
Business Case and Funding Proposal

IT Commons
Enterprise Directory Services Project



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Executive Summary

This business case is the culmination of the efforts of a project team charged by the IT Commons to create a visionary architecture and plan for a future Enterprise Directory Services. Although the current directory environment provides valuable functionality such as white pages, email routing, some support of account provisioning, and basic identity management, it does this at a considerable cost and risk. We discovered that the current directory environment consists of much duplication of effort, manual account creation and maintenance, multiple instances of data interfaces between systems, locally administrated data stores to support account provisioning, duplication of identities, and no common process for de-provisioning accounts to prevent inappropriate access to services. The opportunity exists to create a more robust, scalable architecture that will not only support these basic functions, but will also greatly improve how schools, colleges, and business units provision current and future technology services.

The future architecture described in this Business Case is based on requirements gathered from across the University. The future architecture we envision removes work from the current system and provides simplified processes and data flow. In addition, it improves the integrity of identity information and provides a more secure, manageable process for removing inappropriate access.

The future Enterprise Directory Services goes beyond a technical architecture. It includes policy and procedures, education and training, and service and assistance to units to leverage the technical architecture. The project team has developed a plan for funding and a governance model for engaging the campus community in decision making, taking advantage of the role of data stewards.

We recommend that the Executive Officers approve the funding to move this project forward to the next phase – implementation of the future Enterprise Directory Services.

Introduction

In July 2002 an infrastructure working group was launched via the IT Commons to make recommendations on campus needs for an Enterprise Directory Service. The Directory Services Working Group identified several key areas where a more robust and fully featured directory service would be of great benefit to the University. An outgrowth of this effort was the identification of a project structure and recruitment of a project manager for the Enterprise Directory Services Project.

The project's purpose was to create a visionary architecture and plan for identity management, roles, data sharing and reconciliation, and directory services that reaches far beyond the current system and organization constraints. This architecture describes services and functionality that allow units across the campus to build high-quality local and infrastructure services quickly and with the fewest resources.

The project was jointly sponsored by James Hilton, Associate Provost, and Laura Patterson, Associate Vice President. The project team was charged to:

- develop and implement a communication plan to keep the University community informed of the activities of the project
- investigate and make recommendations on adoption of appropriate middleware standards
- gather requirements from campus constituencies for an enterprise directory service
- gather current campus uses of directories
- define the scope of the enterprise directory service and identify resource needs
- develop a high-level and detailed project plans
- develop the business case and a proposal for funding the next phase of the project
- develop a plan for campus governance of the enterprise directory
- determine the commitment of campus constituencies to leverage a directory in the future
- define the high-level architecture for the enterprise directory capability
- recommend the software platform on which the directory will be built

This business case is the culmination of the project team's efforts.

Statement of Opportunity

A new faculty member arrives at her office in the Life Sciences Building, one week before her official start date. She enters her new office space and begins to organize her research and course materials. Her new laptop is on her desk with instructions for signing on. She uploads her research data to UM file space; sets up projects for her graduate students, and reads her email. She checks the class list for the two courses she is teaching and emails her students the URL for the website with course materials. She is soon working on her journal article, where it is backed up on UM file space, and has access to library materials to continue her scholarly work.

How do we accomplish this today? There is a plethora of people and manual procedures behind the scene making it happen. An assistant must contact the faculty member prior to their arrival, paperwork must be filled out and sent via campus mail to set up a unixname and ITCS accounts, additional paperwork for Engineering and LSA is needed to set up file space for research and coursework, a system administrator must download a class list from M-Pathways, a teaching assistant must set up email groups for the classes, a web master must allocate space and set up access control for the website, and an administrator at the library must set up access to library

resources. Each of these steps relies on manual data entry, replication of identity information, and little synchronization across systems if the faculty member changes any of her directory information such as cell phone number.

The current directory environment consists of much duplication of effort, manual account creation and maintenance, multiple instances of data interfaces between systems, locally administrated data stores to support account provisioning, duplication of identities, and no common process for de-provisioning accounts to prevent inappropriate access to services. The future architecture we envision removes work from the current system and provides simplified processes and data flow. In addition, it improves the integrity of identity information and provides a more secure, manageable process for removing inappropriate access. Investment in Enterprise Directory Services not only addresses current shortcomings in the environment, but sets the stage for future uses enabling the University to adopt and integrate new technologies. For example, expectations are high and demands are heavy for increased access to electronic resources. The increase of inter-institutional collaboration, the changing nature of teaching and learning, and the overall investment in future technology such as digital asset management systems and voice over IP, will all benefit from a strong directory infrastructure.

