

# Metadata Systems

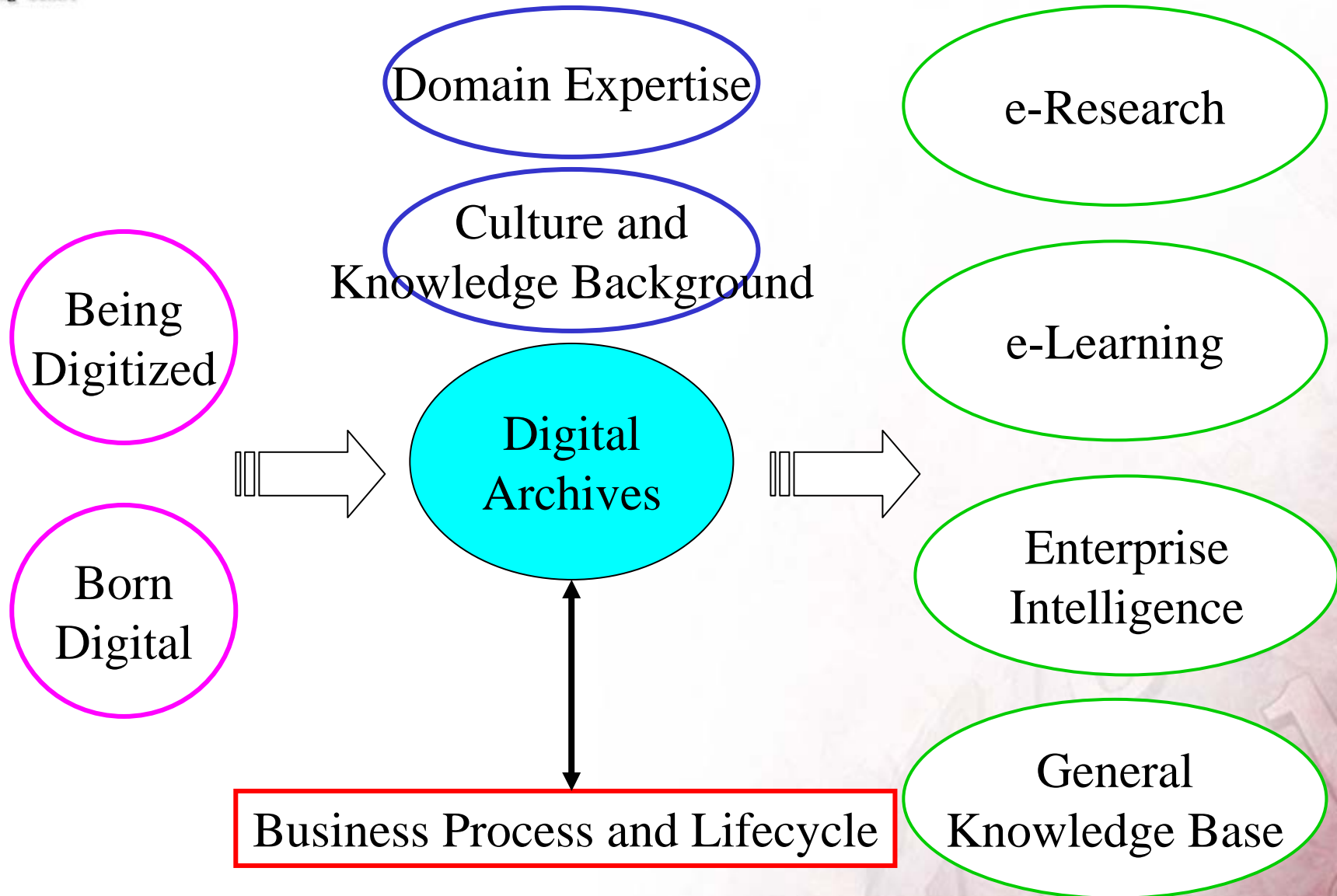
## *A User Needs Perspective*

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# Metadata and Digital Information in the NDAP

- What is the role of Metadata?
  - Metadata plays a chief role to help organize digital information.
  - National Digital Archives Program (NDAP)
- Metadata Issues
  - The question “What are the needs of a metadata system?”
  - Creating a bridge of communication between parties
  - Creating an adequate metadata system with regard to content of metadata projects

# Scope of the NDAP



# Layers of Knowledge Management in the NDAP

## Data Type Layer

Rubbings, Files, Rare Books, Full Text, Specimens, Corpus, Maps, Photos, Painting and Calligraphy, Video Tapes, Score, Dress, Reports, Investigation, etc.

