



The Background Information of Developing Metadata Lifecycle Model

MAAT and the NDAP : Organization Chart

Organization Chart of NDAP

MAAT:

Metadata Architecture and Application Team



NDAP:

National Digital Archives Program (Taiwan)

Non-solicited Projects

22 for digital content development,
10 for technology R&D,
18 for applications of digital archives,
10 for creative learning of digital archives.



Objectives of MAAT

- *Service*
 - Collection Projects (80+ by 2004)
 - Strategic planning and application of metadata standards
 - Metadata application profiles/best practices
 - Metadata consultant services
- *Research*
 - Metadata methodology
 - **Metadata Lifecycle Model**
 - Domain Analysis
 - Metadata registry
 - Knowledge organization
 - Domain ontology
 - Thesaurus
 - Authority Control

The screenshot shows a web browser window displaying the MAAT website. The page title is "Metadata Architecture and Application Team". The navigation menu includes: News | Best Practice | Introduction | Projects | Getting Start | Management Systems | Documents | Events | Resource Sharing |. The main content is a table with the following structure:

Projects	Attributes			
	Data Types	Subjects	Communities	Metadata Standards
The Digital Archives of Rubbings and Archaic Texts	Rubbings	History	Museum	CDWA
Digital archives for the Grand Secretariat Archives	Archives	Politics/History	Archives	EAD
Digital Archives of Chinese Archaeological Data	Artifacts	Archaeology	Museum	CDWA, MIDAS
Digital Archive for Rare Books of Fu Ssu-Nien Library	Rare Books	History	Archives	TEI
Digital Library Project for Official Economic Archives and Diplomatic Archives	Archives	Diplomacy	Archives	EAD
Zoological Research of Taiwan: Fish and Mollusks	Specimen	Herbarium	Herbarium	SPECIES 2000 Standard Data
Digital Library of Taiwan Herbarium	Specimen	Herbarium	Herbarium	HISPID
Linguistics Anchoring and Language Archive of Digital Archives	Corpus	Language	N/A	OLAC
GIS Archive for Modern Chinese Historic Atlas and Aerial Photos	Map, Photography	GIS	N/A	FGDC
Taiwan Aborigine: Ping-pu	Video, Costume	Race/Aborigine	Museum	DC
Digital Archives for Ethnological Specimen, Photo and Archives	Report	Race/Aborigine	Museum	CDWA

MAAT Metadata Architecture and Application Team

News | Best Practice | Introduction | Projects | Getting Start | Management Systems | Documents | Events | Resource Sharing |

Digital Archives for Ethnological Specimen, Photo and Archives	Report	Race/Aborigine	Museum	CDWA
Knowledge Base of Taiwan's Earthquake	Report, Photo	Earthquake	N/A	DC
Digital Archives Project of the Office of Governor-General in Taiwan	Archives	Politics/History	Archives	EAD
Digital Archives Project of Chinese Antiquities at the National Palace Museum	Artifacts	Arts	Museum	CDWA
Digital Archives Project of Chinese Painting and Calligraphy at the National Palace Museum	Painting and Calligraphy	Arts	Museum	CDWA
Digital Library Project of National Museum of History	Artifacts/Painting	Arts	Museum	CDWA
Digital Video Library Project	Video Tape	Multimedia	Museum	IFLA FRBR /ECHO
Taiwan Momery: Digital Photo Museum	Photography	Multimedia	Museum	DC/CDWA
National Digital Archives Program (2002-2006): Academia Historica (Taiwan, ROC)	Archives/Photo	Politics/History	Archives	EAD

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MAAT

Layers of Knowledge Management for Metadata in the NDAP

Community Museum, Archives, Library, Herbarium, etc.

Data Type Rubbings, Files, Rare Books, Full Text, Specimens, Corpus, Maps, Photos, Painting and Calligraphy, Audio-Visual, Score, Dress, Reports, Investigation, etc.

