Cost Sharing System
A new, user-friendly way to manage cost sharing commitments

Proposal for
2012 University of California Larry L. Sautter Award
for Innovation in Information Technology
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Project Information

The following information is being submitted for consideration for the 2012 University of California Larry L. Sautter Award for Innovation in Information Technology.

Project Title

Cost Sharing System – track the contractually defined portion of the total costs of a sponsored project that is borne by the University utilizing non-federal funds to supplement the sponsor funding.

Submitters’ Name, Title, and Contact Information

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- Hiep Vu, Database Administrator, ACT, UCSD, h1vu@ucsd.edu
- ACT’s IT Infrastructure Teams: Unix and Network Application Support (UNAS ) Team; Data Warehouse Team; Identity Management Team
Summary of Significance of Project

When a new sponsored project is accepted by the University, the Office of Contract and Grant Administration (OCGA) determines if cost sharing is mandatory. If so, OCGA flags the benefiting award in COEUS (UCSD’s central system for tracking research proposals and awards) which is fed into our cost-sharing reporting system. Departments enter into the Cost Share system the funding source and the expenses to be cost-shared.

The original UCSD Cost Share system was not user-friendly and thus was time consuming to use. For this reason campus did not fully adopt the system and instead of tracking cost share status they primarily used it at the end of an award when a mandatory report was required by the sponsoring agency. Partial use of the system put the University at a severe audit risk by not meeting mandatory requirements from sponsoring agencies for critical research.

Project Description

Cost Sharing is defined as the contractual portion of a sponsored project’s total costs that is borne by the University which uses non-federal funds to accompany sponsor funding. Cost sharing can be voluntary or a mandatory condition for accepting a sponsored project and can take the form of salary support for project personnel or other material contributions such as equipment or third party contributions.

The Cost Sharing System in UCSD’s FinancialLink system is intended to track and report all formal cost sharing at UCSD as required by Office of Management & Budget (OMB) Circular A-110. (For more background information about the current system and policies, see Cost Sharing Overview.)

Because the original Cost Sharing system was cumbersome, non-intuitive and frustrating for both department and central office use, the project team prioritized customer experience: A user-friendly system would make it easy for departments to adopt and meet their research award terms and conditions. In addition, in the old system, users were unable to edit information and often it could take significant time and effort to “massage” the system to be able to add/delete/edit any transactions. Unfortunately editing became even more difficult after transactions were expensed which resulted in departments not meeting their compliance requirements. The new cost sharing system is user friendly, intuitive, flexible and addresses these issues.

Business Case

To maximize effectiveness of departments’ Cost Share management process and to give an up-to-date view of the University’s Cost Share actual commitment, a new and enhanced Cost Share system was developed in order to:

- To provide a clear and easy User Interface to easily enable departments to track, manage and report on Cost Share commitments
Cost Sharing System

- To provide reports for Departments and Central Offices to review Cost Share contribution status and alert all relevant parties as needed
- To increase accountability and reduce risk to the University for meeting all Cost Share commitments
- To report on allowable actual Cost Share expenditures
- To document Cost Share commitments have been met
- To streamline the edit process for the end user (data entry errors and changes over the life of the project)
- To ensure accurate data (ISIS, financial, payroll, CAMS) in system
- To eliminate the opportunity for dual application of expenditures as cost share

Project Value / ROI

The following section describes how the business objectives will be measured in terms of revenue generation, expense reduction and/or client/partner satisfaction.

<table>
<thead>
<tr>
<th>Benefit type</th>
<th>Benefit description</th>
<th>Estimated Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client/Partner Satisfaction</td>
<td>Departments and OPAFS relationship improved through simplified process; reduction in frustration using the system</td>
<td>5-30 hours/award Dept: 3-30 hours/award OPAFS</td>
</tr>
<tr>
<td>Risk Avoidance</td>
<td>Ensure costs are only costshared once; ensure source of funds is not federal or federal flow through (FFT); ensure cost allowability through visibility of system; ensure timely costsharing, accurate reporting to agencies</td>
<td>$3M (audit fine)</td>
</tr>
<tr>
<td>Usability/Process Improvement</td>
<td>Streamlined process allows for increased user participation and compliance; simplified process for PI and OPAFS certification</td>
<td>5-30 hours/award Dept: 3-30 hours/award OPAFS</td>
</tr>
<tr>
<td>Efficiency/Time Reduction</td>
<td>Streamlined process decreases time and effort for departments for data entry and corrections, and OPAFS</td>
<td>5-30 hours/award Dept: 3-30 hours/award OPAFS</td>
</tr>
</tbody>
</table>
Cost Shar\[ing System

| staff for training and corrections. | Total Benefits | At least 100 employee hours plus potential compliance penalties. |

**Key Areas of Benefit**

- **Improvement of operational efficiency**
  The Cost Share system results in a reduction of manual processing time by more than 50% in the departments and even more in the Central Offices. The old cost share system was very restrictive and required much manual intervention to make adjustments, corrections and updates. The new application is intuitive and easy to use. Much of the previous manual processing time is replaced by the usability of this system.

