



Rensselaer Data Warehouse Project

Financial Analysis Requirements Findings

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Overview

Background

The Rensselaer Data Warehouse project will enable management to better leverage information collected within current operational systems to help in their decision making process. Through a formal prioritization effort, Rensselaer identified key analytical subject areas and selected Financial Analysis as the information required in for phase I.

To ensure all requirements were clearly understood and to help define the financial analysis scope, a detailed requirements process was conducted. The process consisted of two primary efforts, analyzing existing month-end financial reports and conducting detailed requirements meetings with business representatives throughout the institute. The key objectives of this effort were to:

- Identify detailed financial reporting and analytical requirements.
- Develop an understanding of source systems and identify data issues.
- Ensure the academic and administrative requirements throughout the institute are fully understood.
- Finalize the scope of the Financial Analysis subject area.

Process and Participants

Ten interviews were conducted with twenty individuals representing both the administrative and academic organizations of the institute. The interviews concentrated on the financial analysis area, reviewing specific reports, shadow systems, spreadsheets and Banner forms to understand the detailed analytical requirements. The following lists the interview participants.

Department	Participant	Position
<i>Finance</i>		
Controller's Office	Jackie Ellsworth	Associate Director
Controller's Office	Jeraldine Lake	Associate Controller
Controllers Office	Jin Wang	Associate Director
Controller's office	Diane Veros	Director
Financial Planning & Budgeting	Eileen McGlaughlin	Director
Financial Planning & Budgeting	Helen Grzymala	Associate Director
Financial Planning & Budgeting	Gina Ricci	Budget Analyst
<i>Administration</i>		
Procurement & Administrative Services	Steve Schwan	Manager of Financial Operations
Procurement & Administrative Services	Colleen Seror	Financial Services Coordinator
Auxiliary Services	Kathy Edick	Director

<i>Schools</i>		
Engineering	Donna Tomlinson	Manager of Financial Ops
MS&E	Lori Robichaud	Financial Manager
MANE	Rose Boshoff	Financial Manager
Chemistry	Anne Marie Strack	Asst. Director
Science	Sam Wait	Associate Dean
<i>Provost</i>		
Provost	Trish Lyons	Director
Professional & Distance Education	Kim Scalzo	Director
<i>DOT CIO</i>		
DOT CIO	Sandy Butcher	Financial Manager
<i>Student Life</i>		
RU Fitness Center	Steve Allard	Coordinator of Mueller Center, Programs and Club Sports
RUO	Martha McElligott	Coordinator of Finance & Office Ops.

Key Operational Reports

The data warehouse team inventoried key monthly reports and performed an analysis of each report to identify key columns used, conditions applied, calculations derived, common groupings of data and key measures. The detailed inventory of reports is located in the following directory.

V:\Data_Warehouse\1-Financial DW\Requirements\report analysis

V:\Data_Warehouse\1-Financial DW\Requirements\reports used for fin statements

BUSINESS REQUIREMENTS SUMMARY

High Level Objectives

The financial departments throughout the institute consistently discuss the need for a mechanism, which offers improved access to both summarized and detailed financial information. Many common themes were expressed while discussing requirements with department financial managers and directors. The following summarizes key objectives described during the requirements gathering process.

- ▶ The finance department needs to simplify and reduce the time it takes to produce and distribute quarterly management reports and annual financial statements. Currently, a large number of queries are executed to extract data from the Banner business systems to integrate into local spreadsheets and Microsoft Access database tables. This time consuming process requires many steps to manually integrate and regroup data from various sources into meaningful financial information. Those responsible for the preparation of this information are requesting a single source of integrated, reliable and timely financial information that is interfaced with an easy to use and flexible reporting tool. **Note: Currently the data as it is collected in Banner does not correspond to the formal presentation categories utilized in the annual financial statements. The finance office must first take the necessary steps to setup the categorizations in Banner before the data warehouse can incorporate the formal production of financial statements.**
- ▶ Each of the departmental representatives indicated that they needed a simplified method of integrating financial information with data maintained locally. In many cases, departments maintain a shadow system to track all fund activity, including those items, which haven't hit the Banner system. This enables them to understand their true available budget. Currently, much of the information collected from Banner originates from monthly static reports and/or downloads. In many cases, this data is re-entered into local spreadsheets and/or Access applications.
- ▶ A common difficulty expressed by most individuals was the difficulty in sharing information. Many system generated reports need to be shared with individuals responsible for departmental spending. A mechanism is needed that will enable dynamic viewing of information relevant to an individual. In addition, many adhoc requests from faculty members are currently distributed in paper form. It would be extremely helpful to have this information distributed in electronic form via email or website.
- ▶ The ability to access historical data is very important when analyzing past spending activity in preparation of annual budgets. This type of information is very difficult to retrieve and in many cases is maintained locally in shadow systems.
- ▶ Many business representatives expressed frustration with the performance of current Microsoft Access queries they run against Oracle database views. Although they could not characterize adequate response time in minutes and seconds, the common theme was reasonable response time. They do not want to wait for data downloads that in some cases take more than an hour to run.
- ▶ The budget office and individual financial departments are in need of an improved method of preparing quarterly forecasts and annual budgets. Although a data warehouses typically does not enable write-back functionality to support forecasting and annual budget preparation, the data associated with this process must be

