing formatting issues.

Funding data is pulled into the report via macros and manual review. Multiple variance analyses are done to ensure that all funding information is captured accurately. Funding is tracked both in total and on a monthly basis so that individual allocations of funding can be referenced throughout the year in response to Divisional questions.

Funding is manually allocated from the DOE specific funding level (Fund Type, B&R, BRN, etc.) to the appropriate Division. These allocations are based on guidance information which automatically populates from the Guidance Report. Funding that has not yet been allocated remains in report lines that are visible only in the master report. Automated allocation methodologies have been pursued in the past, but were unable to provide the necessary controls.

Although funds cannot be allocated or spent without appropriate program guidance documentation, funds may be shown on a Divisional report in advance of the receipt of the signed WAS. If this occurs, the funds are commented out as 'unavailable to cost'. This allows the Division some advance notice for longer term planning purposes, and facilitates their working with their funding programs to obtain appropriate WAS documentation. If an authorized guidance document cannot be provided in a timely manner the funds are withdrawn from the Divisional report.

At the monthly hard close, cost and lien data are pulled from FMS ledger tables. These are compared to available funds at a summarized institutional level and at the individual Divisional allocation level. If a Division has costed or committed in excess of their approved funding, they are notified by the Budget Office and provided an opportunity to make any appropriate corrections before transmittal of the final cost activity to the Department of Energy.

This also provides an opportunity for the Budget Office to review cost and commitment activity and correct any institutional errors. These institutional errors include costs to recast B&R's, costs to blank projects, and costs to invalid funding combinations.

The number of institutional corrections required greatly increased following the PRP implementation. The change in methodology for recording liens created issues with DOE recasts and caused the amount of time for the review and appropriate corrections to triple. These system issues were eventually improved with changes in PRP's methodology, but highlight the necessity of a flexible, sturdy system solution.

The LDRD Capital Equipment Revenue Calculation report

LDRD has two parts: Operating and Equipment. The LDRD Operating is funded out of overhead. Since we cannot use overhead funds to purchase equipment, we have to establish the LDRD Capital Equipment funds by taxing DOE Capital Equipment funding projects. The tax calculation process involves 3 steps: 1) identify all the Capital Equipment funding B&Rs (excluding GPE), and subtotal them at the B&R Control Level (2-digit B&R) for each Division; 2) Calculate 12% of the total Operating funds received at each B&R Controlled Level from step 1; 3) Compare the amount in step 1 and 2, and take 3% of the lesser amount. This is the tax amount that the Division has to contribute for the corresponding B&R Controlled Level.

The calculation of LDRD Equipment Revenue is a manual process and is done on Excel by the Indirect Budget Office. This report is updated monthly after the receiving of the DOE Contract Mod. The updated report is then distributed to the Divisions and to the Direct Budget Office for updating to the B&R Status report.

The allocations of the LDRD are manual in the B&R Status report, so when people request funds from the DOE, this needs to be included in the formulation of the budget.

The Lab has both IGPP and IGPE. This is for Institutional Construction and Equipment Purchases, provided by the landlord program on a direct B&R. It has to be for Institutionally Benefiting programs, not ones for just one project or Division. The Laboratory does not currently have an IGPP or IGPE program. Other Labs do have these programs and we have been looking into it, but nothing is in place. LDRD is for institutional use under DOE's approved LDRD program.

It takes 3-4 hours a month when we receive the Contract mod. It takes about one week a year of one FTE. There is the possibility of error due to the manual nature of the calculations.

If we have LDRD money left at the end of the year, we carry it over. The Lab tries to spend the small amounts first, and so end up with the last of the money in one B&R. LDRD funds get recast along with the Divisional funds.

The LDRD Monthly Cost Report

The LDRD Monthly Cost Report is an nVision report that shows the monthly costs, year-to-date costs, and commitments of LDRD Operating and Equipment projects in relation to their approved funding levels. It is sorted by Division and by LDRD Proposal numbers. The monthly cost report is more time-intensive than the revenue calculation, and requires a large reconciliation effort at the end of the year. We are examining the possibility of utilizing BLIS to generate the report, but our systems currently do not contain the LDRD Proposal number, and that issue would need to be addressed.

The General Purpose Equipment (GPE) Report

The summary GPE information provided in the B&R Status Report is expanded into project detail to allow for better tracking and analysis of GPE project costs. GPE projects are approved by the Laboratory's GPE Committee and divided on the report into computer and non-computer items. This Excel report shows monthly and year-to-date cost and commitment activity for each GPE project in relation to its approved funding. The report has a limited distribution determined by the GPE Committee.

The Technology Transfer Report

This is a detailed breakout of activity for all projects funded under DOE's KJ02 Technology Transfer Program managed at the Laboratory by Chris Kniel. This Excel report shows

monthly and year-to-date cost and commitment activity for each Tech Transfer project in relation to its approved funding.

The report contains an identifying KJ02 project ID and the corresponding FMS project ID where costing occurs.

The NA-22 Uncosted Balances Report

This subset of the B&R Status Report provides more detail on specific Nuclear Non-Proliferation activity under program NN20.

The Uncosted Balances report is an external report going to the NN Program, identifying funding cost and commitment activity by NA-22 project ID number. The report also includes narrative justifications of uncosted balances by project. The Program wants to see uncosted balances every month, even early in the year.

The NNSA's PMIS Web site is used to upload the NN report. The comments, balances and funding all get keyed in by the Budget Office.

Guidance

The Budget Office has prepared a flowchart that shows the formal Guidance process and information flows.

There is a formal notification process and an informal notification process.

Programs write formal guidance memos with Work Authorization Statements (WAS's) attached. These statements back up what the programs tell the CFO to fund, and the Contract Modification (Mod). All Mods are backed up by Guidance.

There can be timing issues with the information flow. Part of the problem is that transmittals are on paper.

A WAS represents the official authorization and acceptance of funding. It is filed for future reference, e.g., for audit purposes.

WAS's get three hard copy signatures. This creates more timing problems.

When a WAS arrives, the Budget Office verifies that it is not a duplicate, enters it into a spreadsheet, and determines which Division is managing the research.. This is often difficult, as the memos are often unclear or unspecific.

The Excel workbook has a tab for every high-level B&R. This spreadsheet is a source of data for the B&R status report.

The Budget Office must constantly reconcile Guidance to WAS, and to the Mod. This can be difficult, because the DOE sometimes makes mistakes and puts in wrong numbers or puts funding in incorrect funding sets in the contract mod.

Work For Others

The Budget Office has prepared a flowchart that shows the Work For Others funding flows.

The Direct Budget Office plays a role in the contract Mod process related to Work For Others (WFO) funding.

WFO works the opposite way from the DOE model. We tell the DOE what cash we have received from Non-Federal Sponsors, and what Federal Contracts we have signed, and, based on that, send the DOE a request to modify our contract BA..

For this discussion, there are two types of Work For Others: Federal non-DOE, and non-Federal reimbursable work. (A third type is DOE integrated contractors.)

Federal funding is a straight-line flow. The whole value is approved up front, even if the project spans multiple years. The Sponsored Project Office (SPO) sets up the contract. Once the DOE approves it and puts the Budget Authority into the contract mod, we can start spending. The dollars to spend are 100% authorized by the DOE.

The Direct Budget Office produces a Mod request. DOE replies with the Mod (Budget Authority.)

Billing and cash receipts don't affect the Budget Authority for Federal Contracts. All funding is established up front.

Non-Federal funding includes universities, states, agencies, foreign entities, etc. It runs the gamut.

The sponsor must pay an advance up front, equivalent to four "high cost" months of work, plus any major equipment costs. The advance is Mod-requested to the DOE, and the DOE gives the authority to spend. Costs are invoiced, and payment is received. Then we request that this amount be added to the Mod, and the DOE adds this to our budget authority.

At any stage, the DOE spending authority is limited to the money we have actually received from the sponsor.

If the system breaks down, we have cash management issues, e.g., the DOE says we don't have enough authority to spend.

The Direct Budget Office's role is to prepare reports to analyze this process.

Reimbursable Work Order (RWO) and Interdivisional Work Order (IWO) status reports are reconciliations similar to the B&R status reports. (The IWO's are used for the integrated contractors.) The RWO status reports and IWO status reports are generated in the Budget Office. These are Excel workbooks generated from Queries. The Divisions use the BAR system's "777" report.

Contract Mods are captured in Excel spreadsheets.

The Contract Mod process is very manual, and requires downloads from BAR.

There are "ceilings" established by Congress for Work For Others by fund type. These limit the amount of Budget Authority we can request in a fiscal year for a specific fund type. Cost Ceilings are managed in the Budget Office manually to prevent us from having to turn away sponsored work. If we begin to approach a cost ceiling, specific forecasts are done to determine if we need to formally request more ceiling from the DOE.

"WN" is a special category that gives us an exception allowing us to work for a non-Federal entity without an advance. There are a variety of entities that qualify for this treatment. WN Budget Authority is provided under the DOE WN02 program and is managed in the B&R Status Report at the B&R level. A more detailed WN02 report by project is currently under development in the Budget Office.

Bridge Funding

The management of Bridge Funding is another Budget Office business function related to funds control that was noted, but not explored in detail. The development of a comprehensive institutional budget system will likely create additional opportunities in this area. Bridge Funding had been previously managed by the General Accounting group, but is moving to the Direct Budget Office for FY05 activity. A formal Laboratory bridge funding policy is currently under review.

Functional Hierarchy -- Funds Control

F.1 **GENERAL CAPABILITIES**

F.1.1 Availability of historical, current and anticipated funding information from multiple sources, and ability to be the single origination point for DOE approved funding (BA, BO) information. (Chicago is not currently tracking BO. We should confirm that this needs to be tracked.)

F.1.2 Ability to accept monthly funding data and track annual totals.

F.1.3 Ability to separate funds by time intervals. For example, carryover funds (called Uncosted Obligations) are those funds not spent from a prior year on a project. Uncosted obligations need to be identified as available for a project, but must always be kept distinct from current year funding and future expected funding.

F.1.4 Ability to maintain an audit trail and transaction log of all program funding changes and allocations.

F.1.5 Ability for authorized users to access incremental funding transaction data.

F.1.6 Ability to report funding changes history through the fiscal year.

F.1.7 Flexibility to accommodate DOE or Sponsor mandated changes or addition of new funding fields.

F.2 **RECEIPT AND ALLOCATION OF FUNDS**

F.2.1 Ability to record funding at a high level in the LBNL project tree.

F.2.2 Ability for the Budget Office to make allocations of funding to Divisions, and for each Division/Department to make subsequent allocations to investigators or to projects or hold as unallocated for subsequent distribution.

F.2.3 Ability to automatically upload funding information from the DOE contract mod as it is identified by its unique combination of 6 DOE funding fields.

F.2.4 Ability for Divisions to allocate funds to principal investigators, project managers and projects (per guidance).

F.2.4.1 Ability to record the amount allocated to PI / project per guidance.

F.2.4.2 Ability for authorized users in the Divisions to enter/modify Mod (BA) allocation below the Division level, such as at the project/PI/budget category/ subcategory level for DOE programmatic funds, and below the RWO level at the budget category/ subcategory level for sponsored projects.

F.2.5 A user interface to input funding data at allocation level below project: budget category.

F.2.6 Ability to ensure that the sum of the funding allocated to each detailed level does not exceed the funding allocated to higher levels.

F.2.6.1 Ability to ensure that the sum of the detailed Divisional funding allocations equals the total funding (institutional allocation) for each of the 6 funding fields: Fund type, B&R, BRN, BRN Sub, Program Task #, and RWO #.

F.2.6.2 Ability to balance the YTD Divisional BA and BO allocations to the total YTD BA and BO amounts for each unique funding element.

F.2.6.3 Ability to balance the YTD BA and BO allocations at the project level to the total YTD BA and BO amounts at the Division level for each funding element.

F.2.7 Ability to show if there are additional funds available for allocation.

F.2.8 Ability to identify total uncommitted funding balances at different levels: Fund type, B&R, funding element, Division, project.

F.2.9 Ability to provide an exception report detailing unbalanced funding allocations.

F.2.10 Ability to enter comments for each funding allocation transaction.

F.3 DOE FUNDING

F.3.1 Ability to track DOE Programmatic funding.

F.3.2 Ability to record incremental funding amount for all DOE programmatic B&Rs at the DOE funding element level, i.e., by the unique combination of the DOE 6 funding fields.

F.3.3 Ability to report current DOE approved funding total at any allocation level for a fiscal year.

F.4 EXTERNAL FUNDING AND CONTRACT MOD MANAGEMENT

F.4.1 Ability to track funding from a variety of external funding sources, including:

F.4.1.1 Federal reimbursable work.

F.4.1.2 Non-Federal Work For Others (with advance).

F.4.1.3 Non-Federal Work For Others (without advance).

F.4.1.4 CRADA (with advance funding).

F.4.1.5 CRADA (without advance funding).

F.4.1.6 Sponsored research (users).

F.4.1.7 DOE integrated contractors

F.4.2 Ability to generate a DOE Mod request at the appropriate time, depending on the sponsor.

F.4.2.1 For non-Federal sponsors, the ability to summarize total sponsor payment amounts and generate a DOE Mod request.

F.4.2.2 For Federal sponsors, the ability to generate a DOE Mod request at the time of signing, based on the full contract value.

F.4.3　　Ability to interface with the DOE to submit the Mod request via a direct, automatic upload.

F.4.4　　Ability to interface with the DOE to receive approval of the Mod request via a direct, automatic download.

F.4.5　　Ability to track discrepancies between the submitted Mod request and the Mod received.

F.4.6　　Ability to generate a Mod request discrepancy report.

F.4.7　　Ability to calculate and include any discrepancy adjustment from previous Mod request in the subsequent Mod request.

F.4.8　　User interface to input and include in a Mod request individual RWO funding incremental amounts for multi-Lab CRADA projects.

F.4.9　　Ability to produce a Sponsored Project Mod Request report (to forward to the DOE regional office).

F.4.10　　Ability to accommodate the Federal Administration Charge (FAC) on applicable sponsored project funding to generate the DOE contract Mod request.

F.4.11　　Ability to track DOE funding allocations as reported on the contract Mod.

F.4.11.1　　Ability to record the fiscal year, date and AFP # of each DOE contract Mod.

F.4.11.2　　Ability to record each unique funding element which is a combination of the 3 funding fields: Fund type, B&R, RWO #, and possibly cost center code and IWO # as well.

F.4.11.3　　Ability to record the BA, BO, and GSO amounts for each unique funding element transmitted in each DOE contract Mod.

F.4.11.4　　Ability to automatically extract pertinent information from the DOE AFP Excel file to create transaction history for each Mod.

F.4.11.5　　Ability to verify the data extracted from the DOE Mod.

F.4.11.6　　User interface to record comments specific to each contract Mod.

F.5　　**SPONSORED RESEARCH FUNDING**

F.5.1　　Ability to track sponsored research funding in total and by appropriate increments (as authorized by the contract).

F.5.2　　Ability to support sponsored project contract year funding capabilities such as award of direct, indirect and total amount to sponsored required detailed levels; tracking of the sponsor's performance period, changes in performance period, changes in contract funding; contract year carry-forward; allocation of contract funding to the sub-project level; restricted funding alerts; sponsor withheld award; capital equipment; and various cross-cuts reports.

F.5.3　　Ability to accommodate fiscal year and non-fiscal year views of funding.

F.5.4　　Ability to support Contract Year carry-forward reporting requirements.

F.5.5　　Ability to carry incremental and total Contract Value information.

F.5.6　　Ability to compare costs at the RWO level vs. approved funding.

F.5.7　　Ability to provide sponsors annual and final fiscal reports by contract year.

F.5.8   Ability to "close" RWO's when appropriate.

F.6   **GUIDANCE**

F.6.1   Ability to allow authorized users to input appropriate Guidance data at the Divisional level to support the allocation of funding to the Divisions.

F.6.1.1   Ability to record the date and authorizer of guidance.

F.6.1.2   Ability to record the amount allocated to Divisions per guidance.

F.6.1.3   Ability to record different types of guidance: WAS, Divisional memo, DOE memo, reprogram request, misc.

F.6.1.4   Ability to balance the YTD Divisional guidance allocations to the total YTD guidance amount for each unique funding element.

F.6.1.5   Ability to record the amount allocated to the OCL level, or the 2-character B&R program level, the 4-character B&R subprogram level or the 6-character B&R category level, per guidance.

F.6.1.6   Ability to ensure that guidance data are used within the fiscal year the data are entered and that no carry-forward of guidance data to new fiscal year.

F.6.2   Ability to calculate Guidance funding variance to Contract Mod funding received.

F.6.3   Ability to calculate the variance between total YTD guidance amount and total YTD mod (BA) amount for each unique funding element at different allocation level (fund type, B&R, funding element, Division) for a fiscal year/accounting period.

F.6.4   Ability to produce a report showing variances between guidance and contract Mod funding.

F.6.5   Ability to provide an exception report when YTD guidance is different from YTD BA amount for each funding element at different levels: Fund type, B&R, funding element, Division.

F.6.6   Ability to query by conditions when YTD BO > YTD BA, when YTD BA > YTD BO, when YTD BA > YTD guidance, or when YTD guidance > YTD BA.

F.6.7   A user interface to track WAS data, including the date, WAS number, and revision number, when a guidance becomes a WAS.

F.6.8   Ability to replace the manual tracking of WAS documents.

F.6.9   Ability to replace the functionality of the Guidance Reports.

F.6.9.1   Ability to query or report by guidance type, by guidance date, by Division, and/or by PI.

F.6.9.2   Ability to record the amount allocated to Divisions per guidance.

F.6.9.3   Ability to provide a report showing guidance transaction history through the fiscal year.

F.6.9.4   Ability to balance the YTD Divisional guidance allocations to the total YTD guidance amount for each unique funding element.

F.6.10 Ability to provide a year end exception report showing the discrepancy between YTD BA and total WAS amount for each funding element at different levels: Fund type, B&R, funding element, Division, and OCL.

F.6.11 Ability for authorized users to input Guidance data online at the Project/PI level.
F.6.11.1 Ability to record the date and authorizer of guidance.
F.6.11.2 Ability to record the amounts allocated to Divisions per guidance.
F.6.11.3 Ability to record different types of guidance: WAS, Divisional memo, DOE memo, reprogram request, misc.
F.6.11.4 Ability to balance the YTD guidance allocations at project/PI level to the total YTD Divisional guidance amount for each unique funding element.
F.6.11.5 Ability to record the amount allocated to the OCL level, or the 2-character B&R program level, the 4-character B&R subprogram level, or the 6-character B&R category level, per guidance.
F.6.11.6 Ability to ensure that guidance data are used within the fiscal year the data are entered, and that there is no carry-forward of guidance data to the new fiscal year.
F.6.12 Ability to query or report by guidance type, by guidance date, by Division, and/or by PI.
F.6.13 Ability to balance the YTD Divisional guidance allocations to the total YTD guidance amount for each unique funding element.

F.7   LDRD FUNDING

F.7.1 Ability to track funding from LDRD Equipment Tax.
F.7.1.1 Ability to record allocation of incremental funding amount, extracted from DOE programmatic EQU funding, to LDRD at the DOE funding element level.

F.7.1.2 Ability to support the institutional LDRD Monthly Cost Reporting process.
F.7.2 Ability to support calculation of the LDRD Equipment Tax.

F.7.2.1 Ability to calculate YTD EQU LDRD Tax for all relevant EQU funding at the funding element level, excluding all GPE and GPP (i.e., BRN=GPE), based on 3% of the lesser of the YTD EQU BA at the funding element level and 12% of YTD OPE BA at the OCL level.
F.7.2.2 Ability to record calculated EQU LDRD Tax amount as new funding for LDRD and offset the total EQU funding amount.

F.7.2.3 Ability to provide user interface to distribute the collection of the EQU LDRD Tax among the Divisions receiving the EQU funding so that the total EQU amount is the sum of the LDRD Tax and the Divisions' allocation less its weighted tax.
F.7.2.4 Ability to allow LDRD tax exemptions for list of funding elements specified by DOE.
F.7.2.5 Ability to use the following rules to calculate LDRD EQU Tax: default to 0 if a recast, reprogram or deobligation occurs where the BA amount is negative; rounding to 2 decimals.
F.7.2.6 Ability to generate the Equipment LDRD Tax report.

F.8   BRIDGE FUNDING

F.8.1   Ability to apply bridge funding to cover timing issues.

F.8.2   Ability to accommodate the input and deobligation of Bridge funding at the RWO level.

F.9   RECAST, REPROGRAMMING, DEOBLIGATION

F.9.1   Ability to accommodate recast of funding data.

F.9.2   Ability to accommodate reprogramming of funding data.

F.9.3   Ability to accommodate deobligation of funding data.

F.9.4   Ability to provide a linkage between the old funding elements and the new funding elements in case of recast and reprogram.

F.9.5   Ability to identify funding level changes by type such as obligation, deobligation, reprogramming, and recast.

F.9.6   Ability to provide a report showing the history trail of funding amount changes through recast/reprogramming.

F.10   UNCOSTED BALANCES AND GSO

F.10.1   Ability to enter initial GSO data (B&R/RWO, Divisional and Project).

F.10.2   Ability to calculate year end uncosted balances at the appropriate allocation level.

F.10.3   Ability to calculate LBL uncosted balances as GSO + YTD BA allocations minus YTD cost for each unique funding element.

F.10.4   Ability to calculate LBL uncosted balances as GSO + YTD BA allocations minus YTD cost for each unique funding element at the Division level.

F.10.5   Ability to identify the total uncommitted funding balance at different levels: Fund type, B&R, funding element, Division, project.

F.10.6   Ability to generate a variance report showing cost + liens vs. the DOE approved funding amount on sponsored projects for any fiscal year/accounting period.

F.10.7   Ability to provide an exception report showing all uncosted balances that exceed funding at the DOE funding element level.

F.10.8   Ability to provide an exception report showing all uncosted balances that exceed funding at the Division level.

F.10.9   Ability to generate an uncosted balance report by appropriations and by OCL or 4-char B&R level, if higher.

F.10.10 Ability to convert LBL uncosted balances at the Division level into GSO at the Division level for each funding element at fiscal year end.

F.10.11 Ability to for the user to identify (through a report or Query) Divisions and funding elements having uncosted balances exceeding a DOE-set threshold at fiscal year end, and thus requiring carryover justification.

F.10.12 Ability to calculate GSO funding for DOE funding. When the current fiscal year ends, current funding data shall be decremented so that new carry forward balances are generated.

F.10.13 Ability to calculate fiscal carry-forward balances for Sponsored Research funding, to meet DOE tracking requirements. When the current fiscal year ends, current funding data shall be decremented so that new carry-forward balances are generated.

F.10.14 Ability to start a new fiscal year funding record by zeroing out BA and BO allocations for each unique funding element at fiscal year end.

F.10.15 Ability to start a new fiscal year funding record by zeroing out BA and BO allocations at the Division level for each unique funding element at fiscal year end.

F.10.16 Ability to enable a GSO reconciliation by recording the LBNL calculated GSO amount and the DOE GSO amount transmitted in the contract mod for each unique funding element.

F.10.17 Ability to provide an exception report when the DOE GSO differs from the LBNL GSO for each unique funding element.

F.11 **B&R STATUS REPORT**

F.11.1 Ability to replace the functionality of the B&R Status Report.

F.11.2 Ability to produce the B&R Status report at a project level (vs. the current L1 Division level).

F.11.3 Ability to provide a report showing YTD BA, YTD BO, and YTD cost for each funding element at the project level.

F.11.4 Ability to generate a variance report showing costs + liens vs. the DOE approved funding amount for any fiscal year/accounting period.

F.11.5 Ability to provide a report showing YTD BA, YTD BO, and YTD cost for each funding element at different levels: Fund type, B&R, funding element, Division.

F.11.6 Ability to provide an exception report when YTD guidance is different from YTD BA amount for each funding element at different levels: Fund type, B&R, funding element, Division.

F.11.7 Ability to query by conditions when YTD BO > YTD BA, when YTD BA > YTD BO, when YTD BA > YTD guidance, or when YTD guidance > YTD BA.

F.11.8 Ability to identify inappropriate costs such as B&R costs without projects, costs on recasted B&R's, or costs on invalid funding fields.

F.11.9 Ability to identify any new funding element such as a new B&R.

F.11.10 Ability to identify when the first BA or BO transaction happens in a fiscal year for a funding element.

F.11.11 Ability to identify funding level changes by type, such as obligation, deobligation, reprogramming, and recast.

F.11.12 Ability to identify total uncommitted funding balances at different levels: Fund type, B&R, funding element, Division, project.

F.11.13 Ability to identify cost differences between two FMS tables (MARS_YTD and ZW_MR_L1) in B&R's that are shared by more than one Division.

F.12   REPORTING

F.12.1 Ability to report on high-level B&R's.

F.12.2 Ability to report funding and costs on B&R's truncated to the 2-character B&R program level, the 4-character B&R subprogram level or the 6-character B&R category level, or the OCL level.

F.12.3 Ability to calculate "Do Not Exceed" funds totals (i.e., GSO plus BA) at appropriate allocation levels.

F.12.4 Ability to provide a report showing YTD BA, YTD BO, and YTD cost for each funding element at the project level.

F.12.5 Ability to provide Divisions with rollups of funding data to various levels.

F.12.6 Ability to generate a variance report showing costs + liens vs. the DOE approved funding amount for Sponsored Research projects for any fiscal year/accounting period.

F.12.7 Ability to generate a RWO status report.

F.12.8 Ability to provide "available" funding reporting.

F.13   MISCELLANEOUS FUNDING SOURCES

F.13.1 Ability to track funding from external funding source: Royalty.

F.13.2 Ability to track funding from external funding source: Conferences.

F.13.3 Ability to track funding from external funding source: Workshops.

F.13.4 Ability to track funding from internal funding source: LDRD Operating.

F.13.5 Ability to track funding from internal funding source: UCDRD.

F.13.6 Ability to track funding from internal funding source: Bridge.

F.13.7 Ability to track funding from internal funding sources: Overhead, Recharge, Organizational Burden.

F.14   MANAGEMENT BY OCL

F.14.1 Ability to summarize various levels of funding and cost information, including OCL.

F.14.2 Ability to record list of OCLs by appropriations.

F.14.3 Ability to record a list of funding elements by OCLs.

F.14.4 Ability to keep history of OCL's and their associated funding elements.

F.14.5 Ability to report funding amounts and cost amounts by OCL.

F.15 OTHER DESIRED FUNCTIONALITY

F.15.1 Ability to calculate uncosted trends based on "what if" scenarios.

F.15.2 Ability to provide automatic project opening upon validation of available funding.

F.15.3 Ability to provide an interface capability for FMS Project Setup to check funding availability for the specified funding element and Division upon project opening.

F.15.4 Flexibility for the Budget Office to override opening a project without available funding.

F.15.5 Ability to generate continuing resolution funding requests at the funding element level.

F.15.6 Ability to track Mod received vs. continuing resolution funding requests.

F.15.7 Ability to handle temporary holds on Division funding.

F.15.8 Ability to record Division "Heard on the Street" as a potential funding source.

F.15.9 Ability to track the realization of "Heard on the Street" funding to guidance.

F.15.10 Ability to support the institutional General Purpose Equipment (GPE) Reporting process.

F.15.11 Ability to support the institutional Technical Transfer Reporting process.

F.15.12 Ability to support the institutional NA-22 Uncosted Balances Reporting process.

F.15.13 Ability to support the institutional Work For Others (RWO and IWO) status reporting processes.

F.16 SECURITY

F.16.1 Security capability to ensure that data can only be entered, modified, and accessed by authorized users at the appropriate level.

F.16.2 Ability to allow full security privileges for designated users (e.g., the Budget office).

F.16.3 Ability to maintain modification privileges for designated users (usually Division) by their user ID, employee ID, and a list of Divisions whose funding allocation they can modify.

F.16.4 Ability to provide administration capability for maintaining the list of designated users.

F.16.5 Security capability to ensure that Mod data (BA and BO) below the Division level at the project/PI or budget category/subcategory level can be entered and modified by authorized users in the Divisions.

F.16.5	Security capability to ensure that Mod data (BA and BO) from the funding element level to the Division level and all guidance can only be entered and modified by authorized users in the Budget Office.

F.16.7	Ability to freeze funding balances during the closing process.

Reporting and Analytics
Summary of Desired Functionality
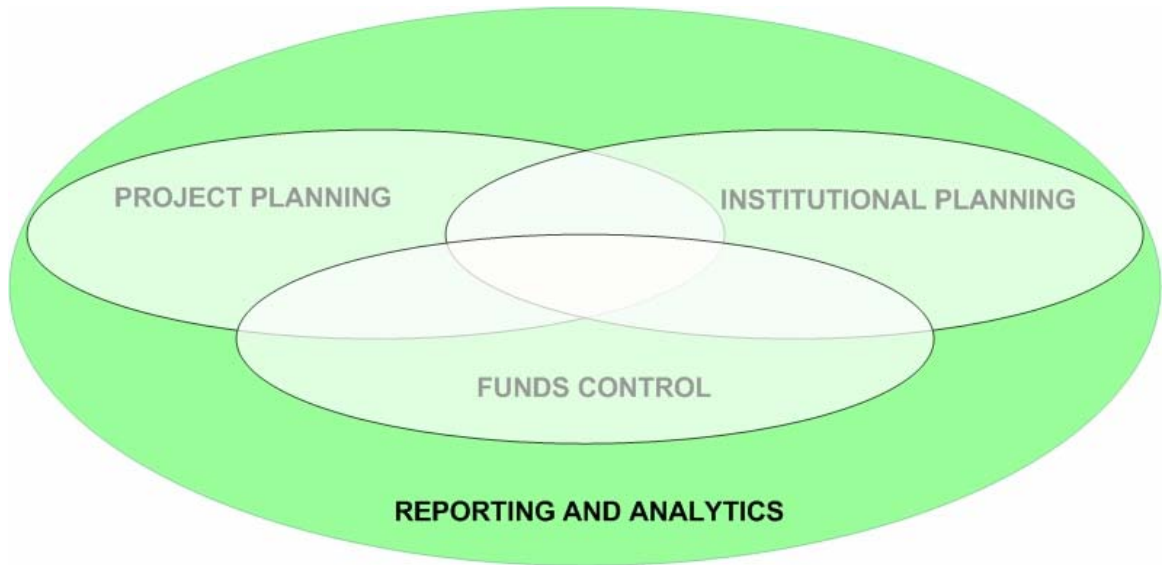
Budget Activities

Budget vs. actual cost tracking is needed throughout the year in order to meet fiscal year goals. Divisions and departments want to compare and report on project budgets, revised spending plans, funding, and actual costs; and to roll up groups of project budgets for management reporting purposes. At present, reporting for both individual projects and rollups is done with mixed success because, in many cases, this information has not been standardized and is not available in a centralized database.

Some reporting activities, such as the Spend Forecast (formerly, Management Report), are common to all Divisions. Currently each Division must produce data for this report and keep their detailed assumptions separately and offline. Because there is no central database of budget details, it is hard to produce rollups and consolidated reports, or to engage in a detailed, Laboratory-wide analysis of projected spending, such as rate what-if analysis. To accomplish these rollups or consolidations, the budget information must often be re-keyed manually in order to pass it on to other systems as input or as a summary report. In this process there is a chance for errors (such as transposed digits) and reconciliation problems.

Budget Reporting

It is essential for budget calls and for budget execution that Laboratory programs, Divisions, departments, and the office of the CFO be able to consolidate and view aggregated cost and budget data for individual projects, groups of projects, and on a Laboratory-wide basis.

Periodically throughout a year, Laboratory management is interested in reviewing both total projected programmatic spending and indirect recoveries (generated from the various

overhead and burden rates) for the current and subsequent fiscal year. For the Spend Forecast, each Division is requested to project fully burdened, annualized costs by major funding source and by major type of resource. CFO then consolidates and summarizes this body of data and reviews it for significant changes in projected spending and recoveries. The results are reported to senior Management. The overall goal of the Laboratory's budget execution processes is to ensure that overall spending is maintained within funding limits, and that sufficient indirect revenues are generated to fund the Laboratory's management, administrative, and support activities.

The Office of the CFO also occasionally performs what-if analyses on consolidated spending plans to review the potential impact of changing overhead rates, indirect cost pools, and/or distribution bases. Accurate overhead recovery forecasts and analyses are critical to allowing the Office of the CFO to adjust overhead rates on a timely basis and to ensure that, at the end of the fiscal year, overhead revenues meet overhead expenditures. Similar analyses are also done to set rates for future years.

Presentation formats can vary by budget call and by sponsor, and may change over time. In addition, sponsors may also want to see the impact of alternative planning assumptions on a budget. As a result, the system requires flexibility in these areas.

Consolidations and Rollups

There is a great need to consolidate or roll up funding, planning, and actual cost details for reporting. Two or more detailed budgets or spending plans may be combined based on a common characteristic: a manager, Division, funding source, program, etc. The scope of these consolidations may be limited or Laboratory-wide.

The Laboratory's FMS and Data Warehouse systems currently support only one hierarchy, the FMS Project Tree, for rolling up project budget and cost information. Since the inception of the project tree methodology with the implementation of FMS in 1997, the Divisions have had the freedom to manage their own project hierarchies in the FMS project tree as they have wished. For example, some have organized their trees by B&R Category, and others have organized their trees by Principal Investigator. This has tended to provide the ability to roll up budget and cost numbers in a useful fashion for each Division. However, there are many circumstances in which rollups are desired according to groupings that are not represented by the FMS project tree. The Laboratory's Budget system should have a way to accommodate these alternative hierarchies.

The Budget system should facilitate meaningful comparisons of plans vs. actual costs at the Resource Category level. The resource line item inputs in the planning system should be organized in a way that is compatible with the cost reporting system.

It is also important that the direct and indirect cost of each line item be accessible.

Proposal Formats

The system should provide for several formats for printing out proposal budgets. The initial focus should be on developing those formats that are used most often. For the balance of formats, these could either be system generated, or a reporting tool could be made available to the user.

Division-Specific Formats

In our investigation, we found that there is a great variety of report formats in use by the Laboratory's many scientific and operations Divisions. Samples of these have been collected into a set of thick binders. The diversity of these formats shows that budgeting information needs tend to be highly localized, and even personalized. Some of the variation is driven by individual tastes, and some by genuinely different needs across the different organizations. Standardization of reporting styles can lead to efficiencies and should be pursued, but we should keep the organizations' different needs in view when striving for an ideal level of homogenization. Ultimately we will need to strike a balance in this area. Advanced end-user reporting and analytical tools that permit the budget analysts across the Laboratory to customize the system's information reporting for their individual needs will go a long way towards helping to achieve this balance.

Reporting and Analytics
Budget Office Business Functions
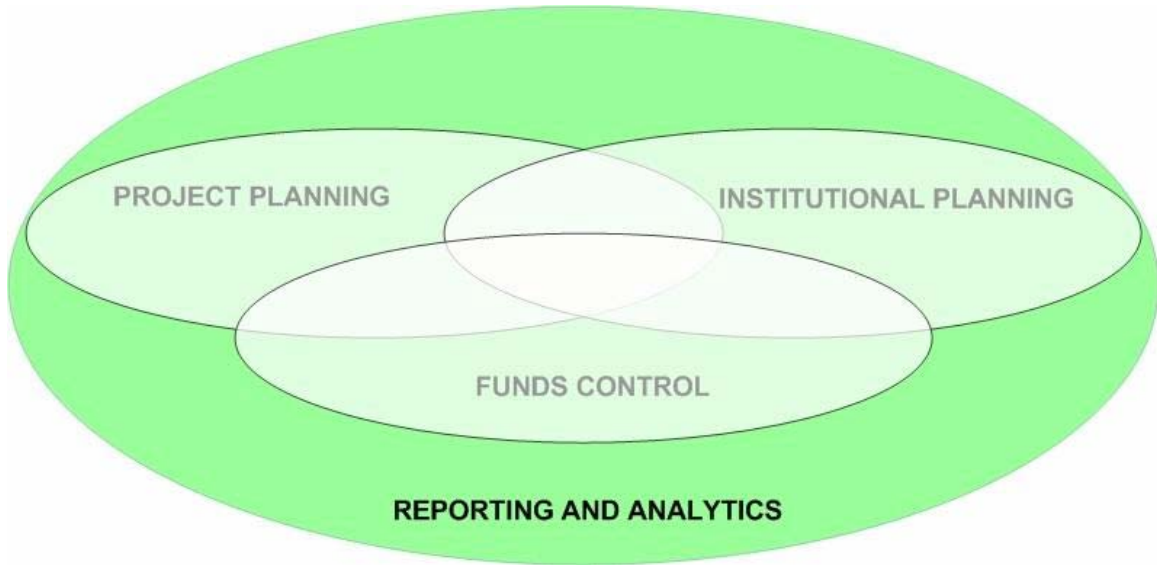
Introduction

The LBNL Budget Office manages a variety of business functions requiring the use of reporting and analytical tools. These processes include the following:

- Overhead Recovery Reporting

- Overhead Analysis Reporting

- Functional Support Cost Reporting

- Cost Pool Development and Analysis

These processes are described in detail in the following pages.

Overhead Recovery Reporting

Overhead Recovery reports are produced by the Indirect Budget Office and compiled into the "Redbook", to provide the capability to do what-if reporting and forecast validation.

Information is gathered by cost pool for this purpose, e.g., procurements by month, gross earnings, FTE's, etc.

The data are initially put together by the IBO, via FMS and HRIS Queries, Excel, and data massaging. The results are accumulated into a red binder, hence the name "Redbook".

