Technology System Assessment Protocol

(Issued By Technology Systems and Services Committee)

- Thinking about implementing a new information system to provide new services or improve processes within your office?
- Interested in enhancing how data[1] is accessed and/or collected?
- About to purchase software that will be accessed by multiple people?
- Interested in developing or purchasing an application[2] for research or teaching that will run from different computers?
- Want to implement a product to keep track of academic information?
- Reviewing software or a service that may be hosted externally by an ASP (Application Service Provider)?

If you can answer yes to any of these questions, you should continue reading this document. You may believe that *your* application is straightforward, and does not require the protocol below, but you won't really know that until you do the analysis.

Process

Step 1: Review this document to make sure you are aware of the elements to consider when making your decision.

Step 2: If you decide to move forward, please call the Help Desk at 617-521-2222. You will need to ask for a consultation about the "Technology System Assessment Protocol", because the Help Desk will not be the source of the information you need, but will start the process.

Step 3: Someone from Technology will work with you to: map out what needs to get done and who is responsible for the different tasks, determine a rough estimate of costs, and who might be responsible for them. It is only at this stage that a choice of specific product should be made.

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[1] "Data" are any information that the college collects and maintains, whether in digital form or not. It is beneficial to investigate where and if the data you are planning on working with in the proposed system already exists on campus and who the appropriate owners are. If this data does already exist, the answer may simply be to establish a process that makes this data accessible to you. Please see the attached list for an overview of data currently collected around the College. *(Link to Data Ownership document)*

[2] An "application" refers to software used on a single computer, or located on a server and accessed by one or more computer users.

Overview

The Technology Systems and Services Committee (TSS), with consultation from Technology Governance and Technology, has developed the following protocol for departments to use when evaluating the addition of a new "system"[3] into the "enterprise"[4] (refer to endnotes for definitions), or a new server-based application. TSS and Technology have prepared this protocol to help faculty and staff with the preliminary stages of a potential technology project by making explicit the requirements, costs, and benefits for such a system.

On the academic side, such projects may involve the implementation of a discipline specific technology which might be an academic application in any field, a "tool of the trade" or a simulation. On the administrative side, they will involve information systems or applications to provide a service and may vary anywhere from core financial operations, to business affairs operations, admissions, student services (housing, registration, advising), library services, etc. This protocol is to provide information and insight on what you and the College will consider when selecting and choosing to implement a new technology. It is important that your department think through both the plus side of the ledger: the needs, benefits and opportunities that this particular "system" will address; and the debit-side: costs, responsibilities and technical requirements, prior to moving forward with the technology purchase. This protocol will help to support your business case.

Consider the following six elements when choosing a product and before making any purchase or implementation decisions:

- ☐ Implementation
- ☐ Integration with existing systems / Interoperability
- ☐ Maintenance
- ☐ Support / Administration
- ☐ Privacy / Security
- ☐ Scalability

For each element there are three topics to consider: technical concerns, financial impact, and impact on personnel.

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[3] A "system" in the context of this document is a way of performing a College function (administrative of academic) that uses technology. Typically it consists of one or more applications, working together, being used by multiple people.

[4] The "enterprise" is the institution wide information services environment here at Simmons. One of the primary goals of an enterprise services environment is to ensure that institutional processes communicate and align to provide seamless, non-duplicated and accurate entry, storage and movement of data through the College's system.

Implementation

Technical concerns

What are the hardware requirements? What are related software and operating system requirements?

You may be considering software that runs on a *desktop* computer and requires a desktop operating system, like Windows Vista, or Mac OS X.

- Is there a particular operating system version number below or above which the software will not run? If the software is not compatible with the most recent version of an operating system (e.g. Windows Vista), it may be a sign that the company is no longer developing and maintaining the product, which may leave you stranded with something that will not work in a year or two, as Simmons' hardware and software minimum standards (available on the Technology web site) move forward.
- If you want more than one person to access this software or the data / documents you manipulate with it, does the software run on both supported desktop operating systems (Windows XP/Vista and Mac OS X)?

