OE RESOURCE REQUEST APPLICATION

University of California, Berkeley

I. SPONSORSHIP

A. Initiative

Initiative	IT Foundation		
Initiative Manager	Pamela Brown / Karen Kato		
Phone	2-7059 3-3371	E-Mail	phb@berkeley.edu kkato@berkeley.edu

B. Sponsorship

Sponsor Name	EDW - Erin Gore		
Sponsor Signature		Date	8-27-2012
Sponsor Names	Curriculum – Andrew Szeri Curriculum - Cathy Koshland		
Sponsor Signatures		Date	8-27-2012
OE Program Office Signature		Date	

C. Give the title of the resource

Cal Answers Student Curriculum

II. PROBLEM STATEMENT/CASE FOR CHANGE

A. Identify and describe what needs the proposed solution is seeking to address.

Thousands of management decisions large and small are made each year that impact the curriculum, yet there is currently no systematic way for the managers across campus to gain insight in this area. Analysts across the campus are piecing together data elements and creating shadow systems that allow them to better understand student demand, enrollment needs, curricular changes, and faculty workload. But the lack of a centrally supported tool leads to many issues:

- We cannot use our investments in instructional staff and facilities as effectively
- Vast amounts of wasted time as each unit struggles to maintain their own data
- We are missing opportunities to effectively shape the curriculum to students needs
- There is no consistent methodology. The same question brings different answers depending on who you ask.
- We cannot be as nimble in creating or changing programs, adjusting enrollments, or otherwise making changes to the status quo without good data to back up decisions.
- We cannot easily develop common processes and develop training that would be more efficient and raise the quality of analysis for decision makers and advisors

B. Describe the solution that is being proposed to meet the identified need(s).

This project will bring to Cal Answers the key elements needed for analysis of curricular questions including:

- Programs
- Enrollments
- Courses
- Course Requirements
- Instructors
- Grades
- Schedules

We will work extensively with stakeholder groups including unit analysts, MSOs, advisors, students and leadership to define Cal Answers dashboards that best address their needs. Cal Answers dashboards and reports will be created which will help faculty and staff in numerous ways including:

- Evaluate which courses and classes should be expanded or reduced and assess future demand.
- Integrate course and student data together to better highlight the timeliness of course taking patterns, characteristics of students who enroll and their performance in courses by instructor.
- Determine how well the campus is supporting the common good curriculum.
- Analyze enrollment patterns – which courses are filling up and which are not, how quickly, with what types of students.

We will do extensive work with source system owners to understand and import data that will be usable for dashboards delivered in the project, ad hoc querying, and integration with existing subject areas. Doing so will result in many benefits, including but not limited to:

- Improve data security, reliability and accuracy.
- Reduce data duplication and hosting costs of maintaining data in multiple systems.
- Simplify the data access request process by reducing duplicative data stores.
- Improve understanding of data by developing common definitions.

The project will also develop communications, training and change management plans that promote usage of the new tools and data driven decision making through: (1) creating online and classroom training, (2) providing extensive communication, (3) promoting an active user community, and (4) working with stakeholders to integrate the new tools into campus processes.

Cal Answers Student Curriculum project will also provide critical support to other campus wide efforts:

- It promotes Advising Council goals by providing a common tool and thus more definitions and processes for advisors.
- It facilitates moving to Shared Services and security initiatives as we help replace costly, inefficient, and risky departmental shadow systems, and unsupported analysis tools with common practices that centralized staff could be trained on.
- It provides Online Course Evaluations with foundational data to help analyze results.
- It will help with numerous proposed Student Initiatives such as Advising Toolkit, Course Planner, Cal Central and updates to AP Bears. As with Online Course Evaluations, Cal Answers can integrate this data with data from other data sources such that it reduces the cost of providing reporting and reduces training costs by providing a single tool. By analyzing and documenting source data we reduce the costs to other projects that will need the same data.
- The Metrics initiative can be more effective if units have this data available.

The interactions with other projects listed above are the key reasons why it is important for the curriculum project to move forward now, rather than delay. Design decisions and investments are currently being made by these and other projects where the availability curriculum data will have an influence. For example, Online Course Evaluations has already delayed designing their reporting, hoping that they could take advantage of this information. We also have synergies between efforts for Student Financials and Student Curriculum that can reduce costs (e.g. sharing training and communications resources), temporarily increased staffing in the EDW group, and the temporary existence of the IDC program manager that make doing the project now easier.

Having put some initial student data in the warehouse, we have seen that the model is successful and can build upon the strong foundation using the data dictionaries and tables that have already been produced. Analysts throughout the organization have embraced the data and the tool and are eager for more data to be available. As staff struggle to keep up after workforce reductions, reorganizations and substantial changes in systems and support, having easier and more effective ways to get their work done would be greatly appreciated. In an environment where these students are paying higher fees and coming with greater expectations on course availability our ability to understand and meet demand is imperative.