- **Improvement of compliance**
  The Cost Share system results in improved understanding of the purpose of cost sharing by creating an open, transparent environment for users. This then results in the improved perception of the system and hence the willingness to comply with the research award terms and conditions.

- **Flexible**
  The improved Cost Share System provides great flexibility for campus departments to manage their cost sharing. They are able to pull expenses from any funding string and report on that. They are able to do more cross campus collaboration on research awards with cost sharing and still have oversight of the entire research award. If changes are needed to be made, the new system is also flexible in allowing that.

- **Shareable, interoperable and integrated**
  The concepts, technology and implementation surrounding the Cost Share System are industry standard and widely used across all UC campuses (Java, Tomcat, Linux); and the business concepts and practices are also standard across UC’s and government organizations, thus providing the opportunity for the Cost Share System to be readily adopted by other campuses, avoiding design, development and operation costs.

- **Collaboration**
  The functionality of the Cost Share System was formulated by business partners across campus in the following departments: ACT, OPAFS, IOD-SIO, Physics, Pharmacology, and the Supercomputer Center. While the Cost Sharing system was the end result, cross-functional collaboration proved to be a valuable professional experience for the involved teams.
Technology Used

The following lists the technologies used for the toolbox and the benefits of those technologies.

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Technology</th>
<th>Benefits</th>
</tr>
</thead>
</table>
| Access/Security                 | Spring Security | Authentication UCSD SSO (pluggable: can plug in any other SSO system: LDAP, CAS, OPENID)  
Authorization: UCSD Access Link (Java Standard Soap web-service call, pluggable: can plug in any other authorization system to identify roles) |
| Web App Presentation Layer     | Spring MVC, jQuery | Spring MVC - fast development time with auto binding and easy error handling  
jQuery - easy and fast Document Object Model manipulations |
| Web App Business/Data Layer    | Spring Core, JPA | Spring Core - IoC container for managing business logic. Interface design forces good design pattern.  
JPA - standard interface for accessing data |

Timeframe of Implementation

The Cost Share System project was kicked-off in September 2010 and went through the complete ACT Project Management Framework and SDLC lifecycle. The final official release to the UCSD campus was February 2012.

<table>
<thead>
<tr>
<th>Task</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements &amp; UI Design</td>
<td>3.5 months</td>
</tr>
<tr>
<td>Web Service</td>
<td>2 months</td>
</tr>
<tr>
<td>Decision Tree</td>
<td>1.5 months</td>
</tr>
<tr>
<td>Transaction Search/Selection</td>
<td>2 months</td>
</tr>
<tr>
<td>Approval Workflow</td>
<td>1.5 months</td>
</tr>
<tr>
<td>Maintenance and Cleanup Jobs</td>
<td>1 months</td>
</tr>
<tr>
<td>Total</td>
<td>15.5 months</td>
</tr>
</tbody>
</table>

The rollout strategy consisted of a timed and systematic release:

1) Beta release to the four core departments participating in the requirements process.
2) 2-month production pilot rollout to select departments representing a diverse set of units across the campus
3) Campus-wide release February 2012
Objective Customer Satisfaction Data

See a sampling of the many positive client responses received following the toolbox rollout and usage. The names have been omitted and replaced by titles.

“Thank you for Cost Sharing 2.0! It is a DREAM COME TRUE!! So easy!!! :-)

-- Sr. Fund Manager, Electrical and Computer Engineering

“Cost share 2.0 is far better than its predecessor. It is extremely user friendly, and allows for faster transaction entries and queries. 2.0 has saved me several hours of work compared to that of the old system. The thing I like most about the new system is the accessibility of the transactions. Transactions are now easily viewable without sifting through numerous fields.

-- Fund Manager, Computer Science and Engineering

“The new system is so user friendly! It has saved me hours of time on the phone trying to troubleshoot the old system.

-- Accountant, Office of Post Award Financial Services
Appendix

Definitions, Acronyms and Abbreviations

The following are definitions of all terms, acronyms, and abbreviations required to properly interpret this document.

