

PPDM/PODS Meeting, Houston TX, 18 -19 April, 2005

Metadata and Interoperability

Standards and Metadata: Part III

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Introduction

Context

Example data model

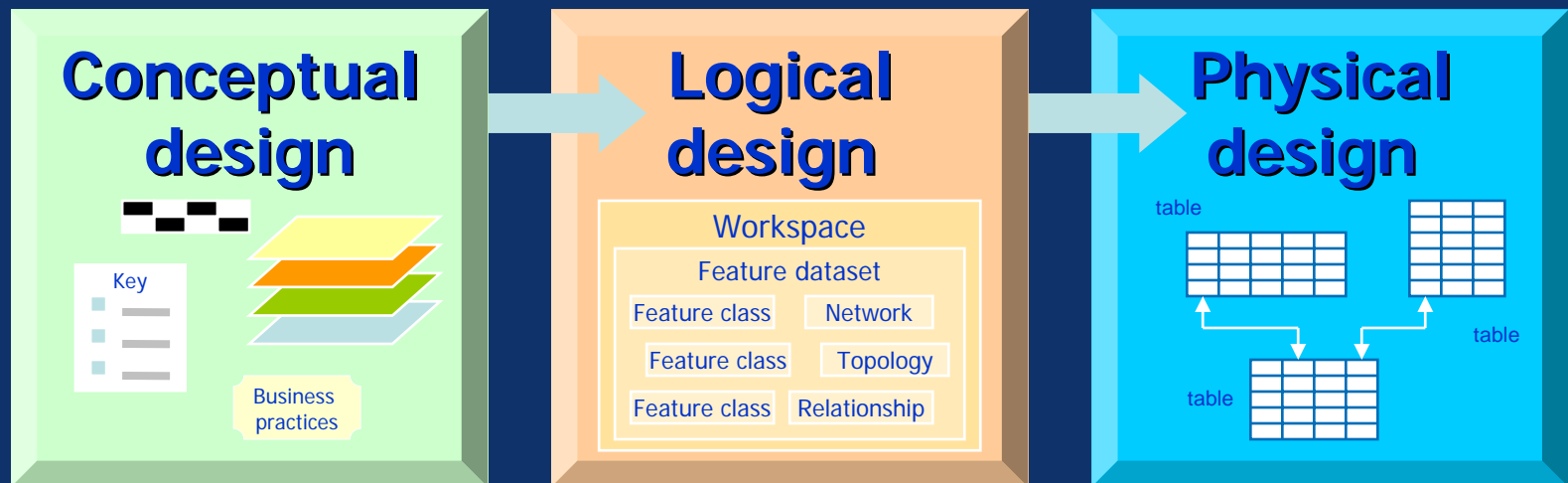
Example metadata portal

Lessons learned

Conclusion

Standards and Metadata: Parts I - II

- designing a data model is the same basic process as designing any GIS database



Basic design steps

Collect information

- maps, applications, data sources, metadata

Identify thematic layers

- map scale, relationships, methods, properties

Define each layer

- feature representation, attributes, symbology

Define database structure

- feature classes, relationships, domains, rules

Pilot, refine, implement

Conceptual design

Logical design

Physical design



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Standards in this context

- standards are content models that describe the *shape* of the metadata
- they allow the description of your digital assets with consistency, and with the use of common technology
- they are readable by people and by machines both

What does metadata do?

- it helps find information
 - think for what populates a card catalog
- allows informed access and data usage
 - legal statements on resources liability help protect your investments (Sarbanes-Oxley and Freedom of Information)
- helps organize data logically
 - allows resource decision management

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ArcGIS Pipeline Data Model

- APDM is a *template*
<http://www.apdm.net>
- need to incorporate sufficient intelligence
- → *metadata*
- ensure interoperability between vendor applications
- beyond *standard* content
 - descriptive information
 - spatial information (reference, extent, scale)

Determine metadata content

- APDM abstract class type
 - online point, polyline
 - offline point, polyline, polygon
 - other *root* APDM objects
- reference mode behavior
 - systematic reference mode definition
 - how reference modes relate to each other
- event behavior
 - overlap and gap rules (topology)
 - behavior relative to the centerline

Storage options to manage metadata

- geodatabase metadata
 - FGDC and variants
 - ISO and variants
 - other
- additional APDM object classes and domains (*PODS Feature_Table entity*)
- APDM custom feature classes
- APDM class extensions
- topology feature classes

Metadata and schema maintenance and exchange

- schema/metadata tools
 - UML CASE tools
 - XMI
 - XML Workspace Document
 - Other
- metadata tools
 - ArcCatalog
 - XML
 - topology
- other formats
 - CASE Data Interchange Format (CDIF)

Identify best practices

- which tools to use for what
- identify tool limitations / unmet needs
 - need reverse engineering capability
 - GDB → XML wkspc. doc. → XMI → UML CASE Tool
 - need ability to store spatial reference in UML
 - need ability to define topology in UML
 - topology rule problems
 - point overlap
 - other

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USGS metadata portal

- Energy Program World Assessment
 - based on US Geospatial One-Stop and Geography Network Framework
 - formal content type and metadata requirements
 - spatial relevance scoring (Ken Lanfear, USGS)
 - discovery by multiple means
 - programmatic custom relationship building, etc.
 - over 1000 product indexed (more to come)

Data categories

- Geospatial One-Stop
 - ISO topic categories
<http://www.geodata.gov>
- USGS EPWA
 - extended topic categories based on ISO
<http://energy.cr.usgs.gov/oilgas/wep/index.htm>
- USGS NOGA Online
 - extended topic categories based on FGDC
<http://energy.cr.usgs.gov/oilgas/noga/index.htm>

Metadata standards at USGS Energy

- based on FGDC metadata standard
- formally defined metadata requirements for each content type
- relationships defined in metadata using *larger work citation*
 - ArcIMS metadata relationship then programmatically inferred during publishing

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Where are we today?

- standards... to wait or not to wait
- how do you drink from a fire-hose?
- operationally, it *is* alive!
- communicate, communicate...
- where do users want to go today?
- it's not a UFO, it's an application

Data Model → Metadata

- stabilize data models
- establish links among them
- create XML extension
- publish extensions
- implement metadata
- work with other industries

Metadata → Enterprise

- metadata fuels the catalog service
- search metadata service using the catalog and metadata explorer
- easy to add directly to a map
- Z39.50 connector lets people search metadata services as part of the data clearinghouse

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Got metadata?

- the increased availability of data reflects the importance of metadata standards *and* procedures
- quality metadata increase the confidence users have in the information and analyses they conduct
- metadata promote the re-use and the understanding of data over a longer period of time

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THANK YOU

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