

This report was submitted to the UC Information Technology Guidance Committee in December 2006 for its consideration. The proposals contained herein are not necessarily endorsed by the ITGC.

ITGC / Common IT Architecture Working Group Summary for Dec. 11 Meeting

A. Background/process details:

1. Charge:

The ITGC will explore the potential deployment of common IT infrastructure to improve functionality and productivity, assure interoperability, simplify operations, and reduce costs. It will also explore collaborative service delivery and funding models to support, develop, and sustain this infrastructure. Examples of such information service utilities include identity management, portal-building tools and services, middleware for grid computing, services that support the University's business and academic functions, services that support strategic planning and decision making, *etc.*

Initially, specific work by the Common Information Technology Architecture Work Group will primarily focus on architecture for services that support the University's business functions. All work groups will, however, recommend strategies that affect the common architecture. That work will be synthesized in a second phase.

2. Membership:

- Arlene Allen, UCSB
- Marina Arseniev, UCI
- Marty Backer, UCSD
- Peter Brantley, UCOP/CDL
- Russ Harvey, UCR
- Bruce James, UCOP
- Rich Kogut, UCM - Chair
- Nick Redingius, UCLA
- David Walker, UCOP - Consultant

3. Work Plan

- a) Our overall strategy is to draw on the expertise of the campus CIOs and information technology architects using the Information Technology Leadership Group (ITLC) as a vehicle, to interact with the other ITGC workgroups to ensure that we are addressing requirements appropriately (and to identify boundaries of scope), and to draw on the reports from the ITGC campus visits to identify campus issues, requirements, and concerns. We have also identified liaisons with the groups looking at Quali and potential HR initiatives.
- b) Our initial meeting was on 8/18/2006, where we reached broad agreement on general principles, started to establish the full list of issues we need to address, and decided how we will proceed. The group will primarily work electronically, and schedule conference calls as needed.
- c) The first day of the Sept. 12/13 ITLC meeting will be devoted to a workshop on architectural principles and examples of best-practice UC campus implementation projects as well as a presentation by CSU. Campus architects will be attending this meeting. The day will be framed by discussions led by the IT Common Architecture work group, and we expect that we will leave this meeting with a good consensus.
- d) Following that meeting, we will schedule conference calls with the other ITGC work groups.
- e) In the Fall, we will try to develop a good draft of a Powerpoint summary of our conclusions and recommendations, and then work on a detailed, supporting report. Our hope is to deliver this relatively early so that it

will be available to the other work groups as they develop their own reports.

4. Proposals:

Recommendation to Create an Advisory Group for Ongoing Oversight of UC Architectural Standards

Objective

Invest the IT Architecture Group (ITAG) with formal responsibility for system-wide IT architectural standards and guidelines.

Background

Historically, there have been relatively few, but significant IT architectural standards established for UC as a system. For example,

- Shibboleth for federated authentication within UCTrust.
- JSR 168 and WSRP for integration between campus portals and shared portlets.
- Common file formats for the transmittal of "corporate" data from the campuses to UCOP.
- MARC file formats for transmittal of bibliographic data from campus libraries to Melvyl.
- TCP/IP as the protocol suite for intercampus networking.

Since the number of these standards is small, it has not been necessary to coordinate UC's standards processes. The need for interoperability standards is increasing rapidly, however, as UC moves to great sharing of IT resources.

The ITLC has recently created the IT Architecture Group. We need to invest it with the appropriate authority and resources to guide UC's system-wide IT architecture.

Action Items

- By the end of FY 2006/2007, complete the creation of the ITAG, providing it with appropriate resources (hardware, software, and staff) to be an effective standards body. As part of this work, the ITAG must establish its internal processes for establishing standards and guidelines in collaboration with system-wide system implementation groups.
- By the end of 2007, establish policies and guidelines for system implementation groups and the ITAG to achieve an appropriate level of consultation between the ITAG and those implementation groups.
- By the end of 2007, the ITAG should articulate recommendations, guidelines, and standards for the following:
 - The availability, consistency, and timeliness of system wide data particularly entertaining data warehouse and integration broker technology.
 - Architectural principles that enhance disaster recovery and business continuity for the University's critical applications.
 - In collaboration with the HRIS implementation group, architectural standards for HRIS and similar applications.

