USC Research Administration System (RAS) System Requirements – V1.0

Comments are invited on this document, which should be sent to vpres@usc.edu.

March 7, 2011

1. Purpose and Scope

This document provides the requirements for a Research Administration System (RAS) to support the administration of funded research and other sponsored activity at the University of Southern California, including pre-award, post-award and closeout activities. The RAS is an integrated set of software modules that will be used to support externally funded projects and associated cost-share accounts, as well as internally funded research awards.

The RAS requirements address: financial activities; creation and modification of proposals and awards; reporting; and compliance with regulations and best practices. We envision an integrated software system (or software environment) that will be used by both staff and investigators. The system shall simplify research administration by:

- Minimizing data entry and reducing manual effort;
- Expediting exchange of information and data, and expediting proposal submission and automating system-to-system proposal submission;
- Eliminating human mistakes and errors and increasing proposal success rates;
- Automating submission of documents required for compliance reviews;
- Unifying the system interface with a common "look and feel"; and
- Improving visibility of status for proposals and projects and simplifying report generation.

The system shall also support web-based remote access, coupled with an authentication system that protects private information as well as manages user specific privileges for information access and editing. The system shall also provide back-up and recovery capabilities to survive potential failures and disasters, and be robust to accommodate significant variations in usage associated with proposal and reporting deadlines.

2. Background

USC receives approximately $550 million per year in funding to support sponsored activities in the form of grants, cooperative agreements, subcontracts and contracts. The majority of this funding comes from federal agencies, but USC also receives funding from foundations, corporations, state and local government and other entities. In addition, USC receives funding in the form of unrestricted gifts. While the financial management for gifts differs from grants and contracts, gifts are subject to many of the same regulatory requirements.

Research administration at USC is supported by a range of independent systems, which have been developed over many decades. Many of these disparate systems are confusing and slow, and do not provide users with sufficient awareness to fully manage the creation and submission of proposals, or administer the execution of research. In some cases, employees use manual processes or simple spreadsheets in place of specialized software.

USC aims to provide an integrated RAS that supports the management of research projects from "cradle to grave" across all funding sources, i.e., from the time when a proposal is initially conceived until final reports are submitted and approved by sponsors. The system may consist of a set of modules that are unified through a common web-based portal entry.

2.1 Users

The RAS will be used by the following categories of employees, residing in the specified business units:

Investigators: are faculty and/or staff who are responsible for performing the work on a research project. The Principal Investigator has overall responsibility for a project, including the responsibility to ensure compliance with all requirements and regulations.

School Administrators: are staff employed by schools (or departments, centers, or institutes) with responsibility for assisting investigators in the preparation of proposals and managing financial aspects of research awards.

School Research Leadership: are faculty appointed as department chairs, deans, associate or vice deans, or those who are otherwise responsible for overseeing research within schools or centers.

DCG Administrators: are staff responsible for the review of proposals prior to submission to sponsors, negotiation and execution of agreements and various account closeout activities.

Business Process Administrators: are staff responsible for individual business processes, such as purchasing, sponsored project accounting, equipment management, technology licensing and disbursements.

Research Advancement Officers: staff responsible for assisting the campus and schools to put together large interdisciplinary proposals.

Research Compliance Administrators: are staff and faculty responsible for ensuring that research is conducted in compliance with regulations and university rules, particularly with respect to use by these regulatory committees:

- Institutional Research Board (IRB, for human subjects)
- Institutional Animal Care and Use Committee (IACUC)
- Conflict of Interest in Research Committee (CIRC)
- Stem Cell Research Oversight Committee (SCRO)
- Institutional Biosafety Committee (IBC)
- Radiation Safety Committee (RSC)
- Chemical Safety Committee (CSC).

University Research Leadership: are staff and faculty in the Office of Research, who are responsible for oversight of the entire university research enterprise, and for assisting investigators in pursuing major funding opportunities.

Health Research Association: is a potential future user responsible for administering industry sponsored clinical trials, including contracting and billing.

Childrens Hospital of Los Angeles: is a current user of the iStar system for IRB review. CHLA is a potential user of additional modules in the future.

System Administrators: are staff responsible for system maintenance and allocation of system permissions.

For a more complete description of roles and responsibilities, see Appendix A.

2.2 Processes Supported

The RAS must support the "cradle-to-grave" lifecycle of business processes associated with sponsored research, beginning with proposal creation and ending with award close-out and reporting. Business processes are grouped into five categories: 1. Pre-award, 2. Post-award, 3. Close-out, 4. Regulatory and Compliance, and 5. Business Intelligence. Each business process corresponds to a module within the overall RAS. These modules are described below.