It would be good to eliminate some of the manual processes required to create these reports. Ivy estimates that she spends about one day per month putting these together.

The Redbook is held internally in the Budget Office, and, in the past, was provided to the CFO. It is used as backup for management presentations and trend analyses, and to surface issues to bring to management's attention.

This analysis is performed every month for the analysis of the current year.

It is strictly an analysis of actual costs only.

The granularity of information analyzed varies, but it tends to be at the institutional level.

Overhead Analysis Reporting

The Overhead Analysis Reports are a series of tabular nVision reports on pool costs and distribution bases for various overheads and burdens. They are reviewed every month to determine how close the recoveries match the costs and the predicted recoveries.

These are monthly cost reports produced in the FMS system by an automated process.

Traditionally these reports have been named after the ISS programmer who primarily supports them. Currently, this is David Galbreath.

These reports are based on projects with B&R categories starting with 'YN01'. This B&R must be zeroed at the end of the fiscal year.

Functional Support Cost Reporting

The Functional Support Cost Report (FSCR) is an annual report that classifies the Lab's costs as either mission specific or as support cost. Mission Specific costs are classified in two categories: Capital/Construction and Mission Specific Operating. Support costs are costs associated with activities/functions that are necessary to be performed to enable the Laboratory to accomplish its direct mission activities. Support costs are categorized by functional activities as defined in the FSCR Guidance. There are 22 specific functional support cost elements, grouped under three categories: General, Mission, and Site Specific.

Costs are reported on a prime basis rather than fully distributed costs. Thus, all burden costs have to be backed out from the project costs to purify the costs before classification. Most of the time, project type, project descriptions, resource category, and org codes are used to determine the functional support categories. When needed, the Divisions can also be consulted for the categorization decision.

As a requirement, the reported costs need to be traceable (through mapping) to the accounting records, and reconcilable to the total site costs shown in the Management Analysis Reporting System (MARS).

The FSCR is due to DOE at the beginning of December. For the last two years, Ivy Tran had about 6 weeks to prepare it. However, in order to review the report thoroughly and produce better quality report, the actual time required is at least 8 weeks. (It may be possible to shorten this time through additional automation, but it would require restructuring FMS to recharacterize the costs.)

Although FSCR is a DOE requirement, it has gained a high level of attention from Congress and GAO over the years, and Senior LBNL management is also interested in it.

Cost Pool Development and Analysis

Operations' Activity Based Budgets (ABB's) are submitted to the indirect budget office in Excel format, while the Divisions' submissions typically arrive in hard copy format, commonly IRIS reports based on Janus. The Indirect Budget Office manually consolidates these submissions to build the Cost Pool analysis.

(It was noted that there might be an opportunity to automate some of analysis based on the ABB spreadsheets.)

Julia Rudniski said that the Janus reports tend to be too detailed for the Budget Office's purposes. It would be helpful to have a more global view. There was some discussion about the suitability (or lack thereof) of Janus as a tool for building the quarterly ABB reports. Gita Meckel (EH&S) mentioned that she manages much of this outside of Janus. Gita also observed that GPP and GPE don't fit the Janus model. It's a waste of time to set up Janus budgets for these funds.

The June submission is used as the basis to help calculate the next year rates for each of the five cost pools.   Initial budgets are often stated optimistically by the Field (i.e., on the high side), but senior management prefers to take a more realistic and cautious view. A "reverse engineering" methodology is often employed in calculating the Institutional Rates, based on a senior management directive to 'cap' the rates, i.e., to maintain the rates at current levels. The end result is that the Operations operating budget (also referred to as ABB's) is made to 'fit' within these rates. Jim Norwood observed that the Budget Office would benefit from having a better way to handle these plan reductions.

Typically, the planning view is to be conservative (underestimate recovery), and if direct spending goes up, causing recovery to go up, then more money becomes available for Operations to spend in the latter part of the year. This presents a problem in that oftentimes the Lab is faced with having to spend a significant amount of operating money at the end of the fiscal year, which creates a daisy-chain effect from a resource planning and project management standpoint. (Operating funds cannot be carried over from year to year.)

Other Reports and Analysis

Other Budget Office business functions requiring the use of reporting and analytical tools, that were not explored in detail include the following:

- Guidance vs. Funding vs. Costs

- Funding Trends

- Spend Plan Forecasts

- Travel Reporting

- Ad-Hoc Reporting

The development of a comprehensive institutional budget system will likely create additional opportunities in these areas.

Functional Hierarchy –
Reporting and Analytics

R   **REPORTING AND ANALYTICS.**

R.1   **GENERAL REPORTING FUNCTIONALITY.**

R.1.1   Flexibility to create output report formats as needed by the Laboratory's business units.

R.1.2   Ability for the user to define the level of details vs. summarization when generating reports.

R.1.3   Ability to view budgets in a variety of dimensions including time, PI, resource type, resource category, sponsor, B&R, PO, and organization level.

R.1.4   Ability to drill down from summary budget information to reveal data at the detail level.

R.1.5   Ability to enter budget information and analyze against actuals for Projects and Subprojects (at all levels of the LBNL project tree.)

R.1.6   Ability to roll up budgets entered for child projects to a budget for their parent project.

R.1.7   Ability to view detailed commitment information, both budgeted and actual, at the Purchase Order level.

R.1.8   Ability to view balance remaining, percent spent, percent remaining, ratio of labor/total, etc.

R.1.9   Ability to retain historical data for a certain period of time.

R.1.10   Ability to perform budget rollups and consolidations (based on FMS trees).

R.1.11   Ability to view online the cost of resources in two ways: fully burdened, and with the direct and indirect costs aggregated and shown separately.

R.2   **TRACKING AND TRENDING FUNCTIONALITY.**

R.2.1   Ability to report, graph and analyze financial trends.

R.2.2   Ability to track and forecast costs separately for the different Department of Energy budgeting categories, as well as for other federal and non-federal sponsors. This ability should include the option to accomplish tracking or forecasting at both a high or detailed level. (See Appendix B, B&R Status Report) High level funding and execution reporting.

R.2.3   Ability to display actual costs for specific budgeted employees on a project.   Other non-budgeted labor costs shall be displayed in a general category.

R.2.4   Ability to provide reports or inquiries (both on screen and in hard copy printout) which compare baseline plans with actual costs, and forecasts with actual costs.

R.2.5   Ability to view and generate custom reports in formats required by external sponsors. (e.g., the NIH proposal format).

R.3   **ANALYTICAL AND MODELING FUNCTIONALITY.**

R.3.1   Ability to calculate indirect rates by accessing current and future year budget, forecast and actual data from indirect cost pools, and distribution bases by type of cost (or cost mix). A very complex problem.

R.3.2   Ability to manipulate the composition of indirect cost pools and distribution bases. This will allow evaluation of impact of such changes on rates and on the distribution of indirect costs by organization across the Laboratory. I.e., what-ifs.

R.3.3   Ability to report and analyze projected indirect recovery. Individual project budgets would roll up to Division budgets and a management report to the Budget Office.

R.3.4   Ability to compare current month and year-to-date actual indirect cost recoveries against recovery budgets, forecasts, and actual costs.   Analytical reporting issue.

R.3.5   Ability to establish rates (budgeted) annually for components of work orders using historical cost data (for example, equipment, supplies, labor costs). This involves data capture and analytical tools.

R.3.6   Ability to project revenue for a recharge center and compare collected revenue to costs by person and by resource category. Requires analytical tools. Who would use this? This needs further exploration.

R.3.7   Ability to easily simulate and capture the impact of alternative planning assumptions, sensitivity analysis, or what-if/scenario-based analysis.

R.4   **INSTITUTIONAL REPORTING FUNCTIONALITY.**

R.4.1   Ability to support the institutional Overhead Recovery Reporting process.

R.4.2   Ability to support the institutional Overhead Analysis process.

R.4.3   Ability to support the institutional Functional Support Cost Reporting process.

R.4.4   Ability to support the institutional Cost Pool Development and Analysis processes.

Interviews with Laboratory Divisions

Overview

Between November 2003, and June 2004, members of the Budget Assessment Team met with representatives in scientific and administrative areas across the Laboratory to perform an inventory and business process analysis of the Laboratory's current budgeting business practices and requirements. Representatives were asked to discuss their observations and needs in the areas of project and resource planning; funds control; and reporting and analytical tools. In each of these areas, participants were asked to describe their business unit's needs and how the Laboratory's existing systems are (or are not) meeting these needs. In addition, participants were asked to discuss what locally developed solutions they use to help meet their budgeting information requirements. The interviewees were asked to identify the strengths and weaknesses of both the institutional and non-institutional budgeting systems, and to make recommendations for how a new institutional budgeting system could best serve their needs.

Participants

We are grateful to the following people for their contributions to this interview process:

Armando Bautista	Laboratory Directorate
Jeannie Chan	Joint Genome Institute
Ann Clark	Life Sciences Division
Deb Connell	Environmental Energy Technologies Division
Cynthia Coolahan	Human Resources Department
Jeremy Coyne	Advanced Light Source Division
Jim Dahlgard	Advanced Light Source Division
Margie Dere	Physical Biosciences Division
John Freeman	Engineering Division
Ellen Ford	Physical Biosciences Division
Bill Fortney	Computing Sciences Directorate
Angela Gill	Chemical Sciences Division
Larry Hanson	Human Resources Department
Wendell Hom	Joint Genome Institute
Jerry Kekos	Life Sciences Division
Rick Larson	Facilities Division

Peter Lau	Earth Sciences Division
Joy Lofdahl	General Sciences
Laura Luo	Materials Sciences Division
Sandra McFarland	Joint Genome Institute
Gita Meckel	Environment, Health, an Safety Division
Grace Miller	Earth Sciences Division
Faye Mitschang	General Sciences
Lesta Nadel	General Sciences
Nora Nichols	Joint Genome Institute
Nancy Padgett	Environmental Energy Technologies Division
Denis Peterson	General Sciences
Robert Quinlan	Life Sciences Division
Emmy Randol	Facilities Division
Denise Rasson	Laboratory Directorate
Lisa Rebrovich	Engineering Division
Catherine Ross	Environmental Energy Technologies Division
Elizabeth Saucier	Engineering Division
Randy Scott	Human Resources Department
Kristi Shaw	Physical Biosciences Division
Susan Waters	Materials Sciences Division

Advanced Light Source Division

Jim Dahlgard and Jeremy Coyne of the Advanced Light Source (ALS) Division participated in an interview with the Budget System Assessment team on January 28, 2004.

As a background perspective, Jim had been previously involved with the institutional Budget Process as a member of the Budget Office, participated discussions on developing the Funding system in 2000-1, and was a member of the committee to implement the Janus system. Subsequent to this interview, Jim has transferred to a leadership role in the Indirect Budget Office in CFO.

Project and Resource Planning

The ALS Division makes a variety of business decisions based on the Laboratory's project and resource planning information systems, including staffing (e.g., is everyone accounted for?), resource allocation, prioritization, budget development, rate planning, and recharge rate setting. Planning is critical to what they do. It is how they allocate their resources and prioritize their projects. The funding doesn't vary that much, but equipment requirements do vary. It is very important to build budgets based on people and where they are.

Jim believes that there is an overwhelming need for an integrated budgeting system at the Laboratory. He does not feel that the Laboratory systems available are anywhere near adequate. The ALS Division's internally created Excel systems are "adequate but lacking."

The ALS Division uses Janus for their Organization Burden budgets and their LDRD budgets. This represents about 10% of all of ALS' budgets. They also use Janus for ad-hoc budget preparation and what-if analyses.

They use Janus for "what-if" budgets for their Organization Burden projects, because of Janus' flexibility to support quick changes. However, they do not use Janus for the execution plans of the Org Burden budgets.

They use Janus for both the formulation and the execution of LDRD budgets. Janus is suitable for LDRD because LDRD projects are discrete, enabling them to build the budget with a specific thing in mind. Janus works well as a budget execution tool in that they can use the Budget vs. Actuals report to see how they are doing.

For the vast majority of ALS' budgets, they use a locally developed Excel system, because it allows them to make and see changes more easily. The Excel system provides reports "that can be printed out in less then 17 pages." The information is also easy to view In Excel.

The Janus Budget vs. Actual Reports would be very big if the ALS Division were to put all of their budgets into the Janus system.

The ALS Excel system takes the hourly rate of all the employees in the Division. For each project, they can see all the people that are in it, their costs, and the bottom line effort by month. Actual costs are added to the Excel data manually every month, so it is a formulation

tool, an execution tool and a forecast tool. The Supplies and Expenses (S&E) projects do not show their details on the spreadsheet, only a summary line, so that at one glance they can see how they are doing. This single report shows all the people in ALS and where they are being charged.

(ALS organizes their projects into Effort projects and S&E projects. The department managers / PI's are responsible for S&E costs, but not effort costs. For planning purposes, S&E is allocated based on 4% per person, so, as they increase people, the S&E goes up. The deputy director and Jim are responsible for managing the effort costs.

The FMS project tree for the ALS Division is very flat. Operating Budgets are separate from the Equipment budgets. LDRD is also separate.

Jeremy uses a one-page Excel file for each sponsored proposal. It includes mainly procurements and recharges. The recharges are related to the use of shifts at the ALS facility. They recharge the sponsors of the other Divisions. The cost of the ALS facility is $1600 per 8 hour shift. This is calculated by taking the total operating cost, pre-burden, and applying it to the total beam lines and the available shifts. The ALS operation is around-the-clock except for the two week shutdown in December. So recovery is about $800,000 per year.

Project managers develop equipment budgets using the ALS system. They build a budget out of the project's work breakdown structure, and select types of people by code. The system multiplies the average salary for the code by the number of hours, and that gives the cost. These budgets include equipment, purchases and labor.

Each beam line has a consumables account and they are given their own budget of around $30K. There is some TEID cost, some telephone cost and some contracts in the user office. The Work For Others budgets are insignificant dollar-wise. (Work For Others is about 1% of the ALS budget.)

They control who charges labor to their projects by analyzing the actual costs to verify that costs are reasonable, and looking further into places where costs are really high or low.

In Jim's and Jeremy's view, the greatest strengths of Janus include the following:

- Janus has links to HRIS for staff and salaries.

- The source of funds is listed for proper burden allocations.

- Can be shared between staff and Divisions

- Can run budget execution reports

- Reports can be run on tree nodes

- Burdens are built in

- Cost escalation is built in

- Ability to quickly build a budget

- Can do what-ifs

Given that Jim uses Excel for most of the ALS Division's budgeting, we asked why he uses Janus at all. He replied that ALS uses Janus for LDRD budgets. As discussed earlier, these budgets are discrete and very simple, typically one person and some S&E. Janus provides an execution budget capability, and the reports can be mailed out to the PI's. In this area, the shortcomings of Janus aren't as big of a problem. As mentioned above, they also use Janus for what-if analysis on org burden. They put the distribution base into Janus to see the recovery, and then compute the rate.

In Jim's and Jeremy's view, the greatest weaknesses of Janus include the following:

- Budget vs. Actual reports are hard to read.

- Budget reports and Budget vs. Actual reports are too long.

- It takes to long to make changes. They hate waiting for it to process.
- Reports are too long.

- Moving people around and making adjustments takes too long in Janus.

- Janus doesn't provide the ability to sort by employee, and Jim strongly recommends that the new system have this.

The greatest strengths of ALS' locally developed, Excel-based budgeting solution are as follows:

- It is easy to make changes (such as rate changes).

- It is easy to read.

- Reports are not overly long.

- It does not contain unneeded information.

- Division management can make changes and understand the report.

- It works!

- The Excel database is used as a budget formulation tool, "kind of" an execution tool, and also a forecasting tool.

The greatest weaknesses of ALS' locally developed, Excel-based budgeting solution are as follows:

- They have to manually add hourly rates.

- It is easy to make a mistake.

- It is too complicated to share.

- Final product is not neatly packaged.

- Adding actual amounts is manual.

- It takes about two or three hours to add actual amounts and do some analysis at the same time.

- As the spreadsheet is not uniform across the Lab, new employees have to learn it when they come to ALS.

- The new hourly rates must be added to the spreadsheet once a year, and there are 250-300 people including matrixed engineers.

In addition, Jim would like their Excel system to provide a report sorted by employee.

Jim believes that it would be efficient for the Laboratory to use a single, integrated system for project and resource budgeting, but sees that it will be hard to make everyone happy.

Funds Control

The Laboratory's funds control information is important for various ALS Division business decisions. This information makes it possible for management to let the Division staff know when they can spend money. Funds control information provides ceilings on amounts to be spent.

ALS is block funded. This makes funds control easier, so fund control is not so much of an issue for ALS as it is for the Laboratory as a whole. Jim allocates it out himself. ALS gets $39 million on one B&R, so that's one big budget to control. Equipment is more difficult to manage.

Jim believes that the fact that the Laboratory does not currently have an integrated funds control system represents a big risk. He enthusiastically believes that it would be efficient for the Laboratory to use a single, integrated system for funds control, but sees that it would be hard to meet everyone's needs.

Top priorities in the area of funds control Include quick and accurate delivery of Guidance and Mod information; the ability to take consolidated amounts and allocate funding to individual projects; and the ability to communicate the status of funding.

In the absence of an integrated institutional system, ALS manages funds control through the use of the B&R Status Reports, Budget reports, the 737 report, and various funding spreadsheets.

Jim showed a Funding Report titled, "ALS FY04 Funding", showing the total guidance for the year on a B&R, and all the Contract Mods (representing permission to spend.) The Mods come in a little at a time, and most departments get this funding throughout the year.

Jim sees the greatest strengths of the existing tools To be the fact that he understands them and can control them. However, they have several weaknesses. It is easy to make mistakes, and there is no assurance that project budgets add up to the total funding. As mentioned above, the absence of a central, institutional system is a major risk area. Also, Jim is the only person who reviews the available data and verifies that all of the money adds up. There are no checks and balances.

Jim would like to have a central source to see the total guidance, source documents, and Mod information. He suggested that the Budget Office should keep track of all the ins and outs centrally, because sometimes Jim doesn't get all the Mods; rather, the Division director sees some directly.

Work for Others funding presents the additional challenge of being managed by grant / award year. It only represents $200K out of 35 million, but it represents a higher proportion of the Division's labor budget, and it has to be managed closely.

Reporting and Analytical Tools

Jim's overall impression is that the tools available for budget reporting and analysis at the Laboratory are very lacking.

The ALS uses the Laboratory's Cost Browser, the Budget vs. Actual reports, and some home-grown nVision reports for budget reporting and analysis?

Jim uses an nVision report showing Funding vs. Cost, which contains the actual costs from the ledger and manually entered funding data for each project. The manual entry of that data is where the risk is. The group leaders and project leaders track the equipment projects this way. Jim moves some effort from operations to equipment projects as the year goes on. This report ties back to the Divisional Excel spreadsheet. Jim notes that the Divisional spreadsheet is not distributed to everyone because it has sensitive salary and planning information on it.

The PI's use Janus reports to track the LDRD projects. They don't use Janus itself, because they have no need to build the budgets. They also use the Cost Browser.

On a monthly basis Jeremy sends various IRIS Reports (DET, MES, BUDEXP) to the sponsors per their requests, to allow them to track their costs.

Jim sees the greatest strength of the Laboratory-supplied budget reporting and analysis tools to be their accuracy. Cost Browser is "great". The Budget vs. Actual reports provide good budget execution data.

However, these tools have weaknesses: The reports are too long and hard to read. The Budget vs. Actual reports are very hard to read and understand quickly. In addition, there is no linkage between funding and actual cost information. It would be great if we could put Funding info into the Cost Browser, especially for the S&E projects. Also, the IRIS Forecasting reports in IRIS do not handle carry-forward for unspent money.

In addition to the Laboratory provided reporting tools, the ALS Division uses spreadsheets. The greatest strengths of these are that they are simple, easy to read, easy to use, fit their

needs, and they can control the content. However, they are time consuming, and have no linkage to the Laboratory's institutional systems. Also, because they are locally developed tools, new ALS employees must go through a learning curve to use them.

Jim believes that it would be great to have one report that shows all the people in ALS and where they are being charged. That way it would be easy to see if someone is over- or underallocated.

In addition, Jim would like to see a display showing a consolidated rollup of labor expenses at the project level, in which it would be possible to drill down like in the Cost Browser to be able to see the labor details.

Chemical Sciences Division

Angela Gill of the Chemical Sciences Division participated in an interview with the Budget System Assessment team on February 18, 2004.

Project and Resource Planning

Angela uses Janus extensively for Field Work Proposals (FWP's) and spend plans. She runs reports separately for each project. The PI's do not like the reports from Janus. They particularly dislike the fact that the direct costs and burdens are separated.

Angela manages the commitments manually because the liens in FMS don't give a complete and accurate picture. Anticipated salary, space and electricity costs are recorded as committed in Chemical Sciences budgets. However, the travel budget is kept flexible.

Angela used the FIASCO when she was part of the Material Sciences Division (MSD), and Chemical Sciences used it too.

Angela would like to have a crosswalk or conversion of data between the Janus system and the new budget system.

For reporting, Angela mostly uses Janus and Excel spreadsheets. She also uses IRIS for some reporting, but the PI's don't like the IRIS reports.

Chemical Sciences have a lot of IUT's (Inter-University Transfers), campus labor, and campus supplies. She uses spreadsheets to keep track of these. They record each invoice as it comes in because they can't depend on the liens. The balance is a total of the purchase orders. They are still fighting to move stuff manually from the Oracle (purchasing?) system.

Angela uses Janus to create spend plans. She has four B&R's, KC03 mostly. That includes Equipment and Operating projects. There is also LDRD and Work For Others. The level of Work for Others funding is very low, about 1%. The total funding is $13 million.

In Angela's view, one of the Janus system's strengths is its ability to project, to do "what if" analysis. She has not used Janus for the Division's Org Burden Budgets. She has tried this, but it has not been successful because it doesn't handle the distribution base well.

Angela would like to know if there are any FMS Queries available to use for Org Burden.

In the area of Janus' weaknesses, Angela observes that the system seems to have a lot of crashes. Also, Janus does not build future budgets from historical costs. For a multi-year project, it should take the first year's entire budget and copy it out to future years, so that January is the same as January, February the same as February, etc., month by month, rather than taking the September value and using that for the entire next year's values. This would be useful for seasonal trends, e.g., summer faculty who don't have salary in September, but in the summer only.

Also, Angela would like to see some more options for forecasting.

Angela likes being able to change the escalation rates in Janus, and sees that as a real plus.

The Chemical Sciences Division's connections to the UC campus may make its requirements different from those of other Divisions. For example, Faculty labor and IUT's are significant. Stipends are entered manually, also fee remissions.

Funds Control

In the Chemical Sciences Division, funds control is managed on a spreadsheet. The B&R report is very helpful. They take it down to the project level. Funding may be allocated down to the project in the guidance, or the Division director divides a lump sum. It's quite similar every year. There are privacy issues. Programs don't know other programs' funding position. Equipment funding comes in a lump sum. A committee makes the decisions partially, and then the rest is done by the Division director. That part is kept confidential.

Angela doesn't use Janus for Fabrications. She doesn't project those – the budgets are almost preset. She uses a spreadsheet to track the fabrication budgets, the funding amounts and the year-to-date costs. There is no need to see the expense level detail. Angela wondered if there would be a BLIS check of the $5000 labor threshold, to determine if something is a Fabrication or not, otherwise it's deemed to be an Equipment purchase.

Angela's approach is labor intensive at the moment. It would be great if she could pull the funding up and compare it from month to month. She would like a way to accept and allocate it. The Budget Office allocates it to some degree. Funding gets earmarked by the type of research. There are no reporting requirements, except for Work for Others.
For the DOE review, they provide financial information and manual spreadsheets, including the FWP. The information is by B&R as a whole. For the Director's review, the information is by program.

There are about 100 budgets broken down by project. They use spreadsheets for the Management Report.

For staff planning purposes, Angela usually meets with each PI twice a year. They look at the budget to see where the graduate students are going to be. They have to plan for summer salaries. Post docs are usually one-year appointments. Graduate students do a TA – there's no expense there.

They don't plan by staff. The PI's get together to see how they can help each other. They know how much they can carry. They all want summer salary. Some people just do the work for free. Sometimes they have grants from campus that they can use. Grad students can be working for LBNL or campus, as long as they get paid out of one place for the semester. Depending on the budget, they decide whom they can keep on, or they let someone go. There are two people, or fewer, tracking these costs.

One PI takes care of everything himself. In another program, the admin person takes care of it. It's part of the job on campus to keep an eye on the funding. The accounting on campus is worse than the Lab's.

Reporting and Analytical Tools

For budget analysis, Angela uses IRIS, the Budget vs. Actual report, and the aggregate report. For the Management Report, she uses the report by B&R. She uses a MARS Actual

costs report, and also a B&R by Resource Category Rollup, because the Chemical Sciences Divisions are organized by B&R in the FMS project tree.

Angela would like to look by B&R and also by PI. Having just one tree is a limitation.

Angela populates the PI and project team in FMS now for each project. Just reporting by high-level detail project wouldn't work, because these don't always contain the same PI.

Angela doesn't use any nVision reports currently. She is interested in getting more information on that.

When asked if she thinks we could make a Lab wide budgeting system work, Angela says that if we develop a tool which meets the requirements and is fast and intuitive, then half of the Lab will use it.

We mentioned the possibility of downloading a spreadsheet for budget planning, and then uploading it. The question is, when must data be available centrally? The Life Sciences Division cranks out proposals all the time that don't need to be uploaded centrally. Data may be required in the Budget Office for a specific budget call. So, perhaps data must be available centrally just for institutional needs. Or perhaps a Division director may want to see consolidated data.

The Division director likes to see the total numbers on a daily basis, a bird's eye view, but not the Org Burden Budget. He's mainly only interested if there's a problem.

It's a problem if someone doesn't have funding to cover the staff. A recent example occurred in LDRD: Sometimes Angela puts together a spreadsheet to show the funding, and what areas can be cut. So the Division director gets a general idea and then talks to Director Shank. In one example a PI was getting setup funds from LDRD – these funds were promised to him, but they were cut Lab wide, so money had to be found elsewhere.

Computing Sciences Directorate

Bill Fortney of the Computing Sciences Directorate participated in an interview with the Budget System Assessment team on January 30, 2004.

ITSD is operations focused. The other Divisions in Computing Sciences are research focused. The user needs and the institutional needs represent two different perspectives.

User Needs

Bill believes that whatever system we get needs to be very flexible with Excel. People will need to be able to pull reliable data from the Budget system easily into Excel. This could be done either as part of the budget system or as part of BLIS. We should not try to recreate the analytical capabilities of Excel in a new budget system. The new system should assume that folks have access to and know how to use Excel's capabilities. That is the value added that the resource analysts bring to the table.

Bill showed a very high-level, one-page financial statement, a funding requirements projection on a spreadsheet showing NERSC funding at the top and the expenses below. It had prior years' expenses off to the left, and the long-term projection for out years on the right. There is a similar ESNet spreadsheet. This is a report that Bill developed himself and uses to show the high-level managers what is going on. The summary spreadsheet is fed from more detailed spreadsheets, linking back to spreadsheets that have all the assumptions. The NERSC spreadsheet included the N2, N3 and N3E computational systems costs. Also, variable factors such as electricity and space could shift depending on different scenarios, such as building a Cray architecture.

A new resource analyst for NERSC (Heidi) is building Excel macros to do what-if scenarios based on assumptions about the future. We asked if this could be extended to an enterprise solution. The difficulty that Bill sees with that is that the look depends on the sponsor. DOE has its own perspective.

Bill stated that, "If we could have a 4-dimensional view, that would be great".

Bill cited the following reasons for using Excel. The look and requirements change depending on the sponsor. The costs are drawn from various sources. For example, network costs are directly related to purchase orders. The view is both subjective and consistent every year on how they divide these costs. They hand-enter and cut-and-paste from the Cost Browser into spreadsheets. The forward view is where the power of Excel comes into play.

Excel is flexible and open enough. If you lock the analytical functionality into a Budget system, it would be too constraining.

Often they need to transfer their numbers into an FWP form or an OMB300 form. The FWP is a cookie cutter approach that is a "necessary evil".

All of the numbers are merged into nine to ten groups that are given a budget. Refining the numbers is a year-round process.

Janus is used for the annual execution budgets in ITSD, CRD, NESRC and ESNet. They take the proposed budgets in Janus and put them into their financial P7L (Excel) model. The model changes frequently.

NERSC and ESNet share the same model. The other units' models are quite different. They use a much simpler budget approach (funding sources vs. costs.) Each project stands alone. Overhead funding has a different model. It is divided among the departments and groups.

The process for creating proposal budgets for ITSD is distributed among department managers and group leads. Janus is used as a tool, but Excel is also used for projections. Computing Sciences is the only place where managers are doing their own budgets in Janus, and they are doing it pretty well. Bill says that they use viewgraphs to show the financial position to the managers once a month. If the plan is not matching costs, they try to improve the plans.

Janus works as an analytical tool to develop next year's budgets. ESNet and NERSC planning goes out six years into the future. ESNet and NERSC have complex budget requirements, and need the Excel reporting flexibility.

Institutional needs

The institutional problem at the Laboratory is that we're not sure what the roles are between the field resource analyst and the Budget Office. The analysis is the value-added that the resource analyst contributes. Institutional reporting requires a consolidation of this analysis.

Funds control is interesting. The guidance specifies who is getting what funds, by project. The Budget Office only sees one lump sum. Every funded project ties back to a proposal (FWP) through the B&R, and it must be broken down further. The funding guidance actually specifies who is getting funds by project down to within $5-10K. However, in the direct funded programs, the Budget Office actually doesn't know exactly what projects are funded, or for what amounts. The only people who know these details are Lissa Prince, Bill, and some others. This information is all on Excel spreadsheets that have been maintained since 1999.

It would be good to allocate funding online, but the question is who would do it. The dividing line is across B&R's. The decision of which project gets what money is made in Washington, and only a few people know what that is. They specify the titles of projects in the guidance. Sometimes there is some confusion, and they have to call back to settle which project gets the money. Every project that gets funded is tied back to a single FWP that was submitted. However, the FWP amounts are very high level. The dollar amount given is usually a flat amount per year until the project ends.

The Laboratory must control the funds from DOE, which is tracked by B&R's. There should be a policy requirement that the Divisions have to break it down by project, or else you don't have sufficient control on the money.

The Budget System should REQUIRE an annual execution plan by resource by month to match the funds that have come in. They should have one by x days after receiving the funds. From there, the institution should assess what planned carry-over is there, and what the burden recovery is going to be, and measure every annual plan. Then, when a project

doesn't meet recovery, it is because someone didn't follow the plan. This requires discipline and policy change.

Regarding data security concerns: The information on what PI's are getting is currently held pretty close, but it should be public knowledge because this is a public institution. For example, we could publish the numbers without the names of the PI's. The DOE should be given the information on what it is spending its money on because it is public funds, but that would be a cultural change. We don't have specific reasons not to show it. The bias is shifting to transparency and openness and that makes us successful dealing with the DOE.

Salary information should be secure, however.

We need a standard methodology to apply overheads so that any inequities get removed from the allocations. Then they could be more open. But people shouldn't have access to everything. However, they should know how much is Divisional overhead cost and how much is Lab overhead.

Regarding alternative tools for budget formulation: We need to look at projected spending in out years and see what the rates need to be to cover the overhead costs. Currently PMTS is used for collecting the numbers for out year projections. This is done through PMTS. However PMTS involves hand keying of data, and the projections are not real projections.

If the Budget Office asked what the overhead recovery will be, the Computing Sciences Directorate would identify what the expenses need to be to operate effectively, and examine what the probability is of pulling in research funding in different categories of science. They would need to do detail planning, see what the DOE's funding has been and the future trend. They would also look at the primary sponsors and what their future plans are. Then they would come up with several scenarios. For instance, if we had a cut in funds, the rates would have to go up.

Other Comments

When on continuing resolution, they still get full guidance from the DOE at the beginning of the year, and the Government makes contingency plans for cuts.

The Computing Sciences Directorate has $2.5 million of sponsored research annually. There are 7-8 contracts with SPO, and 12 active Integrated Contractor orders.

Construction projects can run for several years.

A funds control system must be flexible enough to allow the users to see fiscal year vs. grant year views and flip from year to year, because they may have to manage either one.

All spend plans have to be by month, or else those tracking recovery don't know where they are.

Earth Sciences Division

Grace Miller and Peter Lau of the Earth Sciences Division participated in an interview with the Budget System Assessment team on January 20, 2004.

Project and Resource Planning

Budgets are needed for proposals. To create these budgets, Grace can use a variety of tools, e.g., Janus and Excel. This is the easy part.   When rollups are required, however, by B&R, PI, or program area, that is where difficulties arise with the current systems (both Janus and Excel). Grace frequently needs to make "what if" analyses based on rollups, and the current systems do not allow this.

Often a PI will not provide Grace with the data she needs in order to create a budget, so she will have to perform her own analysis. She must ensure that the details of a budget add up to the available or proposed total. The PI's do not want to deal with the details.

About 25% of Grace's (ES) funding comes from Work For Others.

Earth Sciences rolls up their projects to the B&R level. Their portion of the FMS project tree is organized by B&R codes.

They use the EETD Excel spreadsheet (created by David Faulkner) to perform most of their budgeting.

They have about 250 individual budget spreadsheets on their LAN.

Grace estimates that about 50 new Excel spreadsheets are created each year.

These spreadsheets can be emailed and worked on by the recipient, e.g., for what-if analysis.

When budgeting, Grace tends to focus on salary expense rather than space, telephone, recharges in general, and other non-labor costs.

They typically don't ask, "Do we have enough money to cover this person's cost", but instead usually ask, "Do we have a project where this person can work (where his skills apply)".

Grace is the only person who regularly uses Janus in the Earth Sciences Division.

Peter will use Janus only when Grace asks him to. More frequently, he goes directly to FMS, retrieves the data that he needs, and runs a special report he has created himself.

Regarding the question of Janus' greatest strengths, Grace likes to use Janus for creating the IRIS "Budget versus Actual" report. She also likes the ability to get anyone's salary at the Lab from Janus.. She likes the way Janus calculates and spreads out salary information over future years.

However, Grace sees the following weaknesses:

- It requires too much data input and is not responsive.

- What-if analysis cannot be done as effectively as in the Excel spreadsheet.

- Janus is too slow and cumbersome.

- Janus requires data entry on a month by month basis.

- Too often funding will not come in according the original schedule in Janus, and that will throw off the entire budget.

- Janus requires too much precision. It's not "quick and dirty" enough.

Funds Control

Grace agrees that the Laboratory should have an integrated funds control system. Too often funding will come to her PI's, and she will not be aware of it until months later. Not even the Budget office will learn of this money until she informs them. Guidance documentation comes in "every which way."

Grace would like to see a database of historical funding information. Containing how much was brought in, when, and by whom.

Currently, for funds control, the Earth Sciences Division uses Excel to track funding. The PI will inform Grace that funds are coming. The DOE may send guidance information on these funds. They receive an Excel spreadsheet from the Budget Office against which they can compare the information they keep themselves. Nothing is available in one centralized location.

Reporting and Analytical Tools

Both Grace and her scientists use IRIS extensively for reporting and analysis. The Cost Browser is frequently used. Grace will create a budget in Janus and use IRIS's "Budget versus Actual" report almost daily.

Grace stated that only 2-3 out of 50 PI's review the financial numbers closely.

Engineering Division

John Freeman, Elizabeth Saucier, and Lisa Rebrovich, representing the Engineering Division, participated in an interview with the Budget System Assessment team on May 24, 2004.

Project and Resource Planning

From the "20,000 foot view", the Engineering Division participants would like to have a tool that provides better information about available funding, in order to help them make better decisions in terms of staffing.

They use Janus for most of their project planning. Lisa uses Janus for 100% of the indirect budgets. However, they don't use Janus exclusively on direct funded projects. They do use Janus or Excel for FWP's on the direct side. Many of the initial proposal budgets are done in Excel. Once WFO and DOE (direct funding) projects are funded, Lisa puts them into Janus. John used Janus in the past for all of his DOE budgets. Roy, a senior analyst (last name?) uses a mixture of Excel and Janus for his WFO projects. (This represents about $5-10 million per year in about 40 small projects.)

Other tools are used besides Janus. Lisa downloads her budgets from Janus into Excel for various purposes, including making attractive presentations in Excel and nVision. She makes changes to budgets in Janus, not Excel. She updates Excel at year end, and produces summaries in Excel.

Janus doesn't supply the type of budget formats required by many of the WFO sponsors. As a result, these budgets aren't going into Janus, but rather Excel is typically used for initial WFO budget proposals.

Roy uses various tools that he brought with him from the Life Sciences Division.

In response to our question about Janus' strengths, the participants noted that Janus fulfills its initial design requirements.

The Site Office picks a random sample of B&R's every year to audit. Historically, prior to the availability of Janus, LBNL got criticized for not estimating consistently. Janus provides a tool to consistently estimate budgets. The Site Office has been extremely impressed with Janus, and "it has saved our bacon". The DOE has a high degree of confidence in the Janus budget system. It has removed calculation errors. This is one of the purposes for which Janus was initially funded.

John supports Janus, and would like to see it built upon.

However, the participants also see a number of weaknesses in Janus:

Janus doesn't provide budget information in the format required by many of the WFO sponsors. They would like to see nicely formatted budget reports (including boilerplates and templates) for WFO sponsors.

Janus doesn't provide any capability to easily compare actual costs to forecasts for past months. Unspent dollars vanish from the forecast budgets in Janus once the month has passed. It is necessary to manually move these amounts out into a future month. They would like to see this happen more automatically.