Imagine a future environment where a faculty member is able to access appropriate software and file space, where these varied technical resources that are essential to her productivity, are provided based on real time administrative data collected as part of the recruiting and hiring process.

The information technology community has endorsed the need for a future enterprise directory service that addresses the current weaknesses and relies on a simple, yet elegant, design and vision. The future service includes a strong governance model that ensures community input on changes and enhancements. It takes advantage of the existing role of data stewards and data managers to determine directory schema, resolve data integrity issues, and establish appropriate data flow. The future service will be built upon sound data and privacy policy and will seek assistance from the Provost's Privacy Committee.

Long-term cost-saving opportunities associated with the implementation of enterprise-wide directory services include:

- Reduced redundant effort across schools, colleges, and business units who would otherwise implement and support local directories
- Simplified access to common data in the enterprise directory would allow redirection of staff time to other tasks in units where staff currently expend undo effort to access and use the data from multiple sources
- Reduced number of interfaces or database links for directory information would allow redirection of staff time in IT organizations to other tasks
- Common architectural components would establish boundaries on technical support requirements and effort

Current State of Directories

The University community was invited to participate in a series of focus groups to discuss current directory usage and future requirements. The current directory environment provides some much needed functionality such as white pages, email routing, some support of account provisioning, and basic identity management. The current environment has significant shortcomings as well. Several of the stated problems include:

Accuracy and Timeliness of Data

- There is a common need to go to multiple data sources to obtain the information necessary to provide accounts for file space, email, and networks. System administrators in departments are faced with a labyrinth of processes for getting access to the data they need. There is no single source of directory information. The timeliness of the data does not support automated account provisioning and de-provisioning.
- The community expressed the need to expand on the data provided in our current architecture. The expansion of data would support inter-institutional efforts such as Grid computing and Internet 2 activities. In addition, there is a strong desire to separate and properly identify data from authoritative sources and data that may be self-entered.

Distributed Provisioning of Accounts

- Members of the extended University community, including guests, faculty with very short appointments, unofficial class auditors, temporary employees, visitors, volunteers, contractors, external reviewers, recruiters, etc. are problematic with respect to provisioning access. Their presence at the University tends to be short-lived and/or they do not have an official University affiliation. Going through existing "official" channels to provision access for these individuals is very time-consuming and unrealistic.
- Many units still use manual processes to create identities or allocate resources. In general, manual processes introduce error and are very time-consuming.

Need for Roles Data

- Basic information on the roles an individual has with the institution could greatly assist in providing access to the appropriate electronic resources and services. It is also desirable to allow units to define their specific role data. The current environment does not provide detailed and accurate roles data with appropriate precedence.

Privacy Issues

- A user's ability to modify attributes of their own UMOD entry renders those attributes unusable for administrative purposes. User-updated attributes are often inaccurate and don't conform to a common format, accepted naming standards, or reality.
- Access to resources needs to be granted to those who may not be able to present themselves physically for identity verification; password resets currently require a physical presence and cannot be performed securely via e-mail. Many other e-mail providers (such as Yahoo!) have this capability.
- Although primarily anecdotal in evidence, it is known that passwords are often shared due to the inefficiency in creating new accounts.
- Existing privacy flags are too restrictive; some administrators with legitimate need to see data are hindered from doing so. A greater degree of control over which attributes are visible, and to whom, is needed. Incoming freshmen have been frustrated because they have been unable to find themselves in directory, as FERPA flags have been set initially. Additionally, the protocol necessary for appropriate administrative persons to obtain access to see private data should be simple and well-documented.

Project Scope and Vision

The proposed project scope includes replacing existing functionality that is not flexible and scaleable to meet our future vision. The scope goes beyond what may be considered directory services to include leveraging the enterprise directory by providing easy to use tools to enable applications to provision accounts automatically and provide authorization. Appendix A contains the overall conceptual architecture for the future Enterprise Directory Services. The most significant components include:

1. New real time and batch data feeds for employees, Ann Arbor and Dearborn students, alumni, emeritus faculty, and sponsored individuals as well as replacing the batch feed of Flint students.
2. A data hub, where data from disparate sources are merged and complex logic applied to determine precedence providing units with a “one stop directory shop.”
3. Authorization components for widely used web services environments.
4. Automatic provisioning via the enterprise directory for ITCS supported services such as email, Active Directory, printing, and file space.
5. Automatic provisioning for several major units’ core applications, such as CAEN accounts, Exchange email, Oracle, and class directories. The estimates allow for assisting 6 units with building provisioning capability. This includes documentation and will be done in a way that can be leveraged for future units’ benefit.
6. Clearly defined and extensible institutional roles and the ability to include departmental roles to be used for authorization purposes.
7. User interfaces and wizards that allow individuals to maintain and use the directory white pages and group features.

