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Implementing an ERP on Time and on Budget: An Innovative, Inclusive Approach

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The value of information technology (IT) to colleges and universities cannot be overstated. Before information technologies were broadly adopted in higher education and before their value was fully understood, progressive institutions viewed IT investments as budget imperatives—tools that deserved investment because they were of clear value to a subset of faculty and researchers and because they held potential value to others. During the past 40 years or so, as computers proliferated on campus and devices, applications, and technologies of all kinds became woven into the fabric of higher education, information technologies have become strategic, indispensable assets in higher education.

Services such as electronic mail, data and voice communication networks, personal computer and end user support, routine data backup and disaster recovery procedures, help desk services, Internet access, cell phone support, security protection, and printing payroll checks were once considered to be the fundamentals—and the pinnacle—of IT services. Today, many of these services have been commoditized, and our institutions are demanding higher-level, integrative services from IT departments. Investments today must deliver software applications that improve processes or ease access to timely information. New and tailored software applications that decrease transaction costs, increase staff utilization, interoperate with previous software investments (creating an information infrastructure), and transfer information to modern mobile devices are viewed as strategic services required to attract and retain students and faculty and to serve their academic IT needs.

This ECAR research bulletin provides an innovative and practical approach to implementing an institution-wide enterprise resource planning (ERP) system, both on time and on budget. It describes the principles applied at Kent State University from December 2005 through June 2008 while the institution implemented an ERP that included 10 modules from the SunGard's Banner Unified Digital Campus along with 22 "bolt-on" applications and 24 integrations with legacy systems (see Appendix for detailed list). The \$23.5 million project involved hundreds of personnel representing every major division of the university. The project succeeded largely as the result of some very dedicated individuals applying important, common-sense strategies, as well as lots of hard work.

Highlights of ERP Implementation

Preparing an institution for the changes that a new, large IT system will bring requires care, forethought, and a great deal of coordination. In some ways, it is like hosting a banquet for the institution at large. Success depends in large part on how well each step of the process is carried out—from setting expectations, to selecting the guest list, to building the budget, to choosing the menu, to wording the invitations, to determining the seating plan, to decorating the room to create an atmosphere of celebration. No detail is too small to escape examination, and it takes a village to do the job right.

Project leaders know that running very large scale projects means that there are many things that must be done first. These include scoping the project, gaining buy-in from stakeholders, getting budget approval, articulating timelines, and building relationships. Perhaps the most pressing of these is to establish key roles and responsibilities for those who will participate in the project.

Establishing Key Roles and Responsibilities

It is safe to say that people like to be included when decisions that will impact their lives are being made. This fundamental principle is sometimes overlooked by project leaders who fail to recognize the breath of individuals who have a stake in how a project turns out. Operating out of a principle of inclusion and awareness from the outset of a project for all key people likely to be involved not only helps manage expectations along the way, but it also creates the sense of ownership necessary for a successful project.

From a policy and fiscal approval perspective, it is necessary to gain project approval from key stakeholders such as trustees, the chief executive officer, and other senior leaders. These individuals must understand the purpose and cost of the project, major milestones, and anticipated project difficulties. It is also important to have initial discussions with functional department heads about choice of software, planned project schedules, and allocation of their staff members at each stage of the project. Developing project ownership and commitment among all stakeholders, including the middle managers and functional experts who will be participating in the project, is critical for project success.

Managing the implementation of a large-scale IT project that affects how major administrative, instructional, or research activities are performed across a college or university requires full cooperation among software vendors, institutional stakeholders, and governing bodies (depending upon how the project is structured and funded). A critical component is establishing a software selection process that results in adopting a product that is fully supported by the vendor during and after implementation and that stakeholders are eager to use. It is critical to ensure that key functional stakeholders evaluate vendor software features and compare them to both current processes and their desired process improvements. If a procurement bidding process is necessary, thorough documentation of key features will be necessary, and this documentation can serve as a tool to ensure that the features are included. This component of a large-scale software project is important. If possible, the selection should reflect the choice of the functional leader or leaders, even if that differs from what the IT department might choose.