1. Pre-Award: Proposal Creation and Processing
   1.1 Creation and modification of project budgets
   1.2 Creation and modification of project proposals
   1.3 Tracking institutionally limited and internal competitions
   1.4 Routing proposals for approval prior to submission to sponsors
   1.5 Quality checking of proposals prior to submission
   1.6 System-to-system submission of proposals
   1.7 Negotiation of terms and conditions

2. Post-Award
   2.1 Account establishment, modification, and verification of regulatory requirements.
   2.2 Sub-award processing and monitoring
   2.3 Service center recharge
   2.4 Equipment tracking and reporting
   2.5 Intellectual property tracking and recording
   2.6 Effort reporting and certification
   2.7 Post-award administration and accounting, including financial and progress reporting, financial projections and budget modification
   2.8 Accounts receivable and billings, including internal charges

3. Award Closeout
    3.1   Final reporting to sponsors, accounting for all obligations; facilitating transfer of unobligated balances.

4. Regulatory and Compliance
    4.1   Creation, routing, submission and management of protocols and disclosures.
    4.2   Tracking controlled materials, laboratory safety, safety training

5. Business Intelligence
    5.1   Automatic and customized reports on research activity
    5.2   Tracking and reporting on performance of research administration (financial and non-financial)

2.3 External Systems Requiring Interfaces

The RAS will be interfaced with the following external systems.

USC is in the process of implementing Kuali Financial System (KFS).   The RAS should be fully integrated with KFS, for the purposes of extracting salary information, access to general ledger, purchasing, and disbursement.

Gifts received by USC are processed by the PeopleSoft Gift Management system, which is administered by University Advancement. These gifts are then sent to the University financial system through an interface supported by ITS/EIS, and are subsequently posted. In addition to financial management, the gift system should also interface to applicable regulators systems to ensure compliance with all university requirements.

Grants.gov is the online proposal submission system utilized by federal agencies, including the National Institutes of Health. In addition to Grants.gov, the National Science Foundation (NSF) utilizes Fastlane as an additional online proposal submission system. The RAS shall provide a system-system interface to automate the submission of proposals to these and other similar proposal submission systems.

Training for human subject research and responsible conduct of research is completed within the CITI system.   CITI generates a list of course completions, which must be checked before individuals are authorized to conduct related research.

Blackboard is a commercial system for on-line delivery of course content, including regular for-credit courses. Blackboard is a mechanism for delivering research training, and interface is needed for tracking course completions.

The BAXTER system is being created to manage biographical and C.V. information associated with individual faculty as part of annual appraisals. The BAXTER system is a resource from which data may be extracted for proposal creation.

Training data may be extracted from Career and Protective Services' Training Information System, which tracks occupational safety training for all university employees, including annually-required blood borne pathogens, respiratory protection and laboratory safety training.

The medical surveillance system is used to manage occupational health risk assessments, and vaccine provision.

2.4 Existing Systems that May be Retained

Some components of the RAS will be existing systems. The following describes systems that currently exist, and which may be retained, in which case they will be integrated within the overall RAS (see Appendix B for a tabular summary).

The iStar system for human subject protocols is a Click Commerce application. The system is fully paperless, and fully implemented at USC as well as at CHLA. This system shall be retained unless there is a compelling reason to do otherwise. USC is also in the process of implementing an on-line system for IACUC protocol submission, review and approval, using Click Commerce software. This application is being designed to mimic the existing iStar system used by the IRB. This system shall also be retained unless there is a compelling reason to do otherwise.

LaserFiche is a system for digitizing and recording award documents. LaserFiche is in the process of being implemented.

Information Technology Services (ITS) is in the process of creating a system for submission, review and management of internal proposals, as of now un-named.

ARM is the system used by animal resources for billing and tracking completion of required training. ARM should interface for charges to individual accounts, and for verification of course completions.

The PARiS system is designed for generation of proposal documents, approval routing, budget creation and system-to-system proposal submission. PARiS has been partially developed and deployed, and may be a component of the RAS, but could also be replaced.

Inteum is the system used by USC Stevens to track Intellectual Property disclosures. Inteum will be retained, and will need to interface to the RAS.

BOSS is the financial system used by the Institute for Creative Technologies, for budget generation and financial management.

MyPortal is the financial system used by the Information Sciences Institute, for budget generation and financial management.

The Laboratory Safety Information System (LSIS) is a USC-adapted commercially-available database used to track all compliance aspects of the university's state license and the use of radioactive materials (e.g., materials inventory and activity timeline, usage permits).

The Chemical Inventory System is a USC-created database into which researchers either manually enter data or upload existing spreadsheets of the hazardous materials stored in their facility. The system used to generate required annual reports to California regulatory agencies, information for emergency response, and flagging of select agents, nanomaterials, Department of Homeland Security chemicals of interest. Data may be extracted from this system to populate Environmental Impact Questionnaires, and to flag the amount and location of particular materials of interest that have regulatory reporting and program implementation requirements.