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPAFS</td>
<td>Office of Post Award Financial Services</td>
</tr>
<tr>
<td>EBA</td>
<td>External and Business Affairs</td>
</tr>
<tr>
<td>ACT</td>
<td>Administrative Computing and Telecommunications</td>
</tr>
<tr>
<td>UXT</td>
<td>User Experience and Technology</td>
</tr>
<tr>
<td>SSO</td>
<td>Single-Sign-On Login: authorization and authentication</td>
</tr>
</tbody>
</table>

Definitions

- **CostShare Award Commitment** (i.e. Highest level; flows from coeus, this will be shown on the overall commitment header attributes, non-editable)
- **CostShare Overall Bin(s) Commitment** (i.e. calculated using all the bin(s) setup by users for one CS Award Commitment. Note: Bin’s attributes DO NOT change automatically by the system as the result of changes in Coeus)
- **CostShare Bin(s) Commitment Attributes** (i.e. commitment amount, percentage, ...):
- **CostShare Commitment Search** (A search on bins using award#,fund#,....):
- **Costshare Transactions** (i.e. costshared transactions in the Bin)
- **Bin**: A Container, holding different types of transactions that are being costshared and shows the source and commitment
- **Bin Attributes** (i.e. header attributes+transactions,Bin Digital Signature,Status ...): ...
- **Bin Digital Signature**: electronic signature through SSO.
- **Bin Status** (i.e validated/not validated):
- **Validated Bin**: A bin reviewed and approved by MSO/DBO/PI...
- **Not validated Bin**: A bin that is open for additions/deletions/edits
- **CostShare Contribution Report**: summary report of amount cost shared on the award
- **CostShare QueryLink Reports**: reports to see status of cost sharing information to run centralized reports from the data warehouse
- **Transactions** (transaction outside cost-sharing system: financial, non-financial, ...):
- **Transactions Attributes** (amount, IDC Rate, ...):
Cost Sharing System

- a) **Costshareable/Allowable** Transaction Types (non-financial, financial, Misc/Non-Misc Transactions, W-Accounts...? need to pull from requirements doc):...

- b) **Non-Costshareable/Non-Allowable transaction Types** (non-financial, financial, Misc/Non-Misc Transactions, E-Accounts, Federal Flow Through, Federal Fund...? need to pull from requirements doc):...

  these fall under 1 or the 2 categories above

  - a) **Misc Transactions** (pull defintion from requirements doc):...
  - b) **Non-Misc Transactions** (pull defintion from requirements doc):...

  again this falls under 1 or the 2 categories above

- **Partial Transactions** (Costshareable transactions that are....):...

- **PI**: Principal Investigator
- **Lead PI**: Primary PI responsible for award oversight
- **Co-PI**: Other PI’s that are working on the award
- **FM**: Fund Manager
- **Lead FM**: Fund manager for the lead PI on a project. Oversees the overall commitment, assigns bins to other FM
- **Non-lead FM**: Fund Manager for a co-PI on a project (oversees a single bin)
- **OPAFS**: Office of Post Award Financial Services; responsible for submitting and retaining certified CS reports to agency
- **Notification Email**: Email to bin contacts on various status’ of bin

**Process**

![Cost Sharing Process Diagram]

- Office of Contract and Grant Administration (OCGA) enters project and cost-sharing information into COEUS
- OPAFS establishes project related IFIS fund and index numbers
- Department tracks cost sharing related expenses
- Department selects appropriate cost-sharing transactions in CSS
- Department generates reports
- PIs or MSO/DBO validates that the cost sharing commitment has been met

- Office of Contract and Grant Administration (OCGA) enters project and cost-sharing information into COEUS
- OPAFS establishes project related IFIS fund and index numbers
- Department tracks cost sharing related expenses
- Department selects those appropriate cost-sharing transactions to record in Cost Sharing System
- Department generates reports
- PIs or MSO/DBO validate that the cost sharing commitment has been met
- OPAFS reviews and submits to sponsor as needed
Screen Shots

Initial search page
### Award listing

**COST SHARE 2.0**

**UC San Diego**

**Award Search Results**

<table>
<thead>
<tr>
<th>Base Award No.</th>
<th>Fund No.</th>
<th>Bin Index</th>
<th>Bin Org.</th>
<th>Bin Program</th>
<th>Award Start/End Date</th>
<th>Bin Title</th>
<th>Bin Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>037965</td>
<td>30016A</td>
<td></td>
<td></td>
<td></td>
<td>05/01/2003 - 04/30/2004</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>050038</td>
<td>30225A</td>
<td></td>
<td></td>
<td></td>
<td>07/15/2004 - 07/14/2005</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>051215</td>
<td>30298A</td>
<td></td>
<td></td>
<td></td>
<td>01/15/2005 - 01/14/2006</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>060948</td>
<td>30873A</td>
<td></td>
<td></td>
<td></td>
<td>09/15/2005 - 07/31/2006</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>081574</td>
<td>30675A</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2008 - 02/28/2009</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>090777</td>
<td>24051A</td>
<td></td>
<td></td>
<td></td>
<td>09/20/2006 - 06/30/2013</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>090777</td>
<td>24051A</td>
<td></td>
<td></td>
<td></td>
<td>09/20/2008 - 06/30/2013</td>
<td>Overall Cost Share M...</td>
<td>$287,280.45</td>
</tr>
<tr>
<td>091850</td>
<td>24236A</td>
<td></td>
<td></td>
<td></td>
<td>04/01/2009 - 03/31/2010</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>102040</td>
<td>25836A</td>
<td></td>
<td></td>
<td></td>
<td>02/18/2010 - 02/17/2011</td>
<td>AWARD</td>
<td></td>
</tr>
<tr>
<td>110042</td>
<td>27630C...</td>
<td></td>
<td></td>
<td></td>
<td>07/01/2010 - 03/31/2015</td>
<td>AWARD</td>
<td></td>
</tr>
</tbody>
</table>

