Rice University
Task Force on Information Technology

Report on IT Principles, Governance & Organization

April 22, 2014
IT Principles, Governance, Organization

Information technology, across all missions and support functions of higher education, has dramatically increased in complexity and importance over the last decade, and is now a foundational component of a successful university. Thus it is an appropriate time to review comprehensively Rice’s IT structure and adapt it to a changed environment—an environment in which IT is more central and pervasive than it was when the current configuration was implemented and an environment when a thoughtfully designed IT organization can substantially impact a university’s learning, research, and administrative ecosystems.

Organizations that effectively employ IT as a strategic asset have a coherent and integrated set of IT principles, governance and organization. One way to think about the relationship between these three integrated dimensions of IT is to describe how they are intended to affect the behavior of IT professionals and users:

- Principles define desirable behaviors.
- Governance structures, motivates and guides behaviors.
- Organization enforces behaviors.

The Task Force set out to develop a set of principles and a governance framework for IT at Rice – neither of which had been previously expressly articulated. The principles and governance then formed the basis for the recommendations on organization.

Process

The Task Force employed the following activities with the assistance of a consulting firm:

1. Benchmarked the following peer institutions:
   a. Brown University
   b. Cornell University
   c. MIT
   d. Princeton University
   e. University of Pennsylvania
   f. Yale University
2. Conducted three 4-hour workshops on each of the following topics:
   a. Principles
   b. Governance
   c. Organization
Principles

IT principles are a related set of high-level statements about how IT is used in the organization and the desirable behaviors that enable its effective application. The Task Force developed three categories of information technology principles that apply to the whole of Rice University.

Category 1: The role of information technology in the university

1. IT that supports the core missions of research and education should be: flexible and nimble enough to support innovation by the faculty; as close to the state-of-the-art as necessary; and, resourced robustly.
   
   **Rationale**  IT resources should be prioritized first to meet the core missions of the university over infrastructure and IT support to administrative processes. While standardization is the most efficient use of resources, both research and education may require more variation.

2. Rigorous standardization, process integration, efficiency, and commodity-grade IT should be employed for administrative purposes across all organizational units of the university.
   
   **Rationale**  Administrative functions have a broad set of users that must coordinate their activities, make decisions utilizing common data, and perform their roles in the most productive and cost effective manner.

3. The core IT infrastructure should be sufficiently robust to meet the needs of research, education, and administrative processes.
   
   **Rationale**  A well performing infrastructure is necessary to support the objectives of the IT function. Investment in this area can be significant and thus it is important to balance system capabilities and performance with cost.

Category 2: The desirable behaviors of information technology staff and users

4. The purpose of the IT function is to deliver best-in-class execution of services and solutions to meet the needs of faculty, students, staff and alumni.
   
   **Rationale**  IT is an essential resource for the entire Rice community and thus the IT organization(s) must be tightly coupled and responsive to stakeholders.

5. Rice IT resources will be used in a manner that supports established university-policies, procedures, and standards.
   
   **Rationale**  Compliance with university policies, procedures, and standards is the responsibility of users and the IT function. Support to activities that do not adhere to policies, procedures, and standards will be limited.
6. Ensure optimal utilization of IT resources through deployment, training, and support.  
   **Rationale** Software and hardware provide far more capabilities than users employ. Increased utilization of common assets also enhances interoperability.

7. When new or enhanced capabilities are needed, commercial or other readily available solutions should be formally considered, and in general, preferred.  
   **Rationale** Developing new solutions is expensive and modification of standard solutions should be limited. Administrative practices should be reviewed and revised as appropriate to leverage standard solutions.

8. Users and providers of IT resources have an obligation to protect those assets, and the information they contain, from threats to their security.  
   **Rationale** Protecting information and IT assets is not only a local matter – compromises can cause serious harm to other parts of the university.

**Category 3: Information technology decision-making and resource allocation**

9. How IT decisions get made (e.g., process, criteria, who decides) should be simple, known throughout the university, and transparent.  
   **Rationale** Good governance requires clarity about decision-making structures, processes to secure stakeholder involvement (including exception handling), and communication about how and what decisions are made.

10. The IT organization(s) must exhibit clarity in structure, and precisely define and align responsibilities, decision rights, accountability, and budget.  
    **Rationale** The structure should be clear to both those within the IT organization(s) and users / stakeholders impacted by the IT organization(s).