## Discipline Layer

History, Politics, Humanities, Archeology, Ethnology, Diplomacy, Zoology, Botany, Species, Genomics, Linguistics, Geology, Geography, Visual Arts, etc.

## Functionality Layer

Resource Discovery, Description, Exhibition, Preservation, Rights Management for e-Commerce, e-Learning, etc.

## Community Layer

Museum, Archives, Library, Herbarium, etc.

# A Common Set of Functional Requirements

- Why do we need it?
  - To conserve effort made by all parties
  - To achieve more cost-effective system development
- Different perspectives can be adopted when building the set of requirements
  - The software design perspective
  - The system evaluation perspective
  - The user needs perspective

# Methodology—Step 1

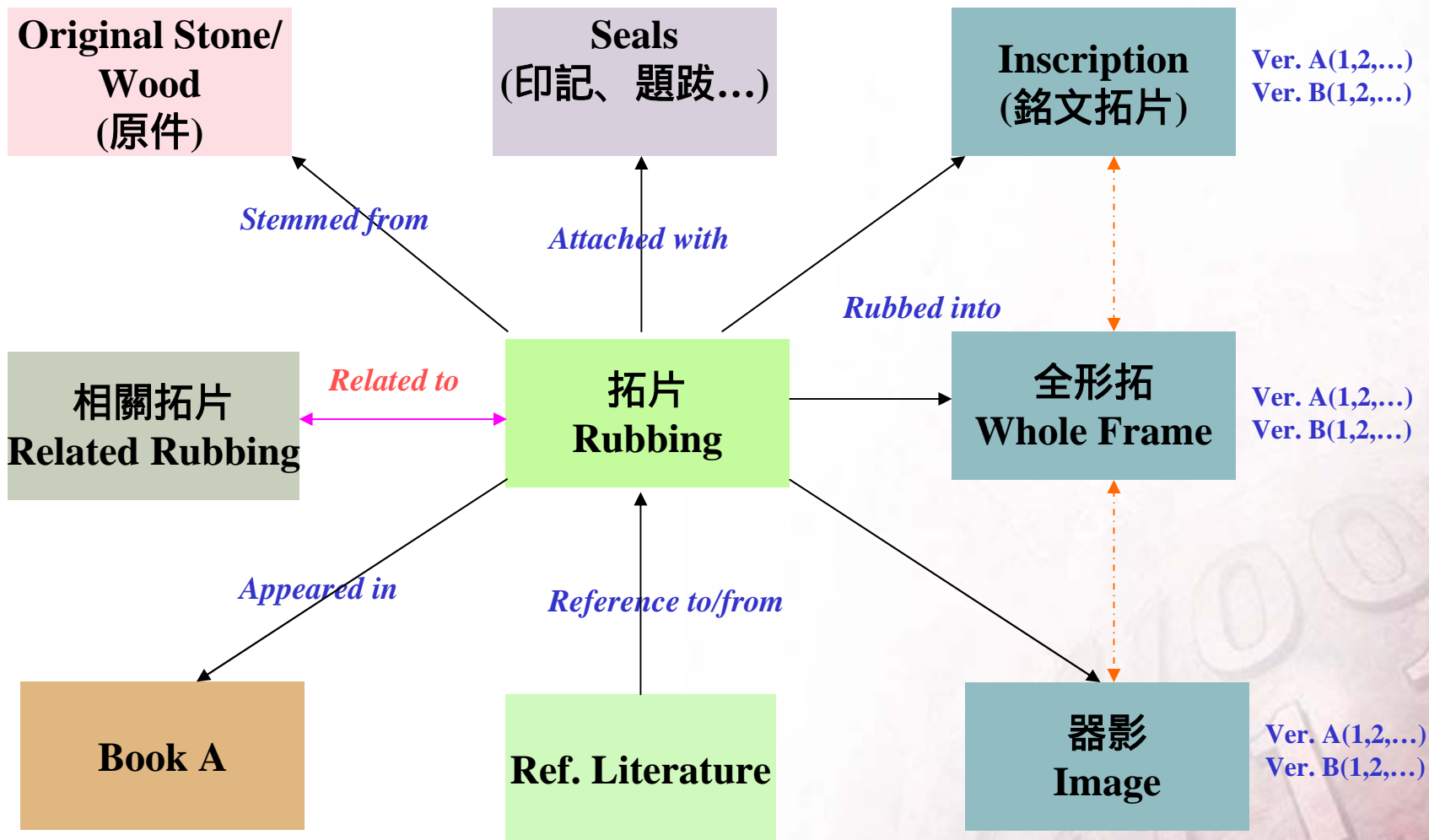
- Step 1—Case Study (The 8 NDAP projects)
  - Digital Archives Project of Chinese Painting and Calligraphy at the National Palace Museum **museum** - **CDWA**
  - Digital Archives Project of Chinese Antiquities at the National Palace Museum **museum** - **CDWA**
  - Digital Archives of Rubbings and Archaic Texts **museum** - **CDWA**
  - Digital Archives for the Grand Secretariat Archives **library** - **EAD**
  - Digital Library Project for Official Economic and Diplomatic Archives **archives** - **EAD**
  - Digital Archives Project of Academia Historica **archives** - **EAD**
  - Zoological Research of Taiwan: Fish and Mollusks **Species 2000**
  - Digital Library of Taiwan Herbarium **herbarium** - **HISPID**