They would like to see reports in a "presentable", "nice", Excel spreadsheet-like format.

For purchases, they would like to be able to compare budget to actual costs down to the purchase order level.

Janus has limited abilities to roll up budgets hierarchically, via the FMS project tree. IRIS can provide rolled up Janus reports based on the tree, but they would like to see all of the details rolled up in Janus itself. For example, they may prepare a project budget for $100K. Later, they may get another $50K of funding, and, in this case, they typically have to establish a separate project budget for this $50K. Then they can't roll these two budgets together easily.

It would be nice if they could put all of the budgets into the system to automatically generate the Spend Forecast (Management Report), by rolling up to the appropriate B&R levels. Comparing actual costs to budgets by B&R is time-consuming.

When they prepare a budget for a WFO project, they also have to prepare a budget for RAPID, so it would be good to automatically feed RAPID and avoid duplication.

There is a sense that RAPID (for WFO) and "FMS" (for DOE) involve some unnecessary duplication of functionality. It would be good to tie them together.

Regarding the greatest strengths of Engineering's locally developed project and resource budgeting solutions, the participants noted that Excel is seen as indispensable. It cannot be taken away, unless the new system can do 'what if' scenarios. They also observed that Roy's Life Sciences tools have workbooks that automatically feed information into the required forms.

However, they also note that, when making changes to budgets, it is not simple to go back and update all of the corresponding Excel reports.

We asked the participants if they thought it would be efficient for the Laboratory to use a single, integrated system for project and resource budgeting, and what drawbacks there may be.

Lisa thinks it is possible to use one institutional budget tool if it meets the needs of all of the Divisions. "A project is a project". However, the system needs to integrate with Excel.

John thinks a standard institutional budget tool is necessary. This is being done throughout the DOE complex. (John recommended that we look at FermiLab as a good example.) John rejects the notion that we can't do it here. It is a cultural choice not to use a standard system. John notes that universities have a culture of "individuality" and don't have standard budget tools, and observes that this culture of individuality seems to be ingrained in some of our Divisions.

Funds Control

The participants agree that the Laboratory should have a single, integrated funds control system.

The top priorities in the area of funds control are the ability to tie funds to their budgets, and to get reporting on new funding.

Current year costs + current year liens must always be less than or equal to the available funds, where available funds are equal to the prior year carryover + budget authorization, at all points in time. For this calculation, accurate lien information is essential.

The Engineering Division currently uses a variety of tools For managing funds control. They have the B&R status report. This is critical and important. They have the SPAA from RAPID. The 737 (from RAPID) has some usefulness, but not total usefulness for controlling funds. It needs to compare forecasts to actual costs, and roll up costs and budgets. They use Excel and nVision for budget reports. The Budget Office supplies various things in addition to the B&R status report, including the GPE reports, LDRD, the "KJ02", etc. They get a lot of e-mails about funding. They ignore many of these because of duplication.

For this purpose, Lisa likes Excel because it automatically puts data into reports. However, this approach also results in disparity and heterogeneity. Also, there is a lack of integration between the DOE side and the WFO side.

Reporting and Analytical Tools

For reporting and analysis, the Engineering Division uses Janus, Excel, and nVision. They use IRIS, and are starting to use BLIS. They really like nVision. It provides good automation. IRIS is good in their opinion, but has its downsides.

They also use locally developed Excel spreadsheets.

The greatest strength of IRIS is that it is simple to use. They like BLIS, but aren't entirely confident yet.

However, a downside of IRIS is comparing forecasts to actual costs in prior months, as discussed earlier. They also see weaknesses in the area of project rollups. Going back and forth between Janus and the IRIS Cost Browser is time consuming.

General Discussion

The Engineering Division participants can envision managers and PI's using an integrated, centralized budgeting system, but it would have to meet the needs of the Divisions.

John took some time to present some high-level concepts, summarized below.

There are four basic kinds of information to consider in budgeting:

- Planned (Forecast) Funds (or revenue) -- (PF)

- Actual Funds (or revenue) – (AF)

- Planned (Forecast) Costs – (PC)

- Actual Costs – (AC)

There are four, perhaps five useful comparisons between the above, as follows:

- PF vs. AF: Is the funding present? What planned funding has not come in yet?

- PF vs. PC: Is our plan consistent with our contractual obligations?

- AF vs. PC: A variation on the above, perhaps less useful. Situations in which PC > AF need to be watched.

- AF vs. AC: Are we breaking the law?

- PC vs. AC: How good is our plan?

Each relationship can be further analyzed in terms of various crosscuts, such as DOE, non-DOE, G&A, Recharges, Org Burdens, etc.

Other things to consider:

- Management of cost and funds to meet contractual obligations (Appendix F).

- Standard tools increase credibility with our sponsors and decrease human errors.

- Consider UCOP and Property (Project?) Management (earned value, links, complete with time and cost.)

- Jim Siegrist and Kem Robinson gave good marks to FermiLab's systems in a recent Operations Review.

- FTE allocation from the research Divisions to the matrix Divisions (LLNL practice).

- Standard conventions for Project ID's.

- Project Management needs will increase, not decrease (DOE order).

Environment, Health, and Safety Division

Gita Meckel of the Environment, Health, and Safety (EH&S) Division provided the following information to the Budget System Assessment Team on March 3, 2004.

Project and Resource Planning

The critical business decisions EH&S makes (or would like to make) based on the Laboratory's project and resource budgeting information systems are:

- Will I be on budget?

- How much money do I have left? Can I afford to do x?

- Effort planning: Are all the people in the Division budgeted for? Where?

- What-if type questions: What is the impact of the payroll burden going up?   How has the Division / Lab population changed over the last year, the last five, or the last ten years?

- How cost effective is EH&S given x (e.g., the number of people at the Lab, the total funding of the Lab, billable hours, space occupancy, the Lab's aging workforce)

- What does it cost to do x? (e.g., providing an ergonomics program at the Lab, both within EH&S and across the other Divisions.)

EH&S sees Janus as but the first step of building an integrated system. EH&S has learned to live with the drawbacks of Janus, i.e., the benefits outweigh the negatives.

EH&S uses Janus for about 90% of the institutional budgets and 50% of the program budgets. 50% of EH&S' program budgets (ERP) cannot be done in Janus due to the sponsor's reporting requirements (Baseline plans, BCSW, BCWP, ACWP), and program-mandated software implementation requirements (Timeline). They also use Excel to perform what-if analysis and Division-wide effort planning and resource management.

EH&S sees the greatest strengths of Janus as being its Integrated rate management, its dynamic salary data integration with HRIS, and the ability to report budgeted costs vs. actual costs via IRIS.

However, EH&S sees the following weaknesses in Janus:

- Consolidation and roll-up functionality is cumbersome.

- There is a lack of what-if analysis capability.

- It has a rigid resource category structure.

- It has an inadequate Excel upload/download capability.

- It is difficult for non-budget-staff to learn to use it.

- Forecasting is difficult to perform.

- It is difficult to compare different versions of a particular budget. (This is more of a reporting issue.)

- There is no integration with the Lab's official budget calls, i.e., the Spend Forecast (Management Report) and the ABB Quarterly reporting requirements.

The greatest strengths of EH&S' locally developed project and resource budgeting solutions are:

- Everyone knows how to use Excel.

- It is flexible, quick and easy.

- What-if analysis can be performed.

- It has graphing capabilities

- It is the only tool available to consolidate data and slice and dice data

However, the weaknesses of using Excel include the following:

- It is error-prone.

- It can be time consuming.

- It is not scalable.

- It lacks adequate controls

EH&S believes that it would be efficient for the Laboratory to use a single, integrated system for project and resource budgeting, if it meets the needs of most users. The question will be how to satisfy the various needs of the Divisions.

Some of the EH&S PI's have expressed an interest in having a more intuitive budgeting tool to be able to do what-if analysis. However, Gita is not sure that the ultimate tool we will be deploying will be one that can (should be) used by non-finance professionals.

Funds Control

From a "20,000 foot view", the critical business decisions EH&S makes (or would like to make) based on the Laboratory's funds control information systems include:

- How much money do we have?

- Is the guidance here?

- Who has what piece of the funds?

- Cost control.

- Project and PI funds distribution and control.

EH&S absolutely agrees that the Laboratory does need to have a single, integrated funds control system. However, it should solve more problems than it creates.

For funds control, the EH&S Division currently uses nVision reports combined with the B&R status report.

Reporting and Analytical Tools

EH&S's overall impression of the tools available for budget reporting and analysis at the Laboratory is that they are very rigid. There are lots of detail reporting formats, but few seem to meet the needs EH&S has. They can't define their own reporting requirements. In addition, the print font is often too small, they are unable to export to Excel, and they can't consolidate or roll up based on the users' needs.

For budget reporting and analysis, EH&S currently uses the IRIS Cost Browser, the IRIS Budget vs. Actuals report, the POS, the PROD, and the SC011R.

In addition, EH&S uses PeopleSoft Queries, due to their flexibility in defining criteria. They often need data that goes back prior to 1997. In addition, they use nVision reports for high-level management and status reporting.

The greatest strengths of EH&S' locally developed reporting and analysis tools are their flexibility, the ability to define information applicable for executive and upper level management, and the ability to format and consolidate as needed.

Their greatest weaknesses are that they are error prone and time-consuming.

Environmental Energy Technologies Division

Nancy Padgett, Deb Connell, and Catherine Ross of the Environmental Energy Technologies Division (EETD) participated in an interview with the Budget System Assessment team on November 20, 2003.

General Observations

Nancy offered the following questions and key observations:

(1): Is it possible to have a budget product prior to having a funds control database? (In fact, do have such a situation.) Nancy feels strongly that it's not possible to succeed without a funds control database. This would lead to an unsuccessful product.

(2): Is it possible for this new project to be successful unless the overhead structure is simplified?

(3): Is it realistic to expect to have a single solution reaching all audiences? She would recommend focusing on one audience - the budget analysts, and the management executive reporting should be done in BLIS. So, segregate the executive reporting or it's a deadly trap. The BLIS tool should be aimed at those such as the Laboratory Director. That way we will end up with a more efficient product.

How do we define the two target groups? Nancy said the budget analysts provide services such as funds control and budget reporting. The system should not be directed to the customers who receive these services. BLIS is the answer to efficiently provide the tools for the PI's, department heads, Division directors, etc. Gelco has had only limited success because they have tried to deploy the system to both the travelers and the administrative staff. The budget system should really be only for the administrative staff. Budgeting is a complicated business process. We don't want PI's to enter budget data. It's too detailed and sophisticated. In EETD, the PI's are not using Janus. We should not try to deploy the product to the whole Lab.

The PI's and the department heads need to receive the information, but not to manipulate the data. In 1999, when we created Janus, we didn't have BLIS, so we were trying to create a system for everybody. At that time we said, "We want this nice simple Web-delivered thing with the data", but that's not part of this system, that's part of BLIS.

The PI's need a simple "Quick Calc" tool for rough calculations.

They don't want the PI's to enter data. They don't understand the overhead structure. It's not a scientist's role. The budget analysts and support staff are supposed to provide the budgets for them, and show them how the effort is from month to month. They want to know how much has been charged to their budgets. They want to see budgets as long as it is simple. However, it is not simple.

Effort is managed in a very unusual way here at the Lab. It's hard to explain it to the sponsors.

We observed that, across the Lab, some PI's actually do want to make budgets. But at the same time, they don't want to enter their LETS time, either. The budget analysts prepare the budgets because they understand the accounting. (Or maybe the PI's should have MBA's too!)

The EETD budget analysts want to be able to work through the PI's budgets until they understand their complexities. Now the PI's want to have a Quick Calc function that will allow them to enter a few numbers and see an estimate drop out at the bottom. The PI's want the option to do what-if analyses on their own, so that they can work out their own issues.

During the conversation, Catherine mentioned that, at her previous employer, she had used a budget system called "KCI". It's similar to Pillar, but less expensive.

Project and Resource Planning

EETD does not use Janus at all for proposal development. For post-award management, they use Janus extensively as a budgeting execution system. Project budgets are built from bottom-up at a work group level. Work groups can have 10–20 projects, so this translates to an FMS summary project level. EETD has 5 departments, and in each department there are many groups. There are 30-40 groups in the Division. The budget totals range from $500K to $4-5 million.

For proposal development, EETD uses their own also Excel tool, called the "Proposal Budget Tool". The budget analysts load it for the PI's with the people they are responsible for, and let them loose to play with it.

They use an Excel spreadsheet to develop burdened-up numbers for labor and subcontracts. They also use an Excel spreadsheet to spread supplies and expenses, administrative expenses, etc., by person.

Catherine says that Janus works pretty well as a basic budgeting tool. (It has taken some getting used to. For example, she can now change the paid leave factors.) It's not slow bringing up data. It's pretty fast, and it's fairly easy to use.

Deb and Catherine see a number of weaknesses in Janus:

For reporting, it's hard to get data in the format that they want. They want to see an easy Budget vs. Actual analysis.

The system needs more capability in the area of managing project hierarchies. The FMS Project Tree doesn't always provide the hierarchy they need. It's OK if the project tree is nice and clean, and reflects the rollups we want. However, Catherine's tree wasn't set up to do that. Janus does not have an adequate hierarchy capability.

If they want to see a particular consolidated list of projects, they are limited to the single, "official" view of the FMS project tree. Catherine says that, in other commercial systems, she was able to define her own hierarchy.

Janus doesn't contain its own reporting function at all. Rather, the reporting lives in IRIS. The reporting is very slow – the Budget vs. Actuals report can take 5-10 minutes, or even ½ hour for some projects at the end of the year.

Forecasting is a good concept, and it's most useful on the area of effort. Janus provides a forecasting function that brings in each month's actual costs. Unfortunately, the Janus forecasts do not give detailed actual costs by person, but rather just the total dollar value by budget subcategory. It doesn't fill in the effort by person by month, and, as a result, isn't very useful.

Also the reports come out in "5 point type". It's too small, and she has to enlarge it on the copy machine to read it.

Deb says she has a large budget in Janus and she has a whole lot of little budgets that feed into that. She would like to see some of them as individual, but, again, cannot roll them up in the desired hierarchy. Because she can't roll them up, it takes a lot of little budgets to do the trick.

We asked if it would be possible to mitigate this problem by changing the FMS tree. Deb said that this would solve some problems but create new ones. Their tree is currently organized by PI, so if they did that, they would lose our reporting by PI.

Catherine noted that it would to be able to have budget "versions". Deb pointed out that we can already do this in Janus, but it would be nice to have better tools for comparing different versions. Catherine suggested being able to copy all the budgets that are children of a summary project into new versions, so that it would be possible to do comparisons between old and new budgets at both the summary and detail level over time. For example, every three months, they could get a new version created and then can do time comparisons.

In a subsequent correspondence, Catherine elaborated on this concept as follows:

"I believe this was part of a discussion on an integrated central system that would create budget / forecast "versions" on a specific schedule (i.e. ,an "original budget" that doesn't change once finalized, a "rolling forecast" that has actuals automatically downloaded to it after the close and is constantly updated, etc), and the ability to generate reports that would run "original budget" vs. "current forecast" vs. "actuals" with variances on these. The idea here was that each budget "version" would be created centrally as part of an integrated system and would be available at any hierarchical level from project ID to group, department, and Division."

Regarding the strengths of EETD's locally developed Excel "Proposal Budget Tool", Deb and Catherine noted that it provides proposal budgets in the sponsors' formats, by year, and composite. It also calculates "fringe benefits" as opposed to "payroll burden". (EETD has a large amount of sponsored research, and the sponsors want to see fringe benefits.)

Regarding its weaknesses: The EETD Excel "Proposal Budget Tool" satisfies the Quick-Calc concept, but it is not Web delivered, and they have to load the people data for them. They do the people extract only a few times a year, but that's good enough – after salaries are raised in October, also when there are union raises they will do it again, and in the beginning of summer when they add a bunch of temporary students. It is a painful 4-6 hours of manipulation to load the data from HR into the Excel tool.

Regarding whether it would be efficient for the Laboratory to use a single, integrated system for project budgeting, Catherine observed that LBNL currently has no agreement on standardization. Various decisions would need to be made related to the use of an integrated budget system (i.e., what we are going to use it for, what the schedule will be, what the "versions" will be). The central budget process (and associated standardizations) would need to be determined before the budget system could be completely specified.

Deb does think that it is possible to have a single, integrated system.

Funds Control

Deb and Catherine agree that the Laboratory should have a single, integrated funds control system. They have said so for years.

The real catch may be how we deal with the DOE funding coming in. Deb sees a simple debit and credit system there. They had just had a recast of the B&R's here, and soon (with DOE's new STARS system) the B&R will go away and be replaced by 7-digit numbers. But the concept is not changing. We will still have large sums of money and have to allocate them down to PI's and projects, and the large sums will have to roll up together.

EETD uses four things for funds control: The B&R status report, the guidance report from the Budget Office, the 737 report for the sponsored research funding, and General Accounting's UCDRD drawdown report. The guidance report is a big workbook. EETD puts that information into an Excel spreadsheet that has all their funding in it. They put it all into an nVision layout with all of the funding, and make sure that all of the B&R's roll up and agree. They pull in costs after each close for comparison. This is time consuming.

At the department level they have several groups, some split between two or three PI's. They partition money into 100 buckets. They don't budget at that level of detail, but they track costs at that level of detail. The department level reports may have 300-400 project ID's. They have about 50 nVision reports to run.

The greatest strengths of these tools is that they work!

Their greatest weaknesses are that they are time consuming, and the manual reports have to be tied up to someone else's manual reports, so the process prone to error. Catherine's report is very long, in order to include all of the projects that she manages.

Deb observes that it is hard to do historical analyses for the director with no database. He wants to know funding from agencies going back 10 years. The data is in spreadsheets and Access. These systems allows them to slice and dice the information.

They would like to compare forecast to budget to actual costs.

Reporting and Analytical Tools

Regarding the greatest priorities for the enhancement of the Laboratory's reporting and analytical tools, Deb suggests that we could have a download for PI's into Excel that would

have formulas attached to the spreadsheet. That way the PI's could use it. Catherine says that she has seen other Oracle-based systems that provide a "front-end" you can save as an Excel spreadsheet, so that you can do additional analysis, offline. Right now in Janus it is possible to download the budget as a spreadsheet, but you have to reformat it to show to anybody, and there are no formulas. It would be incredibly useful if data could be downloaded to Excel with formulas. It would be good to have a strong Excel interface at the front and the back. Excel integration is the key.

Deb would like a report, organized by Org Code, showing where people are budgeted and where they have charged year-to-date, and where they are budgeted in the future. Such a report could show, for example, if someone is booked two months in the month of June.   "We need it so desperately!"

Other Remarks

Nancy suggested that we look at "people budgeting". They want to take people and ask, are they covered in the next months? (This has a bearing on layoff notifications, career employees etc.)   This is not exactly project budgeting. It is a big concern for our Division to be able to answer, from Oct 1st to Sept 30th, where is every individual budgeted? If they are not fully budgeted, for what period of time are they budgeted? Perhaps this is really a reporting issue -- rolling up the individual budgets into an aggregate, and seeing how the FTE's are covered. They want to ask, is everybody covered, and where are specific people covered? It's a matter of resource loading and leveling, and is very important.

Facilities Division

Emmy Randol and Rick Larson of the Facilities Division participated in an interview with the Budget System Assessment team on December 15, 2003.

Introductory Discussion

Facilities' budget model was described as follows:

FUNDS	Original Budget	Current Budget	Forecast
ESTIMATES			

Emmy emphasized the importance of estimates in the day-to-day financial management of Facilities operations.

Estimates models are complex and may be based on other criteria than cost of FTEs plus materials. For example, for a construction project, estimated costs are calculated based on linear feet of pipe. Estimators also apply different rates depending on the purpose of the estimate, i.e. to compare with quotes from outside vendors or to perform a job in-house.

Janus is not used at all in the project estimating process for the following reasons:

It does not allow resource budgeting based on other parameters than FTEs.

Resource categories available in Janus do not map easily with categories used in the estimates.

Janus does not calculate shift differentials.

As a result, all estimates are done in Excel. Emmy noted that their Excel estimating model does not have automatic burdening capability. To note, Timberline software was also used for a while.

If it were decided that an estimating module could be created in or integrated with the new budget system, Facilities finance staff would like to be involved in the process of designing such an estimating system.

Emmy asked if part of the project budgeting assessment was to review current Resource Categories available, both in Janus and in the General Ledger.

Emmy made the following comments regarding the current Resource Category structure:

- Facilities does not see the benefit of having multiple labor resource categories.

- The grouping of resource categories should be more flexible in Janus.

- The PRP system has purchase categories, based on the type of procurement rather than the type of purchase document (i.e. blanket order, service, P-card). These purchase categories are used to determine Resource Category. The Resource Categories are used to determine burdening.

- If Resource Categories are not tackled during the implementation phase of the new budget system, then the system that is selected should allow for a later revision of Resource Categories.

Project and Resource Planning

From a "20,000 foot view, the critical business decisions Facilities makes (or would like to make) based on the Laboratory's project budgeting information systems are, "Can I do X? or, "Is there money to do this?" In other words, the system should provide the current expense status for a particular project at any point in time. The questions may differ at different times during the year, for example:

- At the beginning of the fiscal year, budgets are developed based on "what-if" scenarios.

- During the course of the fiscal year: "Where am I?" "Can I do X?"

There are some specific attributes to budgeting for Facilities operations. According to Emmy, there are two types of projects: Cost centers, which have relatively stable expense patterns year after year; and projects, which may occur over multiple years and can be funded by 4 or 5 different sources. In addition, beginning and end dates of such projects do not coincide with typical fiscal or grant years. Budgeting and assessment of progress on such projects are made using a scheduled or earned value methodology, or by looking at trends. Using such a methodology may also be required by certain sponsors. For example, for the Molecular Foundry project, DOE requires earned value reporting. This reporting is currently done in Excel.

The capability of importing/exporting into/from Excel is very important. The new budget system should offer the functionality of Excel.

The Facilities Division uses Janus for about 70% of its budgets. The Total Facilities funding was $50M in FY04. $40M was for overheads (cost centers and recharges), and $10M was for special projects. Most of the overhead budgets are prepared in Janus.

Other tools besides Janus are in use, as follows:

Facilities uses Excel for estimates. Facilities has 2 groups of estimators. Excel templates and rollups are used for everything including salaries and burdens. As noted in the introduction, estimates serve 3 purposes:

- to compare to an outside bid using an average rate for contractors;

- to quote in-house jobs, based on an average rate for the craft;

- other estimates for major projects which could be based on a dollar amount per square foot for a building.

Maximo provides an average wage rate for a particular craft. Thousands of work orders/tasks are generated through Maximo.

The vehicle recharge model, based on rate/mileage calculations, is done in Excel.

The Space Odyssey system is used as a tool to project/ budget space recharges/costs.

Facilities estimators need a system that is consistent and that integrates budgeting and actual cost reporting.

According to Emmy and Rick, the greatest strengths of Janus are that it is an easy tool to generate labor based estimates for cost centers. In addition, the Budget vs. Actuals functionality is very helpful for labor analysis.

Emmy and Rick see the following as being the greatest weaknesses of Janus:

- It is slow.

- The forecasting capability is primitive / useless.

- It does not integrate with PRP (i.e., enable budgeting by purchase order.)

- There are rounding problems: the Janus budget printed from Janus does not round the same way as the IRIS printed reports, and is also different from the Budget Log summary.

- A particular budget can only be viewed by one user at a time.

- It is difficult to slice and dice data. They must use different systems to look at different slices of the world.

- It is not an estimating tool.

- It is OK for simple labor budgeting situations, but not capable of entering effort using hours.

- It is not appropriate for budgeting for unstable or changing situations, e.g. adding or deleting labor during the year with labor falling into the non-budgeted labor category.

- It does not calculate shift differentials.

- Its paid leave factor (PLF) model is not flexible, as it does not take into account demographics or individual criteria. Currently, it uses one PLF for the entire Lab.

- It is not appropriate for GPE type projects.

- It cannot perform rate change analysis.

- It does not address the accelerated close.

- Its forecasting tools are not adequate.

Regarding the strengths of their locally deployed tools, Emmy and Rick observe that Excel is flexible, and Maximo allows the crafts people and their supervisors to manage day to day tasks through work orders.

In all, there are about 20 other project managers who would use a budget system. These people currently use Excel. None of them use Janus.

Regarding the strengths of their locally deployed tools, Emmy and Rick observe that Excel does not offer tight controls, e.g. on salary information and the integrity of formulas. In addition, there are resource limitations. They must use multiple systems and multiple data entry to get the end results (estimating, budgeting, reporting, etc.)

Facilities is favorable to the idea of the Laboratory to use a single, integrated system for project budgeting, if this means access to information from other systems (e.g., B&R funding, HRIS, PRP), while leaving the users with full control over their own budgets. For example, the new system shall allow as many versions and changes as users want at any point in time. Facilities is concerned that an integrated system may bring the risk of "over" control from Central Operations over Field Operations.

The new system should ideally address specific problems: the tracking of estimates, and the level of details at which changes are managed. For Facilities, change in scope of work is an important factor.

The new system should focus on integrating these 3 aspects of a budget: Funds, Budget, and Reporting.

The system should have Excel-like functionality, including charting. They would like to have the formality of a budget tool with the informality of Excel.

Funds Control

The most critical high-level business question that the Laboratory's funds control information system should answer is: Are funds available?

Facilities believes that the Laboratory should have a single, integrated funds control system. There is the question as to whether this integration would include DOE, other Laboratories,

and UC in its scope. Also, a possible risk could be reduced flexibility to make changes, especially at the B&R level.

Facilities' top priorities in the area of funds control include the following:

- Avoiding duplication of efforts. Currently, numbers are run through three checks. That is, comparing B&R reports to management reports to in-house reports. Monthly variances are calculated manually.

- Recasting process.

- The new system should provide exception reports.

Facilities uses various Excel documents for funds control.

Reporting and Analytical Tools

Facilities uses the IRIS Cost Browser and reports, PeopleSoft Query, and PeopleSoft nVision for budget reporting and analysis.

Emmy's and Rick's overall impression (positive, negative) of the tools available for budget reporting and analysis at the Laboratory are as follows:

IRIS Reports are good tools for specific uses. They support financial analysts in doing their job, and provide canned reports, some exception reporting, and detailed general ledger reporting. The Cost Browser is a simple, yet very effective and intuitive tool that a cross-section of the lab's community can use. The drawbacks include a lack of export capability to Excel, and the lack of capability to write notes or highlight information.

PeopleSoft Query is not used regularly. It is not user-friendly, and the necessary skill set is difficult to master (e.g., knowing the right tables to use).

They also note that the IRIS Budget vs. Actuals report is not as useful as it used to be, since the accelerated close expenditures are not in sync with the Janus monthly methodology.

Current analytics and reporting capabilities at the Lab are not useful for special projects budgeting, as current systems do not provide meaningful historical trend analysis.
One example of useful trend analysis is shown in the diagram on the next page.

Projects have different start and end points, yet they may have the same type of cost distribution over those different project durations. This type of analysis is important to manage cash flow.

Facilities do their forecasts in Excel, because Janus is not efficient as a trending tool. Specifically, the PLF is not accurate and shift differentials are not available.

30% of the reporting is done in Excel, and 70% of the reporting is done using nVision.
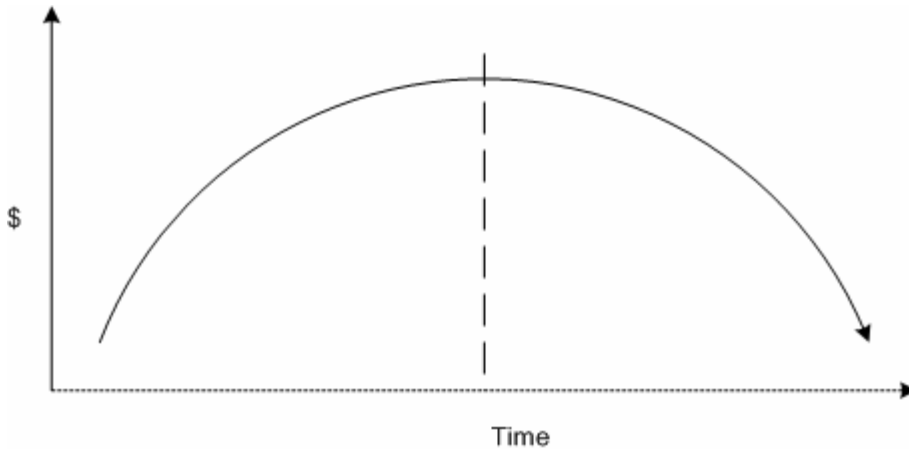
The greatest strengths of the Laboratory-supplied budget reporting and analysis tools are as follows:

IRIS Cost Browser:

- Anybody can use it.

- Drill down capability.

IRIS Reports:

- Exception reporting

- Budget vs. Actuals report is limited but still useful.

PeopleSoft nVision:

- Reports replicate fairly easily.

- Flexible.

The greatest weaknesses of these Laboratory-supplied tools are:

- The IRIS reports do not provide trend analysis or the option to provide notes.

- The HRIS Queries are not customized.

- The nVision reports are tedious to refresh and maintain.

General Discussion

In addition to the other topics we discussed, the system design should emphasize forecasting and flexibility and control over changes.

We asked whether Emmy and Rick could envision managers and PI's using an integrated, centralized budgeting system. They responded that they didn't think many PI's would personally want to use such a system. The users would be selected people who are involved with projects cost tracking. The characteristics that it would need in order to make a manager or PI want to use it would include the following:

- The system should be intuitive.

- Little training should be needed.

- The system should offer reports and Excel export capabilities that could be customized to managers' needs.

The system design should also consider security and access issues, and the ability to share information, i.e., to make budgets viewable by several users from different locations at the same time.

As this effort proceeds, Emmy and Rick would like to have the option to review the specifications document, to review the forecast methodology, and to review selected software functionality.

Mike Marchese would be a good person to talk to for follow-up on the topic of estimates, and Charles Allen on the topic of project management.

General Sciences Divisions

Faye Mitschang and Denis Peterson, both representing the Accelerator and Fusion research Division (AFRD); Lesta Nadel, representing the Physics Division, and Joy Lofdahl, representing the Nuclear Science Division, participated in an interview with the Budget System Assessment team on November 26, 2003.

Project and Resource Planning

Janus is primarily used for proposals or quick estimates, only. Other tools are used when they need a full cost view or report. Everything else is satisfied with spreadsheets and nVision reports. Examples of these include the following:

- Plan by person rather than by project;

- Execution tracking;

- What-ifs, e.g., changing org burden rates mid-year to see the impact on recovery or project costs;

- Creating forecasts by combining year-to-date actual costs and future budgets;

- Report across multiple projects at one time;

- Multiple year budgeting (easier in Excel);

- Tracking budgets by B&R;

- Producing graphs (much easier in Excel).

The participants offered the following observations about Janus:

- Budgets are too complicated for Janus to handle. Offsite labor costs make it more complicated. They have been using spreadsheets "forever".

- The "what-if" feature in Janus is tedious. They have to change budgets one rate at time.

- Denis uses Janus extensively for project proposal budgets, but uses Microsoft Project for project control and tracking.

- Joy uses Janus for preparing FWP's. She does the vast majority of these in Excel, and uses nVision for reporting.

The participants noted that Excel has the following shortcomings:

- Hand-made Excel spreadsheets must have formulas so that they can work with the data over and over. They pass these on to other people, the formulas change, get recalculated, etc.

- The biggest drawback is the need to input actual cost data, or hand-input any data for that matter. This is prone to error.

- They have to import funding and budget data (and actual costs, if not using nVision)

If funds, forecasts and costs were available, the use of Excel would be easier. They could pull these from the database using nVision or FMS Query.

It is not likely that one system would satisfy all of everybody's needs. Although it may be unrealistic to assume that any budgeting tool will provide 100% of the requested functionality, the system should have an effective two-way interface with Excel.

The participants listed the following as the PI's budget system needs:

- The PI's need a simpler, easier tool.

- PI's may want to do their own input. They could use a rate calculator, a simple tool for quick calculations.

- PI's want a good report, showing what their funds are, what their costs are, what their anticipated costs are, what they have you spent so far, and the bottom line balance – what they have available to spend on other things. Then they want to do some "what ifs" with these numbers. The PI's experience must be less complex than that available to the resource analysts. The PI's could really use a good cost calculator that would allow them to quickly estimate total costs, including indirect costs.

We should make sure that the requirements for interfaces with PMTS, OSTI, and ePME are incorporated into our budget system.

The new budget system will need to provide output of our data to various Project Management systems. We should have some ability to do project management, especially on large construction projects. Sponsors might require that we use a variety of project management software systems, e.g., Primavera, Microsoft Project, MPM, Prism, etc.

The labor component of resource management is the key to any new system's analytical capabilities. The system should be able answer the question, "Have I covered all the people I have employed from one funding source or another?" They want to be able to plan for an employee (labor resource) across all assigned projects. They need to account for all staff, either through a project or across a group of projects.

Regarding project hierarchies, they would like to be able to put the hierarchy they want into the existing project tree? Most Divisions have structured their project trees based on organization structure or by B&R codes.

They want the ability to support and plan by WBS (Work Breakdown Structure). They want some ability to do project management, especially on large construction projects. Dennis often wishes he was able to lay out a WBS into Janus. Dennis needs several Janus budgets

that roll up and dump into Excel. Problems that need to be addressed include sponsor reporting requirements, earned value, and estimated cost to complete.

They need to have the ability to show relationships in a complex project structure for rollups, cost estimating, funds allocation, and cost reporting.

They want access to alternative views, e.g., by organization and by funding source.

They would like to have cost estimating, funds allocation and actual full cost (i.e., fully burdened cost) reporting. They need some kind of hierarchical capability to roll all this up into some kind of tool. They want to specifically identify base costs and the associated overheads and burdens. A PI may know what the funds are. He just wants to know what the total costs would be if he were to bring on expense 'x'.

They need alternative views in this area: effort and overheads; effort + employee related recharges + overhead. They also want to see the components, so that direct costs are known.

Funds Control

General Sciences wants real-time funds management. They want to be able to track balances, uses, and dispositions, i.e., allocations to projects and PI's. They want to be able to track actual funding back to expected funding.

They need to track and account for different kinds of funds, e.g., prior year, B&R recasts, and out year anticipated vs. requested funding.

They don't want system to be overly rigid.

Some sponsors require that funding be tracked by type of resource.

Over the year they want to track month by month funding balances and changes, and show anticipated amounts coming in. Dates may change.

Excel is currently used Lab-wide to track funding. They use it to cross-check funding stats against institutional reports (B&R status report). Portability is an advantage: you can take the data with you. Graphs and charts can be easily produced. However, spreadsheets lack the needed controls to ensure data integrity.

Final Comments

The participants indicated that they are frustrated with the amount of work they have invested over the past 10 years being interviewed for a Lab budgeting system. They would like to see the project go ahead this time.

Human Resources Department

Cynthia Coolahan, Larry Hanson, and Randy Scott of the Human Resources Department participated in an interview with the Budget System Assessment team on March 2, 2004.

Project and Resource Planning

David McGraw wants the Human Resources Department to "spend to plan" and report accordingly. The necessary reporting, however, cannot be generated by the current tools, so Cynthia must do this manually in Excel. This is time consuming.

Sally Benson's Quarterly Budget Report is another reporting requirement done in Excel. This is connected with the Activity Based Budgeting (ABB) initiative, and is required of all of Benson's direct reports. (These include EH&S, Engineering, Facilities, HR, FSD, ASD, ITSD overhead funded activities, the Office of Workforce Diversity, Internal Audit, and the Office of Contract Management.) Randy noted that the detailed management required by ABB does take effort and cost money, but he and Cynthia see the efficiencies created by ABB.

Cynthia uses Janus exclusively and frequently. She is a firm supporter of institutional systems. She uses the IRIS Cost Browser as an integral extension of Janus, and views the two pieces of software as one.

Cynthia often uses the previous year's actual costs from the IRIS cost browser to establish a baseline for the new year's plan (and then meets with the managers to validate this assumption.) This works fairly well, but there are always some unexpected expenses, such as arbitrators and green card applications.

During budget execution, when the actual costs vary from her plan, she will go back to Janus and 'debit' or 'credit' costs for a particular line item.

100% of the ABB activities are planned in Janus, but some of the analysis and reporting is done using Excel. Cynthia has 8 ABB budgets to maintain, and it takes her 3 to 4 days to complete each quarterly ABB report.

Cynthia must use Excel spreadsheets to develop information to meet her Management's reporting requirements.

Cynthia indicated that it is difficult to track actual costs to plans in the purchasing area. She enters individual purchase orders as line items into Janus, but the available reports don't match these budget line items to the actual costs.

Randy wants to have a level of comfort that the things they thought were changed really were changed. He described a particular budgeting and reporting challenge in connection with tracking the costs associated with the annual salary survey: "Have they hit yet?" He found the budgeting tools, Janus and IRIS, and the way actual data is incorporated into them to not always be adequate. They have had "surprises" in the past, and they don't want to be surprised by expenses they don't see coming.

Randy mentioned that 70% of HR's budget is salary, and he and Cynthia have no problem accounting for that portion. They do, however, have significant problems, requiring a disproportionate amount of Cynthia's time, dealing with the remaining 30% (mostly materials and contract labor). Randy would like the new budget system to somehow alleviate this burden of time through some kind of automation process.

Cynthia requested that, in Janus, she be able to make 'what if' budgets for planning purposes. For example, she would like to have budgets A, B, C, and D, where B is a 3% across the board reduction from A, C would be another 3% reduction from B, and D is a 3% increase over A, etc. Randy referred to this as financial modeling, and indicated that this would be very valuable in the current situation, in which he actually is required to make a 3% cut.