If the application requires *server* hardware and a server operating system such as Windows Server, Linux, or UNIX the issues raised throughout this document are very likely to be critical to your decision-making. If you need a server, it should be housed in the Data Center; please see Appendix A, Support and Maintenance of Departmental or Discipline Specific Hardware and Software, and the Maintenance section below.

Are there *related software or hardware* requirements? For example:

- If this is a web-based product, which browsers are supported (e.g. Internet Explorer, Safari, Firefox)?
- Does it require a specific version of Java (and is that requirement compatible with the requirements for other Simmons applications, such as Simmons eLearning and Kronos)?
- Or does it require specific applications, and versions of applications, like the Microsoft Office suite?

How is licensing managed for the application?

- Is there a separate piece of hardware (i.e. a "dongle") that must be attached to the server or each desktop in order for the software to run?
- Can you buy "concurrent licenses," which allow the application to be installed on multiple computers but limits the number of users to the number you have purchased? If so, the vendor may allow Simmons to use the "key serving" software (Sassafras) managed by Technology, or may require separate "license server" software: what are the requirements for that software and where should it be installed?

Increasingly, applications or systems are accessed via a *web interface*. Detailed Web Applications Assessment standards can be found at http://my.simmons.edu/services/technology/policies/web-application.shtml. Vendors should respond to the assessment by stating clearly in writing whether the product meets each required or desired criterion. This written response should be sent to Webmaster@simmons.edu.

- How many people will use this?
- Is this software you want installed on all Simmons office computers, or for all Simmons computers that students use?
- How quickly do you need how many people to be able to use it? If you can schedule with the Help Desk for June, it can be installed on all computers used by students for the following Fall. It may or may not be possible to "push" the application to Simmons computers.

Financial impact

Some of the financial questions are obvious:

- How much will the hardware and software initially cost?
- If the application requires related software, does Simmons have a software license for that software, or will you need to purchase that as well?
- Is initial training and documentation included in the implementation costs?

Personnel impact

- Who has the skills, time, and "administrative rights" to specify the hardware and to test and install the software? Technology staff may need to be involved and therefore work must be requested from or may need to be scheduled with the department.

Integration with existing systems / Interoperability

Technical Concerns

It is important to consider whether your proposed system will need to communicate, or "integrate," with other systems at Simmons. Not all applications have to integrate with other College systems, but if:

- you will need access to existing data (including being able to log into an existing system),
- anticipate a need to share the data now, or in the future,
- or will duplicate data held in full or in part elsewhere

then you should work with Technology to review the issues surrounding integration as you are investigating the system, and you should figure the cost of integration into implementation costs. In general, implementation of a system that holds data also held elsewhere must include a mechanism for keeping consistent the data in the “parallel” systems. Typically, this means that the data can only be changed in one place, and that those changes propagate to any other place the same data is held.

Example: People log in to the Kronos Online Time and Attendance solution using their email (LDAP) username and password. This application also receives daily downloads from the HR database (Colleague) and feeds pieces of data to ADP (Payroll system).

Example: Individual students in the physical sciences gather observational data in the field or from an instrument, put the data into a common location (e.g. the file server), and use specialized software to analyze the data as a whole.

Personnel Impact
Another issue to consider is the impact that the new system may have on not only your own but also other departments. At first you may focus on how the system may affect internal processes within your own department. But when a new "system" is established, it often affects the workload, business processes, and daily activities of other departments as well. It is important to determine how it may affect them and to communicate the impact. By addressing these issues in advance, it will increase the probability of executing a smooth transition both inside and outside your department. Building and maintaining links to existing systems, where necessary, will need to be the explicit responsibility of some unit in the College.

Financial Impact
Building or buying integration with existing systems can be a hidden cost of implementation. Maintenance of those links with other systems could be an ongoing cost.