# Methodology—Steps 2

- Step 2—Interviewing
  - Uses a questionnaire designed to learn about user needs
  - Questionnaire covers items such as current status, requirements for metadata elements, **association diagram**, **context diagram**, metadata instance, etc.

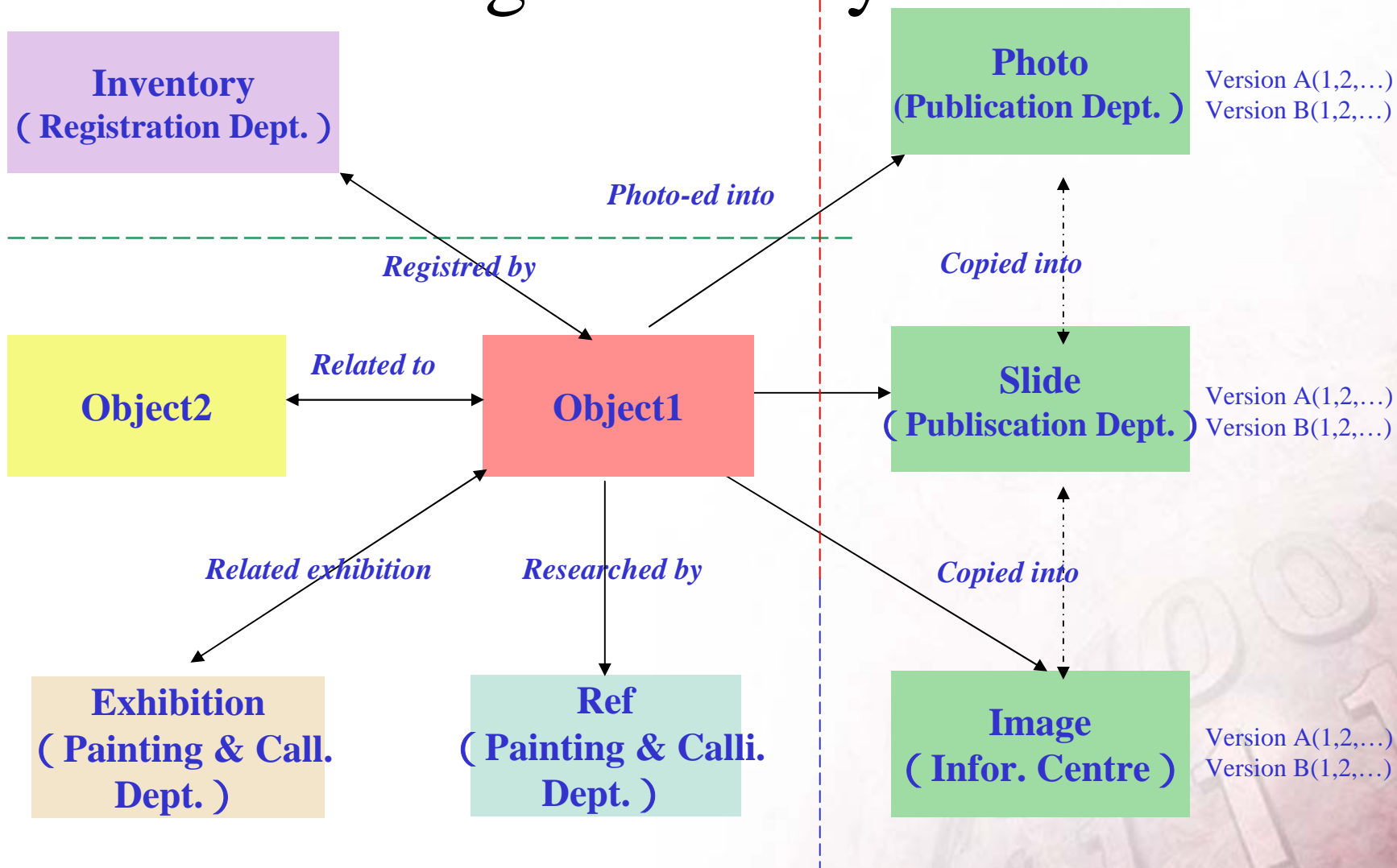


# Association Diagram





# A re-examination of workflow for the digital library



# Methodology—Steps 3

- Step 3—Analysis and Prototyping
  - The results of the questionnaire are analyzed
  - A prototype based on system specification is developed

# Results<sup>1</sup>

- Requirement for a metadata system
  - 32 requirements and can be generalized into 6 categories
    - Input and maintenance
    - Retrieval
    - Display
    - Interoperability
    - Management
    - Automation of Operational Activities

# Results<sup>2</sup>

- Core Requirements
  - common system components and functions
- Criteria:
  - Demanded by more than 6 out of 8 projects ( $\geq 75\%$ )
  - Requiring the metadata system to offer functionality immediately
- 13 core requirements (around 40%)
  - Record creation
  - Modification
  - Deletion
  - Multi-value attributes
  - Select-list menu
  - Simple search
  - Advanced search
  - Simple display
  - Import and export using XML document
  - Links to other databases
  - Cataloguing history
  - Setting private attributes
  - Authentication management

# Results<sup>3</sup>

- 7 Potential Common functions
  - Provide different **levels of information granularity**
  - A mechanism to **integrate external resources** seamlessly
  - Convert **legacy systems** and records into new ones
  - Equip customized options for **report generation**
  - Incorporate miscellaneous tools, in terms of metadata creation, retrieval, display
  - Implement **structured relations** for existing metadata standards
  - Enable **multi-lingual** processing