2.6 Potential Future Systems

The RAS may in the future interface with, or integrate, with these additional systems:

- Space management system, for assessment of productivity of space assignments based on funded research activity.
- Clinical trial billing
- Clinical trial management

2.7 System Environment.

The hardware supporting RAS will most likely be hosted in the ITS data center facility. The facility offers emergency power through UPS and emergency generators, controlled climate, secured access to the center and building, and other features expected of a major data center. Additionally, ITS will maintain (either directly or through contracted vendor support) all hardware making up RAS, including servers, disk storage arrays, and other peripherals. ITS will also provide a stable operating system environment for RAS, and will monitor this environment to assure continued reliable performance. ITS will also perform daily tasks (such as file system backups) that are necessary to assure the underlying data is safe and secure.

At present, servers for iStar, PARiS and Clinical Trials are managed by the Keck School at the co-location facility in the Carol Little building. Through implementation of the RAS, the option of integrating all RAS modules within a single group of servers should be considered.

Assuming RAS becomes a University-hosted product, ITS will also be expected to provide administrative and software support of RAS though its Enterprise Information Systems (EIS) unit. EIS will also support any necessary interfaces between RAS and other systems EIS supports, as required. EIS/ITS will assure that agreed upon service levels are sustained, such as days/hours of availability. As RAS will be a system critical

to the operation of the University, EIS will provide disaster recovery support through its offsite center, with resumption of service within 24 hours after the disaster event.

In the case where the RAS has different systems that are inter-related and thus dependent on one another to function properly, each system must adhere to the same or at least equivalent service agreements to ensure proper functioning of the whole. In addition, administration, software support, disaster recovery and help desk services must be integrated so that any problem can be reported and fixed according to the common service levels.

3. Requirements.

The RAS is envisioned as an integrated set of specialized modules, each corresponding to a business process, which are accessed through a common interface.   Preliminary requirements are described in this section, first providing general requirements that apply to all modules, and then providing requirements associated with individual modules. A more detailed set of requirements will be created for each module as it is developed.

3.1 General Requirements

Accessibility
- Web-based access from common browsers via a unified portal, which gains entry to all RAS functions.
- Authentication must be handled by a single authority (currently this is Shiboleth) to ensure ease of access to all RAS functions.
- Allow school or department level administrators to set approval pathways that reflect their individual procedures.

User Interface
- Easy navigation for movement across modules, minimizing the number of open windows.
- Pre-population of all redundant information.
- Integration of data among RAS modules to reduce duplication and coordinate real-time status of proposals and approvals among modules.

Security and Information Protection
- Protect information through secure access, with differing levels of authorization by individual and module, including view only access to specified data, and ability to modify data for specified individuals.
- Protect information from loss during any disaster or system failure, and enable rapid recovery through maintenance of current information and documentation.

Availability
- Available at all hours without interruption, except for periodic maintenance. Any maintenance activity that requires disruption must be during off hours (late evening, such as 2:00-4:00 a.m.).

- Accommodate surges in usage associated with proposal and reporting deadlines.

3.2 Pre-award Requirements

Budget Creation (1.1)
- Templates or wizards to simplify creation of budget.
- Automatic extraction of salary information and rates; provide protection of salary information based on a simplified "need to know" authorization.
- Automatic extraction and application of institutional rates (e.g., fringe benefits and F&A).
- Flexibility to permit award periods of variable length and start/end dates.
- Simple modification of budgets and ability to construct budget from target constraints (such as total award size).
- Ability to calculate indirect costs, staff benefits and other burdens (such as recharges).
- Record cost sharing and matching requirements.
- Upload a sub-award Scope of work, Letter of Intent, and Budget Support package.

  Primary Users: School administrators
  Secondary Users: Investigators, DCG administrators

Proposal Development (1.2)
Initiation
- Templates or wizards to simplify creation.
- Import sections from prior proposals to initiate new proposals.

Integration of Support Data
- Extraction of bios from external database, such as Baxter.
- Extraction of publication references from external database, such as Baxter.
- Extraction and maintenance of bio-sketches used in prior proposals.
- Extraction of student outcome data from external database, for construction of training grants.
- Extraction of current and pending support from RAS business intelligence module.
- Extraction and maintenance of facilities information and other standardized proposal sections.

  Primary Users: Investigators, School administrators

Integration of Documents and Data Population
- Upload documents to satisfy required section of proposals.
- Automatic population of required sponsor forms.

  Primary Users: School administrators

Secondary Users: Investigators, DCG administrators

Internal and Institutionally Limited Proposals (1.3)
- On-line upload proposals by faculty investigators.
- Enter and track basic information/data associated with proposals.
- Enter needed approvals.
- Distribute proposals to reviewers.
- Enter review comments.
- Record decision and make decisions available to DCG and proposers.