Maintenance, Application Administration, and User Support

While the need for a new system and the cost in *acquiring* it is usually the focus of the proposal process, it is of equal importance to determine the *maintenance* that will be required. Think of maintenance as the effort needed just to keep the application up and running, not to actually use it. Application administration includes managing what each user is allowed to see and do with the system. Often times, systems are implemented, but it is not clear how much work will be required by the department and/or Technology for it to function effectively and keep on functioning effectively. Research this by talking to other clients that work with the same product. Use their experience to your advantage to try to determine what it will take. You may discover that it could end up costing more time and money if additional resources are required. You may also discover that because the system streamlines processes, you save both time and money.

Technical Concerns
Technical questions you might ask about maintenance include:

- Is there an effective way to remove or archive old information?
- Does it have effective tools to find corrupted data and repair the corruption?

- Do you need to shut down the application to run maintenance routines?
- How long do maintenance routines take to run?
- How can the system be backed up and how long would backups typically take?
- How do you restore from backup, and can you easily restore just a portion of the data?
- How often are bug-fixes / maintenance releases / patches / upgrades released?

If this application requires server software, the server will be housed in the Data Center and Technology staff will take on some maintenance responsibilities. Please see Appendix A, Support and Maintenance of Departmental or Discipline Specific Hardware and Software for an explanation of the responsibilities of the system owner and of Technology in this case.

Personnel Impact
In order to assess the impact on personnel, you should ask the following questions about maintenance:

- What roles are needed to maintain the system?
- What skills are needed for the people assuming those roles?
- How much personnel time would fulfilling those roles take?
- Does some company provide for-fee maintenance services?
- How often do bug-fixes/maintenance releases/patches/upgrades need to be installed?

Not all departments have personnel with the required technical ability or the time to administer and support a system. Someone may require training in order to administer the system. This includes someone to be the department's liaison who will contact the system provider's technical support and work with Technology to diagnose issues such as integrations with other Simmons systems.

Users of the system may require training and assistance running the application.

- Who will provide that training, and does training need to be ongoing (e.g. for new hires)?

Financial Impact
Cost-related questions you might ask about maintenance include:

- How much does maintenance (receiving bug-fixes) cost?
- Does annual maintenance include any upgrades?
- What are maintenance service costs?
- What about future costs for maintenance / upgrade / services, how are they determined? Can ongoing training be conducted by Simmons personnel, or will those using the system need to be sent to the vendor's training?

Privacy/Security

If the system will include any sensitive information, particularly regarding students, faculty, staff, or "human subjects," you must review the security of this application to ensure your

department abides by Simmons standards and legal requirements. For student information one applicable law is FERPA, for patient information HIPAA. For human subjects you should refer to the Institutional Review Board (IRB) at http://my.simmons.edu/services/gsp/irb.shtml.

One way to assure privacy may be through technical security, however, policies and human behavior are just as important factors to plan for. For example, a system might meet technical needs for security, but if people share passwords, leave printouts in the open, or download copies of data in text files, the privacy of your data has been compromised. Consider what policies you might need about your system, and whether it is important that any one sign a "use agreement" before being given access to it.

Technical concerns

In general, the starting point for technical security solutions is authorization (who has the right to see/do what) and authentication (identifying yourself to the system typically through an individual username and password). It may be important to assign different security "roles" to different people.

- Does the application have a security scheme that enforces roles that permit users to do or view only what they are supposed to?
- Does the system require its own set of usernames and passwords, or does it integrate with campus authentication schemes?

Personnel Questions

- Who will maintain this security scheme?
- When personnel change or change roles, how will the security scheme be updated?

Financial Questions

- What liabilities does the system create (or mitigate)?

Scalability

When assessing a new application, there are at least two ways in which the scale of the implementation might change:

- While at first you may plan for just two or three people to use this system, in the future it may become convenient or necessary for more people to use it.
- Another Simmons department may already be using a system similar to the one you are investigating. It may be possible to expand that system instead of purchasing an entirely new one. If expansion is not a viable solution, it may still be possible to leverage their experience with respect to purchasing, implementation, testing and launching the system. Or other departments might have a need for a similar system to the one you are considering, and there is value to the College in having unified systems for any given type of need.

