

University of Maryland, College Park
SACUBO Best Practices Competition
Billing & Accounts Receivable System, BARS

The University of Maryland, College Park, founded 1856, is a public land grant institution and a Carnegie class one research university. The student population consists of 25,000 Undergraduate and 9000 Graduate students. Officers are: Dr. C.D. Mote, Jr., President, and Dr. Charles F. Sturtz, Vice President for Administrative Affairs. Director-level contact for this submission is Ms. Julie K. Phelps, Comptroller.

Abstract

The University of Maryland expends approximately \$225,000,000 annually from over 3,700 contracts and grants awarded by the federal government and other sponsors. Approximately two-thirds of the awards require the University to invoice the sponsor monthly to recover related expenditures. The remaining awards are managed through the federal government's letter of credit draw process. Prior to redesign, the procedures to set up a new award account, produce and mail invoices, calculate draws, prepare financial reports, record cash collections, and manage the related receivable were substantially manual and required redundant entry of data in up to four separate systems. As a result, University cash flows suffered, and hundreds of hours of employee effort were devoted each month to manual, redundant tasks.

The Office of the UM Comptroller has developed a new system, the "Billing & Accounts Receivable System (BARS)," to transform a substantially manual process into a substantially electronic process. Information on new awards is now transmitted electronically from the pre-award office and uploaded to create new accounts in the financial accounting system. By means of a BARS interface with the accounting system, invoices, including envelopes addressed for mailing, are produced electronically along with required financial reports in standard federal format. The Letter of Credit (LOC) module allows for automated calculation of draws and preparation of federal LOC quarterly reports. In addition, BARS generates electronic journal vouchers for posting receivable and cash receipt transactions into the accounting system; permits staff to record notes regarding correspondence with sponsors, and archives copies of the invoices and financial reports electronically. Lastly, BARS produces a plethora of statistical reports and analyses to facilitate management of the billing and collection processes.

Process Before Redesign

Prior to redesign of the billing and receivable process, the Office of Contract and Grant Accounting (OCGA) did the vast majority of management and record-keeping for sponsored project awards manually. The manual processes required an inordinate amount of human resources, slowed down processing, and increased the possibility of errors due to redundant data entry in various University systems.

The billing process began with notification from the pre-award office of a new or modified award from a sponsor. Information about the award was entered into a pre-award database, re-entered into the financial accounting system, and then entered again into a separate billing system.

Monthly, a file containing expenses for each award was extracted from the financial accounting system and downloaded into the billing system. OCGA staff members used that information to create invoices and to prepare journal entries by hand to record invoice data in the financial accounting system. Staff then made copies of each invoice before mailing to sponsors. The receivable record was then entered manually in a separate Accounts Receivable (A/R) System using a copy of the invoice.

Letter of credit draw calculations were based on estimates using historical expenditure trends and month-end cash deficit balances in award accounts. Quarterly reports required by federal sponsors for letter of credit agreements took weeks to prepare and required the re-entry of expense data by award into spreadsheets.

Cash receipts from invoice payments and letter of credit draws were then recorded in two systems by manual preparation of journal entries into the financial accounting system and by separate input into the A/R system.

Deficiencies Before Redesign

The redundant, manual processes that existed before redesign were error prone and had a negative effect on University cash flow. Although invoices were produced near the beginning of each month, none could be mailed to sponsors without thorough review by staff for accuracy.

Letter of credit (LOC) draws were being processed only twice a month because of the difficulty in estimating expenses for up to 250 awards per letter of credit. The University of Maryland has 15 separate letters of credit with the federal government. Redundant entry of data into several separate systems drained human resources and increased errors. Manual creation of journal entries and additional data entry into the A/R system to record receivables delayed the recording of invoices and further drained

resources. Collection efforts were hampered because of inconsistencies in recorded information and delays in creating accurate aging reports.