Primary Users: Investigators, Office of Research
Secondary Users: DCG administrators

Routing and Proposal Data Management (1.4, pre and post award)
- Flexibility to allow alternative routing pathways, specified by school, center or investigator. Permit parallel/simultaneous approvals to expedite.
- Allowance of alternative approver if primary approver is unavailable.
- Track status and generate alerts based on need to approve, including automated notification to "watchers" of specific proposals when status changes or when proposal is submitted.
- Track status of all required approvals, including administrative, training, regulatory, and institutionally limited competitions. Generate tickler notifications to remind appropriate staff to check on status of award and to provide updates to PIs and research deans.
- Utilize specific data fields for searching and later viewing, such as keywords and sponsor comments.
- Record proposal status and documentation relating to disposition of proposals, such as reason for denial.

Primary Users: All

Quality Checking of Proposals (1.5)
- Simplified look-up of solicitation associated with proposals.
- Notification of solicitation specific requirements.
- Automatic error checking prior to submission to sponsor.

Primary Users: DCG administrators
Secondary Users: School administrators

System-to-System Submission (1.6)
- Generate proposals (e.g., forms and format) and direct system-to-system submission to Grants.gov and Fastlane, and ability to submit to other future proposal submission systems.
- Generate paper proposals when required.

Primary Users: Investigators, School Administrators and DCG administrators

Negotiation of Terms and Conditions (1.7)
- Research agreement generator using templates.
- Track award negotiation process, including automatic notifications to those involved.

Primary Users: DCG administrators

3.3 Post-Award Requirements

Account Establishment (2.1)
- Enable accounts to be quickly established and modified by importing data from other modules and data transmitted from sponsors (e.g., importation of budgets, award periods, etc.).
- Verification and tracking that all regulatory requirements have been satisfied prior to account establishment.
- Simplified budget modification by school administrators based on terms of award.
- Facilitate approval and establishment of cost share accounts.
- Record all relevant award data for later viewing, processing, and reporting.
- Record sponsor restrictions and utilize data to the greatest extent possible, e.g. automated restriction of unallowable budget changes and/or expenditures.
- Data field in award agreement records to indicate nature of IP terms of award, including terms between project collaborators. Record and link any associated non-disclosure agreements and material transfer agreements.
- Interface with financial system to establish new accounts, budgets, and future budget changes.
- Automate award notifications to investigators and research administrators.
- Provide electronic process for investigators to approve unusual terms and conditions.
- Facilitate efficient request, approval, and setup of advance funding/bridge funding.
- Facilitate entry of terms and conditions, their timely review, and also provide easy access to PIs to view terms, conditions, and restrictions of awards, sub awards, and subcontracts, and record approval of any unique terms (e.g., terms related to intellectual property).
- Archive of award documents.
- Tracking outgoing sub-awards by prime award to USC.

Primary Users: DCG administrators
Secondary Users: School administrators

Sub-award Processing and Management (2.2)

- Facilitate efficient setup of subawards and subcontracts, including a subcontract start work and agreement letter generator using templates, tracking of subcontract status, and automated notifications when subcontracts are awarded.
- Interface with purchasing system to establish new POs, modifications and closeout, including the tracking the payment of invoices.
- Track reviews of A-133 audits of sub-award institutions for special considerations required in sub-awards.

    Primary Users: DCG administrators
    Secondary Users: Business process administrators, School administrators

Service Center Recharge (2.3)

- Track and schedule usage of equipment and services within research service centers, accounting for constraints on individual access.
- Automatically generate charges to individual accounts based on use of services (or other bases, such as MTDC, labor costs, effort, headcount, etc.), and generate liens prior to scheduling services.
- Single monthly report of all charges for each recharge center; track charges and expenses against budget.
- Verify and establish appropriate charges based on USC policy and based on business and research goals.

    Primary Users: Business managers for core laboratories and other institutes
    Secondary Users: Investigators, School administrators

Equipment Tracking and Reporting (2.4)

- Identify and assign status of equipment, such as ownership and taxable status, with this data automatically assigned if the award is electronically received.
- Interface with purchasing and equipment management systems to identify approved budget and terms and conditions governing the purchase of equipment.
- Allow for tracking of fabricated equipment, including fabrication of items purchased through procurement cards as well as PO's.

    Primary Users: DCG Administrators and Business Process Administrators
    Secondary Users: School Administrators

Intellectual Property (IP) Tracking and Reporting (2.5)

- Interface to Inteum, the system used by USC Stevens for IP tracking:
    - Access to sponsorship information for use in completion of invention disclosures.
    - Allow extraction of awarded research to identify those that contribute to the invention.
    - Allow extraction of IP information to be extracted from Inteum to be viewed by research administrators.

- Generate alerts to disclose potentially patentable inventions at end of project, or periodically during project, and provision of such information to Inteum.
- Access to award agreements to review the associated IP provisions.
- Track rights granted to sponsors (unlimited, government purpose, exclusive vs. non-exclusive), rights asserted in proposals, and special rights arrangements in sub-award agreements (royalty for use of inventions created by sub-award recipient).
- Archive non-disclosure agreements and material transfer agreements, and link archive to awards.

