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Campus-wide Integrated Information System Implementation: A Case Study

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Abstract

A campus-wide information system is a major undertaking regardless of the size of the institution especially when the legacy infrastructure was one of “best of breed” approach for each administrative unit. Transitioning from a “silo” approach to an integrated strategy requires a change in thinking and processes. The project to implement an integrated information system began in the spring of 2000 at Luther College. In spring of 2004, all the major modules of the new integrated system were put in place. The challenges faced along the way, the benefits harnessed, and the lessons learned will be discussed. Overall, the project was on time and within budget.

Keywords: campus-wide, integrated, information system, implementation

1. INTRODUCTION

An enterprise information system project is “a massive undertaking fraught with risks” (Gossman and Walsh 2004). Besides the technical aspects of the project, careful planning and the human factor (Barker and Frolick 2003) must also be considered. Management support is also crucial because it affects the success of the project (Hammersmith 2004; Havelka and Lee 2002).

Early in the spring of 2000, Luther College formed a task group to investigate how best to replace the legacy information systems supporting Finance, Human Resources, and Payroll. The Finance information system was internally developed. The goal was to continue the college’s “best of breed” approach to support administrative information systems. Figure 1 shows the different “silos of information” under the “best of breed” architecture. After investigating the various options, the task group recommended to the college administration that it should adopt an integrated information systems approach instead. Over time, the cost of “best of breed” systems was nearly as much as an integrated one. Besides, the college would have to connect all the “silo” systems in time to come and the challenge and costs of integrating the various platforms could be high. The administration endorsed the task group’s recommendation and believed an integrated system would provide a higher quality of service to all the constituents and enable the college to better manage its technology expenses.

In September 2000, a request for proposal (RFP) was completed and sent to appropriate vendors. The vendors were requested to respond to the RFP by the end of Oc-

tober 2000. The vendors’ reports were reviewed and several were invited to campus to present their system and address the needs outlined in the RFP. The selected vendors also provided institutions that were using their system for reference checking purpose. After evaluating the various vendors, Datatel, Inc., “a leading provider of information management solutions for higher education,” headquartered in Fairfax, Virginia., was selected to help Luther College to implement an integrated information system (www.datatel.com).

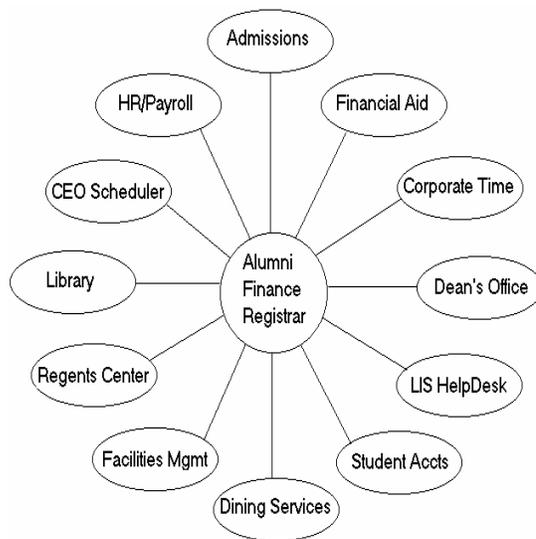


Figure 1 – Silos of information
BEFORE implementation

2. THE INTEGRATED SYSTEM: DATATEL

An integrated information system, as the name suggests, aims to enable the various administrative units to share data and communicate more effectively and efficiently with one another. The underlying infrastructure is the same for every unit.

The Datatel information system consists of the following modules:

- Technical:
 - Hard/Software Installation
 - Process Improvement
 - Training Room
 - Conversion
- Core
 - Communications Management/Rules
- Human Resources
 - Payroll
 - Personnel
 - Faculty Contracts
- Financial
 - General Ledger
 - Accounts Payable/Purchasing
 - Fixed Assets
 - Project Accounting
 - Budget Management
- Student System
 - Admissions/Recruitment
 - Curriculum Management/Faculty Information
 - Academic Records/Registration
 - Accounts Receivables/Cash Receipts
 - Financial Aid
 - Degree Audit/Advisement
 - Residence Life
 - Activities and Events
 - Campus Organizations
- Benefactor
 - Individual/Organizations
 - Gifts and Pledge Processing
 - Correspondence Control
 - Campaign Management
 - Major Projects
- Tools
 - Safari
 - Webadvisor

Each module went through the following phases:

- Planning: This included a process mapping exercise where each administrative unit identified the data flow and the supporting processes. This exercise also enabled the various units to understand value chain and how interconnected they were in their daily operations.
- Training: This phase allowed a Datatel consultant to show the various features in a module so that the

target administrative unit would understand what their module could do for them.