C. Describe the alternate approaches you evaluated in the process of developing this proposal and why those alternatives were not selected.

- Continue the status quo. Faculty and students have made it very clear that the status quo is not meeting their needs. For this reason, this solution was rejected.
- Shadow Systems - Allow individual departments/groups to develop their own solutions. While this has been the norm for many years, UC Berkeley can no longer afford to spend money on redundant systems and can no longer afford to make decisions based on incomplete information. For this reason, this solution was rejected.

III. IMPACT AND STRATEGIC ALIGNMENT

A. Describe how the proposed solution aligns with the OE goals:
- Reduce administrative costs and enable the campus to direct more resources to teaching and research
- Advance an effective and efficient operating environment
- Instill a culture of continuous improvement that leads to high quality performance and outcomes

The Project will reduce costs in numerous ways:

- Enable units to efficiently use instructional staff and facilities as they make curricular decisions
- Promote more strategic investment in mounting new programs, adjusting support for existing ones, and investing in new facilities projects
- Reduce staff time spent developing reports and ad hoc analysis
- Reduce time spent by many units gathering data manually, learning and maintaining local tools and shadow systems, and dealing with the inaccuracies and confusion that accompany use of inadequate systems.
- Provide a central reporting resource so that many other student systems projects will not need to invest in piecemeal local solutions.

It will create a more effective operating environment by:

- Enabling access to data for all those who need it, with clear policies for usage
- Providing a single powerful tool for analysis of many data so that staff can be efficiently trained and develop expertise rather than having to learn many more systems to do the same thing.
- Providing shared definitions and processes between departments so that they are learning from each-other and improving a single process rather than each department reinventing the wheel.
- Lowering the risks and bottlenecks that currently occur when there are only one or two people in the university who have access and expertise on a dataset.

It will promote a culture of continuous improvement by:

- Encouraging a greater use of data and more analytical thinking, driving a culture change rewarding factual analysis and devaluing anecdotal assessment.
- Providing metrics that allow comparisons between departments to identify best practices and opportunities for improvement.
- Promote more consistent, documented tools and processes that can be evaluated and improved

B. Identify any other anticipated benefits in implementing the proposed solution.

The project will provide critical support to other campus wide efforts. See section F below.

C. Identify the risks of not implementing the solution.

- Reduced decision-making capability.
- Less efficient use of resources
- Inability to track goals through performance metrics.
- Frustrated students that lack the tools they need to make good class decisions.

D. Describe the constituency that is intended to benefit from the proposed solution (e.g. students, faculty, staff, 1-many units)

The project aids numerous constituencies: departments will be able to provide better access to critical courses facilitating time to degree and reducing student frustration. Advisors will be able to better support students by integrating information on enrollment patterns, current course availability, degree requirements and student course history. Deans and Chairs will be better enabled to review curricular needs, evaluate their instructional / GSI staffing strategy, and consider other options on mounting the curriculum. . It will reduce the time spent by analysts integrating, validating, and cleaning-up data, and free them to spend more time on value-added work. Finally, campus leadership will be able to better access information on how enrollment patterns impact course enrollments, offerings and demand.

E. Describe the extent to which this proposed solution is a collaborative effort either within campus or with external partners.

This project will be a combined effort of input and resources from: The Vice Provost Teaching, Learning, Academic Planning and Facilities, Graduate Division, Academic Units, Office of Planning and Analysis (OPA), Equity and Inclusion, Admissions & Enrollment, Registrar's Office, OE Student Services Initiative and Information Services and Technology (IST).

Campus analysts and management representing the breadth of campus groups using the data under development will be included in data requirements, report and dashboard design and QA testing to ensure the deliverables are meeting the requirements of the campus.

F. If applicable, describe how the proposed solution may enable additional projects to be considered.

The EDW will become essential as a source of reliable data on which to assess current and future projects. It will be able to provide the reliable data needed for meaningful cost-benefit and performance analysis, and establishment of baselines. As other data-driven initiatives emerge they will benefit by the existence of the EDW foundational subject areas. As more and more data is added, people will increasingly rely on it to answer cross functional area questions rather than copying data and looking for the needle in a haystack. Over the long-haul, it could well prove to be the campuses biggest cost savings project.

Cal Answers Student Curriculum project will also provide critical support to other campus wide efforts:

- It promotes Advising Council goals by providing a common tool and thus more definitions and processes for advisors.
- It facilitates moving to Shared Services and security initiatives as we help replace costly, inefficient, and risky departmental shadow systems, and unsupported analysis tools with common practices that centralized staff could be trained on.
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- The Metrics initiative can be more effective if units have this data available.

