

Achieving Interoperability in the MichaelPlus Project



Tzouvaras Vassilis &
Stefanos Kollias

Image, Video & Multimedia Systems
Lab

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National Technical University of Athens

MichaelPlus Project

- Michael-Multilingual Inventory of Cultural Heritage in Europe is a deployment initiative supported by two projects co-financed by the eTEN programme, namely: Michael (2004-2007) and MichaelPlus (2006-2008).
- Ministries and cultural institutions from 14 EU countries:
- The Michael platform ensures interoperability in the schema, record and repository level.

Schema Level Interoperability

- Schema selection that ensures interoperability with other collections or repositories.
 - Derivation of Michael Schema from RSLP Collection Description which follows recommendations for encoding Dublin Core metadata
 - Creation of Crosswalks between Michael schema and popular metadata schemas like LOM and ISAD(G) as well as Michael schema and proprietary schemas used by cultural institutions (TEL,KB etc.)

Record Level Interoperability

- Mapping of record elements according to their semantic meanings to enable importing from existing repositories.
 - Mapping the metadata fields between records of different digital collections can vary between: one-to-one, one-to-many, many-to-one.
 - Complexity in the record conversion is even higher since there's a need to map field values to values from controlled vocabularies used in Michael.
 - Crosswalks that have been implemented in the project facilitate the creation of mapping tools that integrate metadata records.

Repository Level Interoperability

- Achieved through the use of the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) framework. Michael data repositories are built to be consistent with the OAI-PMH.
- Value-based mapping for cross-collection multilingual searches. Mappings between the national Michael repositories are implemented not on a field-by-field basis but by translating the controlled vocabularies used in Michael.

Discussion

MichaelPlus

- ensures interoperability at the syntactic level.
- is a very good testbed for examining interoperability issues since it is connected with many archives and many users.
- is connected with other projects: MinervaEC, VideoActive, Multimatch
- NTUA is Leading the Interoperability activities in MichaelPlus, MinervaEC and VideoActive
- Important issue: Semantic Interoperability

Future Tasks for Semantic Interoperability

- The data model of MichaelPlus is based on XML.
- XML has no formal semantics (model theoretic semantics) and therefore semantic interoperability cannot be achieved.
- Semantic Web Technologies can ensure semantic interoperability. In particular, W3C is standardising technologies that are aiming at semantic interoperability. NTUA is co-leading relevant activities in W3C.
 - Multimedia Semantics Incubator Group.
 - Uncertainty Reasoning for the World Wide Web Incubator Group.
 - OWL 1.1 member submission (possible WG)
 - Rule Interchange Format Working Group.
 - Semantic Web Deployment Working Group.

Multimedia Semantics XG



W3C MultiMedia SeMantics Incubator Group

<http://www.w3.org/2005/Incubator/mmsem/>

34 group participants:

from 14 organizations (AIT, CNR, CWI, DERI, DFKI, IBBT, IVML-NTUA, IIT, IWA-HWG, K-Space, Uni. of Maryland, Motorola, Oracle, Uni. of Aberdeen)

MMSem Deliverables

Expected outcome:

- XG Report on **Image Annotation on the Semantic Web** (Published)
- XG Report on **Multimedia Annotation Interoperability Framework** (Publication in April/May)
- XG Report on **MPEG-7 and the Semantic Web** (Publication in April/May)
- Living Documents (wiki page):
 - **Multimedia Vocabularies on the Semantic Web**
 - **Multimedia Semantics: Overview of Relevant Tools and Resources**

MMSem Future

- **Targeting a new Recommendation Track Working Group on *Multimedia Annotation Interoperability Framework***
 - September 2007: Workshop on Interoperability of Multimedia Annotations
 - October 2007: Start WG Charter Preparation
 - November/December 2007: Planned WG starting date

Uncertainty Handling and Semantic Interoperability

- The World Wide Web community envisions effortless interaction between humans and computers, seamless interoperability and information exchange among web applications. However,
- Information extracted from large information networks such as the World Wide Web is typically **incomplete**.
- Much information on the World Wide Web is likely to be **uncertain**.
- Web information is also often **incorrect** or only partially correct, raising issues related to trust or credibility.
- The Semantic Web vision implies that numerous overlapping ontologies will co-exist and interoperate. In such scenarios **ontology mapping** will benefit from the ability to **represent degrees of membership**.

Uncertainty Reasoning for the World Wide Web Incubator Group

- There is increasing appreciation of the need for principled approaches to representing and reasoning under uncertainty.
- The **mission** of the **Uncertainty Reasoning for the World Wide Web (URW3) Incubator Group**, part of the Incubator Activity, is to better define the challenge of reasoning with and representing uncertain information available through the World Wide Web and related WWW technologies in order to serve as the basis for information exchange .

More expressivity in Web Ontology and Rule Languages

- OWL 1.1 extends the W3C OWL Web Ontology Language with a small but useful set of features that have been requested by users, for which effective reasoning algorithms are now available, and that OWL tool developers are willing to support.
- Rule Interchange Format (RIF): The Working Group aims at specifying a format for rules, so they can be used across diverse systems. This format (or language) will function as an interlingua into which established and new rule languages can be mapped, allowing metadata written for one application to be published, shared, and re-used in other applications.