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

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



Standards Used

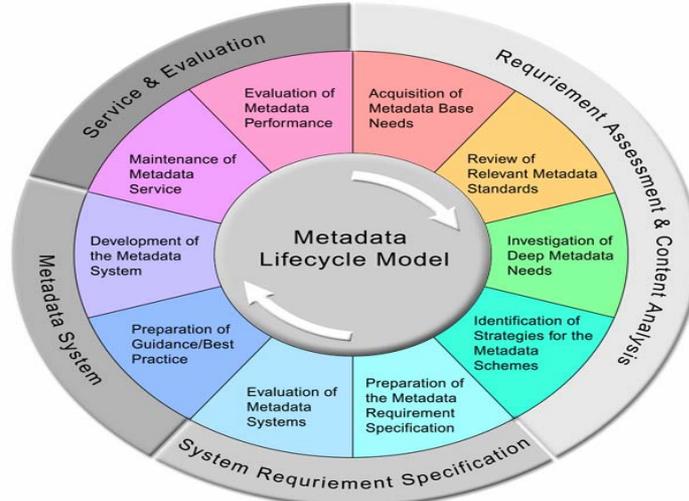
- CDWA
- VRA Core
- EAD
- TEI Lite
- Species 2000
- HISPID
- Darwin Core
- CSDGM (FGDC)
- ADL Gazetteer
- OLAC
- ECHO – an FRBR-based profile
- MARC21
- LOM
- DC - All projects



The importance of MLM

- The NDAP faces issues of
 - A diversity on communities, disciplines, data types, and functions simultaneously.
 - The limitation of metadata practitioners.
- The MLM (Metadata Lifecycle Model) is developed as a systematic approach for various projects to achieve:
 - Cost-effectiveness
 - Quality assurance
 - Consistency
 - Interoperability

The Metadata Lifecycle Model



Chen, Y.-N., Chen, S.-J., & S.C. Lin. (2003). A metadata lifecycle model for digital libraries: Methodology and application. Paper presented at *The World Library and Information Congress: 69th IFLA General Conference and Council*, 1-9 Aug. 2003.

Step 1

Acquisition of Metadata Base Needs

- INTERVIEW
 - Acquire preliminary information and contacts
 - Contact window, scope, legacy system...
 - Establish a better understanding among the team work
 - Goal, schedule...



Step 2

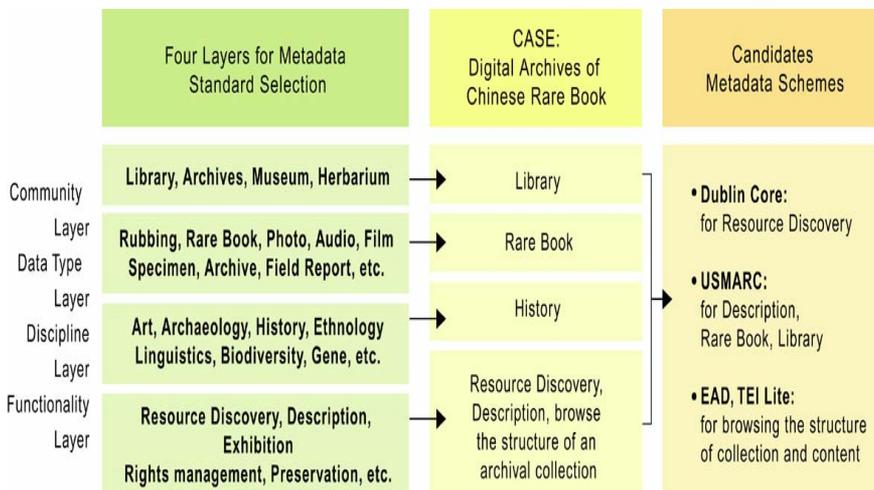
Review of Relevant Metadata Standards and Projects

• REVIEW

- Identification of potential metadata standards
 - The four-layer for metadata selection
- Current metadata trends and issues
 - (Example) Biodiversity - GBIF, TDWG, BioCASE, Species 2000
- Examination of use cases and their experiences