Randy doesn't feel that it is always necessary to budget down to the last cent. He would prefer to incorporate the concept of a 'reserve' that would be responsibly managed and drawn down over time.

Randy also referred to a "blind spot" institutionally when it came to managing salaries Lab-wide. He was concerned about the flat 4% annual increase in salaries that is projected for planning purposes. Although we are being asked to plan for 10 years out, there are insufficient definitions or guidelines about people costs and skills required.

Funds Control

Note: Operations departments have different reporting requirements and needs from the scientific Divisions. For example, there is no concern about DOE or WFO funding. The overhead funding is viewed as being identical to the budget.

Reporting and Analytical Tools

Randy expressed interest in reducing the amount of time Cynthia spends using Janus and IRIS to prepare various reports.

Final Comments

Randy expressed interest in having a new system, and asked when it will be available.

Joint Genome Institute

Sandra McFarland, Wendell Hom, Jeannie Chan, and Nora Nichols of the Joint Genome Institute participated in an interview with the Budget System Assessment team on February 25, 2004.

Project and Resource Planning

JGI has bulk funding of about $60 million in essentially two B&R's for both LLNL and LBNL. 97% is DOE, 3% is WFO, and a very small LDRD $. The production sequencing group performs sequencing for WFO as well as for DOE. (The unit of production is Lanes.) 70% of what they spend is on other direct cost (non Labor). They are very interested in a Budget system that ties into the expense side and the funding also. Understanding and managing the cost of producing lanes is very important.

They receive separate contract Mods, WAS's, and guidance for LBNL and LLNL. In the future, a third set of these may come from LANL.

LBNL	KP1103	KP1102
LLNL	KP1103	KP1102

Many PI's don't care about administrative systems and don't want to be bothered – they want it to "flow", "be invisible", and "just happen". Most of the administrative system action is in the business administration area, and the management wants to see summary data only. Sandra noted that she doesn't want multiple systems (budget, actual, funding.) Rather, she wants an integrated system, and would like forecasting to be a part of it.

Forecasting is used to see what funds will be available to spend, and, based on that, the Production sequencing work (number of Lanes) is expanded or contracted. They need actual costs and funds all tied together so that they don't spend more than they have. A report should indicate when the JGI is approaching trouble. . This year so far, their spend plan is above their actual expenses. They need to show the JGI management how they will spend the resulting available funds.

A special wrinkle, unique to JGI, is that they have to combine planning and cost information for both LBNL and LLNL in a joint financial report.

JGI relies on spreadsheets and home grown databases rather than any of the institutional systems and tools provided by Berkeley Lab, because Excel can consolidate the data in the way they want to see it. Data comes from IRIS, including the Cost Browser. Excel is a requirement. According to Sandra, "Don't even look at it if it doesn't dump easily into Excel."

JGI no longer uses Janus. At one point three years ago Wendell was using it quite successfully for the Berkeley financials, but Pat Jenkins, who was the finance manager, told him not to any more, as she was going to develop something better, but this didn't happen.

Instead, they make extensive use of Excel spreadsheets to prepare and communicate the required information.

Wendell does the details, Sandra gets the bottom line. They use IRIS for reports. They don't want to have more than one system the way it is now, with data entry in one place, and reporting in another. IRIS has some capabilities Wendell really loves, but none of them serve all his needs. For example, there is no report that gives costs, including indirect costs, for itemized direct costs. He has to create his own spreadsheets to give to Sandra and the Livermore people to show what they are spending. With IRIS you can drill down, but it's inflexible. You cannot say, "give me all the costs for the PO for the last few years." Regarding Janus' greatest strengths: Janus has the capability to forecast, and it is possible to download the burden and salary rates. It is possible to make adjustments in the payroll burden and paid leave factor. The format of labor followed by supplies, etc. is like the NIH model. Janus has to meet the need of WFO as well as DOE. The DOE's needs are not so complex.

Janus has more capabilities than IRIS. It gives multiple-year information. Janus is excellent for resource planning and for cost and forecast management, but not for funds control. They want a new system to continue to have all the functionality of Janus, and that would work well for them.

However, they see the following weaknesses in Janus: It does not include Funding. It is very cumbersome to get Janus data into Excel. Janus doesn't provide the capability to consolidate planning information for an individual, i.e., to pull in all projects to which he's assigned, and to verify that he is not overcommitted. Janus cannot accurately compute the indirect costs in situations in which purchase orders meet the $500K exclusion criteria.

Janus doesn't support the merging of funding, or allow for the combining of costs. If a PI has four projects, it is not possible to combine all of their budget data if they are not together on the FMS project tree. The PI doesn't want to see four different sheets. The JGI project structure is complex. There is a main DOE project, and each group has subgroups, e.g. the library group. These break down further to the RCA process, etc. to track costs at that level. There are 10 subgroups under LWP, and there are 3 or 4 subgroups under LWPL, such as LWPPLCT, LWPLLS, etc. Janus doesn't allow them to combine budgets in certain ways. It would be useful for Janus to provide reporting and analytical tools to support alternative hierarchical project relationships. For WFO, Janus cannot combine projects under one PI, which is a critical customer (PI) requirement.

They find Excel to be a flexible tool. However, it does have some weaknesses.

Livermore costs are not reportable under Berkeley costs. Jeannie gets a separate report from them, and manually inputs the data in an Excel spreadsheet. They would like to (or perhaps already) present Livermore with a report format, then take that format and internally create a report linking that data. Then they can get the top level numbers from Livermore into a combined report. Jeannie says they have Production, R&D and Scientific numbers to keep track of. R&D projects are seen as separate projects. In the production side you have the complex project structure, with LWP, etc.

Wendell uses his own system, drawing data from IRIS by project ID, e.g., the labor dollars. He adds up 5 or 6 lines, then adds the Livermore labor costs. When he is planning staff for the entire year, he creates a plan, using Excel, containing the annual costs based on the actual labor costs, then divided by the months remaining to give an estimate. It's a "peanut

butter spread", an even spread which is not accurate because there are some high cost months and some low cost months. He can't adjust the person when they are on leave, e.g. maternity leave. Janus DOES allow you to do that, so that's a plus for Janus. The even spread makes him lose the month by month differences.

Regarding whether it would be efficient for the Laboratory to use a single, integrated system for project and resource budgeting, Wendell observed that he would like another system that replaces Janus altogether, not another one in addition to what they already have. He feels the same about BLIS and IRIS, i.e., let's just have one.

They want everything in one system and it all has to dump into Excel. If it doesn't, they won't even look at it. Excel is the requirement.

The budget information should be organized at multiple levels. Sandra wants to see the budget by groups of people, for instance by status of employee, such as career, guest, professor etc. She needs to know information at the 'people level', i.e. what their position is, what their status is as an employee, and where they fit in the organization.

She would like to slice the data by all the levels she can have, and would like to be able to specify a couple of custom columns in the personnel (HRIS) data for her own analysis, to say what they are. Each one has a different "productive time factor". The system should allow for month by month forecasting. They want the relation of the employee to the organization charts, but even more detailed than that, to support information on a rollup basis. For instance, Financial Services, HR, and ASD all roll into Business Services. If an Engineering person is matrixed to Division GN, they pay 18% organization burden. Now they have Genomics East and West to track. In addition, If a person comes from Livermore, they need to pay Livermore burdens and overheads.

Resource budgeting is very important. Sandra wants to know all her matrixed people from Engineering. The first two levels of the Org code set costs, but she wants to know all her students, etc. The data has other uses than just budgeting.

For comparison purposes, resource budgeting should have an equivalent level of detail to that which is collected for actual costs.

Wendell mentioned that he needs to have access to the number of students working on a project for reporting in PMTS.

There are two types of funding, operating funding and capital funding, and they have to decide what to spend it on. Sandra has a mandate to make costs equal between Livermore and Berkeley. Currently she buys all her materials from Berkeley because the burdens are lower.

Sandra showed graphs of actual costs vs. budgets, with forecasts for the rest of the year. They show production, R&D, and capital. On equipment, a "peanut butter spread" does not work. She wants to be able to budget at the monthly level to deal with variations in when things "hit". But, on capital equipment, you could say that capital equals the budget. R&D costs don't count against "lane cost"; only production costs do.

The functional areas divide into Production, Computation, all Science combined, and Operations.

We should standardize the upper levels of org code across the Lab, and leave a couple of lower level org codes for the Division to use internally.

Funds Control

Funds control is complex. For WFO it is very important not to overspend based on what has been given already. Wendell says when you have a $400,000 grant over 4 years, and you only get $100,000 at a time, they need to keep track of that so that they don't spend money they don't have yet. Timing the spending to tie in with the funds is difficult.

Regarding JGI's top priorities in the area of funds control: It would be nice if the system would allow Sandra to bring in funding from Livermore as well as Berkeley for rollup purposes. They get a mixture of funding. 2% is WFO, and 98% is DOE. There are 2 B&R's. There is no easy way to combine these two numbers. The B&R guidance spans both Berkeley and Livermore. They get a Contract Mod for each Lab, and guidance also comes for each Lab. DOE wants to include Los Alamos also. It would be great to be able to report all three Labs together. We asked how they would get actual costs from the other Labs. Even though we could maybe get the funding and the planning information for the other Labs, the actual costs would come from Berkeley Lab only. Sandra said she has access to Livermore data as a guest. Perhaps they will need that more and more in the future. She wants the systems to be flexible to handle that. The long-term plan is also to expand the Work For Others.

Reporting and Analytical Tools

The most important thing is reporting. That's what management needs. Excel has to be a part of the solution, because people are comfortable with it.

Wendell makes moderate use of nVision reports for Genomics.

They noted that IRIS is simple to use. The PI's can use it. They are interested in BLIS, but haven't seen it.

Wendell doesn't make great use of nVision, because the nVision reports are hard to link to other reports. For example, when the number of people changes, the number of lines in the report changes.

They see IRIS as inflexible. Sandra wants to be able to manipulate, aggregate, and slice and dice data based on business needs. "Give me the data and I'll create the reports."

A specific shortcoming of IRIS is that it can't provide the cost history of a PO. A second shortcoming of IRIS is that indirect costs are not provided down to the specific item expenditure.

They feel that they shouldn't have to go to IRIS to get Janus reports. "It's a pain" to have to go to a separate system.

Additional Discussion

Sandra feels that forecasting should be included as a major focus of the new budget system. It is very important for them, and it touches the other three areas. Forecasting combines actual costs with budget numbers. Without changing the original budget, X, you can see the forecast is another amount, Y.

The real owner of the Funds Control system is the Budget Office. They divide the funding up and tax it. Then you have the SPO office for Work for Others. The real tool for the business area tool is the Project and Resource Planning component, to manage the people etc. So the team should work with the Business Managers rather than the Budget office to get those requirements. For Reporting and Analytics, senior management and the PI's might get interested, so they can get information on a daily or monthly basis. Accounting (General Ledger) owns the analysis part. They should look closely at their system and make sure it is providing the right numbers.

The most important is to collect the right data. Once the data is there, they can start to tell us which data they need to get onto an Excel spreadsheet. They have to decide what they need to collect and in what format. Some organizations want to collect data down to the lowest level. Sandra says we (the budget team) should do that. Then it is possible to report at any level in-between by rolling up. It's a business call. We should have data at the level at which we collect overheads. For example, for a procurement, when you buy material you should be able to categorize it to be able to predict the burdens, for instance the $500,000 lump sum limit of the procurement burden.

Laboratory Directorate

Armando Bautista and Denise Rasson of the Laboratory Directorate & Public Affairs Department participated in an interview with the Budget System Assessment team on June 2, 2004.

Project and Resource Planning

The Directorate uses Janus extensively for managing indirect budgets and for preparing DOE proposals. To support the Activity Based Budget (ABB) process, Janus is used for to create overhead-funded budget proposals. The Directorate uses EETD's Excel spreadsheet based model to prepare WFO proposals for CSEE.

They change forecasts monthly. They maintain the Labor resources closely in Janus, but the other, non-labor budget details in nVision layouts. Depending on the manager, they shift money around from one category to the other, but the overall budget usually does not change. The nature of each group is different.

The budgeting methodology is a rolling re-forecast every month, which requires constant changes to the labor forecasts. Projects drop in and out at the discretion of the management, and therefore budget reallocations are also very fluid.

They need the ability to forecast, because it is almost impossible to stay with the original budget. They start with a baseline budget at the beginning of the Fiscal Year, the "October 1st budget". During Budget development, Janus can give a labor forecast by month including leaves, etc. They do a straight-line plan for S&E. If they know about some major expenses during the year, they will put those in appropriate months.

For CSEE's direct programs, they straight line the budget annually. These budgets consist of 85-90% Labor costs.

Maintaining monthly rather than annual data is important, because they use the forecast budgeting functionality in Janus. They view the forecast budgets for labor in Janus after the month end close, and then transfer the numbers manually into the nVision layouts.

This year there was a lot of movement in the salary pool because of personnel changes.

Armando and Denise see the following as greatest strengths of Janus:

- They can plug in a name and get the correct burdens etc.

- They can easily manipulate a budget.

- They can enter annual amounts.

- There's a lot of flexibility – they can change FTE or salary or change S&E.

- They can do what-ifs. For instance, they can plug in a new job code line item and tell the PI what effect that has on the budget.

However, they also see the following weaknesses in Janus:

They can't get actual labor cost details in the Forecast budget by person. Rather, they can only get the totals. They can't get non-labor actual cost details in the Forecast by resource category either. They have to run the Budget vs. Actuals report to get the actual cost figures by person.

Denise mentioned a problem she has with the current forecast budgets. The spend plans are created at the summary project level (they are marked as proposal budgets in order to do this), but in order to create a forecast budget out of them, they have to be marked as execution budgets and associated with detail projects. When a project in the spend plan is changed from summary to detail and back again, the actual amounts in the associated Forecast budget are modified.

They would like the ability to change all kinds of rates, including burdens and escalations, and do what-ifs.

It would not serve them well to calculate future numbers in most expense categories based on past expenses, at least not for purchases. That practice may work better for certain recharges that have relatively fixed costs.

They are heavily dependent on a forecasting tool. They would like something that saves them time compared to all the steps they have to go through now. They want the year-to-date actual costs to be loaded into the forecasting tool, and merged with the plan numbers. Then it would be nice to somehow eliminate the step of re-keying things in to an Excel spreadsheet, so that it becomes a "one stop shop".

Funds Control

Armando believes that a centrally controlled overhead funding database with most people just having read-only access would be great, because right now someone has to send the funding information to them. They should be able to look it up in the system, with limited access, of course. The Divisions should be able to take funding that is given to them down to lower levels, without being able to change the total amount of the funds allocated. The system should keep the sources of funding intact.

For DOE funds control, the Directorate currently uses the B&R status report.

Todd Hansen uses a Excel spreadsheet to track LDRD money allocations.

They use Excel spreadsheets because the budget changes. Otherwise, they would just use the original ABB budget. They don't want to manipulate the ABB budget after it has been established.

Their nVision report layouts are used for funds control. The data must all be manually keyed in.

One weakness of this approach is that, for example, when Armando sends somebody in the Divisions a funding number, there is no control to prevent that person from miskeying the number or giving her PI's an incorrect number.   At some point you have a human who keys things in, but we want to minimize human error by handling the data only once if possible. This function has been turned over to Brian Fox of the Budget Office's Indirect group.

The funding numbers at the institutional level may not work for the Divisions. Somebody in a Division can give Armando a funding number at the beginning of the year, and Armando sends out the revised funding if there are changes, but he doesn't know how it will be allocated at the most drilled-down level.

LDRD spending is difficult to track because Divisions assign their own project ID's and put their own department ID's on the funding. They want to be able to track LDRD spending in total by using the LDRD proposal number or some other specific identifier.

There is the question of how broadly we want to apply the control mechanism. The funding control should stay with the Lab Directorate. However, if one Division wanted to allocate it to three projects, they should be allowed to do that.

Royalty Income and Re-billings are a challenge specific to the Lab Directorate. Right now there are a lot of areas for mistakes. However, this is not a mainstream area of requirement. They do not see the Budget system covering these needs in future. They have their own expense tracking system.

The Director of operations would like to see Budget vs. Actual numbers at the ABB level. Armando suggested that the Divisions submit their ABB budgets according to how they currently manage their budgets. There is a need to show different angles (slices of the data) depending on the audience.

Reporting and Analytical Tools

Denise uses a lot of IRIS reports of various kinds for budget reporting and analysis.   In addition, they make extensive use of nVision, showing such things as the year-to-date actual cost figures and the percentage of year-to-date spending. They have not extracted data from Janus to date.

They run 16 nVision reports for the PI's, and meet with everybody every month to track costs vs. plan. Armando stated that the current layout established consistency among all Directorate users.

A lot of hours are spent creating the monthly managers' reports. If they could use a subset of BLIS reports, that would be better. Denise prints out all the backup documents for review at meetings.

Details of the costs vs. plan numbers are shown to managers in manual reports, when specifically requested. Sometimes they show the recharges and then discuss it.   Some managers are more detail-oriented than others. There should be a standard tool available for them to use.

They don't see much call for self-service reports for the managers, as they are provided with all their information in the monthly meetings. Perhaps the support staff might go in to check the costs in BLIS.

For CSEE, BLIS would make budget status information available to managers on demand.

The ABB reports roll up fine, according to the FMS project tree.

The Budget vs. Actuals report is used to update the forecast for the labor and determine non budgeted effort.

Armando and Denise see the following as areas needing enhancement:

Denise would like a total line on the Budget vs. Actuals report that shows the whole year, combining year-to-date actual costs and the remaining budget.

Also in the Budget vs. Actual report, they would prefer to see the Org Burden rolled up to the Labor total rather than at the bottom of the report.

It would be nice for the details within a budget category to show up on the Budget vs. Actuals report. That report should be able to give you the whole story.

Armando wants easy graphics for the managers. The nVision reports make this possible, but it's a lot of work. For some managers, a bar chart, etc., would make the information easier to explain.

Life Sciences Division

Jerry Kekos, Robert Quinlan, and Ann Clark of the Life Sciences Division (LSD) participated in an interview with the Budget System Assessment team on February 6, 2004.

Overview

A budget system must be able to do the following things:

- Encompass all DOE/WFO projects.

- Provide fiscal year and grant year capabilities.

- Provide Roll-up capabilities.

The following layout reflects the need-to-have tool that can handle multiple dimensions. Life Sciences indicated that a cost browser-tool with multiple dimensions would be ideal.

Project Costs	<	Current Year	<	Direct $	<	By P.I.	>	Detail
		Prior Year		Total $		By Division		Summary
						By Department / Group		
Projections		Future Years				By Sponsor		
		(2-10 years)				By B&R		
						By Project		
Funding	<	Current Year	<	Direct $	<	By P.I.		
		Future Years		Total $		By Division		
		(2-10 years)				By Department / Group		
		By Cost Type				By Sponsor		
		By Recharge Center				By B&R		
						By Project		
Spending	<	Projections	<	Detail				
		Management Report		Summary				
		Org Burden						
		By Recharge Center						

Project and Resource Planning

We asked what critical business decisions Jerry, Robert, and Ann make (or would you like to make) based on the Laboratory's project and resource budgeting information systems. They replied that they appreciated that this input is being sought from the Divisions. As the ultimate end users, we want to be sure any system adopted works to support the scientists.

They use / would use the institutional system for various planning purposes:

Budgeting:

- How long will funding support the PI's Laboratory?

- Are costs appropriate for the project?

- When is it necessary to submit new grants?

- What kind of expenses can the project afford?

- A report that gives funding + actual + projected costs = balance available would be very useful for grant budgeting.

People:

- Hiring

- RIF's

- Effort Planning

The participants' overall Impression of the tools available for project and resource budgeting at the Laboratory is that not enough tools are available to provide grant budgeting at the resource category level, in a consistent, standardized and integrated way. This might be due to the complexity of funding in the LSD – various sponsors, periods of performance, terms and conditions, etc.

Some of the reports they get from IRIS do not give them us the information at the project level that they need to give to the PI's, so they have to generate their own reports.

Life Sciences is divided along the pre-award and post-award functional lines. There is a team that prepares around 500 proposals per year. They enter all proposals into the POD system (LSD's own proposal database). These Proposals are managed in Excel.

Altogether, they have about 300 budgets for projects in post-award status, ranging from $50K to $4M.

There is, generally speaking, an unstable funding situation. They must be able to create, revise and perform what-if analyses on a high volume of proposals and budgets.

The following is a listing of Financial Systems LSD uses and their purposes:

MSFT	Excel, Word, Access	Spreadsheets, projections
MSFT	Access	PAD, POD data bases
MSFT	Filemaker Pro	Management Report
PSFT	FMS system	General Accounting
		Maintain Project ID - Setup
		RA Adjustment
		Queries/NVision
PSFT	HR system	Payroll
		Labor Adjustment
		Personnel Data Queries
		Verify
		Salary
PSFT	IRIS	Data warehouse
		Financial Reporting/Reports
PSFT	PRP	Procurement Program
		Requisition input and
		tracking
PSFT	Rapid	Grant Award program
PSFT	SQL, nVision	Advanced Features
LBNL	Single Project ID data base	
	Telephone computer system - to get telephone bills, make project id	
LBNL	changes	
LBNL	TNS system - new computer recharge system	
LBNL	SAM	Project ID validation
LBNL	Odyssey	Space
		Project Management Tracking
DOE	PMTS	System

Jerry made the point that we have too many systems that are not integrated with one another. He would like to see consolidation to make it easier for resource analysts to do their jobs.

The budget analysts have been trained in the use of Janus, and some users have a solid understanding of the benefits (and limitations) of the system. The LSD Budget analysts do not currently use Janus. However, it is used for the annual FWP budget submission.

It was not until (approximately) May 2003 that the Janus program was expanded to include WFO projects. Without that capability, it did not make sense to calculate budgets under 2 different "platforms", Excel and Janus.

Robert mentioned that he is now performing an analysis to determine if Life Sciences could benefit from using Janus.

Instead of Janus, integrated Excel spreadsheets and nVision are used to administer budgets within the Division.

The LSD budget process can be described in simple terms as follows:

1. Proposed budgets are used as a benchmark for actual cost estimates.

2. Actual costs are imported from PeopleSoft via nVision reports monthly. (Robert only uses nVision for large projects. The reason for this is that he feels the need to keep his fingers "on the pulse" of expenses. Manual input of monthly numbers helps him do this. Five other resource analysts use nVision to get their actual costs.

3. Estimated spending plans are updated;

4. Reports are generated for PI's

Regarding the greatest strengths of Janus:

- Theoretically, LBNL (as a whole) would best be served with all users on a single budgeting system. This would provide consistency to the organization's budgeting practices. It would also provide the ability to summarize estimated costs for high level management reports.

- Janus has a great ability for budget-to-actual analysis within a single program (rather than Excel, which is a two step process described in the prior question). Janus does good resource category budgeting.

- It is easy to input data into Janus, and Janus performs well.

- Janus calculates burden rates automatically.

- Janus has a good Excel export feature.

- The tables in FMS that are able to extract the budget data are a strength.

- Janus allows workload portability, and would save on training time if it were used as a standard tool.

Regarding the greatest weaknesses of Janus, LSD did a review of Janus in June 2002. (Note: Some issues might have been addressed, and some might no longer be applicable.) A summary is below:

1. Grant Year Ability – (was a problem until resolved approximately May 2003.)

2. Janus does not allow budgets to roll up. LSD has large projects (Program Project Research Grants, Org Burden, etc.) which have many sub-projects, and they need the system to have to ability to roll up budgets for large program projects up to a summary level.

3. Fixed Budget Column – Currently, it is necessary to have two separate Janus files to perform the calculations necessary for the LSD. The first is a baseline budget, and

the second is a working budget that estimates the spending plan. These two different budgets required in Janus are achieved in only one file in Excel.

4. Output: Reports are not simple to read nor easy to interpret. HTML output is excellent for .pdf, but mediocre for exporting to another Microsoft program. They don't provide much in terms of consolidated reports and executive type of information to their senior management. Also, different grants and sponsors have different reporting requirements (e.g., that they can only spend $x on salary) and the Laboratory's current system does not facilitate this.

    For the Spend Forecast (Management Report), Life Sciences uses a FileMaker Pro database). Resource analysts enter their latest data (at the PID level for each PI, broken down by the Resource Categories used in the management Report), and Ann Clark reviews it and consolidates for submission to the Budget Office.

    The FileMaker Pro database is basically used to collect and consolidate spending plans by project and B&R category, and by fiscal year. However, most of LSD's funding is tracked by grant year. This database is also used to generate other internal Division-wide financial reports when needed.

5. On screen effort – The capability to check science staff's effort when spread over various grants is not available in Janus. This capability is used extensively in Excel. Life Sciences has an Access database to keep track of their effort. Timekeepers look into this system to see if everyone has entered their time and ensure that the PI's have charged the right projects. This is cross-referenced in the spreadsheets that the resource analysts maintain to monitor funding and costs. Life Sciences has some flexibility in their effort planning, since a lot of their research is closely related. If one grant is running out of funds, effort can be switched to another project. The PI's dictate to the resource analysts where effort should be charged, and the resource analysts update the Access database. This database is also used to project effort percentages for the current fiscal year by month, and also rolls up by employee. In place of this database, we need a report that can show where effort is planned for the fiscal year by employee, by month, rolled up by employee for the whole Division. This database allows us to print monthly letters to the employees. This information is also very important for submitting proposals where we have to report where the applicant (PI) is currently planning to charge effort.

6. On screen variance – when Excel files are updated, the impact is seen immediately, allowing budget analysts ability to change data and see immediate result. In Janus, one must change the data, run a report, see the result, go back to the data, change data, etc.

7. Variable grant year – we have instances of one budget spread over 5 years, and need the ability to have a grant period from 1 month to 60 months, as specified by the user.

8. More flexibility in Janus: Do not "force" strict line item budgeting, but allow budget line items to be moved in any order – and still compute correctly.

9. The ability to combine projects for presentation. Example: if a PI is funded by DOE, NIH, and NASA, they need to combine information at various levels, e.g., combine Resource Categories for all projects.

10. Janus doesn't have graphs. It can't slice and dice the information, like in Excel.

Regarding the greatest strengths of LSD's locally developed project and resource budgeting solutions:

- The Division routinely turns in budget-to-actual variances in the range of 1% - 4%, year after year.

- The labor intensive Excel spreadsheets produce a high rate of accuracy.

- The PI's are pleased with the output. They can get customized forecasts and reports with graphics.

- Excel allows us to provide customized forecasts & reports w/graphics.

- Excel allows us to do budgets by grant year, and convert them to fiscal year for Spend Forecast (Management Report) information (although this is manual).

- We have the flexibility to project as many months or years as we need to (3 months to 5 years).

- We can link or roll up effort and percentage projections to a separate Excel sheet to see if a person is fully covered to 100%. (For example, some employees have to split their time to 9 different projects.)

- We can see funding, costs (actual & projected), and forecasts (dollars and effort) in one report.

- Some of our large "program projects" are tracked in various sub-projects, and need to be rolled up. This is easily accommodated in Excel. Proposals also have to be submitted this way.

Regarding the weaknesses of LSD's locally developed project and resource budgeting solutions:

- There is a lack of consistent monthly budget formulation for grants. This might not be avoidable, given the various funding agencies for the LSD.

- It is labor intensive.

- Frequently, "tailor made" Excel spreadsheets are used for each grant, different from PI to PI.

- As end users drift from an original template, it loses standardization.

- It has very limited rollup capabilities.

- Rate changes (e.g., salary rates & overhead / burden changes) must be done manually by resource analysts.

- Possible errors in formulas are not easily detected, or links to other sheets can be broken.

LSD would like to track a budget from the proposal stage to when the project gets funded and becomes active.

The participants think that it would be efficient for the Laboratory to use a single, integrated system for project and resource budgeting. An integrated system for project and resource budgeting would increase productivity significantly Lab wide. The institution would have to dictate the format used. We need effort and costs in one place. RAPID could be used for all funds control. However, if the system is not flexible enough to accommodate the various terms and conditions of the LSD WFO sponsors, it will not gain all end-user acceptance.

PI's would be interested in a quick calculator to compute direct and indirect costs to figure out how much a project will cost after the overhead is added. A "smart" calculator would prompt for the extra burdens added to some WFO, such as Safeguards & Security and the FAC charge.

Funds Control

The participants would like to be able to see funding (DOE & non-DOE) in one database.

A funding database would make it easier for them to collect funding info for Laboratory, DOE, and Divisional requirements, such as the WFO budget formulation, Institutional Plan, Director's Budget Review & Division Review, etc.

Most of LSD's funding (70%) is soft, and they need to forecast out-years to see when funding will end. LSD's PIs have to continuously compete to get new or continued grants.

Reporting and Analytical Tools

Effort is (most probably) the largest project cost, and requires the most planning for grants. It comprises about 70% of the expenditures in the LSD. We need a system that works with the existing LETS system (or a planned new system?) to integrate between the budgeting and the time reporting modules.

Materials Sciences Division

Susan Waters and Laura Luo of the Materials Sciences Division (MSD) participated in an interview with the Budget System Assessment team on December 10, 2003.

General Discussion

MSD's DOE funding arrives in relatively large pieces, and guidance is general, the distribution of which to PI's is largely determined by the Division Director. So, data security is a key consideration for the new system. Each PI should not be able to see the funding allocations to other PI's.

MSD's WFO funding is much more controlled and specifically tied to a PI and/or project. While the overall level of WFO funding is fairly stable from year to year, projects come and go.

Regarding the business staff's role in budgeting for the Division, the key to success is providing PI's with funds available, actual costs, and an expense forecast for the rest of the year. The forecast is derived by applying different algorithms to each primary type of resource. Currently the forecast of labor expense is taken from Janus (reflecting the monthly paid leave factor spread), and non-labor expense is projected based on the average fiscal month to date spending rate. Typical PI questions addressed in the forecast are: Can I add another student and still not exceed my budget? Can I buy a piece of equipment?

It would be helpful for PI's to be able to see the kinds of indirect costs that are levied against each Resource Category (e.g., in the IRIS Cost Browser). This would give them a sense of how overheads are applied so, when projecting the total cost impact of a potential future expense, they will know the burdening logic.

They would like alternative forecasting options, including trending. When adding resources to a project, the budget should always show the balance remaining (available funding less planned resource costs). They would like as little manual entry as possible. GSRA pay plans should be associated with employees. The cost projections should follow that association of the employee with the project, and include the overhead treatment associated with the project. Pay plans for maintenance contracts should be associated with the purchase order, and the projection of costs should be automatically applied to the project ID. They would like a better scheme for the non-residence tuition forecasts, and a better scheme for IUT's

MSD uses Janus primarily for budget formulation, especially for projecting the cost of labor. They use Janus to create a "Personnel Commitment Report" for labor resource planning during budget execution.

Note that MSD reports a significant performance problem with Janus. In their opinion, it is very slow.

Once they know which project a staff member is assigned to, they do not need to see the calculation for the fully loaded cost, or even the salary. They want to make the staff

assignments and go on. They don't need the baggage of the real time calculations at this point.

MSD does not use Janus very much, because their business resource costs involve several characteristics that are not supported by that system. The major difference between MSD and most other Divisions is the large use of non-career employees (80% of the total head count).

FY2003 Year End Headcount by Employee Class (BLIS)

Employee Class	Count	% of Total
Career and Term Employees	60	20
Joint Faculty Appointments	43	14
Post Doc Fellows	62	20
GSRA's (grad students)	112	37
Undergrad students	16	5
All other	13	4
Total	306	100

MSD budgeting is highly tied to the Campus budget calendar, because much of MSD's staff has ties with the Campus (joint appointments, post docs, fellowships, visiting researchers, etc)   Higher costs due to the summer salary and summer pay adjustments for students require these costs to be accurately projected early in the LBNL fiscal year.

Joint faculty may take up to 3 months summer salary on research projects. Summer salary pay is accompanied by a PAF and the change in status from LWOP to active in the HRIS database. (As a note: the artificial LWOP status causes problems for various activities, since faculty are here, on site, on the job.   Clerical staff, processing a myriad of individual transactions, often stumble over this LWOP status. The summer calendar varies slightly each year, late May through mid August, but the faculty summer pay must total no more than 57 days. Therefore, careful coordination is required between the campus department and the LBNL Budget and HR offices on the summer pay schedules.   There is the complication that each day of effort is paid at 1/19th the monthly salary, which mimics the arcane campus system. The projection of summer salary cost by month thus requires a formula different from other labor categories.

Faculty for whom LBNL pays a portion of the academic salary, including Division Directors, ALS Professors, and faculty who sometimes elect to take sabbatical on LBNL projects, are paid fully, while LBNL reimburses UC via an IUT. There is one IUT for each campus. The billing is surprisingly irregular.

For fellowship payments, timing is key. The payment schedule is specific to each fellowship, so an overall, global assumption is not useful.

Graduate student research associates' (GSRA) pay plans are determined by the campus department. Variations to those occur with scheduled Teaching Assistants, TA duties and/or fellowship payments. The pay plans and usually the TA scheduling may be determined as early as August through the following June, and possibly beyond.   Some departments pay students higher in the summer months when they do not have to devote time to seminars. EECS and MSME pay 100% in summer and Physics pays the same all year. While the pay schedule is known, it is not possible to record the future changes in HR database. The variation on the percentage of time can be applied, but it must be recreated if the student is assigned to another project. They must reconfirm planned commitments and their schedules.

While most are scheduled to work for four years, they can be diverted to other Campus or Lab-sponsored projects, or could leave UC. With new UC rules, graduate student administration is getting increasingly difficult.

Non-resident student tuition is paid directly to campus via an IUT, and charged directly to the project ID as a procurement. These payments are usually made late in the semester.

For tracking research and/or equipment maintenance subcontracts, they want to be able to associate part of the total value of a multiple year contract for each year that it is in place. That way the expected costs and net available funds are accurately represented.

New MSD Access Database

In lieu of Janus, MSD has built, with the help of an outside consultant, an Access database reporting system which addresses the above budgeting requirements. This new system replaces the rudiments of the old Focus-based FIASCO system. The new system pulls in data from multiple sources (FMS, Janus, overhead tables ,etc.), and produces as output the Division's monthly State Report, which is the budget status report provided to each PI. Examples of State Report were provided.

The advantages of this approach are that it provides the kind of reporting described above top of the interview; it can report by B&R; it is under local control; and it is easily manipulated. It's better than Excel because it provides more control.

The disadvantages are that it requires a lot of data entry work to maintain, and that it is not stable yet. Also, the consultant has other projects, so they have to vie for his time.

PeopleSoft nVision is also found to be a potentially useful reporting tool. but a major shortcoming is that it can't drill down to the underlying actual cost details.

Funding

Since many funding allocations are made locally, MSD may not want funding allocation details available in an enterprise database. They don't want a PI to see the funding of another PI. This is a data security requirement. So the Division may want to maintain a separate funding details database.

They would prefer that online reports, currently only the reports on year-to-date and historical data, but someday to include the cost projections and budget reports, would require the LDAP password of the PI for viewing -- especially the budget and funding reports.

They want to be able to track funding carry-forward from the prior year by PI, including funding held back at the Division level. Once funding allocations to PI's are made for a year, few changes are made. They separately track different kinds of funding: DOE, WFO, and LDRD.

Physical Biosciences Division

Margie Dere, Ellen Ford, and Kristi Shaw of the Physical Biosciences Division (PBD) participated in an interview with the Budget System Assessment team on February 12, 2004.

Division Profile

The Physical Biosciences Division receives approximately $30M per year in funding. 70% of this is Work for Others. The WFO proposal budgets are created by Jerry Kekos' BioSciences support group. The other 30% is DOE funded work. This includes the Genomes to Life program, which is about $6-7 million annually. There are 10 B&R's, and about 12 field work proposals (FWP's). PBD has 350 employees, including guests and campus employees. Of this, there are about 30-35 PI's.

Project and Resource Planning

Margie, Ellen, and Kristi remarked that "they aren't doing badly" with the tools that are available for project and resource budgeting at the Laboratory. They use Janus, "to a degree".

As noted above, the Division is 70% Work for Others. Margie uses Janus for FWP's (Field Work Proposals). She regards it as "great" for baseline budgets.

Ellen's group, BCSB (Berkeley Center for Structural Biology), also uses Janus a lot. There are many grants funding one particular program. BCSB has $2 million activity per year. They manage execution budgets ("spend plans"). They have about 30 project ID's, and do primarily (about 90%) Work For Others.

The DOE Genomes to Life project is a big project, $6-7 million annually. Janus is the tool used for the project manager. Small components are put into Janus, and then downloaded into Excel and consolidated there. Janus reports are not used for the consolidation because they don't suit the recipients. When they print out a Janus budget, it looks good, but the Budget vs. Actuals report doesn't work for them. The BLIS system will hopefully allow more flexibility.

No one requires them to use Janus.

Besides Janus, they mainly use Excel spreadsheets and nVision reports. The PI's like to see the data in a graph form.

They have a shadow system on Excel to track accruals for Campus Labor because UCB is often delinquent in billing.

The nVision reports download actual cost amounts from FMS. The PI's want to see long range Forecasts. They like to see two years in advance, a rolling 24 months ahead. Right now (2/04) they are going through 2005. The actual costs from the newly closed period each month change the forecasts in the Excel spreadsheet.

The Biosciences proposal group in Life Sciences generates all the proposals using their Excel-based budget modeling tool, the Proposals on Demand system (POD). Physical Biosciences is recharged for this service.