Primary Users: Business process administrators (USC Stevens)
Secondary Users: DCG administrators

Effort Reporting and Certification (2.6)
- Automatically populate assigned effort by project and activity from awarded budget into cashflow projection system (which is revised as the research progresses); use the cashflow projection system to populate the payroll system. The payroll system data is used to populate the effort reporting and certification system.
- Administrator ability to designate individual required to certify effort.

Primary Users: Investigators and project staff
Secondary Users: School administrators, Research compliance administrators

Post-award Administration and Accounting (2.7)
- Routing and approval of budget changes, salary and cost transfers, and award extensions.
- Accurately post and account for recovery of F&A, including ability to specify multiple indirect cost rates (including collection of undercharged F&A after budget changes are completed).
- Collect all data necessary to produce reports and/or data interface files as required by ARRA, A133, Federal Funding Accountability and Transparency Act (FFATA), and any other regulatory reporting requirements.
- Facilitate the creation, routing, approval and payment of reimbursement requests.
- Facilitate the creation, routing, approval and payment of Independent Contractor Agreements.
- Automate notification regarding required deliverables to sponsors or satisfying required actions.
- Timely and accurate accounting of all financial transactions related to an award, sub award, or subcontract.
- Encumber pending charges based on purchase orders, procurement card purchases and other foreseeable expenses.
- Automate notifications to PIs in regards to progress reports and deadline for filing grant extensions.
- Record the submission of required deliverables and/or reports.
- Track subcontractor payments, and generate notifications to subcontractors to remind them to spend funds in advance of the deadline to expend funds.

- Record and track matching and cost sharing requirements and accounts to charge.
- Financial projections for both individual projects and for groups of projects for individual investigators, departments, centers or schools. Ability to modify budgets based on projects.
- Process requests for no cost extensions.
- Track publications generated by research and awards/distinctions resulting from research. Provide for an easy way to cite publications in research proposals (standard formats).

Primary Users: All

Accounts Receivable and Billing (2.8)
- Module that is capable of contract billing, grant letter of credit drawdown, and receipt of cash (i.e. an A/R module).
- Record sponsor billing contact information.
- Generate aging reports.
- Record history of what was awarded compared to what was expended.
- Record history of original budget compared to revised budgets.

Primary Users: Business Process Administrators
Secondary Users: School Administrators

3.4 Award Closeout

- Record and provide key information necessary to closeout an account, such as title to equipment, and identification and reconcilement of unobligated balances.
- Request and record disclosure of any potentially patentable inventions at close-out.
- Management tool to generate notifications that account will expire soon and final reports are due, route final reports to research administrators for review, and record when final reports are completed and submitted.
- Notify RAs and central administrative units if extension is expected, and assist in proper timing of freezing of POs, termination of account, and other required closeout tasks such as processing of subcontract invoices.
- Cross-departmental, collaborative, award closeout checklist that all departments and PIs can view, along with who is responsible for which item and status of completion, with automated notifications where possible.
- Employ controls so that terminated accounts are not charged, and notify RAs so that new accounts can be used.
- Account for all equipment purchased, including equipment purchased by subcontractors.

Primary Users: DCG Administrators and Business Process Administrators
Secondary Users: School Administrators

3.5 Regulatory and Compliance

Protocol/Submission and Review (4.1)
- Creation, routing and submission of research protocols and disclosures for key regulatory committees (IRB, IACU, COI, SCRO, IBC, Radiation Safety Committee, Chemical Safety Committee).
- Execution of decisions on submitted protocols and disclosures.
- Integration of decisions of multiple regulatory committees to permit parallel review of protocols, when applicable.
- Tracking completion of required training, including training required by regulatory committees and training required for responsible conduct of research, through interface with training systems.
- Track completion of required medical surveillance required by regulatory committees; this includes tracking occupational health exams, the offer to provide vaccines, pre-injury health risk assessment, etc.
- Access to proposal, budget, and award terms and conditions.
- Management of submitted protocols and disclosures once approved, including renewals, amendments, and adverse/unanticipated events.
- Integrate protocol status and approvals into award specific information.

    Primary Users: Investigators, Research Compliance Administrators
    Secondary Users: DCG administrators

Controlled Materials and Lab Safety Tracking (4.2)
- Tracking completion of chemical inventory, including flagging of select agents, nanomaterials, DHS chemicals of interest, etc.
- Tracking ordering, delivery and use of radioactive materials.
- Creation, routing and submission of Environmental Impact Questionnaires, Certificates of Environmental Compliance, and Institutional Safety Assurances (where required by DOE, DOD submissions).
- Tracking laboratory rooms associated with research protocols, and attendant regulatory requirements including scheduled safety inspections, equipment certification (e.g., biological safety cabinets, fume hoods).

