Activity-Based Costing Scoping Study for UC Davis
FINAL

Scoping Study

To date, conversations with the Office of the President about activity-based costing (ABC) have focused on three parameters of a proposed scoping study: budget and timeline to complete a pilot project, analysis of data requirements, and identification of participating academic departments. Each item is summarized below and explained more fully later in the document.

Summary

1. Proposed Budget and Timeline
   Our budget to complete the pilot project is roughly $3.0 million over the course of 27-30 months. Even after allowing for the hiring of consultants to perform portions of the pilot, the project would still require significant effort by UC Davis faculty and staff. Staff members are currently fully dedicated to other projects; therefore, the budget for the project assumes that resources must be made available to backfill all necessary faculty and staff.

   We note that UC Riverside received significant financial assistance from the Bill and Melinda Gates Foundation and paid a reduced fee to one of its consultants. These benefits will not be extended to UC Davis. It should also be noted that UC Riverside has been running multiple, overlapping projects which makes it difficult to compare their budget for ABC to the one proposed in this document.

2. Data
   The required data elements are housed in several distinct operational data stores (e.g., student data, financial data and facilities data). Within those stores we believe that we have data that are suitable for the project. However, considerable effort will be required to connect data from the various systems in a way that it can be used for the ABC project. We often link data systems for other purposes, but not in the way that ABC requires.

3. Participation
   Three departments have agreed to participate in a pilot study: chemistry, mechanical and aerospace engineering, and psychology.

   The Davis Division of the Academic Senate has been involved in this project because of its relationship to curriculum delivery and potential influences on future resource allocations for instruction. The Senate has raised questions about the expected benefits and costs of the ABC project and alignment of this effort with expected outcomes given other resource demands.

Overview

UC Davis and UC Merced have each been asked to complete a scoping study related to activity-based costing, similar to the project currently underway at UC Riverside. UC leadership will review the scoping studies and evaluate whether the two campuses should proceed with full pilot projects. This draft presents the scoping information that UC Davis has developed to date.

UC Riverside is currently conducting a series of projects that, when completed, will include a new budget model for the entire campus and activity-based costing data for their College of Humanities, Arts and Social Sciences. The budget model will allow Riverside to more transparently allocate revenue and costs to its campus units based on a set of defined metrics. The results of the ABC project are intended to serve as a tool for deans and department chairs to better understand the cost of various teaching methodologies and to help decide which mode of instruction is best for student success in a given circumstance.

The proposed methodology for the ABC project will allow Riverside to capture the fully loaded costs of individual courses. Fully loaded refers to capturing the direct and indirect costs of educational activities. Direct costs are those that may be easily ascribed to an activity. In this case, they include such things as expenses for instructors, teaching assistants and laboratory supplies. However, for this project, Riverside will not only quantify the cost of an instructor for an individual course; they will sub-divide instructor time into educational activities such as course development, course management, teaching and tutoring. This level of information will be collected by interviewing a representative sample of instructors.

In contrast to direct costs, the indirect costs of a course are those that cannot be easily attributed to a particular activity. For this project, examples of indirect costs include expenses for departmental administration, the registrar's office and utilities. Through the development of its budget model, UC Riverside determined how a variety of indirect costs should be allocated across its campus. Some indirect costs are allocated based on number of students, some on square footage, some on number of employees, and so on. This is noteworthy because this work is needed to achieve a fully loaded version of activity-based costing and efforts are expected to be extensive.

Budget

We estimate the budget for a pilot project to be almost $3.0 million over the course of 27-30 months. The combined costs from two consulting firms would be approximately $870,000: Pilbara Group ($470,000) and Deloitte Consulting ($400,000). In addition to the consultants, UC Davis faculty and staff costs would be about $1.6 million over the course of the project. We have also factored in a contingency of almost $500,000 (or 20 percent) to account for the high degree of uncertainty related to the project.