After identifying all key stakeholders likely to be involved in the project, it is important to ensure they view the project in the same way. Remember, key functional departmental directors are more important than all other actors involved in the project. Communicate with them extensively prior to beginning the project.

The software selection process can serve as a means of developing a common level of understanding among all stakeholders about necessary features and how these features

meet stated strategic goals. Other key project elements to communicate at the outset include expected project timelines with key milestones identified, roles and responsibilities of all key steering committees, and both planned feature deliverables and nondeliverables. The features should be expressed from an institutional and a strategic perspective.

Creating and Managing Executive and Steering Committees

Critical to any large-scale project is to have a mechanism to manage expectations, particularly those of key stakeholders. Executive and steering committees of any type must have clearly defined charges. An agreement to fulfill the charge should be signed by each member prior to the beginning of the project. These charge instruments should describe ownership responsibilities, and they should last the life of the project. They should require all members to make timely decisions when issues are brought to the committee's attention. The project director should bring critical decisions to these ownership committees, both to keep the committees informed and to request specific policy, fiscal, and process/workflow recommendations as necessary.

Executive Liaison within the Core Software Application Provider

Prior to contract signatures, it is important to secure an inside executive liaison within the ERP software provider. If the ERP software provider is also involved in the implementation, schedule monthly meetings with the senior vice president responsible for professional services. Doing so will help maintain visibility for your project throughout the implementation. When problems occur (and they will), you will have direct access to the office empowered to make decisions.

Role of and Relationship with the Software Application Provider

Beyond all the technology products, ranging from the database software to the enterprise class servers necessary for a successful project, the actual ERP software application is most important.

Collaborating with the software application vendor (as compared to hiring an implementation company) and knowing who their business partners are is important. Why? It's simple. The vendor knows the software the best, from how it interoperates with other software, hardware, and database certification requirements to how your staff should be trained to work with it. Further, the vendor has a stake in ensuring your success and is positioned to deliver more technical and core software engineering resources than most software implementation support companies.

Establishing a Project Timeline

The criteria to determine the correct project schedule of events and the overall pace of the project will be a balance between costs and functional personnel time availability. For example, scheduling longer to complete each project module, assuming the added time is used wisely, can help ensure that a more inclusive and complete business process analysis is conducted. It is also very useful to allow additional time for testing in order to verify that the new software performs as expected.

On the other hand, sticking to a tighter timeline can save significant project dollars with minimal loss in functionality. Many people think that implementing a software project on a rapid schedule delivers, on balance, the most benefit for the effort. Spending additional time reviewing the plan, once it has been created, often has diminishing returns, relative to added functionality.

Developing and Working a Project Budget

The main project expenses for a large-scale IT project include hardware, software, and professional services (consulting). Indirect project expenses include staff opportunity costs and their personnel backfill expenses (temporary personnel to perform routine duties while the functional expert is assigned to the ERP project).

Of all of these expenses, most often there is overspending on professional services. In an effort to manage these expenses, it is best to parse these costs into person-month and person-hour units of measurements. Estimate and provision them from the outset of the project, and monitor them against these project estimates. Most hardware, database, and application software costs will be close to one-time costs, and, as such, they are easy to monitor compared to tracking the many work hours of software developers, project managers, business analysts, report writers, database administrators, and so forth.

Using Functional Staff and Backfill Support

If you have established the necessary buy-in with all functional directors during the initial scoping discussions, the use of their functional staff time will be much more easily determined at the time their role becomes key to the project. It will be necessary to bundle their time as their particular software module is designed and installed. Additionally, in preparation, you cannot start too soon to identify the need for temporary support personnel (commonly referred to as “backfill”). These backfill individuals can be difficult to find, depending on the level of experience required.

Project Employee Incentives to Ensure That Deadlines Are Met

Though employee incentives are easy to create and implement, they are often not used. It is truly a missed opportunity not to use a relatively small amount of money to save large amounts of project costs in the form of project overruns due to missed deadlines later. Employee incentives are the best means of ensuring that the project progresses on schedule. The total incentive costs are likely to be under 5% of the overall project costs, and they can easily save up to 50% of total project costs.