3.6 Business Intelligence

Automatic and Customized Reports on Research Activity (5.1)
- Customized and automated reports on funded research activity, as reflected in proposals, awards, and expenditures, classified by individual investigator, academic unit, interdisciplinary collaboration, sponsor. Examples include account summaries, funds available, drill-down to detailed account activity, roll-ups of satellite accounts to their associated master account, transactions grouped by category such as travel, materials and supplies.
- Projections of important metrics such as proposal yield, award volume, school and department projections, expected continuation funding, accounting of post

docs, space usage, recovery of indirect cost, forecasting for PIs, burn rates, projecting time required for various award processing steps based on historical data.

- Search tool to identify awards by keyword, title, sponsor, academic unit, investigator, award period. Produce summary report on each identified award.
- Reports needed to fulfill government requirements on impact of research, such as "STAR Metrics", and track associated data.
- "What-if" analytical tools so that users may generate reports based on given assumptions and historical data.
- Interface with an enterprise business intelligence tool, providing access to all data elements deemed relevant to research administration needs, which may include data from several systems of record.
- Download feature so that any reports can be accessed via download and import
- Comprehensive searching and filtering capabilities.
- Assure that sensitive data is only accessible to those that are authorized to view such data.
- Provide data with minimal latency; one day would be ideal.
- Provide tools for users to create their own report templates, which can then be shared with others, with no or minimal programmer involvement.
- Link accounts for multi-year awards for reporting purposes.
- Track foregone F&A, as well as cost-sharing commitments.

Primary Users: All

Tracking and Reporting on Performance of Research Administration (5.2)
- Status alerts as reminders for when actions or decisions are needed by staff or investigators.
- Period performance report, showing average time (and percentile times) to action at each process step and each business unit.
- Automatically generate customer surveys based on key transactions (e.g., proposal submission) and tabulate results.

Primary Users: Business Process Managers

3.7 Interface Requirements Between Modules

Table 1 lists key interfaces between system modules.

Table 1. Key Interfaces

Interface Requirement	Source Module	Recipient Module
Financial data	Financial System	Budget Creation
Upload of external budgets	MyPortal, Boss, Spreadsheets, PDF docs	Budget Creation
Integration of support data	Baxter, Student Tracking System	Proposal Development
Current and Pending Support	Business Intelligence	Proposal Development Baxter
Verification of approval	Internal/Institutionally Limited Proposals	Routing and Proposal Data Management
Compare proposal against announcement	Grants.gov, various	Quality Checking of Proposals
Proposal submission to agency	System-to-System Submission	Grants.gov, various
Alert review process	System-to-system submission PeopleSoft Gift Manage.	Protocol Submission and Review
Award document retention	Post Award	Award Archive
Access to proposed work	Proposal development	Protocol Submission and Review
View IP Terms	Account Establishment	Intellectual Property
Verification of training	CITI,ARM,LSIS	Protocol Submission and Review
Satisfaction of regulatory requirements	Protocol Submission/Review	Account Establishment PeopleSoft Gift Manage.
Account creation	Post Award	Financial System
Payroll activity	Payroll	Effort Certification
Effort commitment	Post Award	Effort Certification
Cost sharing transactions	Financial System	Effort Certification
Billable account	Post Award	Accounts Receivable
Award closeout	Post Award	Multiple
Proposal and award information	Pre Award, Post Award, Financial System, Payroll	Business Intelligence

3.8 Operational Requirements.

RAS will consist of both existing systems already in use by the University, and new systems that either augment or replace existing systems. Operational requirements for existing systems will not be addressed here as these systems are already deployed and maintained through existing operating procedures.

- New systems will be deployed within the ITS infrastructure designated for critical systems. As such, RAS will conform to the ITS disaster recovery (DR) framework, which includes real-time data replication, consumption of bandwidth between ITS data center and the offsite DR center, virtualization of the server environments, and duplication of server hardware at the offsite center.
- Any other requirements of RAS in regards to disaster recovery features will need to be addressed as those needs arise.
- RAS will be provided full ITS data center support. This includes (but is not limited to) reliable power and climate control, daily file system backup, secured data and operating system access restrictions including intrusion detection, connectivity to the USC network and wherever usc.edu is accessible, and application access up to 24/7.
- Any other specific environmental requirements of RAS that are beyond ITS data center support will need to be addressed as those needs arise.
- RAS data storage requirements are not expected to exceed four terabytes, which is approximately a factor of 5 greater than existing legacy systems data storage consumption that RAS is expected to replace. ITS/EIS data storage hardware is supported by a primary storage array, which is shared amongst all critical ITS/EIS systems.
- Support of all interfaces and web services will be provided by EIS, as required by agreed upon service level agreements.

The RAS will support deadline driven work, particularly in the submission of proposals. In the hours preceding deadlines, surges in volume (100 or more times normal) can be expected in the budget generation, proposal development, routing and proposal data management, quality checking and system-to-system submission modules.   The system must be capable of accommodating these surges without failure.