analyzed and reported on in support of the process. The data warehouse should integrate with the overall budget process to provide a consistent and integrated environment, serving as its data source, reporting and analytical mechanism.

- ▶ Many of the financial managers indicated that it is very difficult to see all activity associated with their individual funds. In many cases activity associated with another organization may hit their fund. Due to current Banner security, activity on the fund outside their authorized organization is not available, leading to misleading and inaccurate reporting. The data warehouse needs to resolve this issue to ensure all activity associated with specific funds can be monitored.
- ▶ Many indicated that a graphical representation of key performance indicators is very important for senior and executive level management. The data warehouse team needs to provide an executive management dashboard of key performance indicators as a component of the phase I rollout.

Information and Analytic Requirements

Throughout the requirements gathering process, it became clear that a definition between what is and is not considered financial analysis was difficult to define. In many cases, this was dependent upon the individuals we discussed requirements with. The following summarizes key information and analytical requirements organized into functional business groupings and those that are common to all documented areas.

▶ **Financial Information**

- To produce quarterly and annual financial statements, information from both the operating ledger and general ledger must be incorporated into the data warehouse.
- Operational data for the RPI and Hartford campuses must be integrated into the data warehouse from the Banner system. Currently, the RPI Technology Park data resides in a local business system and is manually integrated into the annual financial statements. The data warehouse must incorporate a mechanism to integrate RPI Technology Park year-end financial data for the production of annual financial statements.
- Typical financial data necessary for reporting and analysis includes budget, expenditure, encumbrance and reservations. Standard calculations used in reporting include fund balance, variance of budget to actual, percent of budget used and fiscal year to date and inception to date summaries.
- The primary attributes used to report and analyze financial data include fiscal and calendar periods of time, organizational structure, fund structure, operating and general ledger account structures, program and activity.
- Each of the primary analytical attributes used in reporting contain natural data hierarchies maintained within the Banner business systems. The data warehouse needs to incorporate the standard hierarchical structures within the organization, fund and account structures. Additionally, each of the reporting hierarchical structures is unique to the RPI, Hartford and RPI Technology Park locations.
- To support the production of quarterly and annual financial statements, the data warehouse must incorporate the accounting framework used. Currently,

manual regrouping of information is performed to provide the formal appearance of financial statements. The data warehouse must ensure the groupings used to produce the financial statements are incorporated into the overall design.

- Transaction detail is critical for general reporting and analysis. In many cases reports are produced by fund and organization showing year to date activity along with supporting transaction detail for the time period. Key detail elements can be gathered from TRND. It will be helpful to incorporate a method of selecting and/or grouping types of transactions such as credit card activity.
- Business representatives commonly discussed reporting and analyzing labor budget and actual data as a priority. In addition to reporting by fund, organization, account, program, activity and location (FOAPAL), labor budget and actual data is analyzed by position, job and person.
- The academic schools focus a great deal of their financial analysis on research related activity. Enabling the academic schools to report the research fund activity by organization would be a helpful. In the future, they would like to report this activity by organization and faculty member.
- Specific organizations indicated a need to monitor budget, encumbrance and expenditure activity specifically for capital projects. The capital project information stored in Banner is not based upon a fiscal year and therefore requires an inception to date total.

► **General Requirements**

- ***Historical Data***

Information required for Financial reporting and analysis should be available for a period of three to five years with the ability to access one to two years of supporting transaction detail. It's important to note that research grants are not based on a fiscal period and therefore require the availability of inception to date figures.

- ***Refresh Criteria***

All business representatives expressed a need to have information as timely as possible and indicated that the data warehouse should clearly post the latest date the refresh occurred. Most agreed that any refresh more frequent than monthly would be beneficial and ideally would like to see information refreshed daily.

