Integrating Document Management & GIS

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Contents

- Overview of Document Management Systems
  - Why Document Management?
  - Features
  - Landscape
- Industry examples of use with GIS
- Designing an integrated GIS / DM system
- Implementation issues
Why Document Management?

• Leverage documents as a strategic enterprise resource
• Organize anywhere from hundreds to millions of documents for easy retrieval
• Set enterprise-wide policies for document security, collaboration, backup, metadata, search
• Provide access through an easy to use web interface (new)
Features (1/2)

• Organize and find:
  – Define a *physical* tree structure (i.e. folders) for documents
  – Define many *logical* categories for documents
  – Define indexable (i.e. fast-search) document properties
  – Full text indexing of documents

• Manage:
  – Robust database storage of documents
  – Easy setup of automatic backup and restore
  – Large-scale and fine-grained security policies
Features (2/2)

• Collaborate:
  – Check-in and check-out documents
  – “Version” documents and restore to previous versions
  – Set up complex workflows, i.e. document “owners” receive emails when documents are modified and must approve the change

• Integrate and customize:
  – Well-defined Java, COM, and .NET (new) API’s
  – Web interfaces for easy use and UI customization (new)
  – Support for web service integration (new)
DM Landscape: FileNET

- Largest, most well established company
- Known for very large image management and archiving systems with giant optical “platters”
- Known for large “turnkey” DM implementations
  - API is open but developer community is not especially well supported
  - New .NET-based “Open Client” web interface and “P8” FileNET-wide integration architecture
DM Landscape: Documentum (1/2)

• Could be considered the “trendiest” DM company
• Earliest adopter to full web interface
• Just released Documentum 5 with advanced J2EE-based web interface and web service integration
DM Landscape: Documentum (2/2)
DM Landscape: Sharepoint (1/2)

- Microsoft Sharepoint Portal Server 2.0 - the “new kid on the block” – completely redesigned
- Highly integrated with Windows Server 2003 and SQL Server
- Lighter DM features, stronger team-centric portal features and integration with .NET
- Easily confused with Sharepoint Team Services and Windows Sharepoint Services
- Price point much more competitive ($) than FileNET ($$$) or Documentum ($$)
DM Landscape: Sharepoint (2/2)

**Categories**
- Category 1
- Category 2
- Category 3

**Quick Links**
- Using Quick Links
- Using Categories
- Using Search
- Tours and User's Help
- Microsoft Web Site

**News**
- Welcome to the SharePoint Portal Server Dashboard Site
  Provides an introduction to using and configuring the SharePoint Portal Server dashboard site.
- Getting Started
  Need help getting started? This is the place. Provides information on adding users, creating folders, indexing external content, configuring the dashboard site and more.
- Using News
  Provides information on how to configure the News Web Part.

**Subscription Summary**
- You do not have any subscriptions.

**Announcements**
- Using Announcements
  Provides information on how to configure the Announcements Web Part.
Contents

• Overview of Document Management Systems
• Industry examples of use with GIS
  – Fortune 500 energy company
  – Large city government
• Designing an integrated GIS / DM system
• Implementation issues
Fortune 500 Energy Company

• Well logs: tests used to study the geology of a well
• Stores thousands of images of well logs in FileNET.
  – Indexed document property on each image storing the unique id of the well the well log is for.
• The company uses an ArcIMS interface to:
  – Select wells on the map in Internet Explorer
  – View a list of well logs associated with those wells
  – Open individual well logs from FileNET in the browser
Large City Government

• Stores permitting and related documents about the city street system in Sharepoint

• Uses an ArcIMS interface to:
  – Enable users to select streets on the map in ArcIMS
  – Choose streets by geocoding an address
  – View a list of permitting documents for the selected streets
  – Open individual permitting documents from Sharepoint Portal Server in the browser
Contents

• Overview of Document Management Systems
• Industry examples of use with GIS
• Designing an integrated GIS / DM system
  – Enterprise architecture
  – Database design
  – API integration
  – DM features
  – Opening documents over the web
• Implementation issues
Enterprise Architecture

- ArcIMS Internet Explorer Client w/DM Customizations
- ESRI ArcIMS 4.01
- Oracle or SQL Server ArcSDE Databases
- ArcIMS Internet Explorer Client Web Server
- Oracle or SQL Server Documents Database
- Sharepoint
Database Design

- Tie a map feature ID and feature type to a doc ID in a many-to-many cross-reference table

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<th>Document_Name</th>
<th>Document_Type</th>
<th>Document_Url_Link</th>
<th>Document_Property_1</th>
<th>Document_Property_2</th>
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</tr>
</tbody>
</table>
API Integration

• Use to retrieve document properties, perform full-text searches, open documents

• Traditional COM and Java (and now .NET) API’s
  – Java only well supported by Documentum
  – All three with large COM API’s
  – FileNET and Sharepoint 2.0 with .NET, Documentum following suit

• Web services
  – New toolkit from Documentum
  – FileNET and Sharepoint moving that way, not there yet. Supposedly with FileNET P8 architecture.

• WebDAV queries
  – SQL-like language for retrieving document properties
Integrated DM Features

• Customize your ArcIMS client UI for integrated features

• GIS to DM features:
  – A document identify tool: click on a feature and see documents tied to it
  – See properties about documents in a table
  – “Launch” a document in your browser

• DM to GIS features:
  – Show me all features associated with a selected document
  – Show me all documents matching a text search in a table and let me find them on the map
Opening Documents Over the Web

• If using an ArcIMS Internet Explorer UI, have to launch documents over the web!

• Documentum 5 and Sharepoint
  – Launch documents from ArcIMS by opening a window to a specific URL

• FileNET
  – Launch to a specific URL if using FileNET Web Services or Open Client (new)
  – Custom COM API program that copies image from FileNET IS / DM systems to a location that can be opened through a hyperlink (old)
Contents

• Overview of Document Management Systems
• Industry examples of use with GIS
• Designing an integrated GIS / DM system
• Implementation issues
  – Symbolizing documents
  – Managing cross-reference links
  – Document to feature relationships
  – Starting with a large DM system already
Symbolizing Documents

- How do you symbolize map features that have documents?
  - Don’t do it at all
  - Put an icon of a document next to them
  - Turn them a different color
Managing Cross-Reference Links

• Problem with “hanging” documents or features
• Deleting documents or GIS features leaves them in the cross-reference table
  – Can use triggers if lucky
  – “Cleanup” job may be necessary
Document to Feature Relationships

- One to one, one to many, or many to many?
- If one to one, or one to many, you can store the feature ID as a property on the document instead of the database!
- Many-to-many increases the “hanging” documents or features problem
Starting with a Large DM System

• What if you already have thousands to millions of documents?
• Can’t use an “associate document to map” tool easily
• Try an automated process:
  – Tie map features to document properties
  – If addresses on documents, try to geocode documents
Contact Information

• Links
  – Documentum: http://www.documentum.com
  – FileNET: http://www.filenet.com

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