Choosing a Project Director

Quite possibly the single most important project pre-implementation decision is to select the project director. One might think that the selection criteria include strong software application skills, knowledge of modern distributed architecture principles, and relational database expertise. Wrong! The two most important skills necessary to manage a large-scale software project are business knowledge and teamwork building skills. Any deficit in IT skills that a project director with strong business knowledge may have can easily be overcome by surrounding the project director with technologists via a direct reporting

line. A project manager who knows the business will be able to communicate with the key functional directors and stakeholders with a perspective they value. Attaching the database administrators, application installers, workflow experts, and systems administrators to the project director's organization will enable control of the necessary resources to complete all the technology-based tasks. Structuring the organization leadership around a business expert will also result in the technology experts' knowledge that their efforts will be well aligned with the mindset of key functional stakeholders.

The Art of the Implementation: Keep Your Eye on the Ball!

A colleague who was responsible for implementing multiple ERP modules over a period of only nine months once told me her key to success: keep the focus on the big stuff! A mind-boggling number of decisions need to be made in the process of any ERP implementation, and it is easy to get distracted by non-crucial issues. As she raced to implement financial, financial aid, and student systems all before the start of fall classes, my colleague focused on one thing: successfully registering the first student who showed up for fall semester class registration. The software had to work; the databases had to synchronize; the hardware could not fail. The project team was clear about this goal throughout the project implementation. They knew precisely what success and failure would look like and what they were working toward.

Develop a Common Project Management Methodology

A large-scale software project actually comprises numerous, smaller modules that combine to create an ERP system. If the project is large enough to require multiple project managers, the services provided by a project management office (PMO) may be useful. A PMO can provide efficiency by pooling its personnel and software resources so that fewer project managers can provide consistent methodologies through the use of a single project management tool. In the absence of a PMO, it is wise to seek project management efficiencies early on, since the project gets more complex as time progresses.

Co-Locate Functional and Technical Staff

Critical to the success of any large-scale project is sufficient space to co-locate core software developers, project implementers (including employees and contract workers), and functional personnel. Ideally, there should be enough space to provide office space for all permanent project staff and surge space for new functional staff (payroll, human resources, general ledger, financial aid, admissions, registration, etc.).

Creating shared space for technical and functional personnel helps ensure that all members of the project can easily communicate with each other, develop a strong team and a shared vision, and concentrate on project-related duties rather than being distracted by the routines of their "day jobs."

Technical Architecture Design Group: Keep It Interoperable and Simple

It is likely that any ERP implementation will require that legacy systems from multiple vendors be connected and integrated with the ERP software. There are two important

principles to keep in mind regarding necessary software interfaces. First, get a solid understanding of the existing business relationships the ERP vendor has with these different “bolt on” software modules. If possible, select these ERP software partner products, since it is likely that technical interfaces will have already been built, easing the integration for your project. Second, establish a small information architecture group to ensure that incremental interface decisions are designed and documented and fit well into the overall project design. Making these decisions in a deliberate and planned way will help reduce the costs of the software interface work.

Do Not Pave the Cow Path: Business Process Needs Assessments

Throughout the project, business process assessments (BPA) will occur routinely because software feature decisions will need to dovetail with both desired outcomes and existing policies. These BPAs are the single most important avenue to deliver substantive process improvement resulting in reduced operating costs, more effective use of staff, and more productive users. It is important, therefore, to bring process design plans to the appropriate steering committees for careful review.

Break Out the Champagne! Celebrate Milestone Successes Along the Way

Maintaining positive morale during long hours of design and implementation is very important. Use “go live” opportunities to reward people through monetary incentives and recognition ceremonies. Planning for rewards might take time to plan and carry out, but they are well worth the investment when measured by their effectiveness in maintaining staff commitment throughout the project.

The Value of Teamwork

Ensuring that each team has what it needs to achieve success is very important. This includes the composition of the team and the skills of its members. A team will be successful if it has clearly established goals and the necessary tools and shared vision to enable it to be successful. Remember, each ERP project is actually made up of many small teams striving to accomplish numerous incremental objectives. Each team’s performance is one of the most important means to ensure that the overall project stays on time and on budget.

Maintaining Effective Communications

Someone once said that the lesson of Change Management 101 is over-communicate, over-communicate, over-communicate. This principle could not be more important when installing an ERP. It will be necessary to communicate with each university community and the project staff members. Multiple methods such as newsletters, brown-bag lunches with the CIO and project director, formal trustee presentations, and targeted e-mail updates are all very good ideas.

Remember the Reports!

It is impossible to overstate the importance of creating business intelligence and ad hoc reports for business units to use during the ERP implementation. While everyone’s

attention might appear to be focused on the implementation project, affected units must, of course, continue to deliver their daily services. To do so, they need basic and strategic operational data in the form of scheduled and ad hoc reports. While unit-based functional staff members participate on the ERP project implementation teams, there is little time available to learn the new software reporting architecture built into the ERP, including building tables and using new query tools.

Training

Learning new software, from both technical and functional perspectives, can be difficult. Users of the system will prefer to learn in different ways (as needed or full immersion, classroom-based or computer-based training, group-based or one-on-one interactive discussion). Anticipate that training efforts will need to be delivered multiple times to accommodate everyone's schedules. Determine the best people to deliver the training—the ERP team or individuals from the functional units. When it comes to training, choosing convenient locations, a focused curriculum, and flexible, knowledgeable trainers are all necessary for success.

Measuring Cost Savings

Even when one gets brand new slippers, it can be difficult to part with the comfortable, broken-in pair in the closet. Plan for functional user pushback regarding turning old systems off. Functional owners of the old applications will require access to data that is stored in the older system. Deadlines to determine when older legacy data will port to less expensive systems will be necessary to help ensure that old, expensive systems are decommissioned in a timely fashion. Remember that software and hardware costs, along with costs associated with staff familiarity with the old environment, will increase as long as you are running legacy systems in parallel with the new ERP, so it is important to cut the cord as soon as it is feasible to do so.

The Impact of an ERP on the IT Department

The impact of an ERP on the IT department will be significant. Many staff members might have been left out of learning the system and will worry about their fate. Ongoing training for the IT staff will be necessary. In addition, new titles and job responsibilities will be required. Many staff members will feel burned out and be in need of a break. Some staff members who were key to the ERP implementation will market themselves and accept new jobs, armed with their new knowledge. It is likely that the organization as a whole will need to be reshaped.

What It Means to Higher Education

In 2002, the EDUCAUSE Center for Applied Research (ECAR) conducted a comprehensive study on the state of the practice for ERPs in higher education. Out of that study emerged a great deal of quantitative data and many lessons that hold true to this day.¹ Kent State's ERP implementation confirms the value of these lessons for higher education:

- *Leadership.* Strong executive leadership—not merely sponsorship by active executive involvement—is imperative to implementation success. Getting buy-in from all layers of management is also advised.
- *Communication.* A communication plan ties the many parts of the ERP vision and plan together, making the goals and implementation requirements clearly understood and securing support for them throughout the institution. It's been said that it is almost impossible to over-communicate.
- *Central ownership of data.* Shared data-center operations and central ownership of data are critical to success and also reduce costs.
- *Training.* The study finds that, generally, training costs are underestimated, delivery timing is bad, and training needs to focus on using the system to both support transactions and leverage the ERP system to change existing business practices. This is one area where institutions thought they could have done better.
- *External assistance.* Consultants were often cited as key to successful implementations, but the costs were a surprise. The advice from study participants is to select consultants carefully, be clear about their scope of responsibility, and actively manage the relationship to get the maximum benefit for the implementation.
- *Customizations and modifications to the vendor software.* One of the most significant findings of this study is the impact customizations had on the respondents' ability to finish on time and on budget. The greater the volume of customizations, the more likely the ERP implementation was to be over budget and off schedule.
- *Reporting.* The ERP products often cannot generate the reports the institutions need. Many institutions have created data warehouses to solve their reporting and data-query needs.
- *Obtaining value from the ERP implementation.* The four basic ways to obtain value from ERP implementations are through efficiency, effectiveness, customer satisfaction, and reduced business risk. For example, providing online self-service and linking and automating related transactions have resulted in more efficient relationships between the universities and their students. These services have been provided on a scale that simply would not have been possible using personal service in expensive physical facilities.
- *Learning and knowledge.* Learn from other projects. Participants in the study emphasize that knowledge gained from previous projects helps institutions move forward more effectively with their implementations.

Key Questions to Ask

- What are the opportunity costs of installing an ERP for our institution? What are the costs of not doing so?
- To what degree will we be able to integrate a new ERP with our legacy systems?
- What governance structure do we need in place to maximize the success of our ERP project?
- In what ways is our institution positioned to take advantage of the important lessons learned about ERP in higher education?

Where to Learn More

- EDUCAUSE Resources, Enterprise Resource Planning.
http://connect.educause.edu/term_view/Enterprise+Resource+Planning.
- Green, Kenneth C. "Prodding the ERP Turtle." *EDUCAUSE Review* 24, no. 6 (November/December 2007): 148–149,
<http://net.educause.edu/ir/library/pdf/ERM07614.pdf>.
- Kvavik, Robert B., and Richard N. Katz, with Karin Beecher, Judith Caruso, Paula King, John Voloudakis, and Lori-Anne Williams. *The Promise and Performance of Enterprise Systems in Higher Education* (Research Study, Vol. 4). Boulder, CO: EDUCAUSE Center for Applied Research, 2002, available from <http://www.educause.edu/ecar>.

Endnote

1. Robert B. Kvavik and Richard N. Katz, with Karin Beecher, Judith Caruso, Paula King, John Voloudakis, and Lori-Anne Williams, *The Promise and Performance of Enterprise Systems in Higher Education* (Research Study, Vol. 4) (Boulder, CO: EDUCAUSE Center for Applied Research, 2002), 15–16, available from <http://www.educause.edu/ecar>.

About the Author

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Appendix: Kent State University ERP Implementation, December 2005–June 2008

Banner Unified Digital Campus (10 Modules)	
Finance	
Human Resources	
Student	
Advancement	
Accounts Receivable	
Financial Aid	
Luminis Portal	
Workflow	
Employee Name Change	
Employee Marital Status Change	
Employee Education Level Change	
Expense Reimbursement	
Position Request Authorization	
Scholarship Payment Authorization	
Tuition Waiver Benefit Request	
Graduate Admissions Application Routing	
International Graduate Application Eligibility Notification	
Notice of Voluntary Separation	
Extender (Imaging)	
ODS (Reporting)	
Bolt-On Applications (22 Applications)	Bolt-On Function
PowerPark	Parking services
Windstar	International payroll
Flashcard	Kent ID card
viDesktop	Performance appraisal
PeopleAdmin	New hire
Brightline	Employee training
CashNet	Online payment
SciQuest	Procurement
WebCT/Vista	Online learning
Darwin	Degree audit
HMS/CBORD	Student housing
fsaAtlas	International tracking
Kronos	Timekeeping/reporting system

Cont'd

TMX	Timekeeping/reporting for dining services
ePrint	Report distribution
Blackbaud/BCI	Alumni phone center
Famis	Facilities management
Coeus	Grants management
TPHi/Infosilem	Scheduling
Cognos	Reporting
FormFusion	Forms generator
AppWorx	Job scheduling
Integration (24 Integrations)	Integration Purpose
CampusWorks	Student employment
Police department	Campus police system
Federal work study	Student work study
New hire	Staff employment
Budget transfer	Finance/budget transfer
RecTrax	Recreation center
LDAP interface	Student accounts
Health center	Health and immunizations
Bookstore	Course and enrollments
KentLink	Library interface
Regional campus	Student enrollment
JAMS	Judicial affairs management
Scanner	Course content
Section 8 applicants	Student information
Total SAT score	Admissions scoring
NCAA	Student athlete eligibility
Clearinghouse	Enrollment/expected graduation
Selective Service	Student enrollment
IN grading	Incomplete grading
HEI	State of Ohio reporting
eAcademy	Software purchase
STRS	State of Ohio retirement (faculty)
PERS	State of Ohio retirement (staff)
ODJFS	State of Ohio employment

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