1. Deloitte – submitted a proposal totaling $400,000

Deloitte would provide two different sets of services under the agreement with UC Davis.

a. Deloitte would assist UC Davis in the development of the infrastructure necessary to complete ABC. Specifically, this would mean helping us develop what they refer to as a cost allocation methodology playbook. The playbook would include cost objects, pool and driver definitions for academic and administrative units. We estimate that this work would take approximately 12 months – six months to complete the first draft of a methodology and an additional six months to complete the necessary dialogue with relevant stakeholders and refine the playbook. Deloitte would perform the work of building the methodology (six months) and UC Davis staff would continue the dialogue and refinement (six months).

b. Deloitte would lead the faculty course study phase. As mentioned previously, a key component of the ABC project is to sub-divide instructor time into educational activities (curriculum development, instruction, grading and assessment, etc.). To do this, Deloitte would conduct interviews with selected instructors from the participating departments. Deloitte would also provide instructor and course profile inputs for ABC model mapping. Deloitte estimates that this work would take three months to complete. This seems reasonable and within the 20 percent contingency that we have applied to the entire project.

2. Pilbara – submitted a proposal for $468,000

The culmination of the work by Pilbara would be the delivery of a cost model for the university that includes direct and indirect costs. The end product would consist of five modules: human resources, general ledger, educational program, courses and facilities. The Pilbara model requires not only data elements from each system but linkages that span across the systems. Pilbara estimates that this work would take approximately 4.5 months (or 18 weeks). This seems optimistic but within the 20 percent contingency that we have applied to the entire project.

3. UC Davis Costs for faculty and staff – estimate $1.6 million over 27-30 months

We estimate that 8 FTE per year would be required from various individuals across the campus, with the four most significant being the project manager, information technology manager, employees from Budget and Institutional Analysis, and employees from the three departments participating in the course-level study. The remaining staff and faculty would come from a variety of campus units (totaling 2 FTE).

Since faculty and staff at UC Davis are currently fully dedicated to other responsibilities and projects, we have estimated what it would cost to backfill those positions.

a. The cost allocation playbook phase of the project (led by Deloitte) would require participation by subject matter experts from Accounting and Financial Services, Facilities, and Budget and Institutional Analysis. In addition, Budget and Institutional

Analysis would assist with the campuswide dialogue among relevant stakeholders and refinement of the methodology.

b. In order link data from a variety of systems, participation by subject matter experts would also be required from individuals in Accounting and Financial Services, Facilities, the Registrar's Office, and Budget and Institutional Analysis.

c. The faculty course study phase (led by Deloitte) would require participation by faculty and administrative staff from each of the three participating departments (chemistry, mechanical and aerospace engineering, and psychology).

d. The project would require consultation and coordination with the Academic Senate.

4. We do not anticipate any significant equipment purchases for this project (e.g., a dedicated file server).

It is important to note that a comparison of the UC Davis budget for its ABC pilot to the ABC costs at UC Riverside is complex, and should not stop at the fact that both show a similar cost. While both are roughly $3 million, the UC Riverside project covers a broader scope of work than the UC Davis pilot. For example, a significant portion of the work in the Pre-Pilot stage of the UC Riverside project was related to the development of a campus budget model. As discussed in more detail in the Data section of this document, while UC Davis will need to develop ways of allocating costs, we will not need to develop ways of allocating revenue. Nor will we need to establish principles for redesigning our budget. We have already completed those tasks. These differences result in a narrower scope of work for Deloitte and UC Davis staff.

Timeline

Based on our experience with similar projects, we estimate that a minimum of 27-30 months would be required. If the project begins in January 2016, then we estimate that submission of a final report would be March 2018.

While some phases can run concurrently, the cost allocation methodology that would be aided by Deloitte must be very near completion before Pilbara begins their portion of the project. This is because the output from that Deloitte phases serve as inputs for the Pilbara costing model.

Data

Pilbara has shared the data elements that would be needed to build the costing model. The required data elements are housed in several distinct operational data stores (e.g., student data, financial data and facilities data). Within those stores we believe that we have data that are suitable for the project. However, considerable effort would be required to connect data from the various systems in a way that it can be used for the ABC project. We often link data from different systems for other purposes, but not in the way that ABC requires, which is, effectively, to link datasets from all of our systems to each other.

One example of linking data across systems relates to organizational mapping. It is our understanding that at UC Riverside a department is a department is a department. That is to say, an academic department in the student information system can be traced to the same department in the financial system and on to other systems. This is not the case at UC Davis. To connect an academic department across data systems would require creating mappings or developing cost allocation methodologies that do not currently exist.