G. What is the impact of the proposed solution on the existing systems and processes? Does it eliminate the need for existing systems and processes?

- This solution will add value to the existing/new systems that are the original capturers of this information. The redundant and piecemeal systems currently providing this functionality may be eliminated.
- Providing greater visibility into curricular data will alert people to data quality issues and lead to improvement.
- Over time, shadow systems can be reduced and eventually eliminated. Through exposure of the student data, we expect academic departments to begin implementing automation for updating websites and replace existing manual data entry.

H. What is the impact on the proposed solution on the workload?

Profile/Impact in hours	Current Workload	1-time workload requirement	Ongoing workload requirement
Student	None	None	None
Staff	Run reports as needed	Training, requirements and testing if on project team. Online training is estimated at 2 hours for general users and an additional 4 hours of classroom time for advanced ad hoc users.	Estimate 15% efficiency gains for dashboard users. Estimate 30% efficiency gains for ad hoc query users.
Faculty	Run reports as needed	Training is estimated at 2 hours for general users	See staff gains.

IV. WORK PLAN AND PROPOSED SOLUTION DESIGN

A. Provide a statement of:
- Deliverables — results the solution must deliver to achieve the stated objectives.
- Constraints — factors that may limit the options for providing the solution (*e.g., an inflexible deadline*).

General Deliverables for All EDW Projects

- **Project Phases** - Projects will be broken up into small deliverables over the length of the project to better enable course correction of deliverables.
- **Data** - New data will be integrated with other subject areas in the enterprise solution allowing cross functional analysis and a consistent cross-campus view. Detail and summaries will be made available to support campus needs. See section 4C for details.
- **Reports & Dashboards** – New development for reports and dashboards will be performed in OBIEE Cal Answers. This solution will deliver certified and re-usable metrics that will measure goal achievement. It provides faster ad-hoc reporting development for campus analysts and drill-down capabilities for all users.
- **Security** - Utilize the recently deployed and flexible EDW security model to meet the expanding data security needs of the campus. Provides information that people need while protecting sensitive data.
- **Metadata** – Capture business and technical metadata and expose through reports and in mouse rollover in OBIEE Cal Answers.
- **EDW Access Request** – For all new data, work with the Identity Management team to utilize the EDW Access Request system, a web-based workflow that assigns security roles based on data proprietor approvals.
- **Tool Training** – Create online training for the OBIEE tool. Create online and classroom training for ad hoc report development in OBIEE.
- **Subject Area Training** – Create online and classroom training for new data, reports and dashboards. Provide tier 1 training to the Service Desk.
- **EDW Support** – Develop a Service Level Agreement (SLA) which defines roles, responsibilities, and processes related to ongoing support of the EDW and BI services.

General Constraints for All EDW Projects

- **Funding** – Project work can start when one-time work is funded and a source of ongoing funding is secured.
- **Project Resources** – EDW/BI projects require a great deal of time in concentrated blocks from data proprietors, functional subject matter experts and technical staff. External project teams will be utilized as much as possible to staff EDW projects and backfill or provide functional and technical expertise, but dedicated oversight is required by both functional and technical leads.

B. Provide a work plan for the proposed solution with high-level steps to complete the solution, including timeline. (Try to limit your plan to no more than seven steps.)

The following process, used to integrate student data into the EDW, would be followed to integrate curriculum and course data projects.

Milestone	Responsibility	Timeline
Project funding approval		
Phase 1		
Identify specific data and reports that are needed	Functional Teams & IST	Month 1
Design the data model to hold all required elements	IST	Month 2
Develop data copying requirements and scripts to copy data.	IST	Month 3
Define data structures to OBIEE Define and develop metrics and reports Define security Capture available metadata	IST Functional teams and IST Functional teams and IST Functional teams and IST	Month 5
QA testing Train users and service desk support	Functional teams Functional teams and IST	Month 6
Implement into production	Functional teams and IST	Month 7
Phase 2		
Identify specific data and reports that are needed	Functional Teams & IST	Month 8
Design the data model to hold all required elements	IST	Month 9
Develop data copying requirements and scripts to copy data.	IST	Month 10
Define data structures to OBIEE Define and develop metrics and reports Define security Capture available metadata	IST Functional teams and IST Functional teams and IST Functional teams and IST	Month 12
QA testing Train users and service desk support	Functional teams Functional teams and IST	Month 13
Implement into production	Functional teams and IST	Month 14
Phase 3		
Identify specific data and reports that are needed	Functional Teams & IST	Month 15
Design the data model to hold all required elements	IST	Month 16
Develop data copying requirements and scripts to copy data.	IST	Month 17
Define data structures to OBIEE Define and develop metrics and reports Define security Capture available metadata	IST Functional teams and IST Functional teams and IST Functional teams and IST	Month 19
QA testing Train users and service desk support	Functional teams Functional teams and IST	Month 20
Implement into production	Functional teams and IST	Month 21

C. What are the data requirements for the proposed solution?

Data Requirements for Student Registration

- Course
- Class
- Grade Distribution
- Class enrollment / registration
- Class Enrollment for Future Semesters
- Faculty class instructing (CSIR)
- Student to Student Reported Class Evaluation
- Degree Requirements
- College Breadth Requirements

D. What are the technical requirements for the proposed solution?

This proposal will likely result in requiring:

- Additional database storage
- DBA participation to create tables, views, and performance tuning activities.
- Enough OBIEE and database CPU/Memory/IO to support additional users during peak loads.

