I. Project Proposal

i. Executive Summary

This document serves as a joint proposal from UC San Diego’s Administrative Computing and Telecommunications and UC Irvine’s Network and Academic Computing Services. We propose to initiate a new cross-campus collaborative model of developing and deploying an Academic Personnel Online Review application by implementing a central Web-based document flow system. This approach will bring forth significant long-term cost saving benefits by eliminating redundant efforts across multiple campuses. Benefits include opportunities to streamline processes and adopt unified standard practices, as well as providing the means to implement scalable IT solutions; all of which are vital to the university’s complex business environment.

ii. Project Overview

We propose a project to create an Academic Personnel On-Line (APOL)\(^1\) workflow data storage system that can be used by multiple UC Campuses. The application and Review data will reside at the UC San Diego campus where project members from other participating campuses can access the code and perform necessary and agreed upon development, bug fixes, and updates to the system. The data will be hosted and maintained by the hosting campus\(^2\) DBA and security teams and all participating campuses\(^3\) will be able to submit requests for any updates. The project will require additional security considerations, database considerations, and user interface updates to reflect a custom look-and-feel

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\(^1\) APOL - UCSD’s Academic Personnel On-line
\(^2\) Hosting campus – The campus where the system and data reside
\(^3\) Participating campus – The campus who is not hosting, but using or contributing to development
for each campus. The project may also add additional workflow or custom functionality required by a single campus that updates the structure of the entire application. Each campus will be responsible for developing and maintaining data feeds and web services to support the application. Each campus will also be responsible for importing of the initial data and the rollout to their own campus including training, documentation, and first-tier customer support.

The development and maintenance overhead necessary to run multiple campuses from a single application and data storage system may be offset by looking at the following benefits:

1. Standardizing and digitizing AP Review business process into one shared application enables faster replication of process innovations across all participating campuses.
2. Collaboration from multiple campuses for a single application will help us streamline business processes at all campuses.
3. A unified code base means multiple campuses are employing technical personnel for a centralized software environment, not disparate systems. This approach reduces the overhead created by individual campuses each employing technical personnel to duplicate common application functionality.
4. Upon completion of each version of the system, a single technical team can perform maintenance.
5. Most standards and middleware customizations can be reused for other applications and will help set standards for the benefit of other UC campuses.

Developing a project between multiple campuses brings up issues such as funding, personnel, project management, stakeholder diversification, and accountability. We believe that we can put processes and standards in place that will provide a model for other software development projects to follow.

II. Collaborating between Campuses

i. Feature sets and application design

A single APOL requirements document will be created and approved by the joint Academic Personnel business offices of the participating UC Campuses. Each campus will identify a primary contact from their respective Academic Personnel office as key stakeholders – we will refer to them as the APOL business team in this proposal. The requirements document will include the necessary features, workflow, campus customizations, and other business rules necessary to develop the next version of the APOL system. When the campuses cannot agree on a feature or require different customizations, both sets of requirements should be included in the document with extra funding or development time added to the schedule. These requirements should be delivered to the APOL project team for review. APOL project team consists of technical staff, managers, and project managers from participating campuses who will be working on the development of the system. The APOL project team will return with the project roadmap for review and approval from the APOL business teams. The project roadmap will contain resource requirements, timelines, and other deliverable information for the project.

All participating campuses should have full access to development specifications, timelines, and staff resource allocations during the development process. A “change review process” must be set up to allow participating campuses to review and discuss priorities, current features and task lists that are under development. A regular meeting will be scheduled among all participating UC campuses in collaboration to facilitate communication and information sharing regarding project progress and challenges. Major features created for an individual campus should be developed in such a fashion to allow each participating campus to opt-out of the enhancement by hiding or disabling the functionality.
ii. Programs and task lists
The APOL project team will have a lead project manager who will reside at one of the participating campuses. The project team will divide work amongst the resources to meet the needs of the project requirements as outlined in the project roadmap. Participating campuses may work on items relating to overhead tasks, APOL specific tasks, campus customization tasks, or campus implementation tasks. Each campus should be prepared to offer resources to work in any or all of these areas to keep the project moving at a sufficient pace. If a campus is unable to continue funding the project either through funds or resources, they should scale back their requests for customizations to meet the need of the overall project.