4. System Development, Deployment and Maintenance

4.1 Priority for Deployment

Deployment is prioritized as follows, beginning with the highest priority feature:

1. Portal interface to the RAS
2. Post-award tools for account establishment, sub-award processing, post-award accounting and close-out.
3. Routing (pre and post award) and business intelligence
4. Integration of documents and data

5. Budget creation and system-to-system submission
6. Integration of support data
7. Effort reporting and certification

Because existing regulatory applications may be retained, or built upon existing applications, they may follow a separate development path. Among regulatory applications, conflict of interest will be the first priority, after completion of IACUC.

4.2 Acceptance Testing

Development of the RAS will be monitored by the Research Administration Task Force (RATF).   The RATF will review all work products from the development team, and recommend any needed actions to the Vice President of Research and Senior Vice President for Finance. The head of the development team will provide a bi-weekly progress report to the RATF.

The RATF will facilitate additional reviews from users of individual program modules, for these milestones:

* System specification, defining functionality and interfaces for module
* Design validation, to ensure design meets system specification
* Prototype demonstration, including all screen shots for module
* Beta test that solicits input from key users
* Initial acceptance of production version of module
* 30 day review after initial release of production version

Development will not proceed to the next phase until sign-off is received by the designated lead customer for each module. The lead customer shall be responsible for verification of acceptance by other impacted customers.   Lead customers are specified below.

1. Pre-award (excepting internal/institutionally limited)	Contracts & Grants (DCG)
1. Pre-award: internal/institutionally limited	Office of Research
2. Post-award: account establishment	DCG
2. Sub-award processing	DCG/Purchasing
2. Post-award: service center recharge	SPA/Disbursement
2. Post-award: equipment tracking	Equipment Management
2. Post-award: intellectual property	USC Stevens
2. Post-award: effort reporting and certification	Financial Analysis
2. Post-award: administration and accounting	DCG/Sponsored Projects Administration (SPA)
2. Post-award: accounts receivable	Disbursement
3. Close-out	DCG/SPA

4. Regulatory and Compliance: protocol submission   Individual committees
4. Regulatory and compliance: controlled materials/lab safety Laboratory safety

5. Business Intelligence   Office of Research

<u>4.3 Training</u>

Training and support will be provided in the following ways

1. Upon initial release of each module, in person training will be provided for a period of three months.   Subsequently, in person training will be integrated into research administration courses offered by the Department of Contracts and Grants.
2. On-line documentation will provide a basic instruction manual for each module and for the system as a whole.
3. Help system, in same visual format as iStar for IRB, will provide "pop-up" response to questions.
4. Help desk support to respond to questions via email or phone.

Appendix A – General Roles and Responsibilities

The University of Southern California is committed to helping its faculty secure financial resources in support of their research. Doing this requires a partnership among faculty investigators, schools (and their departments, research centers and institutes), and central administration on extramurally sponsored projects. This document describes the roles and responsibilities of these groups.

Principal Investigator Responsibilities

Each sponsored project at USC is led by a principal investigator (PI, or in some cases multiple PIs), who is normally a faculty member of the university. The university empowers its investigators by providing them with the authority to lead and manage these projects. The PI has primary responsibility for the technical and administrative success of the project, including the ideas and methods that underlie the research or scholarly activity, creation and execution of the research plan, and academic integrity in all aspects of the work. The PI is also responsible for assuring that the work conducted under the project adheres to the terms of the award or agreement, and also to the policies of the sponsor and those of USC.

Examples of the PI's post-award responsibilities include:

- Execution of the project as outlined in the funded proposal.
- Carrying out the project's financial plan as presented in the proposal, or making changes to the plan following the sponsor's and USC's policies and procedures.
- Reporting project progress and submitting deliverables to the sponsor as outlined in the terms of award.
- Responding promptly to staff requests for approvals, information or decisions, particularly for the establishment of accounts
- Ensuring that an accurate record is maintained of project related expenses.
- Selecting, training, and evaluating project staff and students.
- Complying with all USC policies and procedures, maintaining high standards of research integrity, and protecting the welfare of research subjects.
- Complying with all applicable sponsor rules, regulations and/or terms and conditions of the award.

Although the PI is usually assisted by administrative staff for the creation of budgets, protocols, the Proposal Approval Record (PAR, and its digital counterparts), and the management of project funds, the ultimate responsibility for the financial and administrative management of the project rests with the PI. By signing (either physically or digitally) a PAR, protocol, Medicare Coverage Analysis (for clinical trials), certification or the like, the PI signifies that he or she has read and agrees to these responsibilities and the contained information.

Schools, Departments and Center Responsibilities

Schools are responsible for protecting the university and ensuring that administrative support is provided to investigators for the preparation of budgets and forms and support in the fiscal and administrative management of sponsored projects. In some schools, this support is provided centrally by the school as a service for all of the school's PIs; in other schools, departments, centers or institutes provide this service locally, possibly in combination with central services. No matter which approach is followed, it is the school's responsibility to ensure that no PI is left without administrative support, that all PIs are aware of where to obtain support and that sufficient resources are available to meet reasonable PI needs.