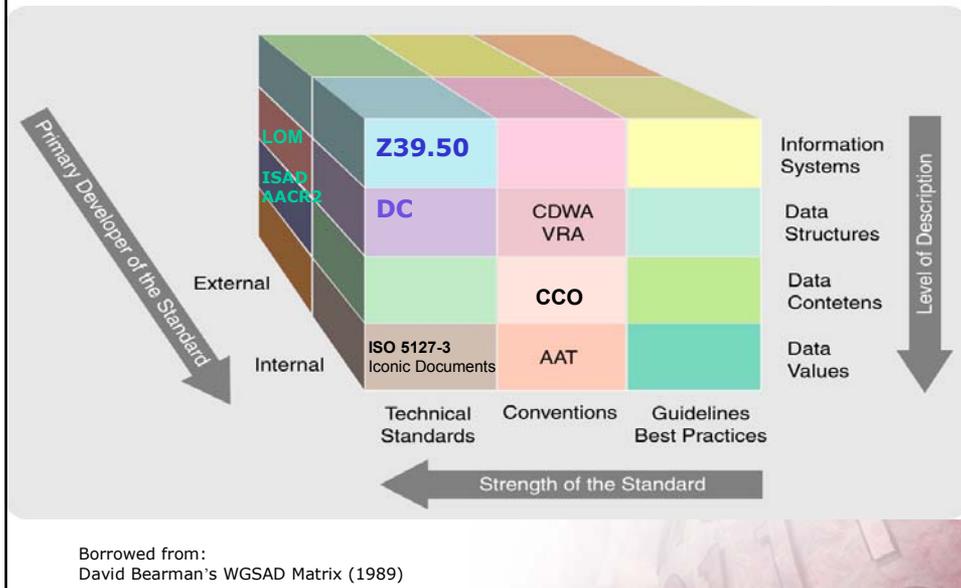
The Four Layers and Exemplar for Selection of Metadata Standards



Chen, Y.-N., Chen, S.-J., & S.C. Lin. (2003). A metadata lifecycle model for digital libraries: Methodology and application. Paper presented at *The World Library and Information Congress: 69th IFLA General Conference and Council*, 1-9 Aug. 2003.



Types of Standards



Step 3

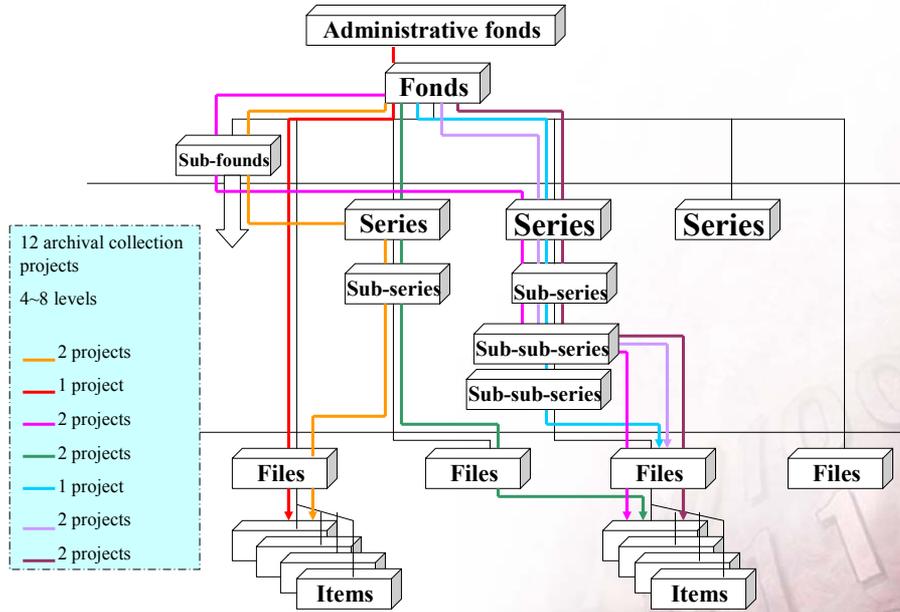
Investigation of Deep Metadata Needs

- **IDENTIFICATION**
 - A concept of content analysis is deployed.
 - A set of work documents