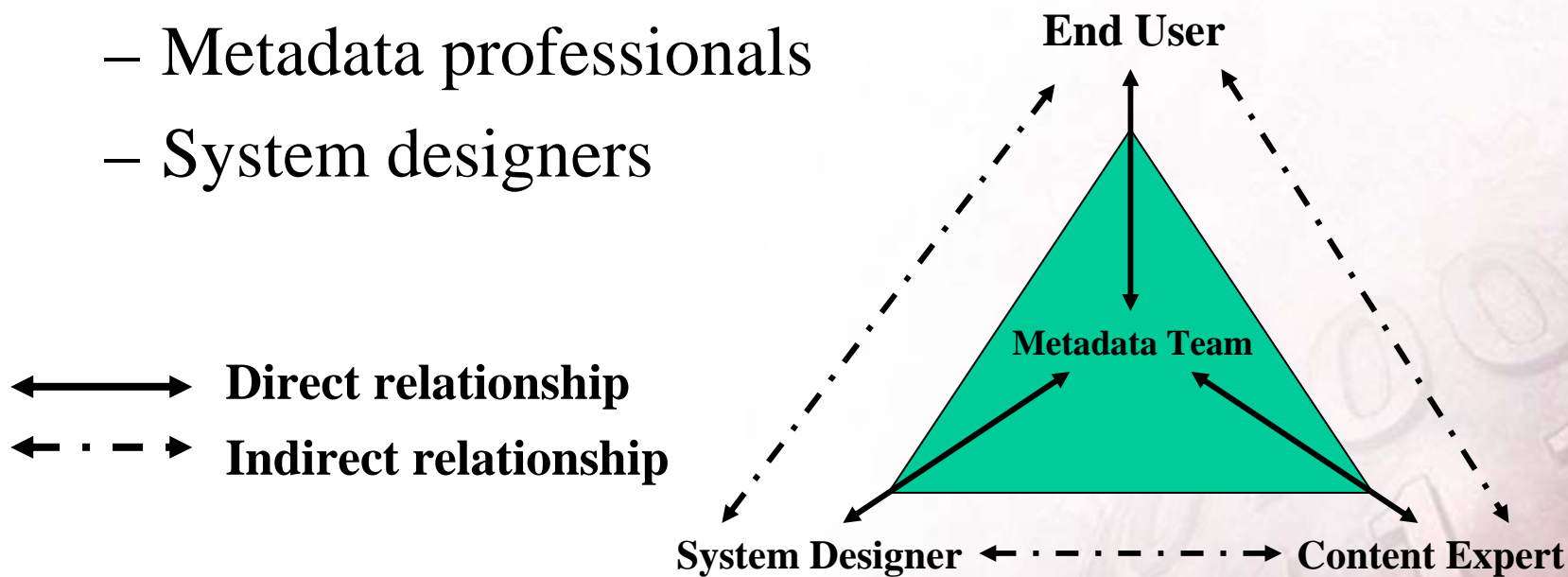
# Findings

- Coverage of functions
  - User requirements, software design, system evaluation
  - A web-based charging mechanism for future e-commerce application
- Gap between system implementation and requirements
  - Requirements: comprehensive description & rich relations
- Relationship between metadata systems and external resources
  - Eg. Person name, Place name
- A mechanism for metadata exchange and transfer
  - Cross-walking mechanism

# Conclusion and Suggestion

## *Recommendations for communication*<sup>1</sup>

- Establish a service model for:
  - Content experts
  - Metadata professionals
  - System designers





# Conclusion and Suggestion

## *Recommendations for communication<sup>2</sup>*

- Content Experts
  - project scope, objectives, and requirements
  - revision should be confirmed by all related parties.
  - Requirements should be reasonable based on enough IT knowledge.
- System Designers
  - Provide Promotion: deliver appropriate IT at the right. (*what I've got*)
  - Provide Advice: examine the feasibility of metadata requirements (*what I can do*)

# Conclusion and Suggestion

## *Recommendations for communication<sup>3</sup>*

- Metadata Professionals
  - A bridge role in relaying requirements to other members
  - Guide content expert toward a more integrated metadata system, in response to related workflow tasks of digital libraries in a whole lifecycle

# Conclusion and Suggestion

## *Spectrum of functional requirements for a metadata system<sup>1</sup>*

- The **web-based metadata representation** has to offer different options for browsing, indexing, and searching for various targeted audiences.
