DEPLOYING THE UNIT INFORMATION SYSTEM ACROSS THE INSTITUTION VIA THE INTEGRATED TECHNOLOGY ACTION GROUP: ONE UNIVERSITY'S EXPERIENCE

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ABSTRACT
Currently there is a problem with information management at many major post secondary institutions. Information was historically acquired, stored and maintained in silos such as Human Resources, Materials Management, Departments or Faculties, Information Technologies centers, Administration units etc. With the arrival of Enterprise Solutions such as People Soft® or SAP®, situations improved because some of the information from silos was loaded into the central repositories and associated data marts. The benefit of information concentration is unfortunately negated by removing the information from its authoritative owners, who should be able to maintain the information as part of their daily routine. This paper argues that a committee represented by IT experts from all faculties can successfully justify to the senior management the necessity of investment into ideas or projects deemed worthy by the IT experts on campus. This argument will be illustrated using one of our large projects, UNITIS, an enterprise level solution for managing unit information across the whole organization.

KEY WORDS
Educational information system, Information and Communication services, enterprise system, shadow system, organizational unit

1. Introduction
The life-blood of the institution is knowledge [1]. This can be knowledge pursued and shared in research, it can be the information we need to process student requests for service or it may be the information that students need to select classes or make other decisions related to their degrees. Managing this information efficiently and effectively is key to our success as an institution and is critical to providing a quality student experience. The ultimate objective of effective information management is that all individuals and communities of interest can gain instantaneous access to highly relevant information, whenever and wherever needed, to make better decisions, reduce risk and eliminate redundancy. Therefore, like most of the modern post secondary institutions, our institution has implemented some kind of Enterprise Level solution to address bad reporting and consolidation of the information under one umbrella. But the installation of this enterprise level system did not remove, in most cases, carefully maintained silos of valuable information [2]. We will also argue that the vanilla implementation of the enterprise system is a huge improvement for organizational reporting, for administration units such as the registrar's office, human resources, financial services etc. but offers little to no improvement for the day to day operations of the Faculties, which have historically developed their own tools to manage their information. The advantages and shortcomings of the vanilla implementation of enterprise solution were discussed in our previous paper [3]. In short, there is currently no enterprise view of information. Specifically

- there is no clear understanding of data and its potential use to the institution
- the mechanisms for collecting, processing and publishing information may be ineffective, possibly erroneous and sometimes redundant
- there are duplicate data stores that have not been validated against an authoritative source
- information may be gathered, stored and published in a manner which is not commensurate with its security requirements
This is an institutional problem involving all aspects of the institution and any solution requires endorsement from senior administration to be successful.

Our solution to better manage information at our institution is the deployment of the Unit Information System (UNITIS) across the whole institution (where we define units as any organizational unit such as department, faculty, IT, Recreational Facility, Human Resources etc.).

2. The Unit Information System (UNITIS)

UNITIS [1] is a scalable and extensible information sharing system that leverages existing University systems to streamline and automate information flow from many sources to the end-user. The UNITIS Drupal [4] module collects and manages information related to University units and displays it in a usable and familiar manner. It is being developed as an open-project with developers contributing from many faculties on campus. It is designed to work with existing enterprise information systems such as PeopleSoft® Enterprise [5] [6], Drupal web content management system, and our Enterprise Reporting data warehouse. When implemented across the whole institution, this tool breaks down the faculty and department information silos, drastically reduces hours spent on data entry, reduces (and in some cases eliminates) errors and omissions, and moves information where it is needed automatically so it can be accessed by multiple departments or students. You can find the current list of UNITIS installations at the UNITIS official web site http://unitis.ucalgary.ca/.

2.1 Benefits

UNITIS addresses the priorities and challenges of information management at our institution in the following ways:

2.1.1 Student Success [7]

Our experience tells us that students find it difficult to obtain information about courses, class materials or registration status within the departmental context. UNITIS is employed as a framework that provides students more of the information they need in a consistent, accurate and timely fashion. The University employs other student oriented information tools such as Blackboard [8]. For those instructors who choose to use blackboard, UNITIS improves accessibility by standardizing links to the blackboard course through its courses interfaces. For instructors who choose to not use blackboard as an instructional tool, UNITIS provides a mechanism for distributing class material within the context of the course posting online. Either way, students benefit by being able gain access to their course material in a standard way via the UNITIS course interfaces.