- Decision making: After training, this phase required the administrative unit to identify what features they would need and what they would want to have. Not all features were needed by the administrative unit.
- Consulting: This phase enabled the administrative unit to visit with the Datatel consultant to examine how the Datatel module and existing data could be set up to support their needs.
- Testing: The testing involved using real data from the administrative unit to populate a test account so that various processes could be evaluated. Testing was done three times over several months with each test more comprehensive than the previous one.
- Live: When testing was completed successfully, the module was ready to be introduced to the users. The hard part is not done; it is just beginning.

Along the way, user input was solicited so that the system would be useful to the users. In the Student modules, for example, faculty members and students were shown prototypes of the features, and hands-on testing by users were conducted. The feedback was incorporated in the next round of testing.

Since the Datatel system has many modules, each module was phased in over time with each having a different start date and live date. After Datatel was selected as the vendor, the information technology personnel at Luther College worked with the Datatel consultants to prepare the technical infrastructure. The Hardware and Software Installation module went live in May 2001 and the platform was in place for the rest of the modules. The Conversions module played a supporting role when the various administrative units needed their data converted from the legacy system to the Datatel system testing and implementation purposes. The Human Resources modules went live in January 2002, followed by the Financial modules in June 2002. The Student System modules affected the most administrative units and the Admissions/Recruitment module went live in July 2002 and the rest of the modules in the first quarter of 2003. The Benefactor modules finally went live in spring of 2004. With each module going live, a celebration was held to mark the milestone. Besides acknowledging the work of the module team members at each public celebration, it was a way to inform the campus of the progress of a phased implementation of the system. It was also a reminder that going live did not mean project accomplished. The next challenging step was to help the users to harness the benefits of the integrated system. Figure 2 shows the integrated system perspective.

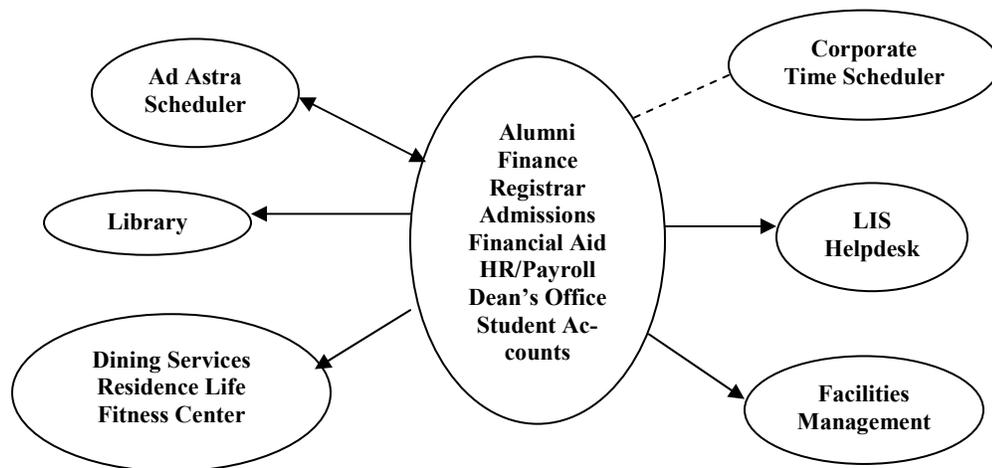


Figure 2 – Interconnections AFTER implementation

3. CHALLENGES FACED

During the last four years, the project has encountered numerous challenges as shown below. However, investing the time to define the requirements of the new system and assembling a strong team help to overcome these challenges and move the project forward (Settle-Murphy 2003). One of the tendencies of the users was expecting the new system to support the current processes. The process mapping exercise emphasized that business as usual was not going to be the case. Learning to think and work differently was difficult for some to adapt and patience was not in great supply many times.