Technical concerns

- How many people can use the system at once?
- How much data will it end up creating and space taking up if you expand use?

Personnel Questions

- If use expands, who will administer the system, if it started out being owned by one department?

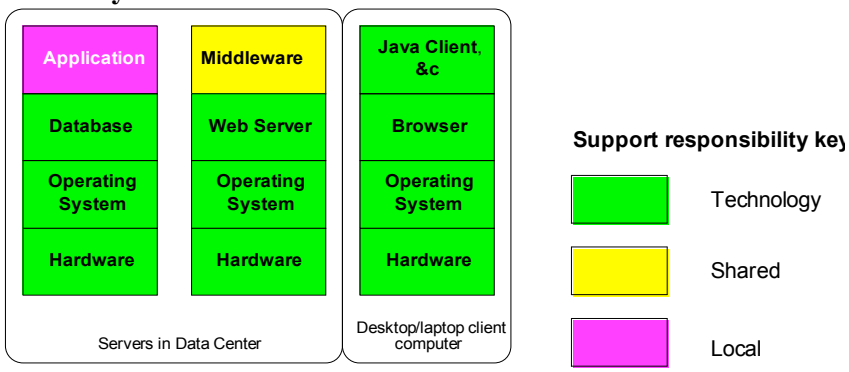
Financial Questions

How many people will use the application, and does it make a difference to the licensing costs if you negotiate for concurrent, volume, or site licensing?
What costs would be associated with making the system available to more people?

If there is potential for others around the College to use this system, you should discuss this with Technology at the outset, as it may increase the value of the project if the system will fill the needs of several departments. At times, we purchase systems to facilitate access to data by duplicating, or "shadowing," official data that exists elsewhere. As a result of "shadow" systems being in existence, we run into a high volume of data discrepancies across the College and discovering which are accurate can be time consuming and costly. The goal is to avoid establishing "shadow" systems in order to save departments the time and money it will take to reconcile the data. If we give departments the guidelines to purchase "systems" that integrate with current Simmons systems, we are optimistic that this will save departments' additional work and resources at the end of the day.

Appendix A. Support and Maintenance of Departmental or Discipline Specific Hardware and Software

Summary Chart



Support for Departmental or Discipline Specific Desktop Software

Support for Departmental or Discipline Specific software that simply resides on a desktop/laptop computer is described under Academic/Accepted Software on the Simmons Technology website. See http://my.simmons.edu/technology/helpdesk/software/accepted.shtml. Central support for this type of software is generally limited to assistance in installation. Users of such specialized software are expected to be largely self-sufficient.

Support for Departmental or Discipline Specific Software loaded on Hosted Servers

In general, local application software, particularly that which is not distributed with the operating system, is maintained and configured by the technology owner – that is, the department. If application software requires either a newer or older version of underlying software (e.g., an older browser or java version, a newer operating system) than is supported, this is the responsibility of the department as well.

Support for Departmental or Discipline Specific Hosted Servers

Technology Networks & Servers provides hosting services in its Data Center for servers belonging to Simmons College departments, providing them with a gigabit connection to Simmons data network, a controlled environment, and conditioned or emergency backup power. The following services are provided for hosted servers: physical security, management of hardware repair, backup, operating system patches and updates, virus protection, support for Simmons' standard databases and web servers, emergency after-hours support.

Servers hosted by Technology must conform to current Technology standards for both hardware and operating systems. Lifecycle policies require that servers be removed from service when they no longer run operating systems supported by Technology.

Administrative access to hosted servers is in accordance with the Technology policy "Administrative Rights on Simmons-owned computers (6/22/04)". System owners should refer to the "Simmons College Acceptable Computer and Network Use Policy (6/13/2004)".

Due to the nature of jointly administered servers, security on hosted servers is a combined effort. Network and Servers staff provide guidance and recommendations as needed. When security vulnerabilities are known to be being actively exploited, preemptive action will be taken to patch the systems unless system owners have indicated they would rather have their systems shut down in such cases instead.