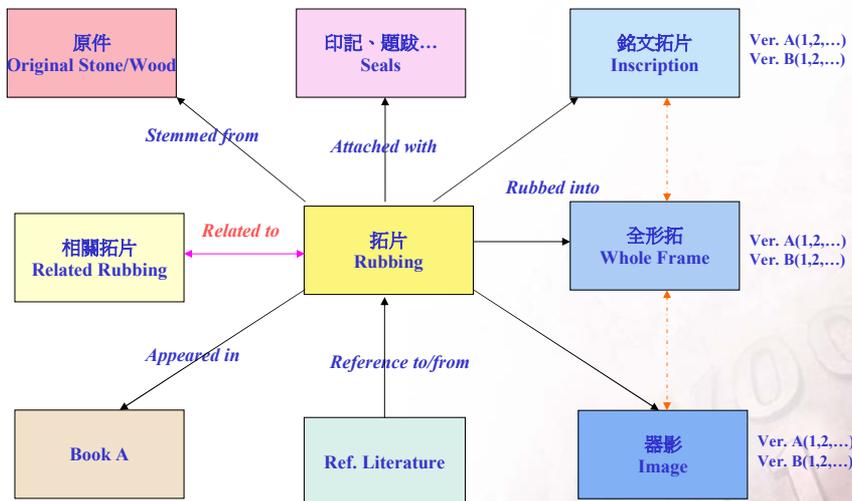


Model of the levels of arrangement of a fonds

A Case of the NDAP

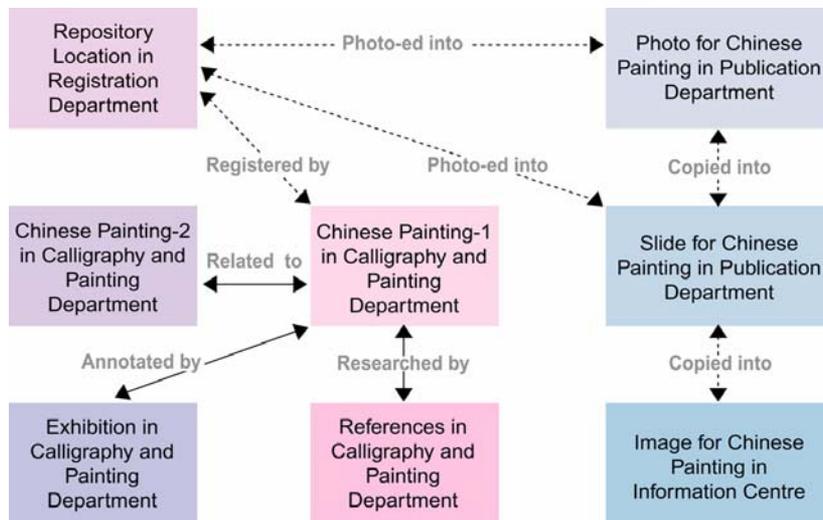


Association Diagram





A re-examination of workflow for the digital library



Chen, Y.N. & Chen, S.J. (2004). A metadata practice of the IFLA FRBR model: A case study for the National Palace Museum in Taipei. *Journal of Documentation*, 60(2), 128-143.



Step 4

Identification of Strategies for the Metadata Schemes and Interoperability Mechanism

- One size can not fit for all.
- The concept of metadata “application profile”
 - Adopting one or several existing metadata standards
 - (Example) Rare book : MARC21 + EAD + TEI Lite



Step 5

Preparation of the Metadata Requirement Specification

- A **common agreement / bridge** among collection project participants, metadata specialists, and system designers.
- The content includes:
 - Background information of the project
 - Objectives and scope of the metadata system
 - Statement of adopted metadata standards
 - Metadata elements and structure
 - Attributes of metadata elements
 - Input template and related standards crosswalking
 - Functional requirements
 - XML DTD



Step 6

Evaluation of Metadata Systems

- **EVALUATION**
 - Assessment of potential metadata systems
 - As a reference for
 - Revision of metadata requirements
 - Outsourcing
 - System design, or
 - Collaboration of system development