iii. Bug fixing and maintenance
Bugs will be logged and maintained in a single bug tracking system located at the hosting campus. The project manager and change review process committee will determine the importance of implementing the fixes. A standard schedule will be used to roll out any updates or fixes to the system. Each participating campus will be required to track and enter bugs from their campus to the bug tracking system. First line support including client communications should be done from the originating campus. Second line support, including infrastructure-related issues and emergencies will be provided by the hosting campus. Each campus will be responsible for final QA and launch to their own campus. Each campus will be responsible for testing and closing out bugs found from their campus.

iv. Infrastructure Needs
The system itself will need servers and server maintenance, database support, security support, back-up processes etc. The hosting campus will provide these services with their internal infrastructure teams using the procedures of the hosting campus. Any data stored locally at an individual campus will be maintained and backed up by that campus. If a participating campus has needs over and above the hosting campus’ current processes, additional infrastructure resources will be required and will need to be discussed with the campus’ Academic Personnel business office. When needed, a neutral party such as ITLC could get involved to determine if the current infrastructure services are adequate or if updates need to be made. It will not be feasible to implement multiple infrastructure procedures for each participating campus.

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4 ITLC - University of California’s Information Technology Leadership Council - http://www.ucop.edu/irc/itlc/
III. Architectural Issues

i. Data issues
If needed, a participating campus may provide a process to populate the database with their initial faculty information. For UC San Diego this includes a Paradox conversion along with manual data entry screens to allow for the Paradox manual process to work seamlessly with the system. UC Irvine does not foresee the need to implement a manual process at this time.

Data associated with this application will fall into a set of distinct categories:

- Application-specific data will be stored in a single database location for all participating campuses.
- Campus-specific data will be accessible either via the application database, or be accessible via an API (Application Programming Interface). Hooks and automation may be developed to populate between these systems. Approaches to integrate external campus data, including data feeds or SOA for phone book data and access control will be evaluated prior to implementation. This will be an addition to the current architecture of the application.

Further research will be required to determine how data will be accessed, cached, stored and updated with particular consideration taken for potentially sensitive information such as employment and salary histories.

ii. Security issues
The security of APOL Review is critical because the APOL Review application will have access to read, update, and delete Review data for all participating campuses. All campuses will need to ensure their security requirements are met through an established standard infrastructure review, code review, and application vulnerability scanning.

All participating campuses will need to use the Single Sign On system developed at UC San Diego which is based on the Shibboleth technology. This system will allow us to authenticate all users as UC employees and to properly determine their role in the system. There will need to be a separate component to the application to build the security and roles cross campus which will add some overhead programming to the application. Campus security teams will need to be consulted to assure all standards are followed properly.

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5 Paradox - UCSD’s database management system.
6 API – A set of functions or procedures within the system in order to support the building of applications.
7 Single Sign On - A method of access control that enables a user to log in once and gain access to multiple systems without having to log on again.
8 Shibboleth - A standards based, open source software package for web single sign-on across or within organizational boundaries.
IV. Conclusion and next steps

i. Conclusion
With a well-managed project we can eliminate the development of a redundant Academic Personnel On-Line system at another UC campus. Over time, we can use this application at multiple UC campuses saving the entire UC system hundreds of thousands of dollars (if not more). The up-front costs for the overhead items connecting the two UC campuses to each other will be recouped by eliminating a second development project and most work can be reused on other ground breaking projects to link the campuses together. It is recommended that business offices discuss and put together a plan to move forward with the joint project between UC San Diego and UC Irvine.

ii. Next Steps
Given additional resources and time, we can create a sample application to demonstrate the security, log in, look-and-feel issues that need to be solved for the joint application. This demonstration could be presented to both UC Irvine and UC San Diego to help secure funds and resources to move forward with the full-scale project.

iii. Future Collaboration
There has been interest among Academic Personnel offices of both UC Irvine and UC San Diego to implement a joint online faculty recruitment system. We anticipate that a similar development to share UC Irvine’s online Recruit project with UC San Diego will follow. The details will be discussed and planned in a later phase.

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