

Improving Information Accessibility

August 7, 2006

The following information is provided to describe the vision for information management that the WSDOT Library is building towards in order to meet the needs of its agency customers.

Establishing a Knowledge Network

Why a Knowledge Network? Data and information is scattered throughout WSDOT in web sites, paper documents, photo logs and databases. While much of this information is of value to employees, many of these resources are not readily known, commonly identified or easily available to employees.

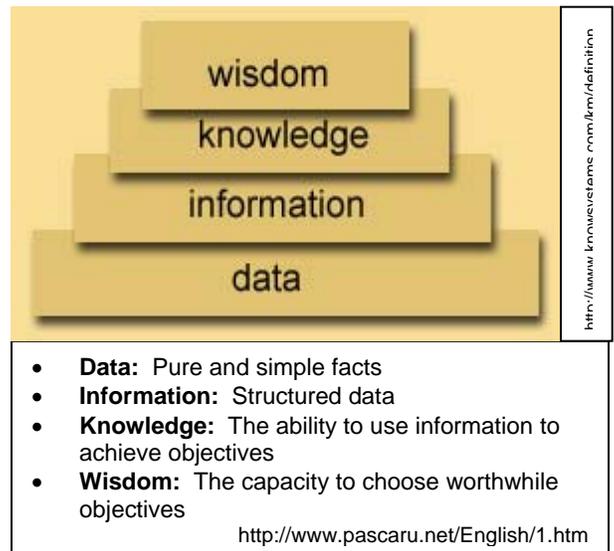
On a simple level, a Knowledge Network simply provides improved access to available resources. A more advance model makes an effort to capture the information that has been used or processed into knowledge. Examples of this include WSDOT's Lessons Learned Database and the efforts to link individuals within Communities of Practice (FHWA and VDOT). As employees age, capturing this knowledge for the next generation of workers becomes very important. Complicating this transfer of information is the reality that our way of sharing information has changed dramatically over the last couple decades and but our methods to capture and efficiently share information and knowledge hasn't kept up.

Why is this significant to WSDOT? Because much of this information is available through the Internet and Intranet, taxing resources and creating a mélange of unlinked material. A planned knowledge network, built with a communication plan and controlled vocabulary, would:

- reduce server space demands by reducing redundant pages
- reduce the likelihood of inconsistent information by linking to one source document with version control rather than recreating pages of the same information
- improve search success for employees, contractors, and the public through the use of a common vocabulary to key word pages
- provide guidance on version control and archiving outdated or old material

What does a knowledge network look like? It's an information portal helping employees, contractors, and the public find the information they need. To further explain a copy of a presentation made at last year's AASHTO Research Advisory Committee national meeting is also provided in a separate document. It describes what a WSDOT employee needing information would encounter.

What do we need? Executive support. There's a fair amount we can do without funding if we can assign time and effort to collecting what we have into an web page that will



serve as the portal and have cooperation from offices within the agency to sort through and eliminate duplication. This will involve significant staff time from the WSDOT Library and Communications Office as well as lesser amounts of time from web management staff in offices as we sort through content questions.

There's more we can do if we hire staff to focus on this task. Two FTEs - an indexer and a web page developer – would be needed for the duration of the project.

Why do we need an indexer? While the need for the web page developer to build an improved site may be intuitive, the need for an indexer probably isn't. However, to be most successful, rigorous use of a meaningful controlled vocabulary is needed and that is the work of an indexer/cataloger.

Indexing, cataloging, and metadata are related terms, in that each is a way of creating and storing information *about a document* in order to facilitate searching for and finding the information the documents contain in a variety of ways, including serendipitous finding. The thing indexed/cataloged/tagged can be a book, a collection of plans and drawings, an element contained within a larger data set (examples: chapter in a book, layer in a GIS, article in a journal) an electronic publication resting on a server somewhere, a set of loose-leaf maps, or really anything.