They use Excel to fill in the blanks, but have no other home-grown systems. They use the Life Sciences Excel template that Rob Quinlan sent for reporting budget vs. actual costs to PI's. It is used for analyzing costs vs. funding and the remaining amounts.

Janus is used for planning. Ellen likes the Janus system, but would like a way to easily create a 24-month rolling forecast. Janus is very helpful for managing Org Burden budgets. Janus is also used for creating DOE FWP's.

The participants identified the following weaknesses in Janus:

- The IRIS Budget vs. Actuals report is ugly to look at, that's the main problem. So they mainly use nVision reports for budget to actuals analysis.

- Another hurdle to overcome is that Janus doesn't cross fiscal years when tracking Budget vs. Actuals. Also, it is impossible to retrieve no historical data for projects crossing fiscal years without going to each individual year and piecing it together.

- Janus doesn't consolidate projects very well. They must use Excel for this purpose.

- Janus doesn't provide graphs. Project managers want to see graphs.

- It would be very helpful to have the ability to do long range forecasts, 2 years in advance.

The biggest problem with using Excel spreadsheets and nVision reports is that they are laborious.

We asked if the participants thought it would be efficient for the Laboratory to use a single, integrated system for project and resource budgeting. Ellen noted that each of the Divisions is funded so differently that it would be hard to meet the needs of all the Divisions. For budget execution, there is a much greater chance of finding a common denominator. Planning and "what ifs" are very different from Division to Division.

They also noted that there are planning difficulties with people from campus, stipends, etc. They might take a look at the Materials Sciences Division's Access system to track such issues.

In a subsequent correspondence, Margie added the following comment:

"In a nutshell, the ideal would be for the Biosciences Proposal group to input their proposal budget into a budget system which would feed into RAPID, and have the ability to be executed in the Divisions to track budget vs. actual on the web using the original proposed budget. Budget vs. actual would cross fiscal years."

Funds Control

PBD's top priorities for funds control are as follows:

They need a good cash management report in RAPID. Right now they are pulling data off the 737 report. When the system spits out a SPAA, they would like it to populate the project ID. It's hard to track that.

It would be good to pull Other Support (other current and prior DOE and WFO research funding) by PI and populate that information in new RAPID proposals. They have to manually provide this data for a proposal. They need the title and the performance period for the PI. It's at the project level. They want to know what other funding they are getting. Funding agencies want to see both the direct and total dollars.

The funding information goes into a field on the proposal and goes to Jerry's Kekos' group. Other support is just one of the items they have to address.

WFO funding is fairly discrete. DOE funding comes in larger lumps. The guidance stipulates the PI or project, so it's not a problem to decide who it goes to. There are a maximum of 10 B&R's. The number of staff in the Division is about 350, counting students and campus employees that are guests. There are 32-35 PI's, and about a $30 million annual budget.

The existing funding tools are inadequate because the funding comes from lots of different places, such as LDRD, SPO, or Bridge Funding from the Budget Office. They have to know who to go to in order to ask questions. It would be nice for all of that to be automated.

If LBNL made the funding centralized, it would not be a hardship. It is clear where the contract Mods are to go. They get distributed to the PI level, and the PIs decide themselves how to subdivide the funding further. Operating funding is not a problem. Equipment funding by B&R is sometimes a problem, because it comes in a big pot, requiring that local funds allocations decisions be made.

Funds control involves tracking lots of little pots of money and advances. Cash Management of WFO projects is a big issue. It's labor intensive. We need to be able to support all of that with reporting, to see when the sponsor is supposed to make another payment, drawing down their advance, etc. This information is on the Award Management Report, but it would be nice for it to flow through a budget system.

Reporting and Analytical Tools

For budget reporting and analysis, PBD uses IRIS reports and nVision reports. Kristi provided a DOE project's nVision report. Margie's showed a Work for Others nVision report with historical data on it. It contains a breakdown of labor with hours on it. The data comes from a "ZW" data-warehouse table. There is no drilldown needed to see the details. The PI's like having direct access to this detail (i.e., no drilldown required).

They also track campus labor expenses incurred, because invoices from campus are not received on a timely basis.

IRIS is used for quick data queries. It is a very good tool for quick and dirty reports. A few PI's use it themselves. They look at the data and then call Margie, Kristi and Ellen to do research into the numbers they want to investigate.

However, certain reports are annoying in that you can't drill down when it looks like you should be able to. For example, in a check request, there is a field that you click on and can't drill down on because it is sensitive information.

Also Computer Recharges feeders put a value of "81" in the purchase order field, but that's not a purchase order, so they shouldn't do that.

Margie would be happy with an easily accessed "dashboard" – a visual, graphical presentation.

They would like to have greater access to rolled-up numbers. They currently must run hundreds of nVisions per month.

Quarterly the PI's see what their financial picture is. The financial managers don't use Janus. They would use some new tool if it were Web based and they could tap into an project ID and see a bar graph with visual information about their progress. They don't really want or need to see the numbers.

Division management is interested in seeing rolled up numbers.

The monthly report currently takes weeks summarize. Kristi does it. Then the PI's circle some numbers with a red pen and ask for research to be done on those charges. The deputies look at the summary page.

Other Topics

Staff planning is done by project or by PI. For example, Ellen in BCSB uses the 24-month projection for staffing decisions because they want to look at two year financing to make an employment commitment.

Margie said that, if everyone put their numbers into Janus, we wouldn't need to do a Management report. Then we would be able to make better estimates of recovery, but we would need 100% participation. LDRD and Overhead budgets need to go in as well.

The biggest question is forecasting. They give a shopping list and ask if there is enough money. They do that in Excel most of the time.

Carry-forward, split funding and "what ifs" are important to consider.

Diversity and Common Themes

In the course of the interviews we saw a great deal of diversity among the needs of the Laboratory's Divisions to accomplish their budgeting objectives.

For example, the Divisions having a high proportion of Work for Others activity require a great deal of detail in their planning, in order to manage the many small parcels of funding that come with the sponsored research business. In addition, they must have a tremendous degree of flexibility to comply with their sponsors' reporting and timing requirements. These Divisions have in many cases found the Janus system to be lacking in the detailed functionality they need, so they have turned to elaborate, custom-developed Microsoft Excel and Microsoft Access solutions to fully meet their needs.

In contrast, some areas of the Laboratory, such as the Advanced Light Source Division, receive block funding, which greatly simplifies their planning requirements. The budget analysts in these areas actually find Janus to be *too complex,* and prefer the simplicity of their own Excel-based solutions.

The Materials Sciences and Chemical Sciences Divisions have a very high proportion of non-career staff, including joint Faculty appointments, post-doctorate fellows, GSRA's, and undergraduate students on a variety of part-time and seasonal schedules. These two Divisions' unique planning requirements have led them to develop their own Microsoft Access based system.

The Joint Genome Institute operates primarily as a production facility in the very competitive genomics industry. Unlike most of the other Divisions, most of the JGI's expenses are for materials. Moreover, the JGI's identity as a collaborative facility comprising staff from both Lawrence Berkeley National Laboratory and Lawrence Livermore National Laboratory creates another set of management information systems challenges.

Many Divisions make use of Janus for most of their budgeting, but wish it could be improved in one way or another.

The great variety of needs expressed by the Divisions presents a challenge to the system implementer to provide a solution that will uniformly satisfy all of these needs. Generally speaking, it would not be prudent to invest a large amount of resources to develop elaborate features that are uniquely requested by only one or a small number of business units of the Laboratory. Unless they can be economically developed and deployed, such unique features would likely best remain in the hands of the individual business units that need them. Rather, the Laboratory's resources should be focused on providing automation improvements in the areas of functionality that will provide benefit to a larger number of business units.

To identify where these common themes might exist, the Budget System Assessment team reviewed the Division interviews and sought to identify those areas of functionality that emerged from multiple business units. The results of that exercise are listed in the following table. This table does not necessarily imply a prioritization, but it does suggest areas in which automation improvements may have the broadest benefit.

Common Theme	Divisions Requesting	Count
Provide more "what-if" analytical capability (e.g., rate manipulation).	Earth Sciences, EH&S, Facilities, Life Sciences, Engineering, Computing Sciences, Human Resources, General Sciences, Advanced Light Source, Physical Biosciences, Chemical Sciences,. Laboratory Directorate, Budget Office	13
Provide inbound and outbound interfaces to Microsoft Excel.	EH&S, Facilities, Life Sciences, Engineering, Joint Genome Institute, Computing Sciences, General Sciences, Chemical Sciences, Physical Biosciences, EETD, Budget Office	11
Provide enhanced forecasting capability.	EH&S, Facilities, Life Sciences, Engineering, Joint Genome Institute, General Sciences, Physical Biosciences, Materials Sciences, Laboratory Directorate	9
Provide enhanced Budget vs. Actuals reporting capability.	Earth Sciences, EH&S, Facilities, Life Sciences, Engineering, Joint Genome Institute, Computing Sciences, Human Resources, Advanced Light Source	9
Provide enhanced capabilities for resource (labor) planning.	General Sciences, Advanced Light Source, EETD, Materials Sciences, Joint Genome Institute, Laboratory Directorate	7
Provide more reporting, and more flexible reporting.	EH&S, Facilities, Life Sciences, Physical Biosciences, EETD, Laboratory Directorate, Budget Office	7
Provide automated support for the Spending Plan (formerly, the Management Report).	EH&S, Facilities, Life Sciences, Computing Sciences, Engineering, Physical Biosciences	6
Provide support for rollups according to alternative hierarchies other than those on the FMS Project Tree.	Earth Sciences, General Sciences, Chemical Sciences, EETD	4
Provide enhanced integration with other Laboratory institutional systems.	EH&S, Facilities, Advanced Light Source, Life Sciences	4
Provide support for budgeting at the detailed line item level.	EH&S, Facilities, Life Sciences, Human Resources	4
Provide support for grant year budgeting and reporting.	Engineering, Joint Genome Institute, Computing Sciences, Physical Biosciences	4
Provide the ability to automatically create plans based on historical costs.	Human Resources, Facilities, Chemical Sciences, Materials Sciences	4
Provide a "Quick Pricing Tool".	Earth Sciences, General Sciences, EH&S, EETD	4
Provide timely funding information.	Earth Sciences, Advanced Light Source, EETD, Laboratory Directorate	4
Provide support for flexible groupings of Resource Categories.	EH&S, Facilities, Life Sciences	3
Provide the capability to consolidate budgets.	EH&S, Facilities, Physical Biosciences	3
Provide automated support for budgeting campus labor resources.	Chemical Sciences, Physical Biosciences, Materials Sciences	3
Provide enhanced reporting for Work For Others projects.	Chemical Sciences, Facilities, Life Sciences	3
Provide enhanced reporting for DOE projects.	Chemical Sciences, Facilities, Life Sciences	3
Provide graphing capability.	General Sciences, Physical Biosciences, Facilities,	3
Provide data security for funds	Materials Sciences, Chemical Sciences, Computing	3

control data.	Sciences	
Improve the overhead rate structure.	Computing Sciences, EETD	2
Provide flexible time granularity (e.g., annual, quarterly, monthly, daily).	Facilities, Life Sciences	2
Provide controls for the distribution of funding.	Life Sciences, Advanced Light Source	2
Provide support for the tracking of B&R recasts.	General Sciences, Budget Office	2
Provide support for full cost reporting.	General Sciences, EETD	2
Provide a system that is faster than Janus.	Materials Sciences, Advanced Light Source	2
Provide drill-down capability.	Earth Sciences, Facilities	2
Provide automated LDRD support.	Laboratory Directorate, Chemical Sciences	2
Provide historical funding data.	Earth Sciences, Chemical Sciences	2

Solutions Considered

We considered the following options for implementing a new comprehensive budget system:

1. Implement the latest version of the PeopleSoft budgeting module.

2. Identify and implement a solution that is successfully in use at another DOE Laboratory.

3. Identify and implement a commercial software solution.

4. Build a comprehensive budget system in-house.

These options are discussed in the following pages.

PeopleSoft

Berkeley Lab's corporate information systems strategy prescribes the use of commercial software, wherever possible, to meet our information systems needs. Conventional wisdom also suggests that an enterprise systems portfolio would ideally be based on an integrated system suite from a single vendor.

For these reasons, as discussed earlier, the initial goal of the 1995-1997 Financial Management System (FMS) project was the implementation of the PeopleSoft Budgets module along with the PeopleSoft General Ledger and Projects applications, as the foundation for an integrated financial systems solution. However, during the modeling and testing phases of that project, it became clear that the PeopleSoft Budgets version 6.0 software was not capable of meeting the Laboratory's needs. Specifically, it was incapable of handling the Laboratory's complex burden and overhead structures, and it was insufficiently flexible to adequately address the dynamic nature of project budgeting at LBNL. Consequently, the PeopleSoft Budgets application was dropped from the scope of the 1997 FMS implementation.

Two years later, in response to our 1999 budget system RFP process, PeopleSoft submitted a proposal based on their version 7.5 budget system product. Though we had hoped that the 7.5 product had overcome the shortcomings of the 6.0 product, we were disappointed to learn that this was not the case. The RFP committee concluded that the PeopleSoft proposal did satisfy the Laboratory's requirements.

At the April 2004 Financial Management Systems Information Council (FMSIC) PeopleSoft Networking group meeting, PeopleSoft presented a demonstration of their newest version of their budget system, called Budgeting version 8.8. Once again, due diligence required that we consider the PeopleSoft module, because, if it met our requirements, its implementation would be a logical fit to our corporate strategy, and would provide the best possible integration to our other PeopleSoft financial systems.

Unfortunately, the presentation was not promising, for the following reasons:

- PeopleSoft's labor planning is based primarily on "position budgeting", a concept that presumes that the institution's budgeting is done on the basis of generic positions rather than by specifically identified people. Since the Laboratory's labor costs are determined by actual salaries rather than standard rates by position, almost all of the planning done at LBNL, either through Janus or locally developed tools, is done based on specifically identified individuals. As a result, the position budgeting approach would not work at LBNL.

- The PeopleSoft system allows for "line item budgeting", which would be the alternative to position budgeting for labor, and would be the primary methodology for planning non-labor costs. However, we observed that the end user interface for line item budgeting would be very cumbersome. Entering a single line item requires going through multiple screens. We also saw only an annualized view, and the end-user interface is very far from the grid-based, spreadsheet-like capability that would be preferred at LBNL (and is provided by Janus.)

- The Budgeting module only handles static, annual budgets. Monthly forecasting and long term planning are handled by a different PeopleSoft module, called the Budget

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Planning module, which was not demonstrated and which would entail an additional license fee.

- Budget plans are organized in the PeopleSoft system by "budget centers", which are based on the values of a selected chart of accounts element, according to a methodology that would be difficult to use at LBNL, and would likely require changes to our chart of accounts structure.

- The architecture of the Budgeting module requires that the data be contained in a "data warehouse" located in a separate database instance from the core financial systems. This would add unwanted complexity and inhibit real-time integration.

- We saw no evidence that the application had made improvements to enable it to handle the Laboratory's complex burden and overhead structures.

- We saw no evidence that the application had made improvements to enable it to make it sufficiently flexible to adequately address the dynamic nature of project budgeting at LBNL.

For these reasons, we do not recommend implementing the PeopleSoft budget system solutions at this time.

Other DOE Laboratories

We made use of networking opportunities at the annual FMSIC meetings, the annual Budget Officers' conferences, and other sources to develop a list of promising budget system solutions that are in use at other DOE Laboratories. The advantages of this approach are twofold. First, we recognize that Berkeley Lab's needs as a heavily fund-driven organization set it apart from most commercial enterprises, and LBNL shares this characteristic, with all of its nuances, with many of the other national Laboratories. Second, the Laboratory complex has a long history of sharing information, best practices, and, sometimes, software among its constituent organizations.

We identified as the most promising budgeting systems in use at comparable DOE Laboratories to be the following:

- Lawrence Livermore National Laboratory's FACTS system;

- Pacific Northwest National Laboratory's FRx system; and

- Brookhaven National Laboratory's Budget and Forecasting system.

Through the collaborative generosity of budget office representatives at Lawrence Livermore National Laboratory, Pacific Northwest National Laboratory, and Brookhaven National Laboratory, we were able to learn about these systems through in-depth discussions and system demonstrations. Our findings about these systems are discussed in detail in the following pages.

It was also recommended that we examine the budget systems at Fermi National Accelerator Laboratory and Sandia National Laboratory.

In discussions with FermiLab representatives, we found that their system is an Access based system for summarizing and analyzing Laboratory budget data. It does not provide the capability to build a bottom-up budget. The fact that it is based on Microsoft Access limits its scalability, and would prevent it from being deployed via the Web. Based on this information, we determined that this system would not be a leading candidate for providing LBNL with a comprehensive budgeting solution.

In our discussions with Sandia, we found that they were in the process of implementing Tecolate's "ACEIT" system. This system will be used to estimate project costs for large projects, and will use Sandia's Oracle accounting system software as the burden engine. It will tie into the Microsoft Project and Primavera project management software tools. It will not be used for current year cost and recovery planning. Sandia's target date for implementation was October 1, 2004. Because this system was until very recently still under development, it would be premature to make an assessment of this system's success at Sandia. Also, based on its limited scope, it does not appear that this system would be a leading candidate for providing LBNL with a comprehensive budgeting solution.

Lawrence Livermore National Laboratory's FACTS System

Overview

On March 3, 2004, the LBNL Budget System Assessment Team had the opportunity to meet with representatives of Lawrence Livermore National Laboratory to discuss and view a demonstration of their "FACTS" budgeting system. We were hosted by Starr Arslan, Bob Vincent, Iris Lam, Tom Ainsworth, and David Shaughnessy of LLNL.

LLNL uses multiple planning systems. FACTS is the detailed tool that was the main subject of the meeting and presentation.

In addition, they have a new, top-down Excel spreadsheet based system that has a more summary-level orientation. They also have a flexible, Excel-based "pricer" tool to assist people with building budgets. These tools all have different purposes and satisfy different needs. In addition, the Divisions have their own Excel-based, bottom-up planning models that are used to create FWP's, other budget proposals, and detailed spend plans.

Prior to FACTS, LLNL's main budgeting system was developed in-house, based on the Oracle database. It was costly to maintain, slow, and had a low degree of user acceptance.

Selection and Implementation

LLNL's CFO sought a commercial, off-the-shelf product to replace it. They considered a balance between detailed planning and high-level planning. They put out an RFI and received 7 or 8 responses. Based on these results, they invited four companies – Comshare, AddDatum, Hyperion, and Cognos – to present structured demonstrations. Hyperion chose not to provide a demo because that they did not think their solution would work.

Based on the demos, LLNL extended an RFP. Based on an elaborate scoring methodology, they selected Comshare (now known as "Geac"). The specific product in use is MPC, and LLNL is currently installed on version 5.03.

Geac upgrades the MPC product about once a year. There is also an Excel-based version.

The product is not compatible with the Netscape browser, nor the Apple Macintosh desktop. It requires Internet Explorer 5.5 or above, and must run on a Windows machine. The product requires the use of Java Virtual Machine software (and so has a thick-client architecture.)

We asked whether the Mac support situation was a big issue at LLNL. They explained to their community that none of the vendors support Macs. LLNL Management supports the use of PC's for administrative purposes.

When they went live in 1/03, the system already contained some data from the earlier attempts to bring it up and three months of actual costs. They chose not to convert data from the prior planning system, but they did support the old planning system for about 9 months.

The LLNL implementation team ran into some performance issues and had to compromise on their list of requirements. Specifically, they wanted to plan at the individual employee level by

name, but, after several months of working with the consultants, they had "horrendous" performance issues and had to back away from that approach.

During the implementation, the LLNL team encountered performance problems related to the complexities of the multidimensional database. They had to modify how the process works for efficiency. They got consulting help for their ASP pages, and built tools to complement the delivered Comshare tool set.

They had to make some modifications to other existing systems. In addition, they had to set up "cost centers" as groups of accounts, based on ranges of account numbers.

Nobody in the commercial world has a burden structure as complex as LLNL. LLNL has as many as 14 layers of overheads. Intensive matrixing adds to the data requirements and complexity.

The labor cost model at LLNL is based on a system of 19 standard salary bands. All labor costs are based on these salary bands. The resulting labor costs are within 5% of the actual salaries. LLNL has done it this way for many years.

The LLNL team didn't like some of the delivered report templates, so they used Crystal Reports to supplement their reporting.

Many tools in the delivered system are not in use at LLNL, e.g., standard profit and loss reports.

The system requirement identification and vendor selection required 9 months. The basic development to a training level required about 1 year, and then they needed about 3 months more of performance enhancements until FACTS was made the official system. It required another 3 months before all of the users were trained and had access to the system. Acceptance has been slow.

The implementation timetable was as follows:

11/01	Developer training
3/02	Defined database structure
6/02	Original goal for having system operational
8/02	System actually operational
10/02	Original schedule for training
10/02+	Discovered performance problems upon heavy simultaneous usage; resolved problems
1/03	FACTS became the system of record.

When they went live in January, 2003, the system already contained some data from the earlier attempts to bring it up. LLNL chose not to convert data from the prior planning system.

The LLNL participants offered the following lessons learned:

(1) Don't commit to a short time table;

(2) Try to get the vendor to do a demonstration project, so that you can see the impact; and

(3) Get a good user group to work with you.

The project was a more complex effort than originally envisioned. The initial schedule, six months in length, was overly optimistic. The development cycle turned out to be closer to 12 months.

The implementation team consisted of one project manager; 3 to 4 technical programmers dedicated full time; 1 to 2 technical support people from the Infrastructure team at about 205-50% time; one full-time functional analyst doing the primary template designs and formulation of requirements; and 3 to 4 functional analysts working about 25% time overall, with periods of more involvement at key points. They also used about 3 to 4 months of consulting time to set up the system and resolve performance issues.

They observed that the vendor training was not very useful, and not geared toward their needs.

Planning Functionality

LLNL uses the FACTS system more as an execution system than a formulation and planning system. The primary purpose of FACTS is to gather Laboratory-wide information so that Management can perform institutional rate collection and planning. There are ten people in the LLNL Budget Office assigned to rate estimation, which is done monthly.

The LLNL participants noted that that their project team had initially had a "euphoria" in which they thought they would be able to provide a system that everybody would use for their own budget planning, but, during the project, they reached the decision that that was not a realistic goal.

All budgets are accounted for in the system, including balance sheets.

The DOE "Unicall" is handled by a separate, Oracle-based system.

LLNL uses FACTS to track out-year budget information. They set up the next fiscal year about six months before the fiscal year starts, in the April-May time period. The system also has a "planning template" that capability allows the user to build future months' plans based on prior month actual costs.

FACTS facilitates the tracking of indirect budgets as well as direct. In addition, the system supports overhead recovery analysis. All accounts are accounted for, so all budgets are entered into FACTS. All activities are accounted for in the budget system, including balance sheet accounts (although the balance sheet requirements are few). Every account in the General Ledger belongs to a cost center. The LLNL Budget Office controls all structural changes to the Account Master.

Effort factors (which seem to be analogous to LBNL's Paid Leave Factors) are maintained at the Payroll Account level and appear to be based in part on historical data, with added consideration for holidays that move from one month to another.

FACTS facilitates direct and indirect budget forecasting through its "plan on actual" function, that can use historical data to "plan" future months. This feature is used extensively for estimating overtime labor.

We asked how the FACTS system integrates with Excel. FACTS downloads easily to Excel, and the LLNL team is still working on upload capability. In the future, LLNL would like to deploy Excel functionality to get quicker calculations, upload plans from Excel to the central database, and download rates from the central database to Excel.

We asked how the FACTS system deals with the sponsored research "grant year". The LLNL participants were not aware of this issue and did not understand this question. (This reflects the fact that Work For Others is a less prominent feature of LLNL's business, as well as the institutional-facing nature of the FACTS system. They did try to implement the system with plans spanning over two years, this impacted the performance, so they scaled back to having one year at a time in their plans.

Regarding information granularity: Directorates can set up their cost center structure at various levels of detail, with some institutional minimum levels. All plans are by month. The system does not support planning by quarter or by year. Expenses are planned by Expense Type, and labor is planned by payroll account and labor type. The system does not match budgets vs. actual costs for individual employees. Detailed contract data and individual purchase order data are not maintained in the system.

FACTS can consolidate budgets hierarchically, within the directorate WBS. Each directorate could have slightly different hierarchies, though.

FACTS can handle multiple versions of budgets for a single project: Original, Forecast (working area), and Operating (approved plans). They intend to add one more version for Budget Office modeling and "what-if" analysis.

FACTS supports planning by labor hours (in addition to FTE's) only for part-time or supplemental labor. For full time labor, employees are planned by FTE. In general, the system is very FTE oriented.

LLNL is on a 4-4-5 schedule, but not strictly in this pattern. The date on which costs are due is the last Friday before the last Saturday of the month. In September, the reporting period seems to include a fractional week. Specific numbers of weeks shown on one screen included: March, 4; April, 4; May, 5; June, 4; July, 5; August, 4; and September, 4.8.

There is no interface from FACTS to LLNL's timekeeping system.

We asked how FACTS deals with the problem of refreshing budgets when the rates change, giving new budget amounts without overwriting custom rates that the users have provided, such as a non-standard escalation rate, or midyear salary changes. The LLNL participants responded that all rates are stored centrally. If a rate changes, it is updated during the nightly process, and all plans are recalculated.

The Cost Center General Information Screen, a customized ASP page, is the "heartbeat" of FACTS. The FTE input screen is the one most used, as labor represents 60-70 % of all costs at LLNL.

The Cost Center Cost Summary screen shows "problems" in color-coded cells. Greater than 10% variance is shown as red, 5-10% is shown as yellow, and less than 5% is shown as green.

The FACTS system has a security feature that limits people's access to particular cost centers. Users are assigned system roles which grant either read only access, the ability to change plans and submit them for approval, or the ability to approve plans. A budget can be approved by the inputter, or submitted for approval by somebody else. The controls in the system regarding this have been relaxed since they initially went live.

The application contains a very detailed user guide, including explicit and detailed information about how the system's calculations work.

Funds Control Capabilities

The FACTS system has an input template into which users can enter their funding information. However, this is an optional area, and so far there hasn't been much interest. One LLNL participant remarked that "a lot of people asked for it, but 'nobody' is using it." We observed that the funding input screen requires all manual input.

The Accounting Department manages MARS and the funding information in an Oracle database. Funding information is extracted and provided to the Divisions in Excel spreadsheets and Word documents posted on the Web site. There is a business rule that cost centers cannot commingle funding types.

The FACTS system does not have an automated capability to download the Contract Mod file received from the DOE and perform fund distribution to the Divisions.

Also, not being a funding system, FACTS does not handle recasts, nor does it track DOE Work Authorizations (WAS's), or track Work for Others and Transfers funds.

Reporting Capabilities

Regarding the FACTS system's reporting capabilities, there are reports built within FACTS, and an ad-hoc reporting tool is available. The custom reports are viewable on screen, available as an unformatted Excel file or as a PDF file that can be printed. The reports available online are in real time for values based on the cost center. For values summarized at the higher WBS levels, there is an overnight process to recalculate any changes. Additionally, each night after the overnight consolidation process the data is copied to LLNL's Data Mart and they can run Business Objects reports from there.

The FACTS system has a "consolidation" process, in which a cost center's budget's estimated burdens and overheads are recalculated after a direct cost change. The process

we observed required about 60 seconds, which is much faster than LLNL's previous system was.

The system uses the term "CAR" for "Cost Analysis Report". LLNL has a standardized cost display format that rolls everything up to 15 cost types.

Top Down Planning Tool

LLNL also showed us a demonstration of their "Top Down Planning" (TDP) tool, a reporting tool that LLNL developed in Excel.

At one point last year, LLNL was hiring 50-60 people per month, and the budget plans did not appear to have enough money to support that level of hiring. So the Director asked for a high level plan, which led to a spreadsheet exercise. Instead of receiving 750 plans through FACTS, they wanted one spreadsheet per Directorate. The TDP tool was developed to facilitate this type of data gathering.

The TDP tool creates graphical summaries of FTE plans, which are very revealing and useful for spotting trends and potential difficulties.

The TDP tool is also used for rate planning. Bob indicated that the Budget Office holds a big group analysis meeting every month to produce a planning model. They analyze the plans and determine which plans are being executed well, and which are not.

Deployment and Management

The FACTS system's users are primarily the resource analysts in the directorates. They have about 100 registered users, less than half of which are frequent users. They have a 50 concurrent user license.

Managers of every funding source (direct and indirect) are required to participate. There is an institutional requirement for all budgets to be planned in FACTS. The Directorates also have their own customized systems, but everybody has to also enter their plans into FACTS.

There is a mandatory internal budget call at the beginning of the year. When the Director has workforce planning issues, the Directorates are asked to update their information. Not all plans need to be updated each time there is a budget call.

People have the option to update their plans monthly, and the updated plans are uploaded to LLNL's Data Warehouse. About 5-10% of the plans are updated in a typical month. The Directors are expressing more interest in having this done more frequently. Sometimes large variances (>5%) stimulate interest that may influence people to keep their plans updated and inside tolerance.

The LLNL participants explained their concept of a 5% undistributed amount or allowance for each budget. Laboratory-wide, this amounts to about $3 million. They do not need to budget 'down to the penny.' but Divisions are warned when certain thresholds are reached: A $1 million variance produces an overriding warning point, regardless of the 5% factor.

As always, there was some resistance to using the system. To handle this, they tried to make system improvements that were attractive to the users and that would help in planning. They also provided a lot of planning support by developing draft plans and helping to update plans during crunch times.

The LLNL development team dealt with one-off requests on a case by case basis, depending on the time it took to provide something and the relative value of the request.

The biggest complaints from the users are related to the amount of time it takes to enter the data. Half of the users want a more simple level of detail, and the other half want to plan by individual. The calculation time in FACTS is much faster than it was in the prior system, but the users would prefer Excel-like speed.

FACTS is not directly integrated with LLNL"s Oracle financial systems, but it does read in ledger data from the Data Warehouse.

On an ongoing basis, they use about 1.5 FTE of technical programming support and 1 FTE of Functional (Budget Office) support for maintenance and some minor development.

For ongoing training, they provide Directorate workshops. Their functional support group does the training and provides some one-on-one tutoring.

The current enhancement list contains about 10-12 items, half of which are still left over from our original design specifications. At the time of the interview, LLNL did not have any firm plans to integrate FACTS with DOE's I-MANAGE and STARS initiatives. They would like to provide an Excel input environment for FACTS, and they are contemplating possible changes for labor planning levels. Funding is in short supply, however, so any enhancements will likely be slow and part of the normal maintenance funding.

Budget System Assessment Team Observations

The FACTS system is a solid system that clearly provides good value for LLNL. We did make the following observations regarding the degree to which FACTS fits Berkeley Lab's requirements. The following aspects of the system were favorable:

- FACTS has some good forecasting tools for out-months. It provides at least six pre-programmed trending functions.

- It is able to pull in cost information.

- All data can be exported to Excel.

- It seems user friendly, with a simple interface.

- It has a lot of drill down capability, and it appears to be easy to move back and forth between screens.

- The LLNL team went live with the FACTS system three months into a new fiscal year. As a result, the Divisions had three months of cost data to relate to.

- LLNL continued to support their old, Oracle based system for nine months (the rest of the fiscal year).

- A copy of a current budget can be exported for use in their Business Objects multidimensional data warehouse.

- Users are limited to those cost centers for which they have responsibility. The available security roles include read, write, and approver capabilities.

- Baseline budgets can be adjusted or restated for reorganizations.

- The FACTS system maintains global rates and ratios (e.g., paid leave factors).

- The system keeps an audit trail of changes to budgets.

- The system facilitates the creation of future spend plans based on history. (Unfortunately, though, most planning is done offline in Excel or other systems).

- Effort can be input by month, by department and then by job code.

- The system Identifies where a spend plan needs to be updated, based on a 5% tolerance rule.

- A right-click will produce a simple graph.

However, the FACTS system is a less favorable fit to Berkeley Lab's needs in the following areas:

- The FACTS system addresses only a few of LLNL's budget management requirements. Other processes are supported by other Excel-based tools and other systems. Funds control and the FWP development processes are supported by other systems.

- Detailed, bottom-up planning by the Divisions is done in Excel or other locally built and maintained systems.

- The Geac FACTS product runs only on the IE browser.

- They do not use FACTS to pre-fill their timekeeping system.

- FACTS does not support line item budgeting.

- Funding is tracked by the LLNL accounting department and distributed to the Divisions on Excel spreadsheets. This information must then be re-keyed into the budget systems, including FACTS.

- New accounts (projects) can only be established by the central budget office.

- There is a lack of integration to most other systems, resulting in an apparent need for redundant data entry in some areas.

- The system does not seem to be able to forecast overhead recovery. This is still being done in a spreadsheet.

- The system does not contain funding or guidance information, so there is no check as to whether the funding supports a forecast.

- The system couldn't really track multiple years concurrently.

- The system didn't work in real time. In some cases, they had to run jobs to process information into the system. In the demo, it took about 90 seconds to make a $1 change to a sample budget.

- FACTS seems to provide very little of indirect budget planning for Laboratory wide needs, e.g., indirect budget forecasting, rate calculation, and the tracking of recovery and recharge costs. If any, the level of planning that FACTS offers is more useful to the Divisions than to the central Budget office.

- It does not appear that Management can get the overall picture of the Lab's budget (direct and indirect) from FACTS.

- FACTS does not have funds control functions such as direct funds tracking, funding allocations, DOE funding authorizations, etc.

- We did not see evidence that FACTS supports Work for Others or non-DOE funds.

Overall, the Budget System Assessment team's opinion is that FACTS does what it does very well. However, its scope is limited when compared to the full scope of LBNL's budget system needs. FACTS is very strong in the area of institutional planning, but is not the system of choice at LLNL for most of the local planning needs. FACTS also lacks the funds control functionality that LBNL seeks.

It would probably be possible to extend the Geac system's capabilities, but this would likely require significant customizations and extensions.

Pacific Northwest National Laboratory's FRx system

Overview

On July 13, 2004, the LBNL Budget System Assessment Team conducted a videoteleconference with representatives of Pacific Northwest National Laboratory (PNNL) to discuss and view a demonstration of their FRx budgeting system.   PNNL participants included Cindy Doyle and Jeff Enger.

Selection and Implementation

A few years ago, PNNL identified a need for an improved methodology for managing the data associated with their budget planning process. At that time, they were using Excel templates that rolled up to an Access database. However, in order to make this work, they found that they had to extensively "lock" the data, which was very cumbersome. Their process required that they run some 300 Queries into Excel, and then build pivot tables. Then they would discover data errors, leading to last minute changes.

Regarding the decision to buy and implement FRx Forecaster: The business offices love Excel. FRx was the only software they identified that looks like Excel. Other key selection criteria were that the system be Web-based and that it support dynamic roll-ups of data.

In previous years FRx was an independent software company, but it was acquired by Microsoft.

Microsoft has another budgeting product, called Helmsman. Helmsman is an older product, and is not Web-based.

PNNL is currently using release 6.7 SE of FRx Forecaster. The background database is SQL Server.

PNNL uses the PeopleSoft Human Resources enterprise software, but their financial systems were written in-house. At the time of our interview, PNNL did not yet have a data warehouse.

The FRx software is licensed by seat. PNNL is currently licensed for 100 users. This cost about $100K, plus $20K annual maintenance. The system did not require any investment for new hardware.

The FRx implementation time was very quick. PNNL purchased the system on 9/30/02. During November 2002, the PNNL team familiarized themselves with the system. They brought in a consultant in December 2002. By May 2003, they rolled out the system. So the implementation took "3 to 4 months". They did not encounter very many glitches, and they regarded their consultant and technical support as excellent.

Planning Functionality

The FRx system's presentation is based on "views" of information. The most popular of these is the "Product Line Standard Sales" view, which contains consolidated views of spending plans. ("Product Line" is a term in common use at PNNL.)

The product seems to have a very strong capability for consolidating multiple plans. In the standard budgeting business process, the PNNL Budget Office asks the "Sectors" (comparable to LBNL's Divisions) to fill in the data entry screens. The end-users input annualized numbers into the system describing various things such as costs, FTE's, etc. The PNNL participants noted that it has been difficult for the end-users to adapt to the delivered format of the data entry screen.

The FRx product can handle monthly plan numbers, but that level of granularity is not needed by the PNNL budget office.

For their inputs into FRx, people use data they get from their Sector managers. They load information at the level at which the central Budget Office needs it, which is often at a higher level of detail than what they have. For example, system reflects the rolled-up cost of research activity, but contains no project detail. As implemented, the system has more of an institutional focus than an operational focus.

(However, the FRx software could handle this greater level of detail.)

The Sectors do not use the FRx system to prepare their local spending plans, but rather use their own systems and methods to do this. The business offices also have their own tools for projecting revenues. The PNNL Budget Office does not dictate how the Sectors prepare their numbers.

The PNNL Budget Office finds FRx to be very useful for the planning of overheads.

The product has the ability to apply mathematical formulas to "build out" planning numbers by year with growth factors, e.g., +5% or +$5K.

The product supports a "footnote" feature, permitting the inputter to add a note to an entry.

An end-user can easily copy an FRx view to Excel, and can easily copy cells from Excel back into a view.

The system allows for the insertion of detailed lines as backup for a line in a view, e.g., travel details. In some cases, the entry of line item detail is required. Views can display or bypass the detailed entries.

Plans developed in the system go through an approval workflow process, with a multiple-level routing.

FRx does not specifically track actual costs. However, PNNL does populate actual costs into forecasts for planning purposes.

Funds Control Capabilities

We learned in this discussion that FRx Forecaster does not support the management of funding information at PNNL. In fact, Cindy Doyle and Jeff Enger are involved with PNNL's indirect budgeting side only, and that the direct budget function is managed by Janie Treadway, who does not use FRx.

Reporting Capabilities

PNNL hasn't had to write any back-end Queries off of the database. They have found the delivered front-end views to be thoroughly adequate.

Cindy's office prepares the plan vs. actuals reports for the system's users.

Deployment and Management

Initially, there was a great deal of resistance to the new system, which could be characterized as typical resistance to change. The end-users "hated" the Excel templates because they didn't contain any formulas. But, after a year in production, PNNL's budget office was no longer hearing any negative comments.

For many years PNNL has followed roughly the same budget planning schedule. In July, everybody must budget for the coming fiscal year. A "first third" update is required in February. Another update for the current year occurs in July.

For ongoing technical support, they have one on-call IT person. They don't have much work planned besides the usual service packs, etc.

Microsoft has been receptive to PNNL's requests for changes to FRx' functionality.

For the future, PNNL is looking at implementing updates based on actual costs, HR budgeting information by person, and resource projections. They also would like the capability to change column headings on reports. The PNNL participants observed that they tried to limit the initial scope of their project, and not bite off more than they could chew. Now that the product is established, they can look at doing more.

Proposal Pricing System

PNNL also has a small "Proposal Pricing System" (PPS) that is used by some of the Sectors. This system used to be based on Excel with macros, and is now based on a database, and has workflow capability. This system provides assistance with estimating burdens. In some cases, people develop their numbers in PPS and transfer them to FRx. There is no automated interface yet. PNNL has considered a possible future merge of PPS and FRx.

Budget System Assessment Team Observations

We found the following aspects of the system to be favorable:

- The FRx vendor, Microsoft, is a stable, well-established vendor, and the product would presumably provide superior integration with other Microsoft products.

- The FRx product has a strong Excel-like look and feel.

- PNNL's Indirect Budget Office seems to be deriving significant benefit from FRx.

However, the FRx system is a less favorable fit to Berkeley Lab's needs in the following areas:

- As a Microsoft product, the FRx system must run on Microsoft's SQL Server in a Windows NT environment. It is not compatible with the Laboratory's enterprise software standard platform, Oracle and Unix.

- The FRx software is proprietary and cannot be modified.

- Though the FRx product has a strong Excel-like look and feel, it does not really have all of Excel's functionality.

- The end-users in the Sectors (Divisions) do not use FRx to develop their own planning budgets.

- Providing data to PNNL's central Budget Office's FRx system is probably just an onerous data entry call for the end-users in the Sectors (Divisions).

- FRx seems to have very little integration with PNNL's enterprise systems.

- In its current implementation, FRx does not have any ad-hoc query capability.

Overall, the FRx system appears to be a solid system that provides the desired benefits for PNNL. However, during the teleconference we became aware of the fact that the FRx system provides a limited scope of functionality as compared to Berkeley Lab's requirements, and is implemented at PNNL only for the indirect budgeting function, and not the direct budgeting function. FRx appears to be a useful tool for institutional planning, but is not used at PNNL for most of the local planning needs. FRx also lacks the funds control functionality that LBNL seeks. Because the FRx software is proprietary, it would be impossible to customize it or extend it to meet all of LBNL's needs.

Brookhaven National Laboratory's
Budget and Forecasting system

Overview

On March 19, 2003, Paul Geiger of Brookhaven National Laboratory (BNL) made a presentation on their in-house developed Budget and Forecasting System to the DOE's Financial Management Systems Information Council. As a result of this system's success and effectiveness as demonstrated in this presentation, the LBNL Budget System Assessment team contacted Brookhaven to learn more.

On June 10, 2004, members of the LBNL Budget System Assessment Team and Brookhaven's Budget Office met via videoteleconference to discuss and view a demonstration of the Brookhaven system.   The Brookhaven participants included Paul Geiger, Dick Melucci, Antionette Russo, and Srini Iyer.

Brookhaven National Laboratory uses PeopleSoft for most of its enterprise applications, including the financial, procurement, and human resources systems.

Roughly 75% of Brookhaven's work is DOE, and 25% Work For Others. In their financial system environment, Brookhaven uses the Project and Activity structure as supplied by the PeopleSoft Projects application. A typical project might have 20 to 30 activities. Brookhaven modeled their Object Classes through the use of PeopleSoft's Resource Type and Resource Category fields. Brookhaven does not use the PeopleSoft Grants Management application.

As they were implementing their enterprise financial systems, they came to realize that PeopleSoft's out-of-the-box budget application was not going to satisfy Brookhaven's business needs. They made a business decision to use PeopleSoft's development tool set, PeopleTools, to write their own budget system and integrate it with their other PeopleSoft financial systems.

The scope of Brookhaven's Budget and Forecasting system includes funds distribution from the Budget Office to the Laboratory, budget submittal, management of current year cost plans, and a three-year window for the DOE UniCall.

Implementation

The implementation project was conducted initially by a team of six analysts, including two from the Budget Office, two budget analysts from the field, and two information systems staff. They felt that it was critical that an internal team take ownership. Two participants, Ed Byrne and Greg Mack, worked on the system on a full time basis. Four others, Srini Iyer, Antoinette Russo, Dick Melucci, and Paul Geiger, worked part-time on the implementation and had their "regular" jobs also. They also conducted user training, developed a Web-based training module, and formed a user group.

From a technical point of view, Brookhaven's budget system was built as a distinct application, integrated within the PeopleSoft environment. The Budget and Forecasting

system's data is stored in separate tables, not in the General Ledger system or any of the other delivered PeopleSoft tables.

They had good support from senior management. There were some reluctant users, but senior management encouraged them to adopt the system. The acceptance period was about 2 years.

Planning Functionality

The system supports current year and fiscal year cost plans and budget submittals. Project-level cost plans are typically initiated through the creation of personnel forecasts, in which each staff member's labor FTE's are planned and assigned to projects. Costs are based on salary information in the HR system. It is required that every employee have labor assignments in the system. The system supports planning by labor hours in addition to FTE's.

In the first year of the implementation, all of the employees' labor assignments had to be entered into the system. However, since then, it has been possible to carry these forward from year to year and modify them as needed.

Labor distribution at Brookhaven is based on the actual salaries of the individuals, as opposed to standard rates.

Labor plans are created and managed on a monthly basis. However, for non-labor costs, the cost planning function is supported on an annualized basis.

We asked, if the system only handles cost plans on an annualized basis, how people handle month-by-month forecasting. The Brookhaven participants replied that this is not so important at BNL, except in the Accelerator Department, which has a $100M annual budget. That Department does its own monthly tracking.

The system has the capability to automatically "fill up" a budget with the correct amount of direct funding such that the calculated burdens exactly use up the unallocated amount. There is also a category called "Reserve" for parking unallocated funds.

The system does not provide the ability to track spending plans by individual purchase order.

The system has a workflow process in which a Department releases a budget to the Budget Office, and the Budget Office must approve it. The frequency of this activity can vary. It can be quarterly, monthly, etc.

At the beginning of the year, the Budget Office does a "quality assurance" check on each of their 20 or so Divisions. If a Division's budgets look good, they can globally approve all of that Division's budgets.

For overhead and burden calculations, the General Ledger system's allocation rates and rules are copied to the Budget system. The end-users can enter rates manually for out-years. These rates are encoded in various tree structures.

The system allows the Budget Office to perform generalized what-if analyses based on manipulating the Laboratory's rates, but the Departments do not have this capability. However, the Departments can change their own organization burden rates.

End-users can select a forecasting function that, on the push of a button, will replace budget numbers with actual cost numbers for selected periods. However, this functionality is only supported for labor.

For the Budget Submission (UniCall), they have developed Queries to gather up the information required for the second pages of the FWP's. They can send the entire FWP electronically, as a PDF, or manually. The Brookhaven participants noted that the UniCall preparation time has been cut by at least 50% since the system went into production.

The system provides data security to ensure that the right people see the right things.

Brookhaven is currently investigating how to deal with the sponsored research "grant year", but currently the system tracks only by fiscal year.

The system supports only one cost plan per project. They cannot keep more than one scenario for a project. However, old cost plans are available as archival reports.

Funds Control Capabilities

The Brookhaven system supports an elaborate methodology, called the "funds distribution module", for receiving funding at the Laboratory level and distributing it downward through the Departments.

To handle the DOE Contract Mod, the Chicago office sends Brookhaven a Mod spreadsheet each month. It takes about 15 minutes to convert this to a flat file. They then pump this file into the "funds distribution" module, and add in the Department Codes. This operation is based on the Budget Office's knowledge of which Departments are receiving which funding. This import utility was written using PeopleTools and SQR. The Departments, in turn, can assign the funding to projects and release funds to the cost plan.

Work for Others funding is entered via spreadsheet.

The combination of the planning functionality and the funds control functionality in Brookhaven's Budget and Forecasting system provides a complete handshake between the top-down funding and the bottom-up project planning.

Reporting Capabilities

The system has several reports that were developed in SQR, including a cost plan and various summary reports.

They use a PeopleSoft construct called "scope" for automatically e-mailing reports to people on a monthly basis.

Each report in the system can also be directed to Excel via the selection of a radio button.

Deployment and Management

Brookhaven uses their Budget and Forecasting system Lab-wide for DOE, Work for Others, and indirect projects.

Various PeopleSoft trees that support the system are controlled strictly in the Budget Office. These include the Allocation and the Ownership trees, which control burdens; and the Category tree, which control the Resource Categories in connection with burdening. The Departments develop their own Work Breakdown Structure trees.

For each B&R Category, there is a list of projects below it.

Similarly, each Department owns a list of projects. Projects have Activities, which are unique to a Project and completely subordinate. Activities cannot have Sub-Activities. There are about 3500 Projects and 70,000 Activities.

The users of the Budget and Forecasting system are mostly budget analysts. The PI's make limited use of the reporting capabilities.

We asked what the biggest complaints were that the Brookhaven Budget Office heard from the end-users. They candidly replied that, two years ago, there were some serious complaints. Today, the system is positively received, and there are few complaints now. User groups have been very helpful for gaining end-user acceptance. Initially, these groups met weekly to discuss functionality and reporting. They now meet every two months.

To our question regarding the level of staffing that is needed to maintain the system, the Brookhaven participants indicated that they don't really have enough resources to do this properly. They currently have less than 1.0 IT FTE (Srini). Art Russo manages the allocations.

We asked what they wished they had done differently. The Brookhaven participants responded that they didn't feel that they had taken enough time. They encountered a big time crunch, which was very stressful. The system wasn't really finished when it went live.

Budget System Assessment Team Observations

We found the following aspects of the Brookhaven system to be favorable:

- The system has broader functionality than any of the other systems that we reviewed, because of its capability in the funds control area.

- The system's funds control module appears to have good functionality and controls.

- It was not entirely clear how much Brookhaven's system has eliminated the use of shadow systems, but the system has achieved good coverage, including DOE, Work for Others, and overhead projects.

- The system provides good institutional planning functionality, equivalent to having a current Spend Forecast (Management Report) at all times.

- The system has a strong labor planning and forecasting orientation.

- The system appears to be well organized, and has an inviting feel.

However, the Brookhaven system is a less favorable fit to Berkeley Lab's needs in the following areas:

- The system only handles plans for non-labor expenses on an annualized basis.

- The system does not support grant year budgeting.

- The system appears to have a limited ability to capture multiple scenarios.

Overall, the system appears to be very sophisticated. The funds control component looks very good, and appears to be an excellent fit to LBNL's needs in the funds control area. However, the system does not have all of the flexibility that the Divisions need to support their project and proposal planning.

The fact that the system is written in PeopleTools makes it very attractive from a technology point of view. This would provide the following advantages:

- The system could be easily integrated with Berkeley Lab's other PeopleSoft enterprise applications.

- The functionality of the system could easily be customized and extended to meet Berkeley Lab's needs, due to the powerful and flexible nature of the PeopleTools development environment.

- Berkeley Lab's Information Systems and Services department already has a staff of knowledgeable PeopleTools programmers, so technical training costs would be greatly reduced.

We noted that, because Brookhaven uses a different project tree structure than Berkeley Lab, it would be necessary to rewrite large sections of the budget system's functionality to fit Berkeley. However, overall, the system seems to handle more than 50% of Berkeley Lab's desired functionality.

We also observed that Brookhaven's business model for budgeting involves a more centralized model than that which we use here at Berkeley. Currently our culture at Berkeley Lab is different. However, a more centralized business model for budgeting would certainly be possible here.

Commercial Software

Both the 1995 financial system RFP and the 1999 budget system RFP efforts were aimed at identifying a commercial software solution that would satisfy Berkeley Lab's requirements.

A major objective of the 1995 RFP was the selection of an integrated financial system suite, and PeopleSoft was selected from a series of vendors as having the best overall proposal and value. However, it was later determined that the PeopleSoft Budget application was not capable of meeting the Laboratory's needs.

The requirements set forth in the 1999 RFP removed the restriction that the budget system be provided by the same vendor as the other financial systems (i.e., PeopleSoft), and it was hoped that this fresh approach would lead to a successful "best-of-breed" solution. Similar to the 1995 process, the 1999 RFP process was a highly structured, formal undertaking that methodically reviewed several vendors' proposals. The search was narrowed to two finalists, each of which was invited to present scripted demonstrations of their products' capabilities for managing the complexities of Berkeley Lab's budgeting. The selection committee judged one of the two finalists to be superior to the other, but concluded that neither vendor was able to meet our basic requirements fully. In addition, the leading vendor's pricing proposal specified an initial license fee of approximately $450,000, not including annual maintenance. Faced with this expense, the selection committee did not recommend purchasing the product.

Because two separate efforts have been made in the past nine years to identify a successful commercial budget system for the Laboratory, neither of which yielded a successful solution, and because the best solution identified in 1999 carried a prohibitively expensive price tag, the Budget System Assessment team decided this time to focus initially on investigating the lower-cost alternatives that may be provided by other DOE Laboratories, as described in the previous pages, rather than make a third foray into the marketplace to identify a commercial software solution. This does not exclude the possibility that, after exploring the other alternatives available to us, we may still determine that identifying and implementing a commercial software product may be the best solution for Berkeley Lab in 2004, but we have set that option aside as a lower priority.

In-House Development

For many years a fundamental information systems strategy at the Laboratory has been to acquire and implement commercially available software products, whenever possible, rather than develop systems in-house. Exceptions to this policy may arise when no existing software is available to satisfy Berkeley Lab's unique needs in a given business area.

As an outgrowth of the 1999 budget system selection committee's determination not to recommend any of the proposed commercial systems, that committee recommended that the Laboratory proceed to build a system in-house, using development tools we already owned and acquiring additional development tools as needed. This led to the development of the Janus system. Though Janus is a powerful system and has had a certain degree of success at the Laboratory, it is generally agreed that there are many desired areas of functionality that Janus, even after the investment of significant development expense, does not provide.

In view of the Laboratory's strategic position encouraging the examination of available commercial products before embarking on in-house development for a given application, and noting the expense that has already been incurred for the development of the Janus system, the Budget System Assessment team has determined the in-house development of a new budget system to be a lower priority option, to be examined only if none of the other approaches reveals a feasible solution.
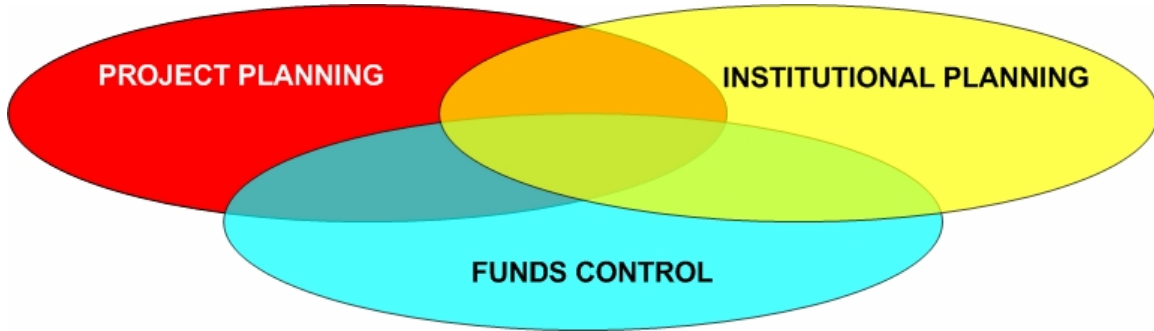
High-Level Fit-Gap Analysis

Figure 3. Major Functional Areas of Budgeting at LBNL.

Figure 3, above, is a conceptual diagram showing the major functional areas contained in the scope of the Laboratory's overall budgeting requirements.

The red "Project Planning" ellipse refers to the activities related to the development and management of proposals, spending plans, and forecasts at the local level, for individual projects or small collections of related projects within a department or business area. As the name suggests, the yellow "Institutional Planning" ellipse refers to the development and management of plans and forecasts at the institutional level. These two ellipses are shown as overlapping, which represents the fact that institutional plans can be derived from the aggregation of individual project plans. It also expresses the possibility that high-level planning can be done at other aggregated levels, such as for large programs or Divisions. The Operations Division's Activity Based Budgeting (ABB) process is an example of a process that incorporates elements of both local and institutional planning.

The blue "Funds Control" ellipse is no less important than the two "Planning" ellipses, and is shown as overlapping both of them. This depicts the interrelationships between funding and planning. Project proposals, if approved, give rise to the authorization of funding by the Department of Energy and the Laboratory's sponsors. In turn, the level of funding that is available for a project establishes the framework inside which its spending must be planned and managed.

Figure 4 represents a summarized fit-gap analysis, showing the degree to which the various system solutions that we considered provide the Laboratory's desired functionality as described in the earlier sections of this report.

The bar shown at the top of Figure 4 represents the full breadth of functionality as shown in the three ellipses in Figure 3. In Figure 4, the two planning components are shown in blue and green as opposite ends of a single spectrum, covering the range from planning at the local level to planning at the institutional level. The funds control component is shown in yellow on the right side.
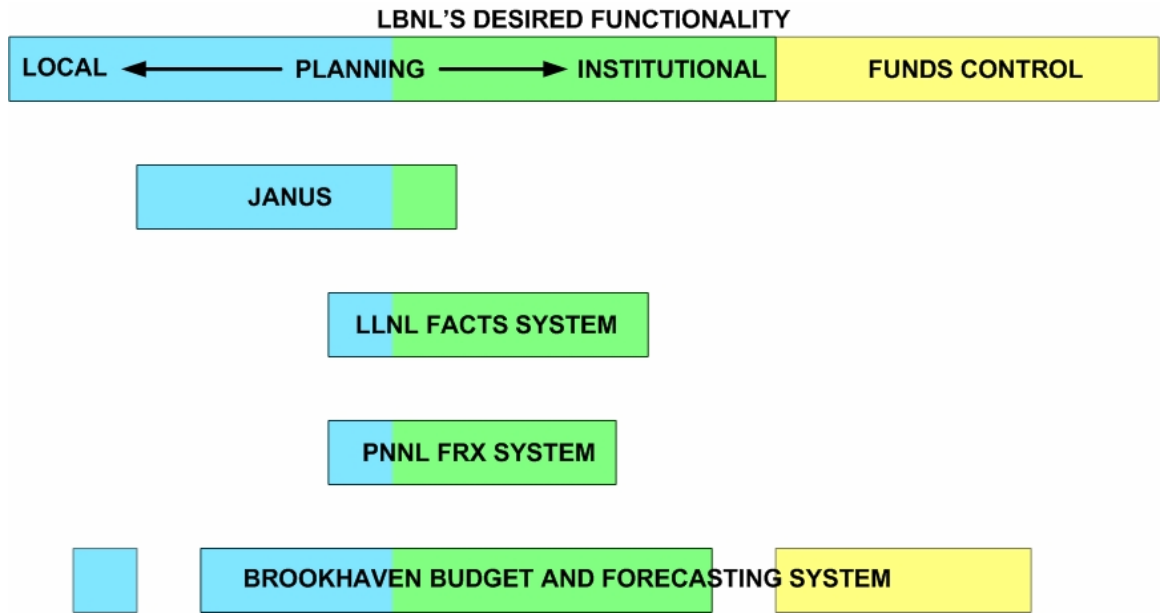
Figure 4. Summarized Fit-Gap Analysis.

To assess the Laboratory's current state and to establish a baseline for comparison, we considered the degree of fit between the Janus system and the desired functionality set. This is shown as the second bar in Figure 4. Janus' greatest strength is its local planning functionality and capabilities. As we examined the other Laboratories' systems, we came to realize that LBNL's Janus system is more advanced than most or all of them in terms of local project planning capability. Janus was specifically developed to address the needs of LBNL's Divisions for the development of their proposal and project plans, and this orientation is reflected by its depth of functionality in comparison with these other systems. Still, we recognize that Janus is considered to fall short in many areas, and, as a result, Janus is used for only a portion of LBNL's local planning needs. For these reasons, the blue portion of the "Janus" bar is shown as extending only about two-thirds of the full distance as represented by the "desired functionality" bar.

Janus contains facilities for aggregating planning data together into a larger planning picture. This functionality is currently used for the Operations Division's ABB process. However, because Janus is only partially subscribed to in other areas of the Laboratory, it is not currently feasible to use Janus for aggregating planning information at the institutional level. For these reasons, we show a small green segment for Janus, indicating its generally unrealized capabilities to provide institutional planning functionality.

Janus contains no funds control functionality, as shown in Figure 4.

In our meeting with Lawrence Livermore National Laboratory, we learned that their Geac MPC (FACTS) system is a solid system that provides strong institutional planning features and functionality for Livermore's central Budget Office. The institutional planning capabilities of FACTS far outweigh the institutional planning capabilities of LBNL's Janus system, both in conception and in realization. However, we also concluded that FACTS, "out of the box", would not address all of LBNL's desired functionality. For these reasons, the green bar for

FACTS in Figure 4 is shown as covering most, but not all, of the institutional planning functionality spectrum.

However, we learned that most detailed, bottom-up planning by Livermore's Divisions is done in Excel or other locally built and maintained systems, rather than in FACTS. Overall, the FACTS system has an institutional planning orientation rather than a local planning orientation. This is represented by the relatively short blue "local planning" bar in Figure 4.

The funds control processes at Livermore are supported by other systems at Livermore besides FACTS, including Excel spreadsheets. The FACTS system contains little or none of the funds control functionality that LBNL seeks.

Our teleconference with Pacific Northwest National Laboratory revealed that their Microsoft FRx system is similar in use and scope to LLNL's FACTS system. Its orientation toward planning functionality is primarily institutional rather than local. PNNL's departmental end-users do not use FRx to develop their own planning budgets. In addition, as implemented, PNNL uses the FRx system to address only the planning of their indirect activities, and not their direct-funded activities. For this reason, Figure 4 shows the FRx system to have a somewhat shorter reach than the FACTS system in the institutional planning area. FRx also lacks the funds control functionality that LBNL seeks.

The information we obtained from Brookhaven National Laboratory shows that their Budget and Forecasting System has a much more complete fit to LBNL's desired functionality, as shown in Figure 4. One fact about the Brookhaven system that clearly sets it apart from the others is that it contains a funds control component. The Brookhaven system's funds control module appears to have good functionality and controls, and appears to be an excellent fit to LBNL's needs in the funds control area.

The demonstration showed that the Brookhaven system provides good institutional planning functionality, and we observed that, if implemented here at LBNL, it could provide functionality equivalent to having a dynamically updated, current Spend Forecast (Management Report) at all times.

In the local planning area, it was not entirely clear how much Brookhaven's system has eliminated the use of departmental shadow systems, but the system has achieved good coverage, including DOE, Work for Others, and overhead projects. We also noted that It has a strong labor planning and forecasting orientation, and provides capabilities in tis area beyond those that are available in LBNL's Janus system. We did note, however, that the Brookhaven system lacks some of the flexibility that the Divisions need to support their project and proposal planning. For example, the Brookhaven system only handles plans for non-labor expenses on an annualized basis, it does not support grant year budgeting, and it appears to have a limited ability to capture multiple scenarios. For these reasons, we show in Figure 4 that the Brookhaven system has a degree of fit to LBNL's desired functionality that is similar in scope to that of Janus, but it has strengths in some areas that extend it beyond the capabilities of Janus, yet gaps in some of the areas of functionality that Janus provides.

Recommendation

Based on the characteristics and functionality of the system solutions that we identified and studied, **the Brookhaven National Laboratory's People Tools based Budget and Forecasting System most closely fits the Budget System requirement as defined at LBNL. We recommend pursuing acquisition of the system in order to perform a more detailed fit gap and system analysis.** This recommendation is based on the following:

The Brookhaven System provides the best fit for LBNL's needs. As Figure 4 graphically demonstrates, the Brookhaven system provides by far the most capability in the three major functionality areas considered. The Brookhaven system's capabilities in the local planning area and its acceptance and usage in Brookhaven's Division end-user community are far more extensive than those in either the FACTS or FRx system. The Brookhaven system's institutional planning capabilities are at least as strong as those in the other two systems. Third, the Brookhaven system is the only system of the three that could provide the desired funds control functionality for LBNL.

The Brookhaven system encompasses funds control and institutional planning functionalities. These are functional areas of automation that are currently lacking in LBNL's Janus system, and are much needed at LBNL.

The Brookhaven system can be easily integrated with our PeopleSoft FMS. This is because the development tools that were used for the creation of the Brookhaven system, PeopleTools, are the same as those that PeopleSoft uses to develop its commercial applications. As a result, it would be possible to host the system inside the same database instance as that in which all of LBNL's other financial management systems (FMS) are hosted. All of the data in FMS would be visible and available, dynamically and in real time, to the new budget system. Under appropriate controls, an end-user would be able to gain access to the new budget system as easily as if it were just another module of FMS.

The Brookhaven system will have a familiar look and feel. Because it would be deployed through the same tool set and in the same database instance as all of FMS, the system will have all of the same on-screen conventions, usability features, and standard formatting as FMS. All of the system utilities, such as the Process Scheduler, the Process Monitor, the system security, effective date conventions, and reporting tools such as Query and nVision, would be exactly the same as those with which the end-users are already familiar. There would be no need for training to get people up to speed on a new, unfamiliar operational environment.

The Brookhaven system can be managed by easily supportable technology. Because LBNL uses PeopleSoft's enterprise software for most of its major institutional systems, we already have a staff that is well trained on the PeopleTools technology. There would be no need to train our technical staff on a brand-new set of application support tools. Instead, adopting the Brookhaven system would leverage our existing investment in PeopleSoft technology, and thereby reduce the cost of ownership.

The Brookhaven system will not require any one-time or ongoing license fees. If we purchased a commercial software product for budgeting, we could reasonably expect the purchase price to be well over $100,000. As noted earlier, the purchase price of the leading vendor solution that was proposed in our 1999 RFP process was $450,000. In addition,

commercial software typically requires an ongoing annual outlay of 20% of the initial purchase price, adjusted each year for inflation, for maintenance. In contrast, since the Brookhaven system is an in-house software application developed at another DOE National Laboratory, we would not have to pay any initial license fees or ongoing annual maintenance fees for the software.

Implementation Strategy

Current LBNL System Configuration

Figure 5, below, is a representation of Lawrence Berkeley National Laboratory's current budget system environment.

The Laboratory's PeopleSoft financial management system suite (FMS), encompassing the General Ledger, Project Costing, Billing, Accounts Receivable, Purchasing, eProcurement, Accounts Payable, and Grants Management applications, is shown as a large rectangle at the lower left. The Grants Management system, identified by its commonly used acronym of RAPID, is shown as a component of FMS. The Laboratory's Janus system, developed in-house and used by many of the Divisions for the preparation and tracking of proposal and project plans, is shown to the right of FMS. Through database links, Janus has access to referential data in FMS, such as the table of valid project ID's, but no transactional data. Information in FMS and Janus is combined and made available to the entire Laboratory community through the Berkeley Laboratory Information System (BLIS), LBNL's enterprise data warehouse, and the older data warehouse system, IRIS. (This is represented by the lower-case "i" information icon in Figure 5.)

The Program Management and Tracking System, PMTS, is currently used by the Laboratory to collect project proposal data for submission to the department of Energy's
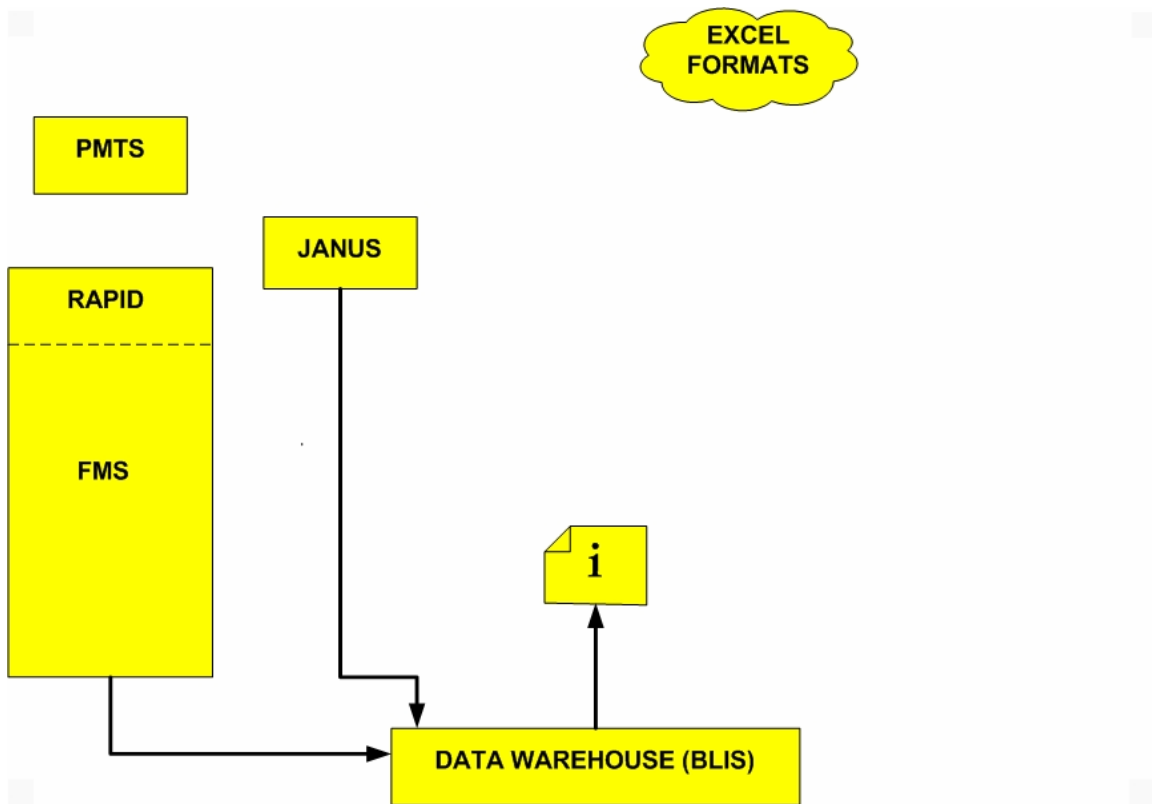

Figure 5. Current LBNL System Configuration.

Unicall process. This system was imported from Oak Ridge National Laboratory in 1999. It is a standalone system and has no interfaces with the Laboratory's other institutional systems.

As was discussed extensively in the interviews we conducted with the Laboratory's Divisions, Janus is used for only a portion, perhaps 40%, of the proposal and project planning and tracking that is currently done at LBNL. This is for a variety of reasons. In most of the cases in which a Division does not use Janus, they use a locally developed and supported Excel spreadsheet methodology instead. Across the Laboratory's Divisions, these spreadsheets are very diverse in style and complexity, and, in many cases, are tailored to the perceived special and unique business needs in each area. Some of these Excel spreadsheets, such as EETD's Proposal Budget Tool, are quite sophisticated. The Life Sciences Division used another Microsoft tool, Access, to develop their elaborate Proposals of Demand (POD) system. All of these systems are represented by the cloud-shaped symbol at the upper right, generically labeled, "Excel Formats". Though these systems are quite diverse in nature, one thing they all have in common is that they are all disconnected from the Laboratory's institutional financial systems.

Implementation of ePME Phase I

Beginning in 2005, the DOE will require all of its contractor organizations, including LBNL, to submit its funding proposals to the Department of Energy's new Corporate R&D Portfolio Management Environment (ePME). LBNL's Budget Office will need an automated method for making these proposal submissions in order to remain compliant with the DOE's requirements.

(The ePME initiative is a part of the DOE's overall I-MANAGE system modernization strategy. The DOE's ePME system is currently undergoing its Phase I rollout. Additional phases will be implemented in future years.)

The proposed new ePME methodology will greatly reduce the amount of paper required for the budget submission, and it will streamline the exchange and retrieval of this information. With the development of a new system, LBNL will be able to eliminate the obsolete and risky PMTS system.

LBNL's new ePME data collection system will be a Web-based system written in PeopleSoft 8 technology. This will provide a standard look-and-feel, and will facilitate future integration with the Laboratory's other financial systems.

In the June 2005 time frame, the new system will provide a data repository and data entry functionality to enable the Division staffs to prepare proposal submissions. Prior year data will be converted from the PMTS system to facilitate the preparation of proposal information. In turn, the system will provide the capability to translate LBNL proposal data into the required DOE XML format, to facilitate the mandated data transmission to the DOE. Institutional reporting, summarization, and crosscut functionality will be provided for internal LBNL information management. This will facilitate the automated transmission of off-cycle proposals in June, and will support the entire spring 2006 budget submission.
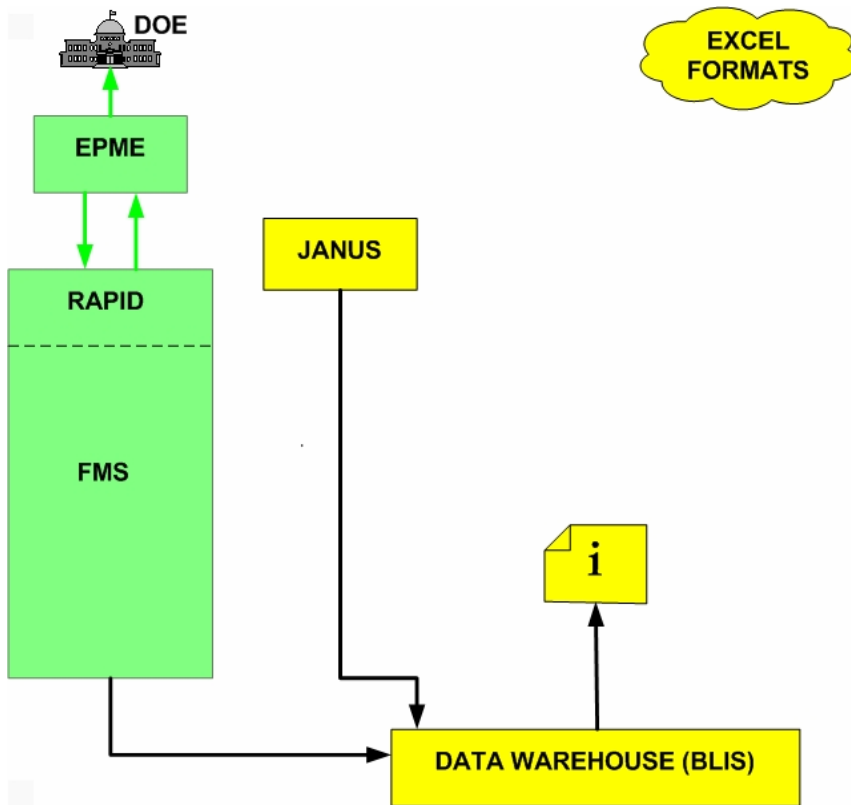
Figure 6. Implementation of ePME Phase I.

As shown in Figure 6, the development of the new ePME system will enable the establishment of appropriate integration points with the RAPID system. Current plans are to deploy the new ePME system using PeopleTools technology. Following the completion of the PeopleSoft FMS version 8.8 upgrade project, the ePME database will be merged with the other financial applications in FMS, which will enable the exploration of opportunities to further integrate ePME with RAPID.

Implementation of Funds Control Functionality

There is a general consensus across the Laboratory that the establishment of an integrated Funds Control system is one of the Laboratory's greatest needs, and that the lack of such a system puts the Laboratory at risk.

Funds Control is a critical business function at LBNL, but, as discussed earlier, the Laboratory does not have a centralized, integrated institutional system for managing, distributing, and controlling funding, and for analyzing the relationship of funding to project budgeting and actual costs. Implementation of an integrated Funds Control system would reduce the risk of noncompliance with applicable laws. In addition, it would greatly reduce the amount of duplicative funding data entry that is being done; it would help ensure that adequate controls are implemented; it would make critical institutional planning and management information available electronically and in a timely fashion; it would provide advanced analytical tools for

management decision support; and it would reduce or eliminate the need for duplicative departmental "shadow" systems.

For these reasons, we recommend that the Funds Control component of the Brookhaven budget system be implemented as soon as possible, as this will provide the highest short-term payoff for Berkeley Lab.