- **External resources**, such as thesauri for "person name" and "place name", should be regarded as independent metadata systems. Synchronous data update and bi-directional linking are also required. Furthermore, projects should be able to share both metadata systems and external resources.
- Flexible **customization** is necessary to offer various options to accommodate a wide range of user needs.
- The ability of **multilingual processing** is required to handle Chinese and Japanese materials.

# Conclusion and Suggestion

## *Spectrum of functional requirements for a metadata system<sup>2</sup>*

- A mechanism composed of more than two different metadata standards for import, export, and harvest, is an essential component of a metadata system, including conversion of legacy systems and records.
- The ability to **control quality assurance for workflow and management**.
- A management set of metadata elements for system and administrative management is also needed.
- Provide offline and online modes to promote the use of metadata systems widely.
- The facility of security functions for authentication and metadata exchange.

# Conclusion and Suggestion

## *Spectrum of functional requirements for a metadata system<sup>3</sup>*

- The help facility should be equipped to guide users toward adoption of a metadata system.
- The metadata system can be planted across various platforms in order to interoperate with technology evolution.
- Dedicated personnel are required to keep system operations stable.
- The metadata system should be designed by a component-based approach to incorporate new software and hardware, to avoid obsolescence of information technology.
- **Recovery and storage devices** should be used to prevent data loss.

Thanks for your join  
&  
welcome any comments!

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