

IMT595 – Efthimiadis/Barzilai-Nahon

Peter Ellis

February 6, 2009

Capstone: Designing a Sustainability Metadata Schema for the University of Washington

Introduction

With the world's attention on issues of environmental sustainability and questions about how we support our current way of life planetwide, and with President Obama's agenda pushing sustainable projects, the University of Washington is placed into a crucial position. As a University, we have strived to promote and initiate sustainable actions across all three campuses and to integrate the ideas and ethos of environmental sustainability into our operations and future planning. Groups like the Green Computing Special Interest Group, the Climate Action Team, and the Environmental Stewardship Advisory Council, along with sustainability initiatives and declarations such as the President's Climate Commitment¹, position the University well in its quest to promote sustainability.

The Brundtland Report defines "sustainability" as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." Though vague, this definition offers a promising opportunity. The Foster School of Business' Center for Innovation and Entrepreneurship (CIE) believes that sustainability in business can be a "pro-active approach to ensure the long-term viability and integrity of the business by optimizing resource needs, reducing environmental, energy or social impacts, and managing resources while not compromising profitability." CIE defines business sustainability as "the increase in

¹ <http://www.presidentsclimatecommitment.org/>, referenced from UWeek, <http://uwnews.org/uweek/article.aspx?id=46996>.

productivity and/or reduction of consumed resources without compromising product or service quality, competitiveness, or profitability.”²

There is currently no formal structure in place for communicating data and information about the University’s sustainability initiatives – its inputs (in terms of the amount of water, paper, or electricity consumed) and its outputs (amount of paper recycled, amount of trash sent to the landfill) remain within the knowledge spheres of people in various facilities-related departments, including but not limited to grounds, various information technology departments, purchasing, and facilities services departments. This data is both disconnected and arguably unstructured.

Because of this, I propose devising a metadata schema that would give the University the means of storing information about those inputs and outputs in a meaningful, structured manner.

Short-Term Project Goals

- Understand where the data for representing information about the University of Washington’s sustainability initiatives comes from. The goal is to utilize as much available data as possible;
- Implement a metadata schema for representing information about the University’s supply and waste flows that can serve as a starting point for further work around communicating the University’s reduction targets, making consumption data publicly available and auditable, and establishing a standard representation that can be utilized cross-campus.

Long Term Project Goals

- Provide an unbiased assessment of the University’s commitment to and work around sustainability;

² http://bschool.washington.edu/cie/PDF/Business_Sustainability.ppt

- Provide information accessibility to a wide audience, even those not necessarily interested in sustainable practices;
- Provide a foundation for future work in establishing visualizations and other methods of communicating information contained within the schema to the University community at large.

Needs Assessment

An initial needs assessment will be conducted to determine several things: first, what information is currently available across the campus, and, perhaps more importantly, what data gaps exist that the schema could assist in bridging; second, where information is currently held and the quality of that information; and finally, what data people find most important to know something about.

This needs assessment will be ongoing to ensure consistent feedback from the community and to allow for maximum adaptability.

Usability Testing

Though a usability test on a metadata schema is a bit tricky, since not everyone reads or writes XML, it is necessary to do a final test on the schema itself with a number of stakeholders across campus who can comment on the quality and depth of the data represented. I propose providing members of the campus community with the documentation of the schema and asking, at minimum, the following questions:

1. Is the data represented relevant to your work? Why or why not?
2. Is the schema itself easy to understand? Why or why not?

3. Is the information presented in this schema actionable – in other words, do you feel that, given the information this schema provides, you could take some form of action to re-envision our use of these resources?

Scope

This project is concerned only with constructing the following:

- Initial needs assessments with stakeholders across the University;
- A metadata schema for representing data about the University of Washington's sustainability initiatives in terms of the inputs and outputs under the University's direct control;
- Documentation of the metadata schema created;
- A final usability test of the schema itself.

I consider the following elements out of scope:

- Any implementation of visualizations or wireframes pertaining to actual display of the data contained within the metadata schema created here;
- Acceptance testing or planning for adoption of the schema by the University.

Project Communication

Communication with people involved in the project will be by e-mail or in-person meetings only due to my hearing impairment, which prevents me from effectively using the phone.

Resources

The only software required – Altova XML Spy – is available via the iSchool's computer labs on campus. Documentation of the schema will either be in-line with the schema or separated into HTML files (generated by hand).

Success Metrics

Success will be measured by the following criteria:

1. How precisely the metadata schema matches the initial needs assessments and conversations with stakeholders across the University;
2. The robustness of the schema itself – in other words, how accurately it represents the University’s inputs and outputs and whether it represents them in an actionable manner (as defined under the usability test section, above);
3. Positive results from the final usability test of the schema itself.

Project Timeline

This project will complete five separate phases: needs assessment, research, schema design, schema implementation, and usability testing. These will be completed prior to the final capstone presentation date of June 4, 2009. Each phase is broken down into component tasks; please refer to the Microsoft Project file submitted with this proposal for a full timeline.

Letter of Support

The formal sponsor of this capstone project will be Terry Dievendorf, a senior application systems engineer with the Foster School of Business and co-leader of the campus’ Green Computing Special Interest Group (e-mail: dievet@u.washington.edu).

From: Terry Dievendorf

Sent: Monday, February 09, 2009 3:17 PM

To: Peter Ellis; Karine Barzilai-Nahon; Efthimis N. Efthimiadis

Subject: MSIM Capstone Project for Peter Ellis

To Whom it May Concern:

I am pleased to extend my commitment to Peter Ellis toward the successful completion of his MSIM capstone project on designing a metadata schema for representing the University of Washington’s sustainable initiatives during the spring quarter of 2009. I will sponsor this capstone project as an interested party in the work that he proposes undertaking. In doing so, I will act as a point of contact regarding ideas surrounding the project and assist him in locating contacts and resources as needed.

If you have questions or require further information, please feel free to contact me via e-mail (dievet@u.washington.edu) or by phone (206-949-2897).

Sincerely,

Terry Dievendorf
Sr. Applications Systems Engineer
The Michael G. Foster School of Business
University of Washington

Learning Experiences

- Learn more about and understand the intersection between environmental sustainability and information management.
- Understand how metadata schemas can act as a catalyst when used to properly structure and describe information
- Reach a keener understanding of information fragmentation, the information management lifecycle, and the environmental efforts put forth by the University as a whole.