- Selecting an appropriate system to replace the legacy system: given the pervasive nature of the legacy system, how do we, and could we, select a system that would replace it and be supported by the users?
- Defining project scope during planning: since we probably could not find a system to satisfy every need, what were the needs versus wants of the new system?
- Identifying interconnections of intra- and inter-office processes: the key was to evaluate all processes and understand their interconnectedness across physical boundaries.
- Differentiating between users' needs and wants: what were crucial and what were "good to have"?
- Transitioning the users from a silo culture and legacy system to an integrated system and environment: how to assist the users in using less and less of the legacy system?
- Selecting who should lead and learn the various modules: since we couldn't train involve and train everyone at the same time, how should we bring people onboard in phases?
- Managing users' emotional attachment to the legacy systems: since the users were familiar with the

legacy system, weaning them off it would need planning and proper timing; we must help users to feel more and more comfortable with the new system and to understand the benefits of the new system.

- Documenting existing processes and new work flow: it was important to document how different tasks were done so as to develop a user-friendly user manual.
- Determining how best and when to train the rest of the users: when was it appropriate to bring others onboard so that they were not feeling left out and also anxious about not able to learn the new system given that others had a head start?
- Balancing performing existing tasks while developing and testing the new system: how best to continue to serve the customers while devoting sufficient time to test the new system? It was very difficult to achieve a healthy and feasible balance.
- Educating the administration on the need to provide additional support: a finite human resource could not handle two systems without addressing opportunity costs.
- Deciding when to pull the plug on the legacy system: it is always difficult to shut down any legacy system when the users are still not completely comfortable with the new system; however, continuing to provide access to the legacy system means users can always rely on it instead of learning how to use the new system better. Soliciting feedback from the users was one positive way for them to have a say in transitioning to the new system.
- Determining what and how much data to move from the legacy system to new one: it was important for the departments to examining their data and decide what were no longer useful in the new system; it was an appropriate time to "clean" their databases.

- Creating awareness of the ripple effects of errors in an integrated environment: examples on how an action caused an erroneous outcome in another department were documented for learning purpose and future reference.
- Reinforcing the need for users to observe system security protocols: it was essential that users avoid sharing access with another user. When it was necessary, the other user must seek security clearance to access the system.
- Moving to an integrated system will affect the organization's frame of thinking and action: how do we facilitate users to think beyond their own department?
- Managing the stress level of all staff: overtime work was unavoidable, for example, but what was an appropriate level to expect from the staff? One staff member actually quit due to stress and other members had to scramble to cover his responsibilities.

4. BENEFITS HARNESSSED

After four years, it is a relief that every module is in place. At first, the "silo" mentality was one of the major challenges within the administrative units. It was so easy to compare the new system with the legacy system and yearned the return to the legacy system since every new system has a learning curve. However, the benefits began to reveal themselves as the users became more comfortable with the new system and confident in using it.

Below are other benefits that were realized through the integrated system:

- Identifying dedication and hidden potential of module leaders: various staff members were put in charge of different modules and it was wonderful to see them blossom throughout the project.
- Enabling a review of how the various offices provide services to the campus: even though some offices have worked together for years, it was an eye-opening experience for them to understand the extent to which they affect and support each other in their daily activities.
- Supporting a more seamless interactions of processes across offices: data that might not flow smoothly in the legacy system can traverse departments now to support timely information access and sharing.
- Educating various offices on how they can collaborate better: the understanding of inter-dependencies enabled some users to create ideas on how to collaborate better.
- Automating some manual processes to improve work flow and response time.
- Allowing students to view their academic progress through 24/7 degree audit: instead of waiting for

the Registrar's Office to evaluate any remaining academic requirements to be fulfilled, a student could do so anytime on-line.

- Enabling offices to share and view a student's academic information and thus minimizing the need for students to visit multiple offices for assistance.
- Creating opportunities for various offices to improve their working relationships: the interdependencies given the new system requires users to work closely to support each other in providing quality services.
- Providing users 24/7 access to data through user-friendly Web interfaces: as long as a student can access the Web, his/her record is a few clicks away.
- Supporting faculty-advisee interactions: one the objectives of the new system was to put as much information as possible at the finger tip of faculty advisors and their advisees via the Web so as to enhance the advising process.
- Enabling Web registration to all students regardless of where they are: this feature was a hit especially with our students who were studying overseas because they could register at the same time as their classmates at Luther; in the past, the Registrar's Offices had to assist them in their registration and there was a time delay in the process.

Student records used to be kept in different offices and students must go to multiple places to see their entire record. Figure 3 shows the Web-based interface that allows all students to view their entire records 24/7 and from anywhere, to register for classes as long as they have access to the Internet, to add and drop classes within the deadlines, to check their class schedule, to view grades earned by semester, to examine their transcript, to view correspondence from various offices, and so on.

5. LESSONS LEARNED

In hindsight, it is always easy to second-guess what could be done if we could go back in time to do the project all over. In this project, one of the key factors that ensured the project started on the right foot was the unwavering support from the administration. Sound project management was also crucial and the project was blessed with one very capable project leader and dedicated module leaders. Below are some of the lessons learned from the project:

- Having a project champion and top management support is very important: the administration was very supportive of this project because it was part of the college's strategic plan formulated to move the institution to the next level of excellence.
- Planning well will reduce delays and budget overruns: it was essential to work with the vendor to develop a feasible project time-line and take the budget into serious consideration.