The amount of materials needing this treatment represents a huge amount of person-hours given the number of information resources to be organized within WSDOT:

- Over 165,000 Intranet pages and approximately 77,500 Internet pages – Interactive Communications, Web Team
- 150,000 + plans and as-builts being scanned into the Records Management Information System (an Accordé database) – Engineering Records
- 40,000+ print monographs and serials currently in the WSDOT library – library staff
- As many as 2,500 electronic publications in-house that need some sort of indexing – unassigned
- 8,000 – 20,000 digital photographs and an unknown number of historic print photographs – unassigned (digital) and Engineering Records (historic print). And many more in project offices.
- A Data Catalog comprised of 430 separate databases, linking over 160,000 data elements – IT

The field of Library Science has well established protocols and resources to guide the classification and organization of knowledge and information assets. To take advantage of this knowledge, information management initiatives within the agency should employ the knowledge of a Librarian trained in cataloging/indexing.

Related activities

The Document Management and Workflow Work Group (DMWG)

This group has been meeting regularly since August, 2005, and its Mission is to:

Develop a high level strategic plan and policy to guide future implementation of electronic document management, workflow, imaging, web-based content, and electronic signature technologies for all organizations within WSDOT.

The group is sponsored by Bill Ford, Assistant Secretary Finance and Administration, and Don Nelson, Director of Environmental and Engineering Programs. It meets

monthly, and is scheduled to meet again on March 2nd, 2006 from 9:00 am until noon in the Capital Conference Room, HQ Building, 3rd floor.

The group has a web page: <http://wwwi.wsdot.wa.gov/docs/docmgmtworkgroup/> where charter document and meeting minutes are accessible. They are addressing issues related to the following questions.

- How can we move from a predominantly paper to a predominantly electronic publication environment, and be able to, for instance, satisfy contractors and the public that a particular electronic document represents the authoritative, final word on a bridge or tunnel design?
- How can we keep such designs – living only in a digital format – safe from the eyes of those who would sabotage?
- How can systems be created to facilitate access to electronic documents without fostering their unending duplication, and the use of unnecessary and wasteful amounts of disk space?
- How do we integrate digital information into the records retention process in order to comply with state law?
- How do we get all the creators of these various forms speaking the same language, particularly when it comes to identifying their data for storage and retrieval purposes?

The issues outlined above are being addressed and, with any luck resolved, by the DMWG.

Metadata for Webpages

Staff from the Communications Office, Office of Information Technology, WSDOT Library, and Materials Lab Library are discussing Metadata to tag content on web sites to improve retrieveability, reduce redundancy, and improve web page management within the agency. A key aspect of this task is developing a shared, controlled vocabulary for describing web page content.

Digital Library Initiative

The Washington State Library is developing standards and procedures for digital library collections. This is relevant in relation to documents that are 'born digital' at WSDOT. Most of these are shared through web sites. Staying in touch with this initiative can help us manage space and maintain permanent links to documents produced by WSDOT. <http://digitalwa.statelib.wa.gov/newsite/collection/RESOURCESCOLECT.HTM>

The Future

Most of today's employees began their education in an environment where information was shared through the paper or taped media and may or may not have progressed to punch cards in their college days. Other employees were introduced to personal computers in their early education and have more comfort and expectations of the digital environment. But the 'Digital Native', the child who uses digital technology in their toys as well as an integrated aspect of all of their education is coming and they will have expectations for storage, access, retrieval and integration of information that we haven't yet envisioned. Blogs, Wikis, RSS feeds and IMs represent near term opportunities that the WSDOT Library is very interested in exploring to better deliver information to our customers. This applications impact the Communications Office and we would like to strategize for future implementation. A number of hyperlinks are provided in the descriptions below should you want more detail.

Blogs, Wikis, RSS feeds, IMs

Employees are asking for more real time access to information and more customized sharing of information. The WSDOT Library is interested in improving information outreach and access to employees without spamming them. We recognize that some of the tools raise concerns about internet security, technology for technology's sake, and cost versus value gained. However, the information user is raising expectations and it would be valuable to pilot the use of the emerging tools to test their value.