Recommendation to Endorse a “Hybrid” Deployment Model for System-wide Applications.

Objective

Endorse a “hybrid” deployment model for system-wide applications that starts an evolutionary migration from UC’s current monolithic application model to a Service Oriented Architecture.

Background

UC has a rich legacy of software that has been built with an architecture in which all applications are monolithic and stand on their own. While this does not facilitate sharing of services among UC’s system-wide applications, and it is not a modern architecture, it does continue to provide great value to the business of running the University.

For example, applications like the Payroll Personnel System (PPS) and UC’s benefits system are “old architecture” systems that are very valuable to the University. At Your Service Online (AYSO), UC’s employee self-service to PPS and the benefits system, shows the inherent weakness, however. AYSO has been a major implementation effort, with separate staff from both PPS and the benefits system, because those systems were never designed for this kind of service-oriented integration.

We need to move in an evolution fashion to a service-oriented model for system-wide applications, without threatening the integrity of the existing production systems. Hence, we need to adopt a hybrid architectural model.

Action Items

- By the end of FY 2007, the ITAG should establish standards and guidelines for UC’s hybrid architectural model, using UC’s new HRIS system as the first test. This will involve:
 - Adoption of the PPS “SOA wrapper” proposal,
 - A continued emphasis on and exploration of SOA solutions by the HR working group in partnership with the ITAG,
 - An immediate focus on establishing portal architectural standards by the ITAG.

Recommendation to Endorse UCTrust as the Preferred Authentication System for System-wide Applications

Objective

Create an environment where system-wide applications use a common authentication mechanism whenever possible.

Background

UCTrust was created in the Spring of 2006. It now has four campus participants, and, by Fall of 2007, all but four UC locations have planned to enable their community members to participate.

In order to achieve our objective, system-wide applications must integrate with UCTrust, and all UC locations must enable access for their community members.

Action Items

- By the end of 2007, all UC campuses, medical centers, labs, and the Office of the President should have enabled UCTrust access for their community members.
- By the end of 2007, all system-wide applications must articulate their strategies for UCTrust integration. Whenever possible, that integration should be complete by the end of 2008.

B. Analysis

1. Assessment of the current UC environment

A small number of applications are developed and/or run centrally (PPS, Benefits, Student Application); most are developed or procured and run on individual campuses with mandatory feeds or reports to UCOP. Substantial financial resources go towards deploying, supporting, and operating these applications. Some of the local instances or aspects of applications provide unique or strategic value to the campuses; others provide pure commodity functionality (e.g., general ledger). At the same time, campuses are embracing portal technology, with the goal of integrating applications, be they local or central, into a locally controlled and "branded" site. UC Trust is beginning to allow campuses to access system-wide and each others' applications using local ids and passwords (access to At Your Service is an example). These applications potentially include research facilities such as grid computing, visualization labs, etc. The sharing of facilities and applications is fostered by the availability of high speed networks (CalREN2) and emerging standards for interoperability.

2. Issues, Opportunities, and Challenges

The push towards integration across applications is accelerating due to demand for usability and to provide functionality that spans multiple application areas. IT organizations are challenged to keep up with the ever increasing demands on them, and are looking for opportunities to share costs across the system.

Current technologies give us the opportunity to fundamentally reconsider the central vs. campus implementation dichotomy. We can deploy hybrid applications that have components sourced in different locations. That would allow us to centralize commodity components while campuses focus on components that are strategic or unique to them. It could also greatly simplify the data interchanges, and ultimately, reporting requirements between the campuses and UCOP.

Clearly identified standards and architectural principles are essential to enabling these kinds of deployments. Those same standards will also foster the sharing of applications (and web content) developed on the various campuses.

Additional technologies (integration brokers and data warehouses) provide other opportunities for simplifying data integration across the system and making information available in real time to planners and decision makers. These facilities would also reduce the burden on the campuses to create feeds and reports – all of the data could be available to OP on a routine operational basis.

Funding is always a critical IT issue. Investments in IT often result in non-fungible advantages outside the IT department (improved productivity, slower growth of staff needs, ...), but rarely in recoverable cost savings. Whether we continue on our current path or implement some or all of our proposals, investments will need to be made within the IT organizations. Our challenge is how to make these investments strategically so as to obtain the highest payback over the entire system in the long run.