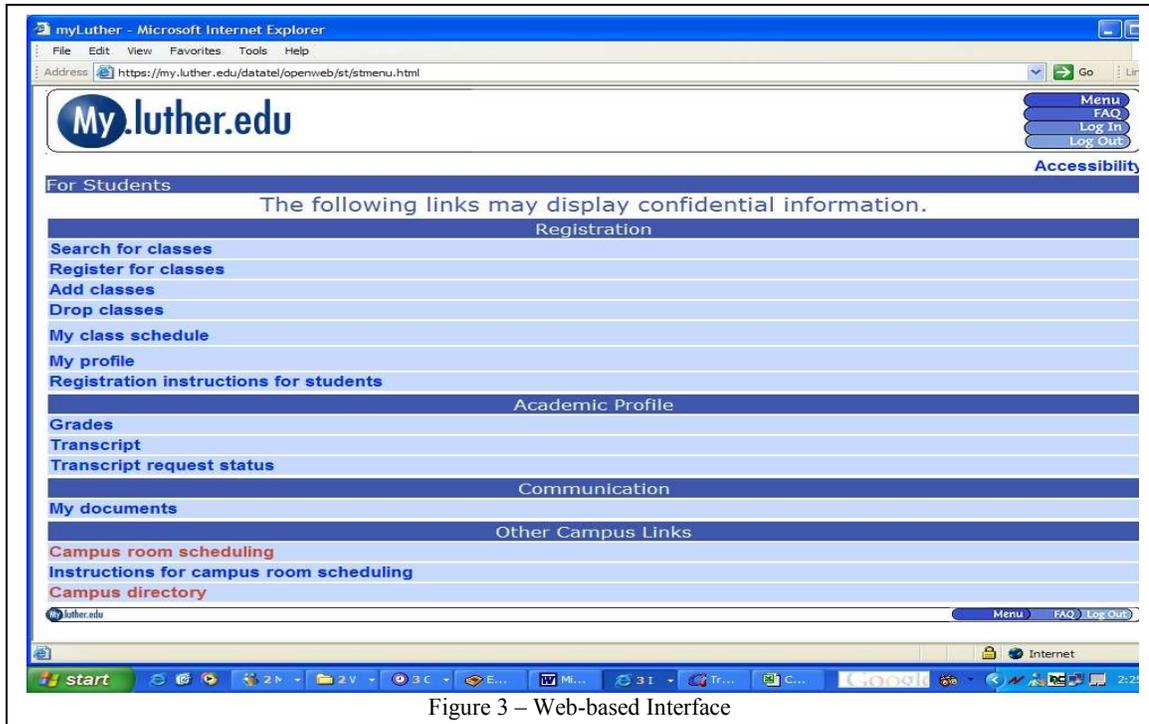


Figure 3 – Web-based Interface

- Practicing sound project management is crucial to the implementation process: it was very fortunate that we had a very capable project leader who was willing to listen to the module leaders, the users, and the steering committee throughout the project.
- Testing rigorously before implementation minimizes errors and re-works: testing was at least 40 percent of the allocated time for each module; as many potential scenarios as possible were created and tested with the new system to ensure that it could support the processes required.
- Allocating sufficient time to implement the modules will increase chances of success: if a realistic time frame were not adopted, it would contribute to more errors when the team rushed to bring the module on-line.
- Assembling a quality project team will increase the success of the new system: identifying good module leaders and their supporting cast was crucial to the project's progress and success.
- Empowering module leaders increases efficiency and decision making: the project leader could not make all the decisions nor should she; it was important to nurture and empower the module leaders to assume responsibilities.
- Rewarding and recognizing talented and dedicated project members and users: it was essential to celebrate each stage of accomplishment and highlights progress made and the people responsible for moving the project forward.
- Taking care of the well-being of the project members will advance the project: this included the physical and mental aspect of each member.
- Allowing the users time to mourn the loss of the legacy system: no matter how well the new system could outperform the legacy system, it was important to recognize and acknowledge how difficult it was for the users to let it go; then it was necessary to involve them in determining when to move to the new system.
- Realizing that it is difficult for some users to give up control when an integrated system is put in place.
- Giving module leaders and users on the team an equal voice in process improvement: the people closest to the action should be the ones given the trust to improve their processes.
- Keeping users informed of progress will build trust and support for the project: this was done through bulletins, email, live demonstrations, and public celebrations.
- Recognizing and emphasizing that successful implementation of the new system does not equate to work done: when a module went live, it was only the beginning of the journey of using that module; there was much to be learned and discovered.
- Educating users not to expect a smooth transition and instant return on investment: the new system was supposed to be better but the learning curve would still be a factor and managing users' expectation was important.

- Appreciating the steep learning curve that users will face with the new system by providing timely and ample training: besides staff members, faculty members and students were introduced to the new system at the appropriate time and whenever new features were made available to them; training came in the form of group training and one-on-one sessions.
- Reminding users of support by top management at appropriate times reinforces the credibility of the project: the presence of the president at the various celebrations and his public acknowledgement of the people behind the progress, for example, spoke volume about the administration's support of the project.
- Maintaining effective communication among modules enables dissemination of relevant information at appropriate time: during the project, weekly meetings were scheduled to enable all modules to share information and ask question of each other.
- Reminding users of the ripple effect of an error in an integrated environment: any error caught must be used as an opportunity to learn and ensure that it did not happen again.
- Contacting other institutions to learn and share best practices: this reduced the need to reinvent the wheel and enabled a community of practice to develop among the Datatel users.

6. CONCLUSION

Even though many institutions use Datatel, not all of them are tapping the full potential of the system. Throughout the project life cycle, it was mentioned by the Datatel consultants on how prepared the project leader and module leaders were at the various phases of the project. The consultants were challenged to bring their "A" game every time they visited Luther College. The inside joke among the consultants was that if they were asked to return to Luther College, they must have done good work during their previous visit. Since an enterprise information system is massive and resource intensive, it is only right that everyone was on task and assumed the appropriate responsibility for moving the project forward. One of the "sins" of project planning is not performing the estimation well (Feldman 2001). One of the indications of successful implementation was when the project came in as budgeted and on time, and this project did so.

The stress level was definitely high when the administrative units were working with the legacy system and trying to bring the new system onboard at the same time. The constituents on- and off-campus still expect services to be provided regardless of stretching the human endurance to the limit. It was very appropriate and important that when a module went live that the achievement was recognized college-wide. Taking care of the human resources in a project of this magnitude is a must. A system is only as good as the people working on it.

When the project was proposed, skepticism was high regarding its success. Transitioning the administrative units to the new system pushed them out of the comfort zone of knowing the legacy system. At a certain point after going live, the legacy system was terminated. Today, memories of the old ways of doing things begin to fade. The focus is still on how to tap the unexplored features of Datatel.

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