There are a growing number of users whose approach to the use and integration of Internet/Web tools referred to collectively as [Web 2.0](#). [NextGen librarians](#) and digital natives in general don't see anything revolutionary going on, since they were all sort of "present at the creation," but many of those used to static web pages that acted more like digital broadsides than dynamic information containers are struggling to keep up.

If personal websites were a Web 1.0 point of view, *blogs* are their Web 2.0 manifestation. They can be posted to by the owner(s), they can be commented upon by visitors (and their comments can be commented upon as well, by either the owner or visitors), unruly visitors can be expelled, and they can have multiple simultaneous, parallel information streams on the same site – allowing owners to run lists of "posts", reviews, events, etcetera. They are generally self-archiving. [Many blogs](#) have [become](#) important [resources](#) for librarians, and increasingly [libraries seamlessly integrate blogs](#) into their web interfaces.

The speed with which information can be updated and distribution of information customized suggests that blogs are a tool WSDOT should become expert at using. This technology is already in limited use within the department. The WSDOT Library would like to build on that use and improve access through indexing of sites and creation of an information portal.

A [Wiki](#) is a software tool that allows for the collaborative collection, organization, and refinement of information. Perhaps the best known is [Wikipedia](#), an encyclopedia created entirely by volunteer input that now has over 3 *million* articles in 10 languages. A Wiki is interesting in that it allows the organization of the content to be edited in addition to the content itself. This allows one to look at information from a chronological, geographic, dependency, or other aspect, depending on the need. The promise of Wiki for project management and accountability, for the development and continuous refinement of "Lessons Learned," and for knowledge management in general, is simply tremendous.

Wiki software is open source and [available for download](#) from its original developer, Ward Cunningham. Included are [tips for site operators](#) that offer pointers for introducing Wiki into a shared work environment. Integrating use of Wikis could be done relatively easily but will require training for employees and guidance on editorial oversight and keywording – similar to the way that IPD manages the Lessons Learned database now. The only thing that would change would be the tool used, but that could end up changing the ease with which as could be updated and collated.

[RSS](#) – or Really Simple Syndication – is a very lightweight XML¹ tool designed for sharing news headlines or other quickly changing web content. Think of it as a way of a distribution tool for late-breaking news. Pretty much anything that can be broken down into discrete items can be syndicated via RSS: the "recent changes" page of a wiki, new postings to a blog, even the revision history of a book. RSS-aggregators will provide a means for employees to receive customized news through these tools rather than through labor-intensive searching. In addition, it is a way that new postings to project websites, lessons learned databases, and other time-sensitive information sources could be readily shared.

Most WSDOT employees do not currently have RSS-aggregators on their desktops. There are free and commercial aggregators available in the marketplace now. Microsoft Explorer 7.0 will have a built in RSS-aggregator. It may be beneficial to test the use of RSS-aggregators with the downloadable software and a specific use in order to prepare for the conversion to MS Explorer 7.0.

[Research](#) indicates that [Instant Messaging](#) (IM) was used in 2001 to deliver online reference service by 29% of academic libraries, while nearly all provided such service via e-mail. Later [research](#) shows that 18-27 year olds use IM more frequently than they use e-mail. This group represents future WSDOT employees, and the agency needs to begin to incorporate communications tools familiar to this demographic.

The WSDOT Library would like to begin offering IM reference service during normal working hours. It would be neither expensive nor difficult to implement, and would offer real-time reference service to employees without their having to leave their workspace.

All of the tools described above can assist in information delivery¹ that is either requested or better targeted than methods used at present. Three of the tools described here—RSS, blogs, and IM—have the potential to deliver information to employees that is currently being delivered via e-mail, thus greatly reducing the load on people's inboxes. A creative combination of two or more of these tools can result in the automation of many processes—like the e-mail news alerts—that currently take a great deal of individual maintenance.

¹ XML, or Extensible Markup Language, is a simple, very flexible text format originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere