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Report on the First DL.org Workshop on Digital Library Interoperability, Best Practices and Modelling Foundations

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Left to right: Location of the ECDL2009 and DL.org Workshop; Sarah Higgins, Giuseppina Vullo and Seamus Ross during the DL.org Workshop; Social dinner at the Achilleion Palace for Conference and Workshop participants.

The 1st Workshop on Digital Library Interoperability, Best Practices and Modelling Foundations was held in Corfu, Greece on October 1, 2009, in conjunction with the [13th European Conference on Digital Libraries \(ECDL2009\)](#). The event was dedicated to discuss top-level challenges and priorities for investigating and achieving digital library (DL) interoperability, to analyse the current state of the art and to deliberate top priorities towards global DL infrastructures. Talks included first achievement reports and visions on the six thematic groups of the EU-funded [DL.org project](#), and a brief overview of the [DELOS Reference Model for Digital Libraries](#), the conceptual framework of DL.org. An interactive panel discussion completed the workshop.

A welcome to participants was presented by Donatella Castelli (ISTI-CNR), the DL.org Project Coordinator. She outlined the objectives of DL.org with special emphasis on important knowledge exchange through the six thematic [DL.org Working Groups](#). These working groups aim at identifying and deliberating the most important interoperability issues for large-scale Digital Libraries, evaluating proposed solutions and contributing to the enhanced versions of the DELOS Reference Model from the architecture, content, functionality, policy, quality and user perspectives.

The opening keynote was "Interoperability Challenges in Digital Libraries", by Stefan Gradmann (Humboldt University). He explored interoperability challenges from the perspective of [Europeana](#), a large-scale initiative willing to implement a multilingual access point to Europe's cultural heritage, where interoperability plays a

fundamental role. An evaluation of interoperability aspects of selected frameworks for DL modelling was provided, including the DELOS DL Reference Model.

Leonardo Candela (ISTI-CNR) exposed an overview of the Reference Model. This talk spotlights two key outputs of the [DELOS Network of Excellence on Digital Libraries](#): the [Digital Library Manifesto](#), which introduced the main notions typical of the DL domain, and the [DELOS Reference Model for Digital Libraries](#), which introduced a set of unifying concepts, axioms and relationships characterising the DL domain independently of technical details. He also highlighted the major releases of the Reference Model planned for October 2009 and September 2010, aimed to amplify and enhance the Model through the contributions of DL practitioners and stakeholder participation.

The first session, chaired by Geneva Henri (Rice University and DL.org External Advisory Board member), focused on Content, Functionality and User interoperability.

Donatella Castelli, Content Working Group testimonial, placed emphasis on specific interoperability problems arising in the content domain. She introduced the information object features that characterise aspects related to interoperability issues: information object attributes, format, context, provenance, and identifier. Castelli presented the Content Interoperability Framework, a comprehensive model the Working Group is developing with the aim to capture in a systematic way the multi-faceted nature of interoperability issues and solutions, as well as evaluating existing approaches and solutions.

Dagobert Soergel (University at Buffalo), Functionality Working Group testimonial, highlighted interoperability use cases with special reference to the Function Interoperability Framework that the Working Group is producing, as well as scenarios and requirements for interoperability and reuse in the functionality domain. Interoperability issues include: pre – post condition mismatches, Interface mismatch, composition of functions, and function behaviour. The talk also draws attention to the need to set up an environment in which the DL community can produce a database of function descriptions. This is an ambitious goal that should be addressed in the following years.

Yannis Ioannidis (University of Athens), User Working Group testimonial, discussed user interoperability clarifying the concept of DL actor, as an individual, group of people acting in unison, or as inanimate entities (software programmes and interfaces). Examples and scenarios of user interoperability were provided. He also explored a number of key issues, ranging from user modelling to interoperable user models, user profiling, user management, collaboration, participation and privacy issues.

The second session, chaired by Seamus Ross (University of Toronto), focused on interoperability issues related to the Policy, Quality and Architecture domains.

Perla Innocenti (University of Glasgow), Policy Working Group testimonial and Seamus Ross (University of Toronto) described the proposal to revise the policy domain within the DELOS Reference Model, and the production of a policy framework. Through a selection of producer and user scenarios, they discussed how policy permeates the digital library from conceptualisation through to operation, and how policy needs to be represented at these various levels. Policy interoperability was presented in terms of business interoperability, and the investigation of the [PLEDGE](#) and the [SHAMAN](#) Assessment Framework was briefly described.

Sarah Higgins (Digital Curation Centre UK) and Giuseppina Vullo (University of Glasgow), Quality Working Group testimonial, discussed the proposal of considering an additional "Organisation" level to the DELOS Reference Model, wrapping the existing Levels of DLs, Digital Library System and Digital Library Management System. The development of a Quality Core Model was the highlight of the presentation. The Quality Working Group is engaged in broadening the Quality domain by defining, selecting and investigating core quality parameters deemed essential for a quality interoperability framework.

Leonardo Candela, Architecture Working Group testimonial, discussed architecture-oriented interoperability issues ranging from component profiles to application frameworks and architectural interoperability approaches. He argued how, while solutions can be borrowed from other domains, standards only bring solutions to some extent, hence the need for guidelines and best practices to drive forward interoperability at the architecture level. He also sketched the pragmatic approach the Working Group is following by designing and testing interoperability approaches in concrete scenarios.

Those presentations triggered an exciting debate, with the audience actively engaged in the discussion. A number of challenges were identified including the level of details of the enhanced version of the DELOS Reference Model, measuring subjective quality parameters, and the characterization of DLs as information systems. Various

suggestions were formulated to support the Working Group investigations, including the similarities with Web Science, the idea of creating a toolkit for measuring the quality of DLs on the model of the digital preservation [DRAMBORA](#) toolkit, a more active role of librarians in DLs modelling, and the different views in Enterprise Architecture as complementary to those in the DELOS Reference Model. The participants recognised the importance of developing interoperability not only in terms of enabling technologies but also considering a higher organisational level. DL.org is addressing the need for a unifying framework for systematically describing and investigating all relevant issues and for an open forum for discussing emerging approaches and promoting proper solutions. By engaging international experts, the project is working towards bringing a substantial contribution to this research area.

More information about the workshop and the presentations are available from <http://www.dlorg.eu/index.php/dl-org-events/workshop-agenda>.

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