New System Process

The objective of the Billing and Accounts Receivable System (BARS) was to reduce the cycle time required to bill and collect sponsored project revenues. In order to achieve this objective, the new system had to eliminate redundant processes, vastly reduce manual processing, automate edit checks, and calculate letter of credit draws based on current financial data.

Account Create/Modification

New awards are now created using data received electronically from the University pre-award system. The pre-award system is swept each night for new awards and award modifications. This information is passed to BARS and then reviewed on-line by Office of Contract and Grant Accounting staff before final acceptance into BARS. Once award data is accepted in BARS, another data file is created and up-loaded to the University financial accounting system to set up award accounts. This electronic process has expedited the creation of awards in BARS and related accounts in the financial system, eliminated redundant data entry, and improved the accuracy of information in systems across the University.

Billing

Both the accuracy and speed of invoice production have been greatly improved by BARS. These improvements are accomplished in part by the system's use of "suspense logic" that automatically reviews invoices before they are printed. These edit checks ensure that invoice data agree with award account information in the financial system by checking total expenses, amounts previously billed, and prior invoice payments. If the data are in agreement, BARS will proceed to check other factors including award expiration date, overspending on the award, special billing instructions, and the existence of a billing address before printing the invoice.

This method of automated review, before creation of the invoice, allows most invoices to be produced and mailed without OCGA staff intervention. As a result, staff members deal only with exceptions -- i.e., resolution of invoices that do not pass the BARS edits. As invoices are produced, either automatically or after review by a staff member, BARS creates and posts electronically both the BARS accounts receivable record and the journal entry to the financial system documenting that the award has been billed.

Letter of Credit Management

The ability to derive LOC draw amounts from expenditures posted to the financial accounting system has significantly reduced the cycle time needed to collect sponsored program revenues. This is accomplished through BARS by detailed tracking of award totals, expenditures, and previous draw amounts and by the ability of BARS to compile these data for an unlimited number of awards for each letter of credit. Staff members can review hundreds of accounts within minutes using the "sort" functions of the system. Modifications to draws on individual awards immediately update the total LOC draw amount. Once a staff member processes the draw, BARS creates journal entries and accounts receivable records to record the transaction in BARS and in the financial accounting system.

One of the most significant improvements in letter of credit management is BARS ability to create the quarterly "272 Financial Cash Reports" required by the federal government. When quarterly reports are due, staff members scan the information and check control totals for accuracy before reports are submitted. With BARS, we can accomplish in hours a task that took weeks before redesign.

Payment Processing

The BARS “payment processing” module has improved both the accuracy and timeliness of recording invoice payments and has eliminated redundant entry of data into three separate systems. The new process allows invoices to be marked “paid” and accounts receivable reports to be updated simultaneously. Bank deposit slips are prepared using BARS output, and this method of posting cash receipts enables the University to pass all cash control audits. The module also includes a feature that allows users to search the A/R database using the amount of a payment as a search criterion. This aspect of the system saves countless hours of staff time previously devoted to research of unidentified payments.

Accounts Receivable Management/Collections

BARS includes reporting features that allow users to create aging reports for the portfolio as a whole, for awards assigned to a particular staff member, for awards from an individual sponsor, or for a range of account numbers. “Past due” notices can be issued for invoices that are 30, 60, 90, or 120 days overdue. A BARS collection management feature allows users to record notes of conversations with sponsors and to set “reminder dates” to follow-up on any action items. Payment histories and collection notes can be printed on demand.

Management Reports

BARS has a variety of reports that can be used by management to monitor staff productivity. The "Suspense Management Report" tracks the number of invoices suspended for review by each staff member and records how many of those invoices have been cleared for mailing. The system also tracks the number of items suspended from month to month so that management can analyze workloads. In addition to the invoice aging reports mentioned previously, the system provides reports for past due letter of credit draw requests. Future improvements to BARS will allow managers to run reports on LOC draw requests that have been rejected – often due to a lack of timeliness by the government in updating federal records for new awards and award modifications.