Figure 7 is a schematic diagram showing how, in its initial implementation, the Funds Control component of the Brookhaven system can be integrated with existing and new reporting tools to create a complete and unified resource for budgetary information.
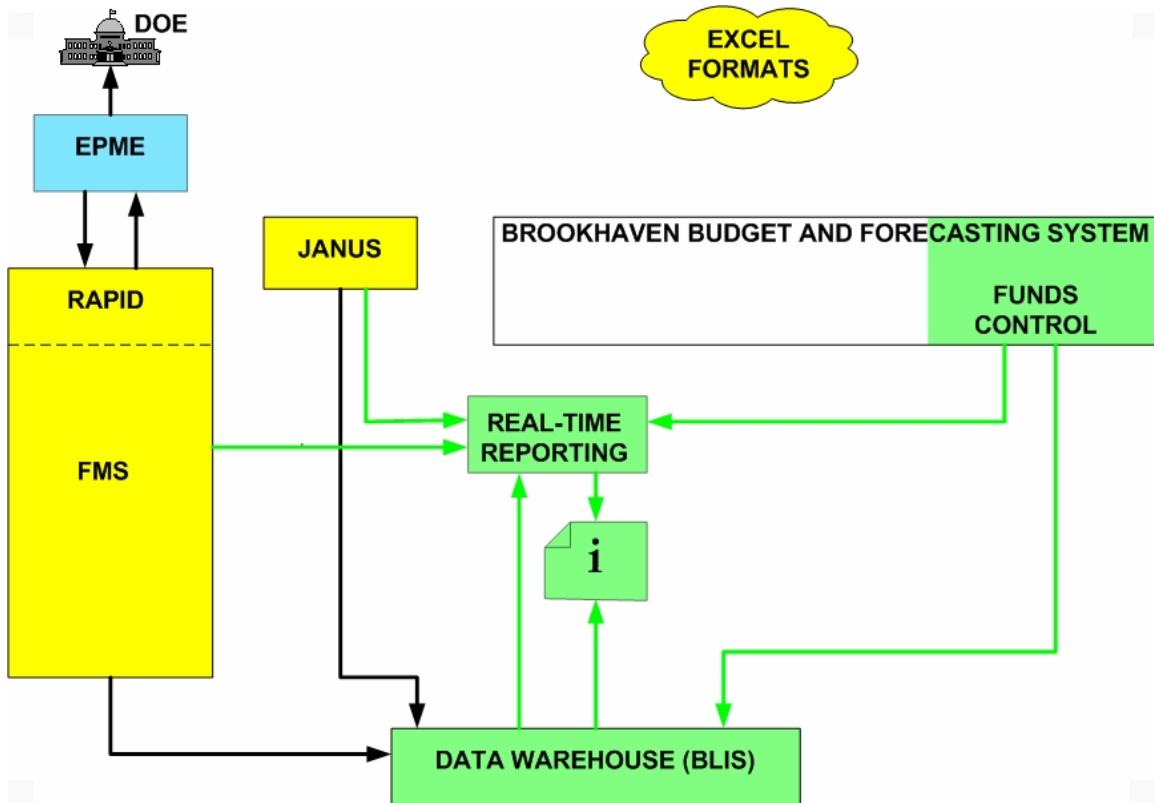

Figure 7. Implementation of Funds Control Functionality.

The Berkeley Laboratory Information Systems (BLIS) Enterprise Data Warehouse project is leading the way in the deployment of new, advanced reporting and analytical tools, both for the presentation of pre-formatted reports and information, as well as for providing the capability for end-users to derive ad-hoc reports and information extracts to serve their own business needs. These tools, such as Cognos ReportNet, are fully licensed for use across the Laboratory, and, as such, are available for use in connection with the new budget system. Used both for enterprise applications as well as in the BLIS Data Warehouse, these powerful reporting tools will soon become the Berkeley Lab standards.

Figure 7 shows two possible avenues through which reporting can be made available. The first of these is through the Data Warehouse, offering access to point-in-time extracts of consolidated institutional information from an external repository. The second will be

available directly from the new budget system, offering real-time reporting of operational information directly from the enterprise systems themselves, including FMS, Janus, and the new Funds Control System. Though we see a distinction between institutional and operational information, we will seek to make this distinction as transparent as possible (as symbolized by the use of a single "information" icon in the diagram), and to make the operational information easily accessible from within the budget system.

The very existence of Funds Control information, which has never before been available in Berkeley Lab's institutional systems, will create a tremendous new opportunity to provide this information in context with the planning information from Janus and the actual cost information from FMS. As a result, the following comparisons will become possible for the first time:

Planned Funding vs. Actual Funding. Is the funding present? What planned funding has not come in yet?

Planned Funding vs. Planned Spending.   Is our plan consistent with our expected contractual obligations?

Actual Funding vs. Planned Spending.   Is our plan consistent with our actual contractual obligations? Are we on a collision course with a cost overrun?

Actual Funding vs. Actual Costs. Have we exceeded our spending authority? Are we breaking the law?

We suspect that one of the reasons for the low adoption rate of the Janus system is that, without the availability of Funds Control information, many of the important questions in connection with our spending plans simply cannot be answered today based on our available institutional information. It is possible that the availability of institutional Funds Control information may, by itself, lead to an increased adoption rate of Janus because of this added value.

Implementation of Local Planning Functionality

After the establishment of a Funds Control capability, we then propose the implementation of the remaining functional components of the Brookhaven system, beginning with its Local Planning functionality.

We note that, though the Brookhaven system's Funds Control and Institutional Planning components can potentially fill needs that are completely lacking at Berkeley Lab, the incremental value of the Brookhaven system's Local Planning component for transforming Berkeley Lab's budgeting systems is lower. In our evaluation of the Brookhaven system, and in the high-level fit-gap analysis discussed earlier in this report, we recognize that, while the Brookhaven system provides some strong features that are not provided by Berkeley Lab's Janus system, there are other areas of functionality in which Janus is clearly stronger than those provided by the Brookhaven system's Local Planning component.

This poses something of a dilemma because it is apparent that, at least in the Local Planning area, the Brookhaven system is not a "silver bullet" that provides the answer to all of our needs. However, in our review of the other DOE budgeting systems, our surprising finding is

that none of the other Laboratories we investigated had developed a Local Planning system with anything near the sophistication and capabilities of Berkeley Lab's Janus system. For example, the Livermore team had initially thought they would be able to provide a system that their Divisions would use for their own local budget planning, but, during their FACTS implementation project, they reached the decision that that was not a realistic goal.

Given our current lack in the Funds Control and Institutional Planning areas of budgeting, and Janus' relative strength in the Local Planning area (which we realize is a debatable point), we do not feel "building a better Janus" is the most cost-effective direction in which to exclusively focus our attention. However, we envision the following strategy for providing improvements for Local Planning functionality at Berkeley Lab, as shown in Figure 8:
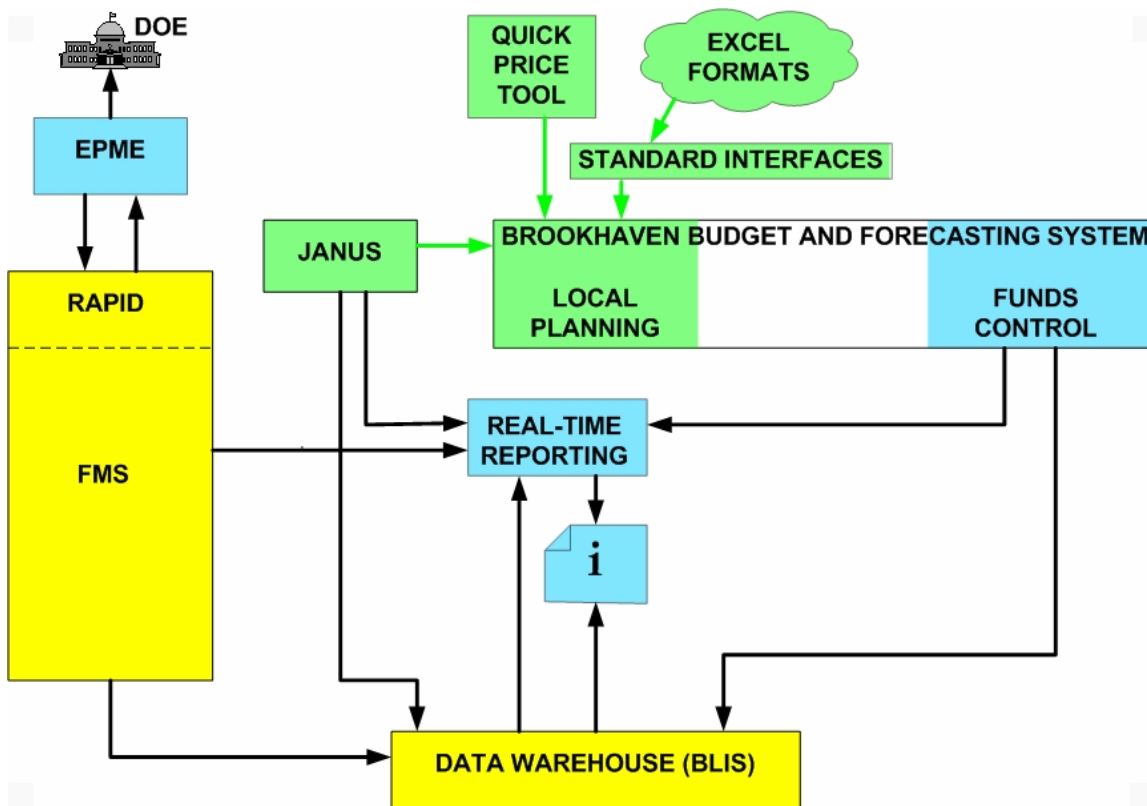

Figure 8. Implementation of Local Planning Functionality.

First and foremost, we plan to continue supporting Janus. We learned in our interviews that many of Janus' shortcomings are in the area of reporting. The availability of new, advanced reporting tools, along with the availability of Funds Control information and a new effort aimed at providing new reporting capabilities, will make Janus become increasingly useful to its current users, and may even attract new users.

Second, we recognize that many of the people at the Laboratory who choose not to use Janus for Local Planning do so because they prefer to use their Divisions' own sophisticated Microsoft Excel and Microsoft Access solutions for this purpose. The Divisions that use these

tools have painstakingly tailored them to efficiently meet their needs, and these Divisions' budget analysts favor their own tools over the more generically-oriented Janus system. While the common wisdom may be to try to eliminate these "shadow systems", we believe that these Division solutions provide a great deal of value to their local users, and that our experience with Janus shows that attempting to replace them with a one-size-fits-all institutional solution would likely not succeed. This returns to the question of the diminishing returns that could be expected from simply attempting to "build a better Janus".

So, rather, we propose to embrace these Division solutions and add value to them by providing a standard interface mechanism that will enable an external system to be interfaced to the Brookhaven system's Local Planning component. This interface will likely be developed through the use of a standard data interchange protocol such as XML, and, when deployed, will enable any external system that is compliant with a defined minimum standard of content and format to provide Local Planning information to the central system.

Many of the people we interviewed told us that they would prefer to use an Excel-based "Quick Price Tool" for developing proposals and plans, rather than what they view as the more formal and cumbersome Janus system. We propose providing such a tool, along with an interface to enable the interfacing of plans to the Brookhaven system's Local Planning component. This Quick Price tool would likely be based on the best commonly provided features that we observe in the various Division tools. The technical interfacing methodology would be equivalent in nature to that used for the standard interface mechanism that we propose for the Division tools.

Probably the greatest shortcoming of the Brookhaven system's Local Planning component, in comparison with Janus, is that it only handles plans for non-labor expenses on an annualized basis. However, some of the people we interviewed found that the Janus system is actually too complicated for their purposes, and these people may find the Brookhaven system's simplicity to be an attractive alternative. In contrast, the Brookhaven system's labor planning and forecasting component is stronger than that provided by Janus, and many people may find this capability to be highly attractive, and therefore may be drawn to the Brookhaven system's Local Planning component for that reason.

In any event, we see the Brookhaven system's Local Planning component as becoming a standard repository for all of the Laboratory's Local Planning information. By continuing to support Janus, embracing the Divisions' sophisticated planning solutions by providing a standard interface mechanism, and providing a new Quick Price Tool to augment the Brookhaven system's Local Planning functionality, the Berkeley Lab principal investigator or budget analyst will have four different methods from which to choose for developing a project plan or proposal. Through the interfaces provided, budget information from all of these sources will be aggregated into the Brookhaven system's Local Planning component.

Implementation of Institutional Planning Functionality

With the availability of multiple methodologies for developing local plans, the stage will be set for the implementation of the Brookhaven system's Institutional Planning functionality.
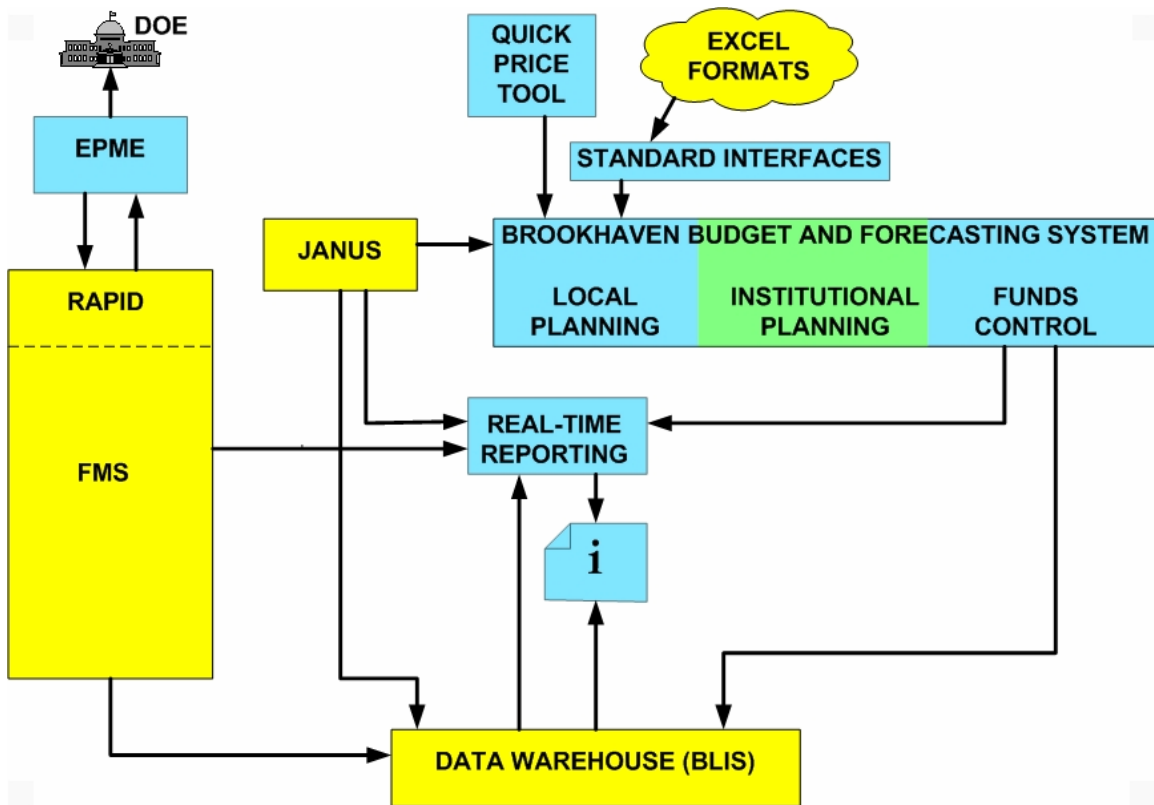
Figure 9. Implementation of Institutional Planning Functionality.

A common experience the Brookhaven, Livermore, and Pacific Northwest National Laboratories' Budget Offices shared during the deployments of their systems was the need to get 100% participation in the institutional planning process. To the extent that this represented a business process change, this was a painful process. Obviously there is great value in collecting planning information at the institutional level, but this type of activity necessarily involves coordination and participation. To varying degrees, the Division budget analysts at these Laboratories must respond to their institutional budget calls by reentering their own Local Planning information into their Institutional Planning system. In the initial rollouts of these Laboratories' systems, there was considerable resistance to this.

We hope to mitigate this problem by providing a wide variety of choices to enable Berkeley lab's Division staff to provide their Local Planning information for use in the institutional calls. If a principal investigator can use his or her system of choice, as we propose, this process will be less painful, and it will be easier to get the required 100% participation.

This will still be a challenging transformation. In connection with the technical rollout of the Brookhaven system's Institutional Planning component, we will also need to focus heavily on the corresponding changes to the business processes themselves.

Integrated Reporting Capabilities

Concurrent with the establishment of the Brookhaven system's Local Planning and Institutional Planning functionality, we will seek to maximize its usefulness by integrating all of this information into the advanced reporting and analytical framework provided both by the BLIS decision support system and by the new budget system's real-time operational reporting capabilities.

Many of the participants in our Division interviews emphasized their desire to maximize their ability to use the powerful tool set provided by Microsoft Excel. To facilitate this, we plan to enable the extraction of budget system information into Excel, through the development of a standard download methodology.

The addition of these reporting capabilities will enable the combined reporting of all of the information contained in the Brookhaven system, including Funds Control, Local Planning, and Institutional Planning, both in standard report formats and in Excel.
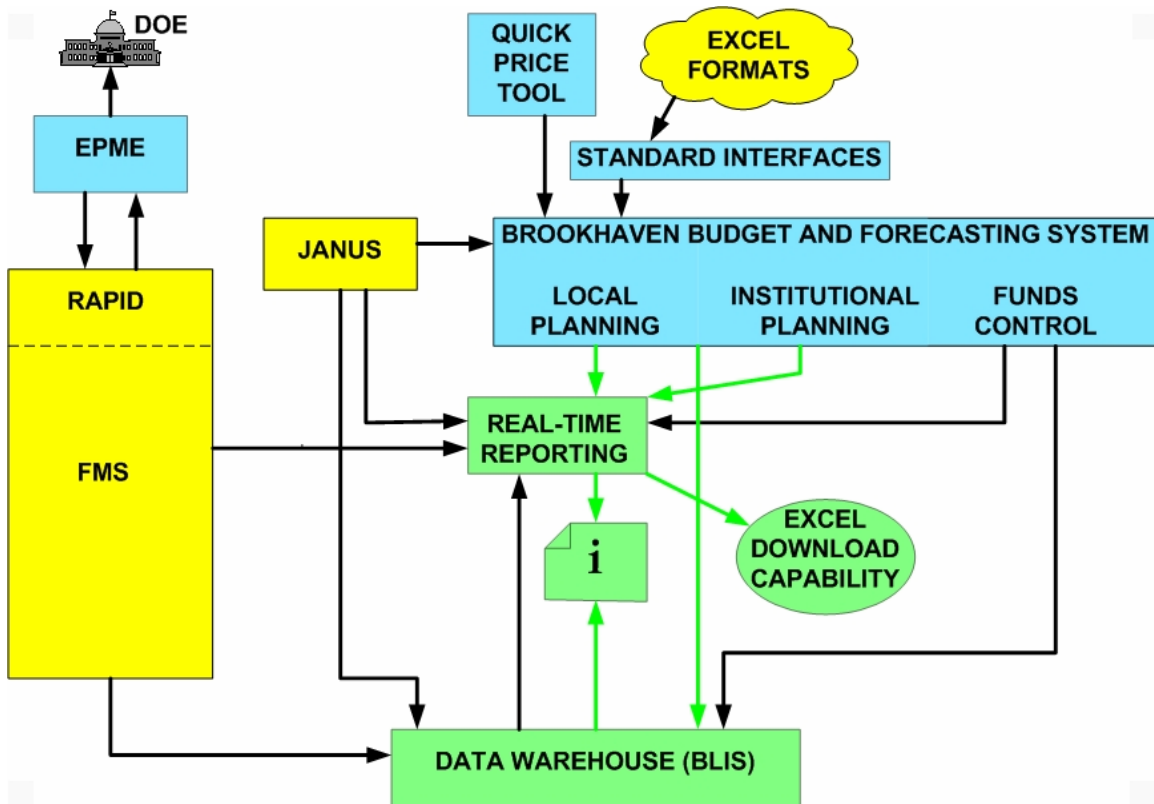

Figure 10. Integrated Reporting Capabilities.

Additional System Integration

An ongoing goal in our implementations of institutional information systems is the minimization of redundancy. There should be a need to enter institutional information into our systems only once, and this information should be automatically made available to other applications through database links or interfaces. In addition to avoiding the unnecessary work involved in duplicative data entry, the elimination of redundancy also reduces the probability of errors through miskeying, and avoids the possibility of getting two different answers from the same question.

For this purpose, we plan to seek every reasonable opportunity to share information between the Brookhaven budget system and our other institutional financial systems, including RAPID, FMS, and ePME. The green arrows in Figure 11 suggest bidirectional information flows. This will be a subject of further study, to determine which systems should logically be the authoritative initial points of entry for various data elements.
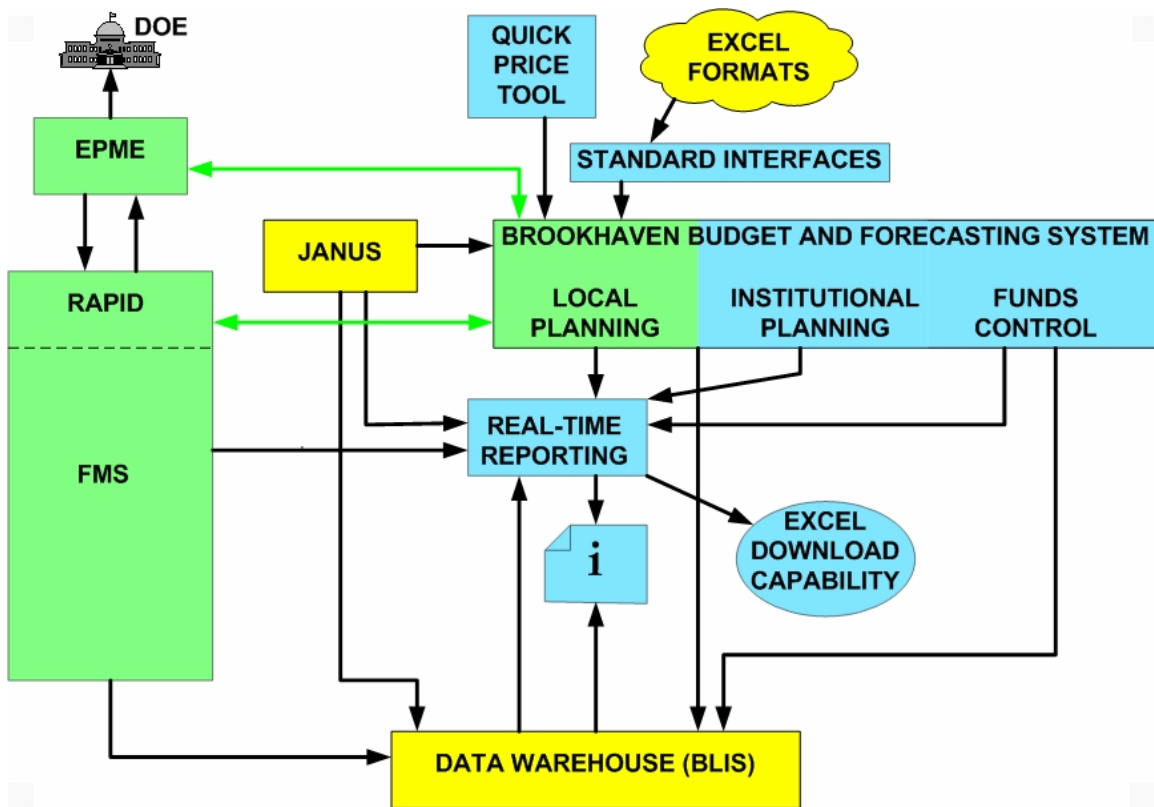

Figure 11. Additional System Integration.

Future Phases of ePME

In the coming years we will be asked by the DOE to comply with requirements connected with future phases of their ePME system rollout. As these requirements are made known to us, they will likely be mandatory, and so will become priorities for Berkeley Lab.

We look forward to the DOE's future capability to send funding information such as guidance, Work Authorization Statements, and contract modifications to Berkeley Lab in a standard, electronic format.
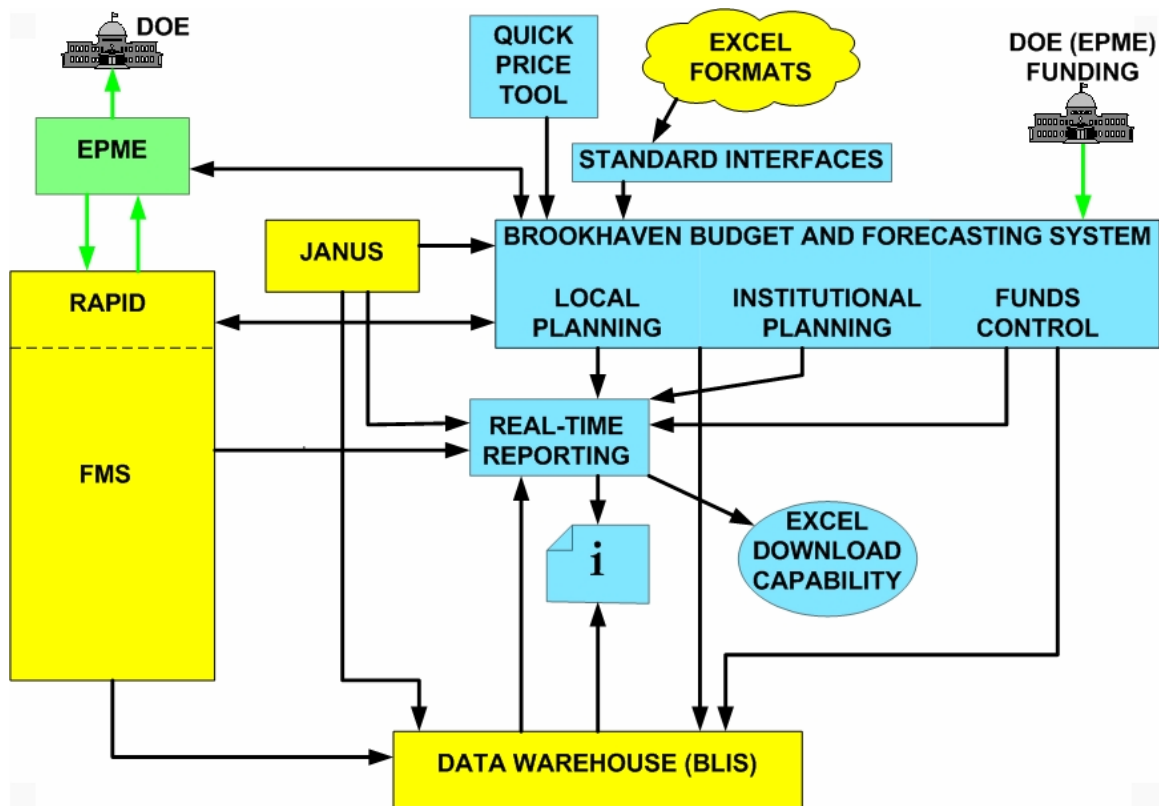
Figure 12. Future Phases of ePME.

Future Phase-Out of Janus

Eventually, perhaps after several years, we anticipate phasing out the Janus system, as it is written in a tool set that is unlike that used for any of our other institutional systems. As a result, with the passage of time, Janus will become increasingly difficult and costly to support.

With the introduction of the Local Planning component of the Brookhaven system, as well as the new Quick Price Tool and an interface mechanism to support the use of standard-compliant external data formats, we wonder what will ultimately happen to the Laboratory community's subscribership to Janus. We suspect that Janus may continue to have a loyal

group of adherents. It will be our goal, therefore, to extend the capabilities of the Brookhaven system's Local Planning component, so that it eventually contains all of Janus' important features and supplants Janus as the institutional system of choice. At that time, we anticipate that Janus' remaining users will be able to migrate to the Brookhaven Local Planning component without an excessive degree of difficulty. When this has been accomplished, we will be able to retire the Janus system.
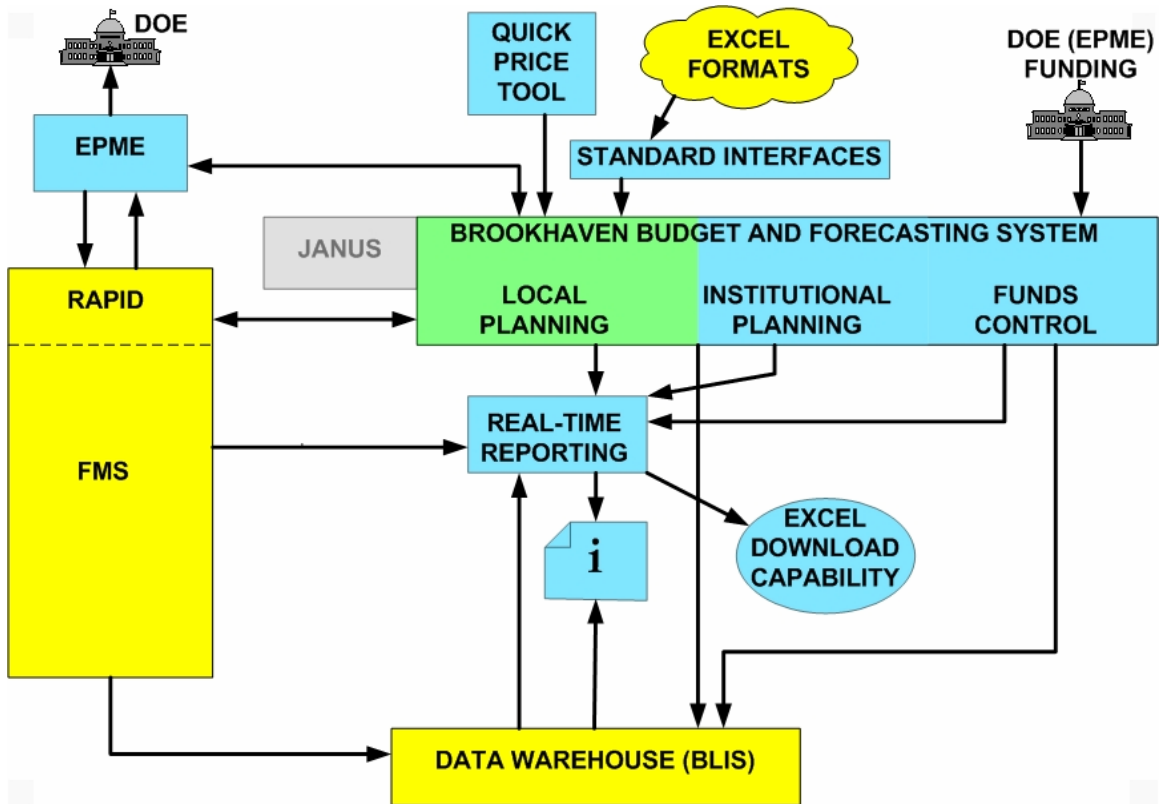

Figure 13. Future Phase-Out of Janus.

Return on Investment

The proposed budget system will provide value and return on investment in terms of the following general business objectives:

Improved, streamlined, cost-effective budgeting processes at LBNL. The proposed system involves the implementation of a broad variety of automation improvements to the Laboratory's budgeting processes. These will be integrated to the greatest degree possible so that institutional information needs to be input into the system only once. Ready availability of information and analytical tools, as well as the standardization of processes, where appropriate, will optimize the system's cost effectiveness.

Easily accessible, real-time, high quality budget information. The management of budget information in a central institutional repository will make it easily available to Laboratory staff. The same advanced reporting and analytical tools that are available in the Laboratory's BLIS data warehouse portal will be made available locally to the budget system for real-time access to information. High data quality will be facilitated by the elimination of redundant data entry, and referential data integrity will be maximized through the budget system's integration with other institutional systems.

Improved management reporting. Advanced reporting and analytical tools will provide budget information locally in the budget system as well as in the institutional data warehouse portal. The availability of funds control information and institutional planning information, both of which are not currently available in the Laboratory's enterprise systems, will dramatically increase the opportunities for comprehensive management reporting in the budget area.

Formalization of the way budgets are prepared and reported at the Laboratory. A centralized, institutional budget system will foster a standard community culture around budgeting, through the promotion of standard processes, procedures, and terminology. Complex budgeting concepts and constructs, many of which must be managed today in the local business units through systems and procedures of their own invention, will become institutionally visible and formalized through the application of the central system and its built-in controls.

Consistency in the Laboratory's budgeting practices among business units at the Laboratory. One of the main reasons why we do not currently have consistent budgeting practices across the Laboratory is that the information required to support these processes simply is not available, leading the Laboratory's business units to invent their own information solutions. The availability of powerful tools to meet these needs will provide a strong incentive for the Laboratory's business units to abandon many of their own duplicative, non-integrated, and labor-intensive practices.

Enhanced automation for the Laboratory's planning processes. The proposed solution involves the deployment of a variety of new capabilities to assist the Laboratory community with their local proposal and project planning processes, including the development of a new, Excel-based "Quick Price Tool", the implementation of a standard Excel interface methodology, and integration with the Janus system, as well as the Brookhaven system's own local planning functionality. The Brookhaven system's institutional planning capabilities will

provide additional new functionality that has never before been available in LBNL's enterprise systems.

Improved control over budgets and their modifications. The new system will provide automated controls where appropriate.

Enhanced information and decision support for managing DOE "color of money". On the cost side the Laboratory's FMS system currently track's a project's relationship to its funding, as defined by a series of funding fields, including as B&R Category, Fund Type, Budget Reference N umber, Budget Reference Number Sub, and Program Task Number. The problem is that the funding information related to these categories is currently unavailable in the Laboratory's institutional systems. With the implementation of the Brookhaven system's funds control component, this information will become available, which will create new opportunities for the management of "color of money" and other funding attributes.

Stronger Funds Management. The new system will provide an integrated approach to the management of all types of project funding. The availability of funds management information in a single location will promote simplicity, standardization, and understanding. The new budget system will be integrated as appropriate to maximize the value of the data in the Laboratory's RAPID (PeopleSoft Grants Management) system.

Improved and integrated recordkeeping, reporting, and reconciliation. The proposed new budget system will make integrated funds control and local and institutional planning information available to the Laboratory in a way that has never before been possible. Powerful reporting tools will be provided to enable a variety of analyses, including reconciliations.

Clarity of budgeting roles and responsibilities. While the existence of a new system will not, by itself, guarantee that this will happen, the deployment of a standard information structure, standard tools, and standard procedures will promote a clearer definition of, and greater alignment in budgeting roles and responsibilities at the Laboratory.

Where needed, new and revised policies and procedures. These will be developed in conjunction with the deployment of the new system.

Reduced dependency on back-office "shadow systems", spreadsheets, and redundant processes. Many of these "back office" systems and spreadsheets were developed and deployed by the Laboratory's business units out of necessity, because much of the critical budgeting information is not available. When a complete, comprehensive institutional repository of budgeting information, encompassing funding, planning, and costs, becomes available, we expect that many of these back-office "shadow systems" and spreadsheets will be rendered unnecessary, because the information in the central system will be more accurate, more timely, and easier to maintain. Integration with the Laboratory's other enterprise financial systems will create opportunities to minimize redundancy.

Enhanced integration of the Laboratory's budgeting systems with other Laboratory institutional systems, and the systems of the DOE and other business partners, including future Government initiatives such as I-MANAGE, STARS, ePME, and eGrants. This is a specific goal of the budget system implementation strategy.

Earlier in this report we discussed a number of common themes that emerged in our interviews with the Laboratory's Divisions and business units.   We comment below on how we envision that the proposed budget system will address these common themes.

More "what-if" analytical capability. Integration with Excel will offer tremendous flexibility in this area for local planning purposes. Having an institutional planning capability will facilitate what-if analysis at the institutional level. The deployment of the Cognos tool set for end-user reporting will further enhance the Laboratory's analytical capabilities.

Inbound and outbound interfaces to Microsoft Excel. This will be directly addressed through the planned standard Excel interfaces, the Quick Price tool, and the standard Excel download formats.

Enhanced forecasting capability. Specific requests regarding the forecasting capabilities in Janus, including the reporting of forecast plans, will be reviewed and addressed. The Brookhaven system provides powerful labor forecasting functionality. Institutional forecasting will become possible through the availability of new institutional planning functionality.

Enhanced Budget vs. Actuals reporting functionality. This will be addressed as we add new reporting options and flexibility.

Enhanced capabilities for resource (labor) planning. This is a specific strength of the Brookhaven system.

More reporting, and more flexible reporting. Enhanced reporting will be a major focus. Ad-hoc end-user reporting will be facilitated through the use of the Cognos reporting tool set.

Automated support for the Spend Forecast. This will be facilitated by the Brookhaven system's institutional planning functionality.

Support for rollups according to alternative hierarchies other than those on the FMS project tree. This is really a reporting issue, and will be addressed as such. New trees to support alternative hierarchies will be developed and managed via the PeopleSoft tool set.

Enhanced integration with other Laboratory institutional systems. The budget system integration plan includes the development of interfaces wherever appropriate to minimize redundancy. As a PeopleTools system, the Brookhaven system's technical architecture will especially facilitate its integration with FMS, RAPID, and HRIS.

Support for budgeting at the detailed line item level. This can take a variety of forms. This will be explored further and addressed in accordance with priorities.

Support for grant year budgeting and reporting. This is not directly provided by the Brookhaven system, but can be facilitated through the planned advanced reporting tool set. This will be explored further and addressed in accordance with priorities.

The ability to create plans based on historical costs. We do not currently know if this capability is provided by the Brookhaven system. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

A "Quick Pricing Tool". This will be specifically provided in the implementation.

Timely Funding information. This will be made possible via the Brookhaven system's funds control functionality.

Support for flexible groupings of Resource Categories. We do not currently know if this capability is provided by the Brookhaven system. This functionality can be facilitated through the planned advanced reporting tool set. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

The capability to consolidate budgets. The Brookhaven system provides the capability to consolidate budgets from the local level to the institutional level. Other needs for budget consolidation will be assessed and addressed in accordance with priorities.