2.1.2 Multi-Disciplinary [9],[10]

The future of research and indeed the future of knowledge lay more and more in our ability to collaborate across faculties and disciplines. Faculties like Kinesiology are regularly engaged in teaching and research that involves partners in Medicine and Engineering. Historically, information stored in ‘silos’ makes it difficult to access and merge in a meaningful manner. UNITIS enables researchers to more easily expound collaborative work in three ways: 1. publishing of collaboration within the unit; 2. publication of collaboration between units; 3. reporting on aggregation of unit data.

2.1.3 Resource Management and Optimization

Over the years, a lot of resources have been spent creating single purpose solutions for a single faculty or department. Many of these solutions have resulted in duplication of efforts and a significant waste of those limited resources. By providing a common framework and common base set of highly integrated data, UNITIS decreases the development cost.

Detailed information about what data is captured by UNITIS is beyond the scope of this paper and can be found at the UNITIS web site [11].

2.2 Valuation comparison

Figure 1 shows how UNITIS value compares to current ad hoc applications scattered across the University. The initial cost of deployment is just a short term bounce on the graph, soon followed by dramatic cost savings as the system is fully deployed. Figure 1 also shows how the value per Function Point/Faculty [12] increases over time, assuming increasing UNITIS utilization.

![Figure 1. Benefits of UNITIS](image-url)
The real value of UNITIS becomes apparent when it functions as a single point of data entry for all of a unit’s faculty, support staff and administrative personnel, for all faculties on the campus, with data aggregated together within the data warehouse. Using UNITIS as a standard program helps standardize data across the university, and provides the benefit of economy of scale. Management on campus has expressed an interest in UNITIS as the data entry point for many items including: allocation of rooms/phones/keys, research publications, equipment responsibility, research interests, office hours and more.

2.3 Our Evangelist’s approach fails

As you can see, it is a very valuable tool that will revolutionize how University units deal with ever increasing information flow.

UNITIS was originally developed in the Department of Mathematics over a period of several years. Our technical support team realized the immediate benefits to our department and was promoting UNITIS at the faculty level, with the vision of institutional deployment. We were not very successful. We did numerous presentations to various key players and decision makers within senior administration, IT and faculties. In each presentation, the group was able to see benefits to their unit and to the enterprise, yet the results that we repeatedly ran into were of the following scenarios:

- We were always presenting UNITIS to a "silo" group, as that is the makeup of the university, and each group could not envision the value of UNITIS for other groups, even other related groups. Even if the decision makers did envision the impact, they refused to help finance the project because UNITIS spans across functional streams of the institution that are not core to the presentation group. For example, a presentation to the Human Resources group persuaded human resources administrative that it would be beneficial to have all researchers show their research interests and awards in a consistent manner, but did not want to fund a project impacting students, web look and feel, materials management, security office etc.
- UNITIS would replace existing applications in use. To convert data from one application to UNITIS can be labor intensive. Administrative people in units naturally resist any change in their routine.
- While the UNITIS software was offered for the units for a nominal "administrative fee", unit managers were afraid that they would have to maintain and support yet another application with no extra funding for it.
- Units using various parts of PeopleSoft were hoping that similar functionality would be added to the software, and therefore saw no advantage in using UNITIS.
- In the past, many units already tried to develop similar in-house solutions, yet failed to produce commercial grade software. When developers were lost, the unit was stuck with an aging and incomplete solution. They were afraid the same would happen to them with UNITIS.
- The end result of years of promoting this system internally was that each group we presented to had effectively come up with a reason why they would not implement UNITIS internally, regardless of the benefit to both the unit and the enterprise. The relief to our hard and unsuccessful promotional campaign came via the ITAG group.

3. Integrated Technology Action Group (ITAG)

3.1 IT Structure

Our university has a mixed IT support structure. The University of Calgary Information Technologies group (UCIT) provides many central services such as campus network services, day-to-day business operations for administrative units, email, general learning tools and general support for students and researchers. But many faculties such as Haskayne School of Business and the Faculty of Social Sciences have their own faculty-wide support. As well, most of the large departments of the Faculty of Science and the Faculty of Engineering have their own technical teams.