- ***Data Security***

Information in the data warehouse should be secured by fund and organization. Currently, security in Banner restricts the owner of a fund from seeing activity on their fund that is associated with another organization. The data warehouse should improve on the current security available in Banner, by enabling a fund owner to access all activity associated with the fund. Additionally, given the sensitive nature of salary information, access to the labor data must be individually authorized and must be restricted by organization.

- ***Tracking Changes to Reporting Attributes***

The RPI organizational structure typically changes over fiscal years. The data warehouse must preserve historical reporting by ensuring data associated with an organization is not changed as the organizational structure changes from fiscal year to fiscal year.

However, many financial managers also indicated that they would like the flexibility to report on past historical data using current organizational structures. To ensure flexibility in reporting, the organizational structure from each fiscal year end must be preserved in the data warehouse.

- ***Reporting Time Periods***

Financial information is most commonly reported and analyzed by fiscal year, quarter and month. Transaction details must be available for a given day. Reporting and analyzing research data requires that contract and grant information be available for the entire grant period.

Financial Analysis Success Criteria

- ▶ All business representatives indicated that they need a solution that is easy to use, consistent, reliable and integrated.
- ▶ Many business users require the ability to slice and dice budget, expense and encumbrance data by fiscal periods of time, fund, organization, program, account and activity with access to transaction detail.
- ▶ Having the ability to create individual reports that can easily be exported or shared with other members within the organization.
- ▶ Performance of queries was continually mentioned as being very important. Although no qualifications for how long a query should take were identified, it is clear that fast response times are expected.
- ▶ The data warehouse should be the tool by which quarterly and annual financial statements are generated. Although the finance department will continue to complete portions of the financial statements manually, there should be little need to reorganize data manually when preparing these reports.
- ▶ Although labor budget and actual information associated with position, job and person are not necessary in phase I, this information is vital to all organizations for budget preparations, forecasting and ongoing analysis and should be available shortly after the phase I rollout.

Data Warehouse Recommendations

To provide an enterprise data warehouse solution, it is important to recognize the need for phased implementations that build upon and integrate with previous phases. Identifying scope is critical to defining the subject areas that will be addressed within each phase. During the requirements gathering process for the financial analysis subject area, key requirements were identified as potential requirements outside the parameters of this phase, (I.E. the need for labor and research related activity).

The requirements team recommends that the first phase of the data warehouse implementation focus on analysis of budget and expenditure activity associated with the FOAPAL structures. In phases II and III, the data warehouse should address the need to integrate position control data along with research information characterized by contracts and Grants and Sponsor Agencies.

The following describes the primary characteristics of phases I – III of the data warehouse:

► Phase I – Financial Analysis (January 2002 – June 2002)

- The financial data from the operational ledger must include budget, expenditure, encumbrance and reservation, while the general ledger data must include debits and credits.
- Key reporting attributes will include Fund, Organization, Account, Program and Activity. The structured hierarchies within Banner will be incorporated into each data warehouse dimension. Since transaction data is required, attributes such as document type will be included to help end users categorize transaction activity.
- The data warehouse will contain three years of historical data corresponding to the FOAPAL structures summarized by month, fiscal quarter and fiscal period. The summarized data will be supported with the current two fiscal years of transaction detail.
- The data warehouse will begin to address fundamental reporting aspects of research related activity by incorporating key Grant attributes such as grant code, description, total amount, grant periods, grant status and sponsor agency. A detailed analysis of Grant tables in the Banner system will be conducted to identify additional high value reporting attributes.
- The data warehouse will incorporate key transaction related information such as transaction amount, document code, document type, transaction description. Additional items associated with transactions will be identified and incorporated during the design phase.
- Information in the data warehouse will be secured by fund and organization, enabling a fund owner to access all activity associated with the fund regardless of the organization. Additionally, phase II will enforce security on labor data.
- Data will be refreshed on a daily basis.
- The data warehouse will be designed in manner that enables the finance department to produce quarterly and annual financial statements with minimal reorganization of the data.

- The data warehouse must preserve historical reporting by ensuring data associated with a fund or organization is not changed as these structures change from fiscal year to fiscal year. Additionally, the flexibility to report on past historical data using current and fiscal year end structures will be incorporated.

▶ **Phase II – Labor Budget and Actual (July 2002 – September 2002)**

- The data warehouse will be expanded to incorporate position, job, person and distribution data.
- The data warehouse will work closely with the budget office to integrate information with the quarterly forecasting and annual budgeting process.

▶ **Phase III – Research Analysis (October 2002 – December 2002)**

- The data warehouse will be expanded to incorporate sponsored research information. Key areas addressed during this phase will enable analysis of research data by sponsor, time, FOAPAL and Grant PIs.