Automated support for budgeting campus labor resources. We do not currently know if this capability is provided by the Brookhaven system. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

Enhanced reporting for Work For Others projects. Enhanced reporting will be a major focus. Ad-hoc end-user reporting will be facilitated through the use of the Cognos reporting tool set.

Enhanced reporting for DOE projects. Enhanced reporting will be a major focus. Ad-hoc end-user reporting will be facilitated through the use of the Cognos reporting tool set.

Graphing Capability. This will be supported by the planned standard Excel download interfaces, in conjunction with Excel's powerful graphing capabilities. The Cognos tool set also provides capabilities in this area.

Data security for funds control data. We do not currently know to what extent this capability is provided by the Brookhaven system. However, the PeopleTools and Cognos tool sets provide powerful and flexible security options. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

An improved overhead rate structure. This is a matter of business policy, and is under constant review. The new system would be modified to reflect any changes.

Flexible time granularity (e.g., annual, quarterly, monthly, daily). We do not currently know what flexibility is provided by the Brookhaven system. This is also a reporting issue, and can be addressed as such. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

Controls for the distribution of funding. This is a specific strength of the Brookhaven system's funds control component.

Support for the tracking of B&R recasts. We do not currently know what support is provided in this area by the Brookhaven system. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

Support for full cost reporting. This will be addressed as we add new reporting options and flexibility.

A system that is faster than Janus. The proposed Quick Price Tool will provide a simplified end-user interface for the rapid creation of proposal cost estimates and simple project plans.

Drill-down capability. This can take a variety of forms. The Brookhaven system's capabilities in this area will be examined in the upcoming fit-gap analysis, and addressed in accordance with priorities. The Cognos reporting tool set may offer opportunities in this area if the data are suitably structured.

Automated LDRD support. Full automation of the LDRD calculation process is probably not provided by the Brookhaven system. This will be addressed in accordance with priorities.

Historical funding data. If funding data exists, then it can be retained for historical purposes. However, we do not currently know what historical funding data retention capabilities are provided by the Brookhaven system. This will be examined in the upcoming detailed fit-gap analysis, and addressed in accordance with priorities.

Lessons Learned From Prior Budget System Projects

As discussed earlier, there have been several efforts made during the past decade to implement a budget system at LBNL, none of which has succeeded at implementing a complete, comprehensive solution:

- In 1997, the PeopleSoft Budgets module implementation was canceled when it was determined that the PeopleSoft software could not handle the dynamic, complex nature of Berkeley Lab's budgeting.

- In 1999, a formal, broad-based, cross-functional RFP process led to the selection of a leading vendor proposal, but its implementation was not recommended due to its high cost.

- In 2000, the Janus system was created as a tool for the formulation and execution of proposal and project budgets. This tool is in widespread use across the Laboratory, but it addresses only a portion of the Laboratory's budgeting requirements. Future phases were planned for Janus, but not undertaken.

- In 2001, an initiative to develop a new institutional Funding database was shelved by Laboratory management.

An observer may reasonably ask how this new proposed budget system initiative will succeed where earlier attempts have failed, or, in the case of Janus, could not thrive. In the paragraphs below, we review some of the circumstances that led to the previous results (or lack of results), and comment on how these risks are being or will be managed or mitigated in this new effort.

The assumption that an integrated, commercial off-the-shelf solution would automatically succeed in every area. This was the reasonable assumption that was made in the 1995 financial system RFP that led to the selection of the PeopleSoft General Ledger, Project Costing, and Budgets modules. While an integrated solution certainly makes sense, the reality was that the PeopleSoft Budgets module was not suitable for LBNL. Though we explored the most recent version of the PeopleSoft software for our current needs, we concluded that it is still not suitable.

The assumption that the winner of an RFP competition would automatically succeed. In the case of the 1999 RFP, a leading vendor product was identified, but its cost was deemed prohibitive. The current process did not involve the execution of an RFP, but allowed for the possibility of an RFP if other avenues were exhausted.

Lack of formal, structured sponsorship. The Janus implementation project did not have a formally defined management structure that incorporated the project's technical, functional, and end-user participants as well as senior management oversight. Ultimately, this led to a loss of interest and a loss of focus in the Laboratory community. We now have the benefit of the Enterprise Computing Program, which formally mandates the assignment of key stakeholders into the roles of Project Sponsor, Project Director, and Project Manager, and

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provides management oversight through the Enterprise Computing Steering Committee (ECSC).

Loss of sponsorship.   When the Laboratory's Financial Services Department's (FSD) management changed in 2001, the degree of sponsorship and support that had been provided by the Financial Services Department (FSD) for the Janus system came to an end. The lack of FSD management support for Janus helped lead to a discontinuation of its development. In a similar occurrence, the FSD Controller was the main sponsor for the development of the new Funding database in 2001. However, similarly, soon after the Controller retired, the Funding database project was shelved. In contrast, the defined project leadership positions formally established through the ECSC project structure, along with ECSC oversight, will help us avoid the discontinuities that can occur when management positions change hands.

Unclear ownership. Janus was seen as a distributed system, "owned" by the Administrative Services Department and the Divisions. With such broad ownership, the governance of Janus was problematic. Also, the lack of ownership in the central Budget Office was an inhibitor to the development of institutionally oriented functionality such as funds control and institutional planning. For the new budget system, ownership will clearly be embodied in the Budget Office.

Lack of awareness. There is a perception that the Janus project operated to a certain degree "under the radar". Though it was well publicized among its participants and to the Division community, Laboratory management may not have had as much knowledge and participation in this project as it could have. Again, the existence of the ECSC oversight structure will assist greatly in avoiding this shortcoming.

Lack of funding or funding commitment. The establishment of the Enterprise Computing Program has created a framework in which the funding for enterprise computing projects is clearly defined, justified, and managed.

No rigorous vetting or project management process. The Enterprise Computing Program provides a high-level management review and prescribes a formal project management process for all of the Laboratory's enterprise computing projects, including the Budget system implementation.

Business processes were not thoroughly examined and optimized prior to building the system.   When implementing an automated solution, the reexamination of the underlying business processes is clearly necessary in order to provide the best overall result. To the extent this may not have been done prior to the implementation of Janus, we have attempted (as documented in this report) to investigate the Laboratory's needs and practices comprehensively. In our path forward, we will continue to work with the Division representatives and the Budget Office to further refine their requirements and priorities.

Budget process standardization across the Divisions was not addressed or resolved. We will seek cost-effective opportunities for standardization, where appropriate.

We did not have specifications for a full set of functionality. Janus' local project planning functionality was carefully specified, but there was not a complete vision that encompassed all of the aspects of budgeting. As documented in this report, all of these elements (including

institutional planning and funds control) have been explored comprehensively and in detail. Moving forward, this initiative will continue to address all of these elements.

A phased implementation approach for Janus. Phase I was completed, but the Laboratory collectively lost interest in future phases that could have deployed additional functionality. However, these future phases were not well defined or articulated. In contrast, the current proposal outlines a detailed, multi-year plan to implement a series of system components, enhancements, and interfaces.

Users were not required to use the solution. This has resulted in a 50% (or lower) usage rate for Janus across the Laboratory. While many business units can argue that Janus is simply not good enough to replace their local solutions, part of this phenomenon may result from a tendency to resist change, coupled with insufficient sponsorship to make the case that changes to local business practices could lead to common benefits for the Laboratory. In any event, we recognize both through our own experiences and the experiences of the other national Laboratories that budgeting is a very personal process that is difficult to supplant with a "one-size-fits-all" solution.

For this reason we will strive to provide a variety of options for the entry of local planning information, including the use of the highly specialized and advanced tools that the Divisions have developed, as well as Janus, the Brookhaven system, and the new Quick Price Tool. At the same time, we recognize that the successful deployment of an institutional planning capability will require 100% Laboratory participation in the process, and that these business processes will need to be developed and mandated.

Janus lacks funds control and institutional planning functionality. This causes Janus to be less valuable to the Laboratory than it otherwise would be. These functionality areas will be given higher priority and would be directly addressed in all recommendations made by the Budget System Assessment team, including the potential implementation of the Brookhaven system.

Janus is difficult to maintain. In part, this is due to the fact that Janus was developed using a tool set (Visual Basic) that is not in common use in ISS. The new initiative will emphasize solutions that would be more easily maintained by ISS staff. For example, the Brookhaven system was developed and can be maintained in PeopleTools, a technology in which ISS' staff is proficient and well trained.

We tried to design in Excel functionality. Microsoft Excel is a very low-priced, commodity software product that contains profound functionality that required tens of millions of dollars to develop. Because of its popularity, computer users tend to expect to see all of Excel's functionality (including its exotic "bells and whistles") in other business applications. However, the cost of building all of this functionality from scratch in an in-house application is prohibitive. For Janus, we used Microsoft's Visual Basic tool set to build an "Excel-like" user interface that, though attractive and powerful, cannot do everything that Excel does. For this new budget system implementation, we will acknowledge the power and value of Excel without attempting to reinvent it, and propose leveraging the power of Excel by providing standard Excel interfaces, a Quick Price tool, and standard Excel upload/download formats.

Path Forward

The initial scope of the Budget System Implementation will be a transitional process containing the following elements:

- Establishment of a working relationship with Brookhaven National Laboratory to effect the transfer of the system's software, the available documentation, and related knowledge;

- The installation of a working "demo" copy of the Brookhaven software in the LBNL computing environment;

- A review and validation of the Budget System Assessment Team's recommendations;

- Prioritization of the list of desired functionality;

- Familiarization of the project's participants with the Brookhaven Budget system's functionality; and

- A detailed fit-gap analysis between LBNL's desired functionality and the functionality provided by the system.

This process will involve a broader group of participants than the original Budget System Assessment team, and will include key contributors from the Laboratory's scientific Divisions.

The result of this process, expected to conclude in the April 2005 time frame, will be an in-depth understanding and verification of the Brookhaven system's contents and its suitability for LBNL's budgeting needs. A formal "go / no-go" decision will be made at this time, which will determine which, if any, Brookhaven system components will be implemented at LBNL, and what, if any, additional, alternative solutions may be indicated. Assuming that the decision is made to proceed with the Brookhaven system, this analysis will also lead to a detailed determination of the programming modifications that will be necessary for the system to satisfy LBNL's highest priority needs.

Pending approval (i.e., a "go" decision), the tentative project plan calls for the implementation of the Brookhaven system's Funds Control component as the highest priority. This would be accompanied by the deployment of reporting and analytical tools for the integration of institutional reporting encompassing funding, planning, and actual cost data, as described in the "Implementation Strategy" section of this report. At this time, the tentative goal (depending also on the availability of functional and technical staff resources) is to implement the Funds Control package in the October 2005 time frame.

We would continue in FY2006 with the implementation of the Brookhaven system's Local Planning and Institutional Planning components (again, pending approval of these components.) At the same time, additional integration would be provided to facilitate the central aggregation of local project budgeting information from a variety of sources into the institutional repository, and other reporting and interfacing enhancements would be provided as described in detail in the "Implementation Strategy" section of this report. The end result

would integrate all of the Laboratory's budgeting information together into a single, comprehensive system.

Glossary of Budget Related Terminology

Accrued Costs: The value (purchase price) of goods and services used, consumed, given away, lost, or destroyed within a given period of time, regardless of when ordered, received, or paid for.

Activity Data Sheet Number: (ADS.) See Program Task Number.

Actuals: Actual costs that have been booked against a project in the FMS system.

ADS: See Activity Data Sheet Number, Program Task Number.

Allocations: A set of system calculated transactions that are automatically applied to a project according to predefined rules, usually either as a burden or overhead cost. Examples are overhead costs, recharges, service centers, organization burdens, and payroll burden. Each of these allocations is applied to the appropriate resource costs based on a "tax rate" defined and maintained by the Budget Office. These rates are calculated based on expected cost outlays for various organizations and activities, and may be adjusted individually throughout the year. There are currently over 80 allocations.

B&R: See Budget and Reporting Classification.

BA: See Budget Authority.

BAR: See Billing and Accounts Receivable System.

Baseline Spending Plan: An initial, time-phased plan of spending that is created after funding is approved for a project, and used as a benchmark to monitor the financial progress of the project over time (typically a year).

BO: See Budget Outlay.

Bridge Funding: (PCCF Bridge Funding) Funds LBNL is authorized to receive from the University of California's Post-Contract Contingency Fund to temporarily finance non-DOE funded work during periods in which costs are incurred for which funds from the sponsor have yet to be received.

BRN: See Budget Reference Number.

BRN Sub: One of six funding fields used by the DOE's MARS system to identify an additional layer of detail for capital funds. For example, B&R KA0501030, BRN EQU, 81EB BRN Sub indicates a Major Item of Equipment or MIE. The BRN Sub field allows the DOE to track this allocation separately from other funds received in B&R KA0501030, BRN EQU. The other funding fields are: Fund Type, B&R, Program Task Number, BRN. The combination of these six funding fields is critical to how projects are set up and costs applied to the funding.

Budget: (noun) a quantity involved in, available for, or assignable to a particular situation; the amount of money that is available for, required for, or assigned to a particular purpose; The authority to spend up to the specified amount; A plan of financial operation embodying an estimate of expenditures for a given purpose and/or period (typically a fiscal year). (verb) to allocate funds for a budget; to plan or provide for the use of a budget in detail. *NOTE: As there are other, more precise words to describe the many forms and dimensions that a budget can take.*

Budget and Reporting Classification: (B&R, B&R Code.) A DOE-defined classification of financial activity prescribed for use in the formulation of budgets; the reporting of obligations, costs, and revenues; and for the control and measurement of actual execution versus budgeted performance. One of six funding fields used by the DOE's MARS system to identify the DOE Program funding source. The other funding fields are: Fund Type, Program Task Number, BRN, and BRN Sub. The combination of these six funding fields is critical to how projects are set up and costs applied to the funding.

Budget Authority: (BA.) Authority provided by law to enter into obligations that will result in immediate or future outlays involving Government funds, except for authority to assure or guarantee the repayment of indebtedness incurred by another person or government. The basic forms of budget authority are appropriations, contract authority, and borrowing authority.

Budget Call: A formal, centrally coordinated budgeting and forecasting process in which all related budgets are collected, summarized, and consolidated. Examples of budget calls include the DOE Unicall, the Institutional Plan, the Spend Forecast (formerly the Management Report), the LDRD budget call, and the Activity Based Budget call.

Budget Execution: The budget management activity performed during the period of time between the initial funding of a project and its completion, i.e., when the work is done or project scope completed. During budget execution, the PI/Manager needs to have information about the financial status of the project and estimates of future expenses.

Budget Category: A term used in the Janus system for classifying FMS Resource Categories. It differs from the FMS Resource Type classification system.

Budget Estimate: The unofficial and approximate financial cost of resources that will be required to perform a specified scope of work. When a Budget Estimate is approved by the sponsor, the total amount is deemed to be the project's budget.

Budget Outlay: (BO.) In DOE authorized work, the amount of checks issued or funds electronically transferred, most interest accrued on public debt, or other payments made (including advances to others), net of refunds and reimbursements. Total budget outlays consist of the sum of outlays from appropriations and funds included in the unified budget, less offsetting receipts.

Budget Reference Number: (BRN.) One of six funding fields used by the DOE's MARS system to identify the color of funding received. For example, EQU indicates funding is equipment and blank indicates funding is operating. Other six funding fields are: Fund Type, B&R, Program Task Number, and BRN Sub. The combination of these six funding fields is critical to how projects are set up and costs applied to the funding.

Budget Type: A term used in the Janus system to classify budgets. In Janus, the Budget type must be either "proposal" or "execution". This determines what fields are required in the Janus entry and update screens, and what views of data are available in downstream reporting.

Budget Year: (BY.) Normally, the DOE fiscal year for which a budget is being considered, i.e., the fiscal year following the current year. The Budget Year is the fiscal year for which budget estimates are being developed, and is two fiscal years from the current execution year.

Budgetary Control: A way of limiting the amount one is allowed to budget based on funding amounts and actual costs for the project.

Burden: An Indirect Cost. This term is sometimes used interchangeably with Overhead. In LBNL usage, burdens tend to be local in nature, and apply to particular Divisions or functions, such as procurement, travel, or organization burden. Also refers to the "tax" that is allocated to a direct cost objective to recover the cost of a set of indirect activities. See also Overhead, Indirect Costs.

BY: See Budget Year.

Carry-Over: See Goods and Services on Order.

Color of Money.   An attribute of project funding that restricts its use to specific kinds of activities such as equipment purchases, capital construction, operating expenses. For DOE funding the color of money is determined by Congressional appropriation, but may be modified upon request to DOE.

Commitment: A lien or other obligations (even one that is not yet entered into any system). Commitments should be treated as "money already spent." See also Encumbrance.

Consolidation: The act of gathering individual funding data elements into some summary group for the purpose of reporting or what-if analysis. Consolidations could be done for upper level or central management within the Divisions or across the Lab, such as the Budget Office's Spend Forecast.

Contract 98: Is the contract between the University of California, as the contractor responsible for the management and operation of Lawrence Berkeley National Laboratory, and the Federal Government. "98" is short for DE-AC03-76SF00098.

Contract Modification: (Mod, FinPlan, Financial Plan) The DOE term referring to the legal document that authorizes Berkeley Lab to spend DOE funding. The funding comes through modifications of Contract 98 that governs the relationship between the two institutions. When the contract is modified, a financial document is sent from the Department of Energy (DOE) Oakland office to LBNL that officially notifies the Lab that funds have been obligated to LBNL in specific B&R categories. Then, and only then, can we cost and obligate those funds.

Contract Worker: A person who does not have employee status, but instead is working under a contract with the Laboratory.

Cost Mix: A term used to describe how different Resource Types are grouped to determine overhead recovery.

Cost Pool. A specific collection of indirect costs that are recovered by applying a burden or overhead "tax" to a corresponding distribution base.

Current Year: (CY.) The DOE fiscal year immediately preceding the budget year. It is the fiscal year of the budget currently being considered in Congress. This definition applies to the first three cycles of the budget formulation process, i.e., the Field, IRB, and OMB budget.

Customer: See Sponsor.

CY: See Current Year.

Deobligation: Adjustments to funding balances that decrease obligated amounts whenever events or justifiable conditions occur (i.e. amendments, modifications or terminations of agreements). Deobligations are included on the Contract Mod. Deobligations can affect current fiscal year funding or can be downward adjustments of prior-year obligations.

Detail Project: A project defined within FMS which can receive actual costs. A Detail Project may include several other Detail Projects as children, but may not have Summary Projects as children.

Direct Costs: Any costs that are or can be identified with a particular program the first time the costs are charged. These costs are directly charged to the program because they are directly related to and are being incurred principally for the benefit of the program receiving the charges. These costs generally consist of direct labor, materials, and supplies. See also Indirect Costs.

Distribution Base: A specific collection of (usually) direct costs that are subjected to a burden or overhead "tax" for the purpose of recovering the costs associated with a cost pool.

Effort: See Effort Level.

Effort Level: A quantity of labor resource that is included in estimated or actual costs. The Effort Level can be expressed in units of hours, work months, or FTE's.

Encumbrance: Funds set aside or reserved pending receipt of goods or services. This represents a legal obligation to pay, as evidenced by a Purchase Order or contract.

Engineering Job Order Estimates: Cost estimates for the Engineering work proposed by internal customers.

ES&H: Environmental Safety and Health. Also referred to as EH&S.

Estimate: see Budget Estimate.

Execution Budget: A budget that is created for a project that has real funding and that is receiving actual costs. The Execution Budget is often compared against actual costs. See also Spending Plan.

Execution Year: The fiscal year in which a budget is being executed.

FAC: See Federal Administrative Charge.

Facilities Work Order Estimates: Cost estimates for the Facilities work proposed by internal customers.

Federal Administrative Charge: (FAC.) The Federal Administrative Charge includes all Federal administrative costs associated with work performed at DOE facilities, and is in lieu of including any Headquarters and field office overhead costs applicable to such work as well as depreciation and imputed interest. The 3% Federal administrative charge was effective on October 1, 1998, and is applied to costs incurred on all agreements with non-DOE entities. Exceptions include all funds-in agreements with domestic entities as follows: small business concerns, institutions of higher education, non-profit entities, State and local governments, and some previously approved blanket exceptions that cover entire segments of work.

Field Planning Proposal: (FPP.) The primary document for providing all Field Budget formulation information for DOE Laboratory proposals to perform research, analysis, technology transfer, or other activities in support of EE (Energy) programs.

Field Work Proposal: (FWP.) A document required by a DOE program office for planning and budget formulation. It may be used as all or part of the documentation of a Work Authorization. The form may also be used by LBNL to describe prospective work. The form is intended to provide an overview of the effort, including each of the proposals necessary for project completion. Proposals should be limited to a single project to allow reporting of costs, obligations, and other information needed by the DOE Project Management System (PMS).

Final Budget Estimate: The estimate which the customer deems to be most acceptable. If the project is approved, this amount becomes the basis for the spending plan.

Financial Management System: (FMS.) A suite of PeopleSoft enterprise computer applications that have been implemented in support of financial operations at LBNL. FMS includes the following applications: General Ledger, Projects, Purchasing, eProcurement, Payables, Grants Management, Billing, and Receivables.

Financial Plan: See Contract Modification.

Fiscal Year: (FY.) Any yearly accounting period, regardless of its relationship to a calendar year. The fiscal year for the federal government begins on October 1 and ends on September 30 of the following year. The fiscal year is designated by the calendar year in which it ends. For example, fiscal year 2008 is the year beginning October 1, 2007, and ending September 30, 2008.

FMS. See Financial Management System.

Forecast: (noun) an estimate or prediction of a future condition; an estimate of monthly actual obligations to date and monthly obligation estimates for the remaining months of the fiscal year. (verb) to calculate or predict some future event or condition as a result of analysis or available data.

Forward Pricing Rates: Estimated increases in non-labor costs for future years.

FPP: See Field Planning Proposal.

Fringe Benefits: Labor costs in addition to an employee's base salary. These include holidays and vacation and sick leave accruals.

FTE-Month: See Work Month.

FTE-Year: See Work Year.

Full-time Equivalent (FTE): Simply put, "one full-time person". A unit of ongoing effort based on the total number of regular straight-time hours (i.e., not including overtime or holiday hours) one full-time employee can perform in a year, not including leave, divided by the number of compensable hours applicable to each fiscal year. The number of compensable hours in a year is typically 2,080.

Fund Type: One of six funding fields used by the Department of Energy's MARS system to identify the Congressional appropriation of funds received. The other funding fields are: B&R, Program Task Number, BRN, and BRN Sub. The combination of these six funding fields is critical to how projects are set up and costs applied to the funding.

Funding: The financial resources received from a customer/sponsor to accomplish a specified scope of work.

Funding Target: The level of financial resources that a customer/sponsor anticipates being able to provide for a project. A funding target is provided to a PI for purposes of putting an upper limit on a proposal's total budget estimate.

Funds: Amount of money officially available for a project.

FWP: See Field Work Proposal.

FY: See Fiscal Year.

Goods and Services on Order: (GSO, Carry-Over.) The DOE funds that are unexpended at the end of the fiscal year and are carried over to the new fiscal year.

Grant Year: A twelve month period corresponding to a sponsor's fiscal calendar. The Grant Year may differ from the Lab's fiscal year. If it differs from the Lab's fiscal year, it is also known as a non-fiscal Budget year.

GSO: See Goods and Services on Order.

Guidance: Written documentation produced for the purpose of authorizing and controlling work performed By M&O (Management and Operating) contractors. Guidance is produced by the appropriate DOE Program Secretarial Office.

Income/Revenue Budgets: Budgets that provide managers a way to plan for recharge or burden income.

Indirect Costs: Costs that are not directly related to the conduct/execution of an activity or project. The ongoing administrative or other support function expenses of a business which cannot be attributed to any specific business activity, but are still necessary for the business to function. The costs necessary for operating the Lab but not directly associated with delivering a research product, fabricating a piece of equipment, building a building or other mission-related activity. These costs, collected in cost pools, are distributed or allocated as "overheads" or "burdens" to final cost objectives based on a predetermined methodology. Site overhead costs, service centers, and organizational burden are examples of indirect costs. See also Direct Costs.

Integrated Contractor: A DOE Laboratory or office.

Interoffice Work Order: (IWO.) A funding authorization document from a DOE Integrated Contractor for work funded at greater than or equal to $100K.

IWO: See Interoffice Work Order.

Job Code: A code that indicates a type of employee position at the Laboratory. Each Job Code has a job title and description.

Laboratory Directed Research and Development: (LDRD.) The Department's independent research and development costs. These are indirect costs that are allocated to all direct programs at the Laboratory for independent research and development activities in conformance with the guidelines contained in DOE Order 5000.4A.

LDRD: See Laboratory Directed Research and Development.

LDRD Equipment Tax: LDRD equipment funds (versus LDRD operating funds) are generated through processes of "taxing" DOE equipment funding. A formula is applied to determine the tax. The result of the calculation is considered LDRD equipment funding. The "tax" calculation is performed whenever a Contract Mod is received at the Laboratory.

Leave: The portion of an employee's time that is paid but not worked. Primary examples include sick leave, holidays, and vacation. The amount of leave an employee may take can vary by type of employee and length of service. For a typical full-time Laboratory employee, leave amounts to about 13% of time paid. See also Paid Leave Factor.

Lien: The value of an encumbrance or financial commitment for the purchase of goods or services against a particular project. See Encumbrance or Commitments.

Management Analysis and Reporting System: (MARS.) The DOE's financial system, to which LBNL must report on a monthly basis.

Management Report: See Spend Forecast.

MARS. See Management Analysis and Reporting System.

MARS Code: (Management Analysis and Reporting System Code) A code that controls the classification of the Laboratory's General Ledger transactions for reporting to the DOE's MARS system.

Memorandum Purchase Order: (MPO.) A funding authorization document from a DOE Integrated Contractor for work funded at less than $100K.

Mod: See Contract Modification.

MPO: See Memorandum Purchase Order.

Non-Fiscal Budget Year: See Grant Year.

Object Class: A funding chart of accounts element in the DOE's new STARS system. Will replace the Budget Reference Number (BRN) prefix.

Obligational Cost Level: (OCL) An administrative limitation that represents an upper limit placed on the amount of obligations or expenditures that may be incurred for a specific program, function, activity, or element of expense. An OCL can be imposed by Congress, the Office of Management and Budget (OMB), or internal DOE management. The mandatory cost control level to which the Operations Office must manage cost for each Laboratory. In the area of reimbursable work, the OCL is the Reimbursable Work Order number (see RWO), and for DOE funded work, the OCL is represented by the two to six leading digits in a 9 digit B&R. The Laboratories are required to manage costs to the 9 digit B&R.

Obligations: Amounts of orders placed, contracts awarded, services received, and similar transactions during a given period that will require payments during the same or a future period. Such amounts include outlays for which obligations have not been previously recorded and reflect adjustments for differences between obligations previously recorded and actual outlays to liquidate those obligations. Written documentation or law must support all obligations.

OCL: See Obligational Cost Level.

Operating Expenses: (DOE funds) Funds normally used to budget for operational activities including such expenses as labor, travel, training and small dollar items not intended to be capitalized (i.e., less than $25,000 *including indirect costs* and a useful life of less than 2 years).

Organization Burden: The overhead amount calculated on the labor costs and payroll burden for almost all projects. The rate applied varies with the Division or Org Code of the labor resource.

Organizational Staff Plans: Plans that enable managers to see if the level of anticipated project funding is sufficient to cover the costs of their employees, which funding source is covering which employees, and which employees have been assigned to each project.

Out Year: Any year (or years) beyond the budget year for which projections are made.

Overhead: An Indirect Cost. This term is sometimes used interchangeably with Burden. In LBNL usage, overheads tend to be general or institutional in nature, or apply to multiple functional areas, such as G&A (general and administrative) or site support overhead. Also refers to the "tax" that is allocated to a direct cost objective to recover the cost of a set of indirect activities. See also Burden, Indirect Costs.

Paid Leave Factor: (PLF.) The average percent of paid work hours for a typical employee that can be expected to be charged to a project. Used for estimating labor costs. The Paid Leave Factor can differ for each Division, type of employee, and period, and is typically calculated based on historical actuals.

Pay Escalation Factor: The average rate of estimated salary increase to be applied to current salaries annually over the next several years in order to arrive at future year budget estimates of labor costs.

Payroll Burden: An overhead burden applied to employee labor costs, covering fringe benefits and other indirect costs. The rate varies according to an employee's benefits classification.

PCCF: Post-Contract Contingency Fund. See Bridge Funding.

PI (Principal Investigator): The Laboratory manager or employee that has ultimate responsibility for meeting the terms of a project proposal, including the scope of work, the schedule, and the budget.

PLF: See Paid Leave Factor.

Preencumbrance: The setting aside of funds based on a purchase requisition, and pending the issue of a Purchase Order for goods or services. When the purchase order is released, the preencumbrance is reversed and replaced by an encumbrance.

Preparer: In the Janus system, the person who enters and updates a budget proposal or spending plan.

Prior Year: (PY.) The DOE Fiscal Year immediately preceding the current year, and two fiscal years preceding the budget year. It is the fiscal year in which the budget is being executed. This definition applies to the first three cycles of the budget formulation process, i.e., the Field, IRB, and OMB budget.

Program: A large body of work, typically consisting of a combination of several projects, sometimes crossing organizational boundaries.

Program (STARS): A funding chart of accounts element in the DOE's new STARS system. Will replace the Budget and Reporting Classification (B&R) and the BRN Sub.

Program Task Number: (PTN.) One of six funding fields used by the DOE's MARS system to identify funds requested through the ES&H Five Year Plan. Typically, this field is only populated for funds received in B&R's starting with EW or EX. The Program Task Number is also known as the ADS or Activity Data Sheet number. The ADS number is the project tracking number from the ES&H Five Year Plan Budget Submission. The other funding fields are: Fund Type, B&R, BRN, and BRN Sub. The combination of these six funding fields is critical to how projects are set up and costs applied to the funding.

Project Budgeting: All processes related to the estimating or forecasting of the costs of a Laboratory mission-related or support activity.

Project.   At Berkeley Lab, an organizational and accounting unit used primarily for recording spending and revenue transactions; used to collect costs and/or revenues for a direct research or construction activity, or an indirect support function.

Project (STARS): A funding chart of accounts element in the DOE's new STARS system. Will replace the Program Task Number (PTN).

Project Type: A code used in FMS to classify projects and determine how they function under different rules.   Usually, the differences are related to funding and overhead treatment. Examples of Project Types include Operating, Capital Equipment Purchase, Capital Equipment Fabrication, various Overhead project types, Fellowships, etc.

Proposal: A Principal Investigator's definition of work to be accomplished, milestones, deliverables, and a budget estimate.

Proposal Budget: An estimate of the cost of resources required to complete a proposed scope of work. Requests can be for a totally new scope of work, for the continuation of a project previously started, or for an ongoing support unit.
Proposal budgets are not yet funded, nor are there actual costs.

Proposal Output Format: A presentation format for a proposal in the predefined layout that is required by a sponsor. There are many different proposal output formats.

PTN: See Program Task Number.

PY: See Prior Year.
Quick Calc Function: A functionality that allows PI's and Managers to quickly and accurately estimate project costs based on their assumptions about resource requirements.

RAPID: The acronym given to the PeopleSoft Grants Management system, which is part of the Laboratory's FMS.

Recast: An event in which the DOE decides to change one of its six MARS funding fields (Fund Type, B&R, Program Task Number, BRN, and BRN Sub) from one fiscal year to another. A recast is typically done when DOE wants to track their funding at a finer level of detail than previously tracked. For example, if the DOE wants to track carry-over balances, they will recast the Fund Type to reflect fiscal year allocations.

Recharges: Costs for services such as Computing or Engineering support, that are charged out to either direct programs or indirect programs on the basis of the services provided, at a predetermined rate reflecting the costs for providing the services. Also called User Costs.

Re-Forecast: (verb) To prepare a Revised Forecast.

Reimbursable Work. Mission related work performed by another (non-DOE) Federal agency or non-Federal sponsor. The DOE is compensated by a specific type of offsetting collection known as a reimbursement, which may be credited as authorized by law to the appropriation or DOE fund account. The reimbursable work or services performed by DOE are financed by the funds of the ordering Federal customer, or by advances from a non-Federal customer.

Reimbursable Work Order: (RWO.) The number assigned to a WFO agreement for tracking purposes for Berkeley Lab and the DOE. The RWO number is the contract number preceded by the 3-character prefix 'AGR'.

Reprogramming: Shifting funds within an appropriation or fund account to use them for purposes different from those that were contemplated at the time of the appropriation. Sometimes called a change in the color of money. For example, the Lab may receive operating funds, but the scope of work changes to require capital funds. While a transfer of funds involves shifting funds from one project to another, reprogramming involves shifting funds from one funding category to another (for example: operating funds to equipment funds).

Resource Category: A code used in the PeopleSoft FMS at LBNL to provide detail-level categories of project costs. They represent groupings of similar income or direct (or indirect) expense transactions. Examples include scientific labor, administrative labor, contract labor; material purchases, service purchases; foreign travel, local travel, etc. Resource Categories are grouped into Resource Types.

Resource Type: A code used in the PeopleSoft FMS at LBNL to provide high-level categories of costs. Examples include labor, purchases, travel, etc. Resource Types are groupings of Resource Categories.

Revised Forecast: An update to a baseline plan to reflect actual costs incurred to date. Prior-period cost trends and open commitments are typically used in projecting current year expenses.

Rollup: The process of using the project tree to calculate summary amounts for projects higher up in the Laboratory's project tree by adding together the detail project amounts of those projects that are lower in the tree (children). This can also refer to other summarizing operations on the details.

RWO: See Reimbursable Work Order.

Scenario: A budget property that identifies what kind of budget is being built for a project. Different scenarios are prepared at different times and are based on different assumptions.

Scope of Work: For a project proposal, a definition of what the proposal contains (i.e., the proposed work activities and/or outcomes), and when the work is to be done (i.e., time frame, period of performance, start and end dates, etc.)

Source of Funds: A code used in the Janus system to designate which external or internal agency is supplying the funding for a project. The Source of Funds influences what cost allocations are applied to estimated and actual direct costs. See also Use of Funds.

Spend Forecast: (Formerly called the Management Report.) A special spending plan that provides senior management with information on projected indirect recoveries and anticipated total spending by source of funding, and provides an opportunity for the Office of the CFO to perform overhead rate "what if" analysis.

Spend Plan: See Spending Plan.

Spending Plan: A detailed program or map of how (a budget) will be used up, paid out, or consumed; a monthly plan of encumbrances, expenses, and income for a project or organizational unit. The sum of the months' planned obligations within the year should not exceed the corresponding appropriated or approved amount. Typically prepared prior to the start of a project and updated periodically as needed and includes details on how (budget or resource category) and/or when (monthly, quarterly, annual) a budget will be spent. Also called Spend Plan. See also Execution Budget.

SPO: See Sponsored Projects Office.

Sponsor: (Also, Customer). The party, or representative thereof, that defines a scope of work and to which the work scope is delivered; typically is also the party that provides the project's funding.

Sponsored Projects Office: (SPO.)   The Laboratory department that provides services to the scientific Divisions by submitting proposals and negotiating agreements for sponsored research at LBNL.

Sponsored Proposal and Project Tracking System: (SPPT.) A legacy computer system that was used prior to 2003 to support the administration of the Laboratory's sponsored work. Replaced in 2003 by the RAPID system.

Sponsored Research: Any research that receives funding from sources other than from the DOE.

SPPT: See Sponsored Proposal and Project Tracking System.

Standard Accounting and Reporting System: (STARS.) The new DOE financial system that will replace the MARS system in the near future, and to which LBNL will be required to report on a monthly basis.

STARS: See Standard Accounting and Reporting System.

Summary Project: A project defined within FMS which groups Detail or other Summary Projects together as children. A Summary Project cannot receive actual costs.

UC. University of California.

UCDRD: See University of California Directed Research and Development.

Uncosted Obligations: Obligations for goods and services that have not yet been costed (accomplished). Included in this category are legal commitments for which contracts, subcontracts and purchase vouchers have been signed, as well as items that are "in the pipeline", such as internal work orders, approved work scope, prefinancing, and unencumbered balances. It is important that any uncosted unencumbered balances be considered as potential offsets to new budget authority.

University of California Directed Research and Development: (UCDRD.) Funds available to LBNL based on fee payments to the University of California.   Restricted for research only, and allocated by the Laboratory Director.

Use of Funds: A code used in the Janus system to designate the principal type of work of the project. The Use of Funds influences what cost allocations are applied to estimated and actual direct costs. See also Source of Funds.

User Costs: See Recharges.

Version: In the Janus system, a budget property that allows the preparer to distinguish between several copies of a budget scenario. Some version names have a standard meaning, and others are free-form. The values could be time related, or indicate the budget's status.

WAS: See Work Authorization System Document.

Work Authorization System Document: (WAS.) The final, official funding authorization document received.   Generated by the responsible DOE Program Secretarial Office. It includes HQ, field element and contractor signatures.

Work For Others: Mission-related activities of the Laboratory funded by non-DOE sponsors. Includes both direct DOE funding as well as funding that comes from other DOE integrated contractors. (This is not a precise term; see Reimbursable Work.)

Work For Others (STARS): A funding chart of accounts element in the DOE's new STARS system. Will replace the Reimbursable Work Order Number (RWO).

Work Month: A unit of effort representing the average amount of time for which a full-time employee is compensated in one month. An average work month is 173.333 hours. Also FTE-Month.

Work Year: A unit of effort representing the average amount of work for which a full-time employee is compensated in one year. An average work year is 2,080 hours. Also FTE-Year.