E. What are the greatest risks for the proposed solution and the plan to reduce or eliminate the risks.

	RISK	MITIGATION PLAN
1.	One Time and Ongoing Funding	Seek OE one-time funds. Seek incremental ongoing costs from the revised look at the financial model which may include this either from common good funding, or from a more robust allocation to decision making and data infrastructure. If for some reason the financial model is not revisited and no additional funding is available, the funds allocated for enhancements will be utilized for baseline support until common good funding is secured.
2.	Functional and technical resources are not available and/or skilled.	Hire outside consulting to fill in gaps in skill set and resources.
3.	Campus resists using a new BI tool (OBIEE Cal Answers)	Curriculum design including the development of online and facilitation of classroom and drop-in training is essential. Developing support from change leaders who will utilize the certified reports is equally essential.
4.	Expectation Management / Project Management	Existing EDW management can concurrently oversee 2-3 large projects. Given the perceived campus demand, the EDW projects include extra management support (project management, technical leadership).

F. How does the proposed work plan allow for evaluation and course correction to ensure the outcomes meet the campus needs?

Each project will have a Project Manager, Project Sponsor and executive EDW Sponsor who will oversee the work effort. The project plans will be developed with milestones to ensure the data deliveries and basic report deliveries are on track.

v. CHANGE MANAGEMENT

A. What is the change management plan to successfully implement the outcomes of the proposed solution?

- Strong communication plan through list serves, updated websites, consistent updates on progress of projects and marketing quotes from thought leaders.
- Development of a solid training program: Forums to prepare the campus. Online, Classroom training for the tool AND the data and drop-in workshops. Advanced training for ad-hoc report development.

B. What incentives and/or disincentives are proposed to influence behavioral changes necessary for the successful outcome of the proposed solution?

- Free use of the OBIEE reporting tool.
- Delivers actionable metrics.

C. Who has been identified as the change leaders and implementers to carry out the changes necessary for the successful outcome of the proposed solution?

- Senior management in Student Affairs, Provost, Finance & Budget, OPA, Admissions, Office of the Registrar provide support for reviewing certified reports and data from EDW.

v. FUNDING MODEL AND BUDGET

A. Could the proposed solution move forward with partial funding? If yes, describe the revised scope, including the associated savings impact.

This proposal has been developed with fully-costed estimates.

Partial funding of the following individual projects is possible by limiting the scope of data sources incorporated into the EDW. Based on input from functional owners and IST, the IDC would prioritize the data to be incorporated into the EDW.

B. What is the plan for sustainable funding to support ongoing operations of the proposed solution?

The EDW/BI function is seeking common good funding to cover the incremental ongoing costs for approved projects.

C. Please download and fill out the OE Resource Request Budget Template located at [location] and follow the instructions on the first worksheet in the workbook to complete the budget ant line descriptions. Include both completed sheets with the Resource Request.

VI. ASSESSMENT PLAN

Please use the table below to detail your metrics.

METRIC CATEGORY	SPECIFIC MEASURE	MEASURE BASIS	DATA COLLECTION METHOD	DATA COLLECTION FREQUENCY	FUNCTIONAL OWNER OF DATA COLLECTION	LARGER GOAL TO WHICH METRIC RELATES
FINANCIAL PERFORMANCE						
1	Staff and Student Time savings through use of Student data (replacement of common good curriculum dashboard; Cal Profiles reporting)	Project	Survey	Annual	OPA	15% efficiency savings for dashboard users, 30% for ad hoc query users
OPERATIONAL PERFORMANCE						
1	# Reports Run for Student Data		OBIEE Stats	Monthly	IST EDW	Utilization – efficiency savings
2	# Users for Student Data		Database Stats	Monthly	IST EDW	Utilization – efficiency savings (target: 600 for dashboard and 90 for query tool)
CUSTOMER SATISFACTION						
1	Data Accuracy, Reliability (Scale 1 to 5)	Project	Survey	Annual	OPA	Successful project implementation (4 on a scale of 1 to 5)
2	Student Report Benefit (Scale 1 to 5)	Project	Survey	Annual	OPA	Successful project implementation (4 on a scale of 1 to 5)