Research administrators within schools, departments and centers offer a valuable service to PIs by providing a bridge to central administration. Because they often provide a direct personal interface to the PI, these local administrators can assist in finding and securing assistance from central administration. Although ultimate responsibility for compliance with rules, policies and regulations rests with the PI, research administrators should be knowledgeable in these areas and should be prepared to advise and support PIs to avoid mistakes.

Toward this end, research administrators should not sign PARs, protocols or the like on behalf of PIs, and should strive to ensure that PIs have read and understand the contained information. Because information on outside financial interests is confidential, research administrators should not answer conflict of interest questions, and should not complete conflict of interest disclosure forms.

Central Administrative Responsibilities

Central administration provides quality assurance with respect to the awards and agreements that the university negotiates and executes. This includes:

Research Integrity and Ethics with respect to protecting animal and human subjects, managing conflicts of interest, preventing scientific misconduct, and ensuring safety.
Academic Principles, ensuring that academic freedom is protected, students are not restricted from participation in research, work can be independently and openly disseminated, and work is not designed to serve an overtly proprietary purpose (such as product endorsement or advertising).
Fiscal Responsibility, ensuring that the university is capable of meeting contractual obligations and that agreements do not expose USC to unwarranted risk or liability. Central administration's responsibilities include negotiating agreement terms, billing and financial reporting to sponsors, and payments to vendors and employees.

To meet these responsibilities, central administration oversees the creation and execution of research policies, in cooperation with the Academic Senate. Central administration also provides training for research administrators, investigators and students in all of the above areas.

These quality assurance functions are coordinated by the Office of Research, among the various administrative units described in the *Guide to Research (*www.usc.edu/research/private/ResearchGuide_2010.pdf). The Office of Research also

supports the PIs by assisting in the creation of multi-investigator proposals, particularly large proposals that span multiple schools. Through the Center for Excellence in Research, the Office of Research also provides education and mentoring on proposal preparation, research strategy and innovation in research.

Appendix B. Existing Systems Support RAS and Their Status

Process	Existing Systems	Status	Existing Interfaces
1. Pre-award			
1.1 Budget Creation	Excel Spreadsheets, MyPortal,BOSS, Budget module in PARiS	Existing systems in use; New system requirement: Users will have option of uploading budgets from existing systems; new budget creation module will be created.	
1.2 Proposal Development	PARiS,MyPortal(ISI),Boss(ICT) BAXTER	PARiS partially developed BAXTER Partially developed for faculty bios	
1.3 Internal and Institutionally Limited Proposals	CentralDesktop Unnamed	In use Internal reviews system under development by ITS	
1.4 Routing and Proposal Data Management	PAR,ePAR(AIS),PARiS	PARiS partially developed; single integrated system needed	ePAR feeds proposal info to AIS
1.5 Quality Checking	None complete	PARiS is capable of adding checking features	
1.6 System-to-System Proposal Submission	Manual upload into sponsor's external system (e.g., NSF FastLane,grants.gov)	System-system interface needed	
1.7 Negotiation of Terms and Conditions	None		

2. Post-Award			
2.1 Account Establishment	AIS (DCG) IAS (DCG),LaserFiche,paper files	To be replaced LaserFiche under development for award archive	AIS system assigns new account and sends to Financial System
2.2 Sub-award Processing	AIS (Purchasing), AIS (DCG)	To be replaced	
2.3 Service Center Recharge	ARM, BOSS (ICT), My Portal (ISI)	ARM In use for animal resources only, both ICT and ISI use their systems to compute and process recharges related to Administraiton, Computing Services, and Facilities	
2.4 Equipment Tracking			
2.5 Intellectual Property Tracking	Inteum	To be retained	
2.6 Effort Reporting and Certification	eCert	To be replaced	Receives data from Payroll, AIS, and Financial System.
2.7 Post-award Administration and Accounting	AIS(SPA),WEBBA,SCERA,ARRA module in PARiS PeopleSoft (for gifts)	To be replaced; New system must interface with existing ICT BOSS and ISI My Portal systems, which are in use.	Receives real-time data from Financial System; receives URS interfaces between PeopleSoft and Financial System
2.8 Accounts Receivable and Billing			
3. Award Close-out	AIS(SPA),WEBBA,ARRA Module in PARiS	To be replaced	

4. Regulatory and Compliance			
4.1 Protocol Submission and Review	iStar for IRB iStar for IACUC Various fillable documents for other regulatory committees	System will likely be retained System under development, will likely be retained	
4.2 Controlled Materials and Lab Safety Tracking	LSIS (lab safety), CSIS (chemicals)		
5. Business Intelligence			
5.1 Reports on Research Activity	SCERA	To be replaced	Receives real-time data from Financial System; receives monthly proposal/award data from AIS.
5.2 Performance of Research Administration	None	To be built	