Benefits of BARS

University cash flow from research activities has improved considerably since implementation of BARS. There has been no growth in related accounts receivable balances despite a 16% increase in contract and grant expenditures and a 30% increase in the number of awards since 1999. Invoices are now mailed within 24 hours of being produced, and the vast majority of invoices are mailed on the second working day of each month.

Since implementing the BARS letter of credit process in Fall 2001, the University has been able to draw LOC funds at a rate of five times per month rather than only twice a month, resulting in additional significant improvements in University cash flows. In addition, the detailed accounting by BARS for each draw has improved record keeping and audit trails.

The savings in personnel time and effort have been tremendous. Despite significant growth in sponsored program expenditures and awards during the last five years, the Office of Contract and Grant Accounting has not had to add any additional staff. The average OCGA employee is now able to handle a portfolio of over 350 accounts. In addition, elimination of many manual tasks has provided more time for analysis, collections, and compliance related activities. In other words, BARS has allowed each employee to become a more efficient and more effective resource to the University.

Because BARS financial reports are produced automatically, we are no longer at risk of being delinquent on reports to the federal government. Letter of credit quarterly reports are now completed in advance of government deadlines.

Elimination of redundant input of data relating to contracts and grants has reduced the time required to establish new awards in University systems from up to one week to within 24 hours. Posting of accounts receivable and cash receipt information can now be accomplished in less than 24 hours rather than taking from one to two weeks.

Copying and filing costs have been reduced because BARS storage is electronic – i.e., financial reports and copies of invoices are available on a server within the Comptroller's Office. Invoice copies can be retrieved electronically from BARS and sent as e-mail attachments by any user from a desk-top computer.

System Development and Implementation

Development of BARS began in 1997 with the writing of a project definition report that documented existing processes, identified deficiencies, and outlined a new redesigned process. This report was used to justify the need for resources to support development of a new billing system.

The users then developed comprehensive functional specifications. This document detailed all system requirements, created the data dictionary,

and established a time-line for implementation. Programming of the system began in early 1999.

The system was developed using Microsoft Visual Basic 6.0 Enterprise Edition and Crystal Reports 8.5 Developer Edition. The data services were developed and implemented using Oracle Server Release 7.3.3.0.0 for Windows NT server version.

In Fall 1999, the Office of Contract and Grant Accounting began the conversion of billed accounts to the BARS System. Conversion of all billed accounts took approximately three months.

The letter of credit processing module was put into production in late Summer 2001. Conversion of all letters of credit took until December of that year. The quarterly reporting process was implemented in September, but users were required to run parallel processes through the December reporting period to ensure the accuracy of federal reports.

The design and programming of BARS was accomplished entirely by existing staff within the Office of the Comptroller. Definition of system requirements and functional specifications required approximately 35% of a full-time equivalent employee for a period of four years. Definition of

technical specifications, programming, and design of the database required approximately 80% of another full-time equivalent employee for the same time period.

Results and Future Developments

BARS has met all expectations. The Office of Contract and Grant Accounting now has a clear picture of its workload, and as a result, has been able to make adjustments in personnel assignments to focus on problem areas. Users find the system easy to operate and have been able to become more efficient. Increased efficiency provides time for more in-depth problem solving and for timely correction of data as needed.

In addition, the University has been able to recover some of its intangible development costs by selling BARS to other universities in the Maryland System. Implementation is underway at those institutions and is going smoothly. Demonstrations of BARS at professional conferences have generated interest from universities across the country. A prominent corporation has expressed interest in licensing BARS.

The federal government is in the process of changing the payment procedures of many agencies. As these requirements change, BARS will change with them. Programming has already begun that will link BARS directly to the Office of Naval Research "Electronic Data Interchange" payment system. The University of Maryland has contacted the Department of Health and Human Services and will begin receiving quarterly reports electronically. BARS will use these files to eliminate the manual process of entering data into government web sites.

The Office of Contract and Grant Accounting is committed to continuous quality improvements of BARS.