Step 7

Preparation of Best Practice Guidance

- To ensure the quality control of the metadata records in the collection project
- The content includes:
 - Element name
 - Definition
 - Description rules
 - System suggestion
 - Examples
 - Mapping to relevant standards



Step 8

Development of the Metadata System

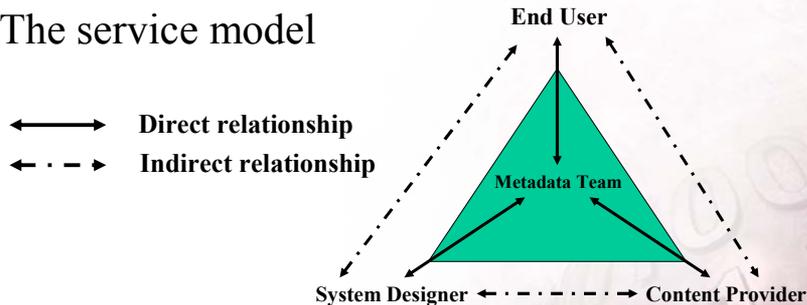
- Approaches include:
 - Metadata Requirement Specification (MRS)
 - Develop metadata systems according to the **final version of MRS** that are agreed between collection project team and metadata team
 - The case is usually happened in the situation that the collection project well understands/expresses their own requirements
 - Prototyping
 - Develop metadata systems according to both the **draft of MRS** and the direct interactive communication between collection project team and system development team
 - This case is usually happened in the situation that the collection project only have rough/unclear ideas about their own requirements



Step 9

Maintenance of Metadata Service

- Guarantee the quality assurance of metadata mechanisms
- The service model



Step 10

Evaluation of Metadata Performance

- **ASSESSMENT**
 - The whole metadata process and performance.
 - The content includes to evaluate:
 - Metadata record quality
 - Effectiveness of adopting a metadata scheme for retrieval
 - Use of metadata creation tools within the collection project
 - How well each stage of the metadata lifecycle model has been performed



Interoperability Strategy¹



For the public, serve as
a base for cross-domain
interoperability

For a discipline-oriented,
professional, in-depth, and
precise search

Chen, Y.-N., Chen, S.-J., Sum, H.-C., & S.C. Lin. (2003). Functional requirements of metadata system: From user needs perspective. Paper presented at *2003 Dublin Core: Supporting Communities of Discourse and Practice: Metadata Research and Application*, 28 Sep. – 2 Oct. 2003.