The future Enterprise Directory Services goes beyond a technical architecture. It includes policy and procedures, technical and functional architecture, education and training, and service and assistance to units. These additional features will encourage the appropriate use of the directory services and will aid in maximizing the benefit of the new infrastructure.

Appendix B is the project scope for the next phase of the project. It includes detailed estimates for all of the activities necessary to deploy the future Enterprise Directory Services. The scope of the next phase will build the basic infrastructure necessary to support future phases and efforts. These estimates were used to develop the overall estimate below:

Projected Cost	One Time	Ongoing
Hardware	\$120,000	\$41,200
Software ¹	\$63,500 - \$1,638,750	\$31,500 - \$401,280
Staff ²	\$2,395,650	TBD
Consulting ³	TBD	TBD

¹ Software estimates are based on the RFI results and reflect several different options. Estimates will be refined through RFP processes and vendor discussions.

² Staff estimates are based on \$75 per hour of project estimates and do not include potential absorbed costs.

³ Consulting costs are dependent on software selection.

Training	\$39,000	\$15,000
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Appendix C is a high level plan for the next phase of the project. The proposed timeline for the first implementation of the future service is to be completed in December 2005.

Proposed Governance Structure

The University of Michigan Enterprise Directory Services will be a trusted and authoritative data source for UM resources. Enterprise Directory Services will bring together data from multiple institutional sources, and will be used by a variety of independent system applications and services. In order to maintain an accurate, secure, and functional service, a governance structure must be established to represent the varied sources of data, reconcile discrepancies, and establish guidelines for consistent use and access.

The Enterprise Directory Services Governance Board will include data stewards from each major data source, including Human Resources and Affirmative Action, Ann Arbor, Dearborn, and Flint Registrars, and the Development Office. It will also include representatives from those IT units such as ITCS and MAIS who have responsibility for managing the data or infrastructure. Schools, colleges, and departments who run directory-enabled applications should also be represented. In order for the Board to be successful, significant and active participation will be required from one or more units who can demonstrate leadership to the campus.

Appendix D outlines the proposed governance board structure.

Proposed Funding Model

A funding model that blends central and unit funding is recommended for long-term funding of Enterprise Directory Services.

For the initial implementation of the Enterprise Directory Services Project, the central funding model is recommended since the focus will be on delivering infrastructural and common architectural components and services. This model meshes with the mission of IT Commons initiatives to provide enterprise-wide service as economically as possible to all schools, colleges, and business units. All of the initial implementation costs of the Enterprise Directory Services Project should be included under the centrally funded model. Following initial implementation, central funding is also recommended to cover on-going, enterprise-wide costs. Central funds should not be spent to develop features or services that compete with Enterprise Directory Services unless Provost's Office approval is granted in support of a well-articulated business case.

The unit funding model is recommended to cover the costs of implementing unit-specific enhancements and extensions of Enterprise Directory Services. Schools, colleges, and business units would be encouraged to discover commonalities and to request features jointly in order to gain economies of scale. Unit-funded features would not be included in the initial project implementation.

Appendix E describes the proposed funding model for the next phase of the project and future phases.

Recommendation

We recommend that the Executive Officers fund the Enterprise Directory Services Phase 1 Implementation Project as outlined in the business case and attached documents. This project should report jointly to James Hilton, Associate Provost, and Laura Patterson, Associate Vice President. The project should be centrally funded for the next phase and should include plans for funding of future phases in accordance with the funding model.

The project team should be co-located to encourage open communication and efficiency. Members of the project team shall report directly to the project manager regardless of their current appointment. We recommend that the project be staffed by members of ITCS, MAIS, the Office of Development, the University library, and Schools and Colleges. Specific staffing decisions will be made upon approval of funding.

The project will operate under the principles of the IT Commons, drawing on the University community to engage in the design, development, and implementation of the new Enterprise Directory Services.

The next phase of the project will include a detailed assessment of vendor products to determine if any proprietary software or tools will assist us in meeting our future architectural vision. As detailed in the project scope and estimates, much of the work will be specific to the University of Michigan and we will draw upon the existing expertise of the IT community.