Showing 1 to 10 of 14 entries
Bin Detail page with Transactions

**Award:** 090777

### Bin Title: Overall Cost Share Match for 24051A

<table>
<thead>
<tr>
<th>Index</th>
<th>Commitment Total</th>
<th>Alloc. Total (DC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund</td>
<td>24051A</td>
<td>$287,280.45</td>
</tr>
<tr>
<td>Start Date</td>
<td>09/20/2008</td>
<td></td>
</tr>
<tr>
<td>End Date</td>
<td>06/30/2013</td>
<td></td>
</tr>
<tr>
<td>Validating PI</td>
<td>PEVZNER, PAVEL</td>
<td></td>
</tr>
<tr>
<td>Added Contacts</td>
<td><a href="mailto:ttruit@ucsd.edu">ttruit@ucsd.edu</a>, <a href="mailto:dbareno@ucsd.edu">dbareno@ucsd.edu</a></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
*CSE0801. Fund 19000A. $185,453 (1.8 PI salary months 141,413 per year and assoc. fringe benefits at 24,040)*
*GSR933/GSR938 - Fund 2009SA - $125,000 (OGS SD Fellowships match) PLEASE SEE CSE5396/CSE5397 used to make up the cost difference since current SD Fellowships are ~$3,000 more each. CSE5398/CSE5397 - Fund 05397A - $125,000 (OGS SD Fellowship Stipends and Fees cost difference) CSE0518 - Fund 05397A/CSE1391 - Fund 41301A - $175,000 (VC research flex funding ~$35K per year)*

**Note:** This bin includes a total of 145 transactions. A maximum of 200 transactions are shown below for editing purposes; refine your search via advanced search or run detailed report to see all.

#### Extended Transaction Search

<table>
<thead>
<tr>
<th>Source</th>
<th>Trans. Date</th>
<th>Index</th>
<th>Account</th>
<th>Amount</th>
<th>Page No./Doc. No.</th>
<th>Line No./Seq. No.</th>
<th>Rule Class</th>
<th>Cost Share Description</th>
<th>edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ledger</td>
<td>03/29/2012</td>
<td>GSR937</td>
<td>637277</td>
<td>$1,712.55</td>
<td>AR018131</td>
<td>1478</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>03/29/2012</td>
<td>GSR937</td>
<td>637277</td>
<td>$1,712.55</td>
<td>AR018131</td>
<td>1528</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>03/22/2012</td>
<td>GSR938</td>
<td>637277</td>
<td>$4,793.50</td>
<td>AR015141</td>
<td>1312</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>11/23/2011</td>
<td>GSR938</td>
<td>637277</td>
<td>$4,793.50</td>
<td>AR015664</td>
<td>449</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>03/15/2012</td>
<td>GSR938</td>
<td>637277</td>
<td>$4,793.50</td>
<td>AR015096</td>
<td>5209</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>11/22/2011</td>
<td>GSR938</td>
<td>637277</td>
<td>$4,793.50</td>
<td>AR015637</td>
<td>2413</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>02/27/2012</td>
<td>GSR937</td>
<td>637277</td>
<td>$1,712.55</td>
<td>AR015970</td>
<td>3847</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>01/28/2012</td>
<td>GSR937</td>
<td>637277</td>
<td>$1,712.55</td>
<td>AR015861</td>
<td>2898</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ledger</td>
<td>12/19/2011</td>
<td>GSR937</td>
<td>637277</td>
<td>$1,712.55</td>
<td>AR015761</td>
<td>4442</td>
<td>JE20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cost Sharing System

Transaction Search

COST SHARE 2.0

Bin: Overall Cost Share Match for 24051A

Bin Commitment Total $651,000.00
Bin Alloc. Total (DC) $287,280.45
Start/End Date 09/20/2008 - 06/30/2013

Select Transactions From • Payroll/DOPES • Operating Ledger • Miscellaneous

Note: only 200 rows per fiscal year are returned for faster processing, refine your search criteria when appropriate

* min. one field required (wild card %)

IFOP Index Fund Organization Program

Account

Account Period Date Range
1211 - May 01, 2012 through 1211 - May 31, 2012

Employee Name ID

Title Code

Project

Search Clear

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