11. Decision-makers have an obligation to understand the impact of IT decisions and all relevant stakeholders should have the opportunity to contribute to a decision-making process that affects their area of responsibility.  
    **Rationale** Decision-makers need to understand the perspectives of relevant stakeholders, and the mechanisms available to stakeholders to influence IT decisions need to be well understood.

12. All IT systems / applications should be periodically and formally reviewed to determine if they should continue to be supported because they no longer support university standards, are obsolete, or provide limited value.  
    **Rationale** Too many systems continue beyond the time they are providing value.
Governance

IT governance is defined as:

*Specifying the decision rights and accountability framework to encourage desirable behavior in the use of information technology.*[^1]

An effective system of governance addresses the following questions:

1. What decisions must be made to ensure effective management and use of IT?
2. Who should make these decisions?
3. How will these decisions be made and monitored?

Building on the IT principles just articulated, a second workshop identified a number of features, in addition to the principles, that should be incorporated into a system of IT governance at Rice:

**Strategic Initiatives.** At times university strategic initiatives (e.g., digital education) require significant IT support – and thus new investments and/or reallocation of resources. It is critical that the IT governance structure provide clear top-down guidance on priorities, expectations, responsibilities, and how the component pieces of an initiative will be coordinated across the university.

**Support of Academic Missions.** Academic schools must have an effective means to provide input and influence the allocation of resources for IT support to research and education.

**Priority Setting.** The IT governance structure should set priorities for IT resources across the university. Those priorities must be incorporated into the university’s budget process.

**Role of Functional Administrative Offices and Departments.** Information systems used for administrative processes involve a complex combination of people, procedures, business practices, and organizational structures as well as technology. Thus a high degree of functional office (e.g., procurement, payroll) and departmental ownership and participation is necessary in order to best serve the end users.

**Speed of Decision-Making.** The governance structure must facilitate the appropriate pace for decision-making, ensuring that the process is nimble enough to take advantage of advances in technology and comprehensive enough to fully consider a range of strategies and options.

Proposed Governance Structure

Governance structures should be simple and focus only on the key decisions that must be made (e.g., how much to spend and on what; objectives for the IT function). The principles and factors described above led the Task Force to recommend a three-level governance structure:

The decision rights for each component of the governance structure are:

1. Trustees
   a. Approve all IT projects of $1,000,000 or more.

2. IT Executive Committee
   a. Approve IT goals and priorities for the university.
   b. Incorporate IT priorities into the university budget process.
   c. Approve all major IT projects (what constitutes a major project should be determined by the IT Executive Committee) as part of the annual budget review.
   d. Conduct post-implementation review of major IT projects.
   e. Oversee, and ensure the effectiveness of, the IT principles, governance, and organization.
   f. Perform an oversight role of the performance of the IT unit(s).
3. IT Council. The council is advisory to the CIO and the IT Executive Committee, and replaces the existing Information Technology Advisory Committee. It has the following responsibilities:
   a. Recommend goals / priorities for the IT units to the IT Executive Committee.
   b. Recommend priorities for IT investments to the IT Executive Committee as input to the university’s annual budget process.
   c. Understand annual budgets of IT organization(s) in order to provide informed and integrated advice.
   d. Review and recommend to the IT Executive Committee all new major IT projects at the university.
   e. Recommend IT policies and procedures.
   f. Recommend IT standards (e.g., service levels, hardware and software).
   g. Ensure appropriate stakeholder inclusion in IT priority setting.

4. Schools / Major Units (e.g., Library, Enrollment, Housing & Dining)
   a. Make all programmatic and operational decisions, consistent with the university’s IT policies, priorities, and standards.
   b. Identify priorities and programs that require IT resources.
   c. Have appropriate representation on the IT Council committees.

5. IT Units
   a. Make decisions about all day-to-day operations and resources allocated to the IT unit(s) consistent with the university’s IT policies, priorities, and standards.

Concerns about the proposed governance model

The Task Force has a number of concerns about implementation of the recommended structure:

1. The most important component of the recommended IT ecosystem is governance (more so than organization or principles). What is proposed requires a high-functioning governance system, which may be difficult in a university environment.
2. The governance structure will require substantial participation and time (particularly for faculty). The only way to ensure appropriate participation from the stakeholders is if their recommendations are considered in decisions about IT strategy and allocation of resources to carry out IT priorities.
3. The IT Executive Committee and IT Council should generally respect and support local decisions made by schools, major units, and IT units.
Organization

What problem is the Task Force trying to solve through organization design and possible changes to the existing structure? Rice needs an organizational structure that facilitates the effective implementation of the recommended IT principles and governance.