Interoperability Strategy²

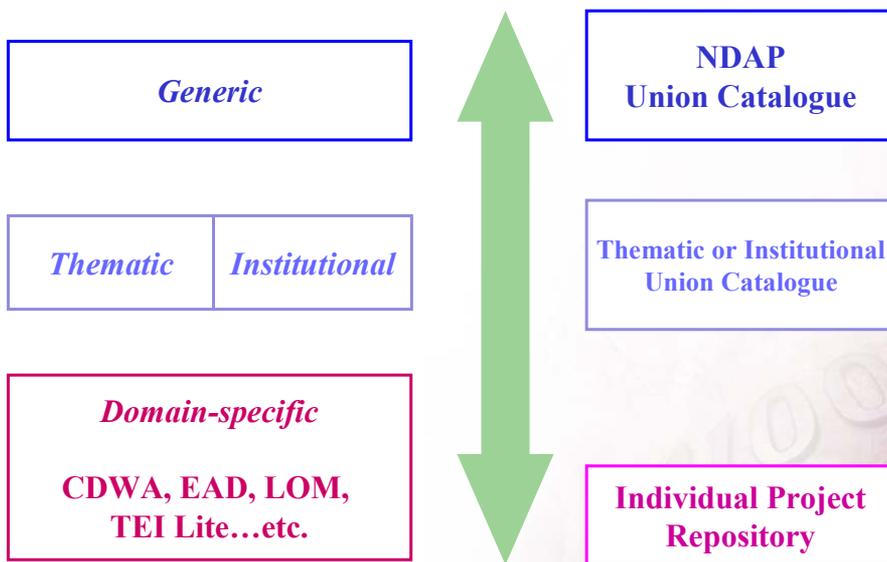


For the specific community,
serve as a base for cross-
project interoperability

For a discipline-oriented,
professional, in-depth, and
precise search



Interoperability Strategy³



Union Catalogue of NDAP¹

The screenshot shows the Union Catalogue of NDAP website displayed in a Microsoft Internet Explorer browser window. The browser's address bar shows the URL: <http://catalog.ndap.org.tw/nc4/0system/>. The website's main content area features a green background with a grid of small icons and the title "數位典藏聯合目錄" (Union Catalogue of National Digital Archives Program). Below the title, it states "Union Catalog of National Digital Archives Program" and "藏品數量: 205,413 筆". A search bar is visible on the right side of the page. The browser's taskbar at the bottom shows the system clock as 06:00 PM on 06/09.



Union Catalogue of NDAP²

數位典藏聯合目錄
Union Catalogue of National Digital Archives Program

現在位置
DC 進階搜尋

DC 進階搜尋

題名 Title	貢獻者 Contributor	來源 Source
著作人 Creator	日期 Date	語言 Language
主題與關鍵字 Subject & Keywords	資料類型 Type	關聯 Relation
描述 Description	格式 Format	範圍 Coverage
出版者 Publisher	資源識別 Resource Identifier	管理權 Rights

查詢送出 清除重填

(C) 2004 數位典藏國家科技計畫 聯合目錄系統發展計畫



Union Catalogue of NDAP³

數位典藏聯合目錄
Union Catalogue of National Digital Archives Program

現在位置
內容主題

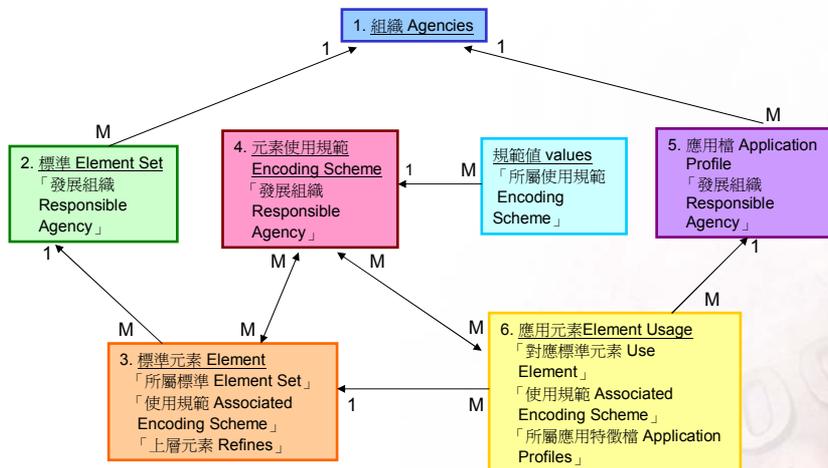
分類架構

- 內容主題
 - 動物主題 Zoology
 - 植物主題 Botany
 - 尚未收錄
 - Phenology, Specimens
 - 地質主題 Geology
 - 人類學主題 Anthropology
 - 尚未收錄
 - 檔案主題 Archives
 - 器物主題 Artifacts
 - 木竹器、玉石器、其他、陶器、漆器
 - 書畫主題 Calligraphy/Painting
 - 地圖與遙測影像主題 Maps & Remote Sensing Images
 - 金石拓片主題 Stone & Bronze Rubbing
 - 善本古籍主題 Rare Books
 - 考古主題 Archaeology
 - 新聞主題 Journalism & Mass Media
 - 尚未收錄

Union Catalogue of NDAP⁴



Interoperability Strategy⁴ Metadata Registry



Note1: M-multiple; 1-single

Note2: 「」 linkage element

Interoperability Strategy⁵ Metadata Registry



Metadata Registry at MAAT

[Chinese](#)

Index

1. Agency (Ex: GettyInstitution 、 National Palace Museum)		
Agency	Browse	Search
2. Encoding Scheme (Ex: Value list)		
Encoding Scheme	Browse	Search
3. Element Set (Ex: CDWA 、 EAD)		
Element Set	Browse	Search
Element	Browse	Search
4. Application Profile (Ex: NPM Digital Archive Project, Academia Historica Government Archive)		
Application Profile	Browse	Search
Element Usage	Browse	Search

[Catalogue Interface](#)



Metadata Interoperability Layers in the NDAP

ICT

XML, OAI-PMH, Web Services, et al.