Another aspect of creating meaningful data connections for this project involves identifying operationally meaningful cost drivers for the allocation of indirect costs. As an example, to fully load a psychology course from a costing perspective, some portion of things like utilities, deferred maintenance, and registrar must be mapped to the instructional operations of the psychology department. As part of the development of its budget model, UC Riverside worked through a process to reach consensus on how such costs would be allocated. UC Davis' budget model allocates revenue but not costs. This means that we will need to work through our own version of how to allocate the indirect costs—a process that must be done on a campuswide basis. Deloitte would be hired to help determine our cost drivers and to lead a campuswide consultative process. Our experience with the budget model suggests that this process will take approximately 12 months to complete. This phase of the project would involve significant consultation resulting in multiple iterations of the model and ongoing discussions about trade-offs across various methodologies.

Participating Academic Departments

For the pilot study, UC Davis was asked to include three departments. For this exercise to be meaningful to the campus, the courses selected should reflect the balance of courses on our campus and thus will need to include a representative sample of courses in the science, technology, engineering and math (STEM) areas, which typically have significantly higher capital, equipment, material and other expenses. Three departments have agreed to participate in a pilot study: chemistry, mechanical and aerospace engineering, and psychology. The rationale for including each department is included below:

1. Chemistry supports more student credit hours than any other department, because it offers courses for chemistry majors and foundational courses for many other majors across campus. Due to its laboratory courses, the department makes significant use of teaching assistants and instructional equipment.

2. Psychology is one of our most popular majors, normally number one or two when ranked by degrees conferred. The department engages in a significant number of student credit hours, including some laboratory courses.

3. Mechanical engineering is a popular major, consistently in the top 20 when ranked by degrees conferred. The department makes significant use of teaching assistants in its laboratory courses and relies on instructional equipment. There is also a differential salary scale for engineering faculty.

Within each department, approximately five courses would be chosen as a representative sample of all department offerings. Based on the courses selected, approximately five instructors would be asked to participate in an interview. The interviews would determine the amount of time spent on various educational activities. Specifically, each instructor would be asked how much time she spends for a particular course on activities such as curriculum development, instruction, advising, and assessment. Deloitte would lead this phase of the project. Deloitte would be responsible for conducting the interviews, compiling and analyzing the data, and loading the results into the costing model.

Activity-Based Costing
Budget for Pilot Project

Consultants	**Cost**
Pilbara	$468,000
Deloitte	$400,000
Total Consultant Cost	**$868,000**

UCD Staff by Unit	**Avg Annual Sal**	**Sal + Benefits**	**FTE**	**Yrs.**	**Total Cost**
Project Manager	$150,000	$227,700	1.00	2.25	$512,000
Information Technology Manager	$150,000	$227,700	0.50	2.25	$256,000
Budget & Institutional Analysis	$100,000	$151,800	0.80	2.00	$243,000
Accounting & Financial Services	$100,000	$151,800	0.25	2.00	$76,000
Registrar's Office	$100,000	$151,800	0.25	1.50	$57,000
Facilities	$100,000	$151,800	0.25	1.00	$38,000
Academic Departments - Faculty	$100,000	$138,300	0.75	0.50	$52,000
Academic Departments - Admin	$65,000	$98,670	3.00	0.50	$148,000
Administrative Support	$52,000	$78,936	0.50	2.00	$79,000
Senate Committee Member	$100,000	$138,300	0.25	2.00	$69,000
Senate Support Staff	$65,000	$89,895	0.50	2.00	$90,000
UCD Staff Costs			**8.05**		**$1,620,000**

Consultant Costs	$868,000
Consultant & UCD Staff Costs	**$2,488,000**
Contingency %	20%
Contingency Amnt	$497,600
Total	**$2,985,600**

Activity-Based Costing
Timeline for Pilot Project

#	Month	Components
1	Jan-16	Get PM, IT Mgr
2	Feb-16	Launch/Deloitte Prep
3	Mar-16	
4	Apr-16	Deloitte - Indirect Cost Drivers Assume 6 months
5	May-16	
6	Jun-16	
7	Jul-16	
8	Aug-16	
9	Sep-16	
10	Oct-16	Deloitte - Interview Faculty Assume 3 months
11	Nov-16	
12	Dec-16	
13	Jan-17	Get Consensus; Revise As Needed Assume 6 months
14	Feb-17	
15	Mar-17	
16	Apr-17	Pilbara Assume 5 months
17	May-17	
18	Jun-17	
19	Jul-17	
20	Aug-17	
21	Sep-17	Review Results; Consultation Assume 5 months
22	Oct-17	
23	Nov-17	
24	Dec-17	
25	Jan-18	
26	Feb-18	Finalize Report
27	Mar-18	Submit Report