There is no ideal design – only principles that can be applied to the reality on the ground. This reality was found in benchmarking six other universities with purported ‘good’ organizational structures – each was very different yet seem to work reasonably well for them.

The principles and governance recommendations from the previous sections give some guidance in addressing the classic questions about organization design:

1. What are the key activities that require excellence to obtain the organization’s objectives, or, where will lack of performance endanger the needed results?
   a. The key activities for Rice are: IT support to mission (research and education); some aspects of the infrastructure; and, the major business systems of the university.
2. Which units need to be together and which should remain apart?
   a. Day-to-day operational decisions are best made locally where relationships are pervasive and frequent.
   b. Activities should be combined when it enhances effectiveness, efficiency, and clarity for users.
3. What is the size and shape of the different components?
   a. Organizational structure should balance standardization, interoperability, and economies of scale, with responsiveness to local needs.
4. What is the appropriate placement and relationship of different units?
   a. There should be a very tight coupling of IT organizations and users.
   b. It should be clear to users where and how to obtain services.

The third and final workshop used two very different models to think through the question of organization. Neither model was a specific proposal, but rather they were employed to draw out factors that must be considered. The models are shown below:

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Findings

1. Governance is the most critical element for making the IT ecosystem work more effectively. Nevertheless, there should not be too high a level of reliance on governance alone, and some changes in organization structure are necessary.

2. Of the two organizational models discussed, one is not dramatically better than the other and a hybrid approach has the best chance of improving the IT ecosystem.
   a. Some reorganization is necessary in order to change some existing behaviors.
   b. Some activities must be coordinated much better than they are at present, and this requires some reorganization or modified reporting structures.

3. Rice would benefit from having a person vested with sufficient responsibility and authority to influence the entire IT ecosystem and help set policies and priorities at the senior management level. The university should formally create the position of Chief Information Officer (CIO) for the university, reporting to either the President or Provost. The CIO could have a second title of Vice President or Vice Provost.

4. From an organization perspective, much of what exists today is working well (e.g., high performance computing; support provided by many local IT units; a single coherent network and most servers located in a data center) and changes are not necessary in those areas.

5. IT systems for administrative processes are complicated by:
   a. Some non-standard business practices across the university.
   b. A governance structure that has resulted in some uncoordinated decisions.
   c. Lower investment by Rice than peer institutions in its enterprise business systems. Although this has provided reliable and efficient support to core operations (e.g., financial transactions, course registration) it needs review.
   d. An overlap in responsibilities between organizational units. IT supporting administrative processes currently takes place in two principal organizations (Administrative Systems reporting to the Vice President for Administration, and the Vice Provost for IT) and those functions would benefit from being consolidated under the CIO to eliminate the overlap in responsibilities and competition between the units.

6. Web services are spread across many organizational units and are often uncoordinated. This has led to some user confusion and a lack of quality standards for design, functionality and content. Improved coordination and user clarity are needed.

7. For those IT units that are not part of the CIO organization, a secondary (dotted line) relationship to the CIO that is meaningful in both directions would significantly improve coordination, efficiency, customer service, and value obtained from the IT activities.

8. The CIO will be in the best position to determine the structure of the IT organization under the CIO.
Recommendations for Principles, Governance & Organization

1. The President and Provost should formally approve and adopt:
   a. The proposed IT Principles.
   b. The proposed Governance structures, including the creation of, and selection of, initial Chairs for the IT Executive Committee and the IT Council.
   c. The organizational realignment of Administrative Systems and the functional structure below (this is not a formal organizational chart – that will be developed by the CIO):

2. Rice’s President and Provost should establish the CIO role and determine:
   a. The reporting structure for the CIO (President and/or Provost).
   b. Whether the CIO should have a second title of Vice President or Vice Provost.
   c. Who will fulfill the CIO position.

3. The relevant IT organizations need to adjust existing IT organizational structures to reflect the adoption of the new principles, governance model, and CIO relationships, and the dotted-line relationships should be defined and documented for each entity.

4. The proposals and recommendations represent significant changes in the way IT is governed at Rice. The draft report should be presented to the Deans’ Council, the Faculty Senate, Strategy and Planning Committee, and the Administrators’ Forum to improve the document and to inform the campus community of the proposed changes.
5. The Task Force has now completed its work on IT support to education, IT support to research, and IT principles, governance and organization. The last remaining component to be reviewed is IT support to administrative processes (including web services). It is very important that this last area be studied in depth and the IT Executive Committee should charter a new group to review this area after the recommendations above are implemented.