Semantic

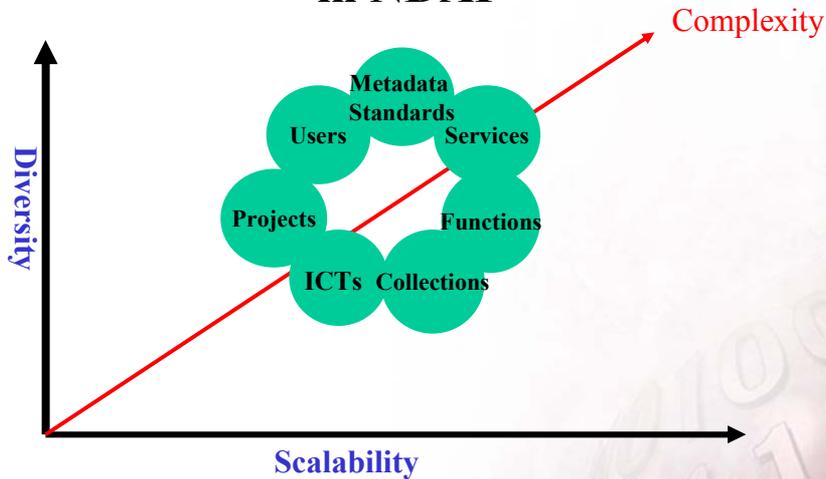
Metadata Stds. Crosswalking, MDRs,
Application Profile

Culture

Cross Institutions, Domains and Communities



Complexity of Metadata Landscape in NDAP



Ongoing and Future Work

- Knowledge Organization System
 - Thesaurus development
 - Ontology (Conceptual Model)
 - IFLA FRBR (Functional Requirement of Bibliographical Record)
 - CIDOC CRM (Conceptual Reference Model)
 - OAIS Reference Model



Selected Publication¹

- Chen, Y.-N., Chen, S.-J., Chiang, H.-Y., & Liu, C.-H. (2000). A case study in designing Chinese metadata. *Online Information Review*, 24(3), 229-233.
- Chen, Y.-N., & Chen, S.-J. (2001). A practical metadata approach towards Chinese rubbings. Paper presented at *The Digital Resources for the Humanities*, 8-10 Jul. 2001.
- Lin, S.C., Chen, Y.-N., & Chen, S.-J. (2001). A Metadata Case Study for the FRBR model based on Chinese painting and calligraphy at the National Palace Museum in Taipei. Paper presented at *2001 Dublin Core: International Conference on Dublin Core and Metadata Applications*, 22-26 Oct. 2001.
- Chen, Y.-N., Lin, S.C., & Chen, S.-J. (2002). An application practice of the IFLA FRBR model: A metadata case study at the National Palace Museum in Taipei. In *Proceedings of the 65th Annual Meeting of the American Society for Information Science & Technology* (pp. 181-193), 18-21 Nov. 2002.



Selected Publication²

- Chen, Y.-N., Chen, S.-J., & S.C. Lin. (2003). A metadata lifecycle model for digital libraries: Methodology and application. Paper presented at *The World Library and Information Congress: 69th IFLA General Conference and Council*, 1-9 Aug. 2003.
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MAAT - Microsoft Internet Explorer

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上一步 后退 前进 刷新 搜索 我的最爱 媒体 打印 连接

網址(U) http://www.sinica.edu.tw/~metadata/index-eng.html

MAAT Metadata Architecture and Application Team

- News
- Best Practice
- Introduction
- Projects
- Getting Start
- Management Systems
- Documents
- Resource Sharing
- Events
- 中文

Metadata Architecture and Application Team

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URL: <http://www.sinica.edu.tw/~metadata/index-eng.html>



MAAT

*Thanks for your attention, and
welcome any comments.*