This atomized structure lead in the past to an unbalanced influence of support. The heavy-weight administrative units took advantage of their proximity to UCIT and ordered solutions for their problems at the expense of the Faculties, unable to take advantage of economy of scale. Our visionary CIO proposed a solution that is unique for institutions with a mixed IT support structure.

3.2 Purpose of ITAG

The purpose of ITAG is "to facilitate the planning and development of a more integrated and coordinated information technology (IT) environment in support of our University Business Plan [13] and related initiatives at the University of Calgary".
Membership of the group:

- A senior IT staff member from each Faculty. The participants are assigned by the Faculty's Dean.
- One of these members will be named as Chair for a one-year period.
- University Chief Information Officer (CIO)
- University of Calgary Information Technologies (UCIT) Directors
- Senior IT staff from other units that can contribute to the overall goals of ITAG.

The group meets biweekly to share best practices, plans, and concerns between participating units. Members identify, discuss and advise on IT priorities. The group provides advice and recommendations to the CIO, Deans, Directors, and University committees regarding global IT directions; and attempts to align IT planning and processes across the University. The group reports its activities to the senior administrator of group members, Dean’s Council and the President’s Office. But most critically for us, it makes recommendations on the direction of IT on critical cross-institutional issues.

3.3 ITAG promotes the adoption of UNITIS

At the time when the Faculty of Science brought UNITIS to the ITAG Group, ITAG already had two successful projects behind it. These projects were the deployment of a University wide printing solution under the umbrella of Project Imagine via Xerox Document Outsourcing [14] [15], and the building of an integrated help desk facility using BMC Remedy Service Management tools [16]. Members of the ITAG group realized the scale of the UNITIS project goes beyond the capability of the group to address at the regular meetings and therefore created a sub group named UNITIS Core, which reports directly to ITAG. The process of adoption of UNITIS across the University took the following steps:

- The Core group took advantage of ITAG and brought the existence of the project to the respective Deans.
- Deans and Department Heads were invited to UNITIS presentations where we showed them the details of the system using an instance of UNITIS already in production.
- Deans of 3 major Faculties made the decision to adopt UNITIS in their Faculties and release enough resources to make the limited deployment feasible.

3.4 Success as a result of adopting UNITIS within ITAG

3.4.1 Increased Adoption

With the planned and directed approach of implementing UNITIS on the recommendation of ITAG, the penetration of UNITIS now includes 14 units in production, with another 10 implementations underway. In each case, the adoption was recommended to the unit by the ITAG member, and after an initial evaluation, the unit chose to proceed with adoption. This same model proved unsuccessful before the ITAG member had the backing of the ITAG group.

3.4.2 Increased cooperation from IT operations

As a result of implementing UNITIS as an ITAG project, the hosting of the UNITIS web and database servers have moved from the groups’ collective set of servers to the Central IT servers, including monitoring and service. Since this move, there has been no unplanned downtime due to server failure. Also, there have been cases where the service was improved due to the central monitoring of the servers, such as in a case where a database server ran out of disk space.

3.4.3 Partnership with IT Project Office

To get the University to adopt the UNITIS project ubiquitously will require some effort to convince the senior administration that it is viable and worthy. All attempts to document the UNITIS project until the ITAG backing were overly technical and did little to convince audiences about why it should be adopted. With the cooperation of the UC IT project office, the UNITIS core group was able to complete the project Business Case, and Road Map documents. These documents will be critical in the case to be made to senior administration.

3.4.4 Increased cooperation from ER

With the pressure and will of all ITAG members, the group was able to motivate the IT Enterprise Reporting group to take over the maintenance and further development of data ETL scripts that are used to move data from the data warehouse into the UNITIS database. Prior to the ITAG backing, these scripts were built and maintained by the members of the UNITIS group.

4. Conclusion – Where do we go from here?

The need for more information being entered, managed and displayed within departmental contexts will not go away. Same could be said about the need of Universities to be able to do some serious Business Intelligence across the whole institution universe. Therefore we are currently preparing the documentation to deploy UNITIS across our whole institution.

So far we have completed the Business Case, and the Road Map to Adoption and both documents are now to be brought for review by ITAG and later to our senior administration. The result of total implementation will be a move from the scenario we see today, towards the integrated solution. The UNITIS integrated solution aligns with our University Business Plan and creates the environment where all the stakeholders are winners. The progress made towards this total implementation was only achievable by the combined efforts of the ITAG committee members, with the validity that ITAG provides them.
References


