DL.org **I**nterviews

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European Commission
Information Society and Media

COOPERATION

Face-to-Face with Wolfram Horstmann

CIO, Bielefeld University Library
Expert in the DL.org Quality Working Group
Programme Chair of Open Repositories 2010 – The Grand Integration Challenge, July 2010, Madrid

Digital Repositories are being developed in a number of fields, spanning education, research, science and cultural heritage, on national, regional, institutional, lab and personal level. In this evolving landscape, repository platforms are transforming the nature of scholarly communication. Universities, research laboratories, libraries and commercial organisations are developing innovative repository-based systems that address the entire life-cycle of information, from supporting the creation and management of digital content, to enabling use, re-use and inter-connection of information and ultimately ensuring long-term preservation and archiving. In this interview with **Wolfram Horstmann** (pictured), Programme Chair of the Open Repositories 2010 conference and an expert serving in on the DL.org Quality Working Group, we explore the issues around integration that were addressed during Open Repositories with reference also to interoperability from the perspective of quality within the context of DL.org.

How would you describe the main aims and focus of Open Repositories 2010?

The Open Repositories conference series, now in its fifth edition, has grown to become one of the most important conference on repositories, particularly in terms of ensuring academics are well placed to offer rich information sources. This year's Open Repositories brought together individuals and organisations engaged in the conception, implementation and management of digital repositories, as well as stakeholder communities to address theoretical, practical and strategic approaches and ensure Digital Repositories offer value-add now and in the years ahead.

The burning issues at this year's conference are summed up as "The Grand Integration Challenge", as repositories become increasingly complex and dispersed, not just linking to Google but to a very broad provider scenario encompassing research publications, research data, bibliographic data and administrative data linked to the world wide web and diverse applications.

The Open Repositories conference series primarily targets the infrastructure community made up of developers and service providers who focus on machine interoperability as well as the end-user community. One trend that has emerged through Open Repositories is an increasing focus on developing repositories that cater to specific academic domains, including customised services meeting specific end-user requirements in fields as diverse as Biology, Chemistry or the Humanities. But while more end-user oriented services are emerging, there is also a great deal of interest in infrastructure development and issues that pertain particularly to developers, researchers, and service providers.

What specific burning issues were addressed?

This year's Call for Papers defined integration as a grand challenge that encompasses diverse facets along a multidimensional spectrum with the aim of shedding light on the most important facets by ensuring effective knowledge exchange on the different trends and perspectives that need addressing to ensure integration in the future. "**Web and repositories**" was one such challenge addressed, where the aim was to define the optimisation of repositories as not every repository is suited to the web. Other issues are concerned with "**knowledge and technology**" and "**wild and curated data**", that is, the tension between what is seen as valuable from a user's perspective and what developers believe is important. In other words, some groups believe well curated content and high quality are key, whereas others believe people should be left to do what they want.

The keynote by David De Roure from the University of Southampton addressed the challenges of "**isolated and linked data**" with special reference to MyExperiment and why and how linked data has been embraced to bring value-add to the services provided. "**Disciplinary versus institutional systems**" was also explored as an important theme moving forward. Here the contrast is between community-centric approaches and approaches that put Quality of Service (QoS) and long-term access high on the agenda, along with opposing perspectives, such as "**scholars and service providers**" and "**ad-hoc versus long-term access**". Open Repositories 2010 also explored "**ubiquitous and personalised environments**", where we have open environments such as Google in the first instance or a combination of open and restricted access in the second instance, which is particularly important for many types of research data. Finally, the conference looked at emerging trends like "**the cloud and the desktop**". While an increasing number of resources are moved from servers to a cloud, it is also integral to reach the desktops of researchers so building this bridge is important.

Summing up the main conference achievements, how do you see the Open Repositories conference developing in the future?

I see a number of developments taking shape over the next few years. One such development is an increasingly professional approach. This year's edition was the largest to date with 400 attendants from 36 countries. Open Repositories has always been an international effort, but global involvement is likely to grow in the years ahead. From a quality perspective, this year there were 6 times as many paper submissions, totalling 250, with a rejection rate of around 60%, which is an important achievement to take forward. The diversity of topics explored is a new trend that will probably continue. We can expect to see a shift away from open access and institutional perspectives as the main topics towards the world of research data and administrative data, particularly on building high-quality data resources in a landscape of diverse systems. It will be interesting to see how this differentiation is taken forward next year.

Wolfram, you serve as an expert on DL.org's Quality Working Group. Why is interoperability crucial for digital repositories and what is the role of quality?

With regard to repositories, interoperability is a decentralised paradigm that poses the question of how to link very heterogeneous and dispersed resources from all around the world. Interoperability is thus a crucial theme and the ultimate goal we are striving for. The role of quality in DL.org's Working Group is twofold. On the one hand, there is reliability of services. When building systems and operating on data in a distributed infrastructure, you need to be able to rely on every part. Precision of data is the second challenge. For example, in a major repository service, the Bielefeld Academic Search Engine (www.base-search.net), there are currently 1700 repositories with 25 million records for academic resources harvested on a daily basis. Considerable effort is needed to arrange all the filters for individual repositories to ensure that the end user has an homogeneous experience in working with such diverse sources. Quality must thus be provided in a decentralised manner, which requires standards.

Wolfram Horstmann is CIO Scholarly Information at Bielefeld University, affiliated to the Bielefeld University Library. He is a Biologist by training, has an experimental research background in Computational Neuroscience and received his PhD for work in the Theory of Science. He has been involved in information management developments since 1997, e.g. distributed systems for academic publishing (across science and humanities, DIPP), for complex media in eLearning and electronic textbooks (educational simulations for the neural and cognitive sciences, MONIST) and for generic information management infrastructures (DRIVER: Digital Repository Infrastructure Vision of European Research).

Face-to-face with Tobias Blanke
Research Fellow, King's College London
Member of the DL.org Liaison Group
The Pioneering Work of Kings College London

Tobias Blanke is a Research Fellow for the Arts and Humanities eScience Support Centre (AHeSSC) at King's College London. He also serves as an expert in DL.org's Liaison Group, which evaluates the main outcomes of the project. Here we explore the current Digital Library and interoperability landscape with particular reference to the eHumanities.

What is the main value-add of Digital Libraries and Research Infrastructures for the Arts and Humanities?

I've been heavily involved in setting up the arts and humanities e-Research work in the UK. This kind of initiative has been largely spearheaded by the UK and U.S. but has also spread to other European countries as the benefits have become manifest. DARIAH (Digital Research Infrastructure for the Arts and Humanities) is one of the projects supported by the European Strategy Forum on Research Infrastructures (ESFRI) and is aimed at bringing together all such current initiatives together.

This is a very important initiative as it will put a European infrastructure dedicated to the Arts and Humanities firmly on the map. Early research infrastructures have been pioneered for eScience with advanced infrastructures to enable researchers to work together on topics of mutual interest and where cross-border collaboration is seen to be essential for tackling global challenges.

The Humanities field is a relatively late comer in this process, originally mainly interested in building digital libraries as spaces connecting artists and humanists for research, knowledge exchange and creativity. There has always been a fascination with the idea of a universal library that brings together archives and private collections, creating lots of work in traditional Digital Libraries for Humanities. Recently Research Infrastructures have been discovered in the attempt to support Humanities research practices on digital library resources.

One challenge lies here in transforming libraries into a "community space", where people can meet and work together, that is, an interactive forum as opposed to a simple collection of digital content available to researchers in the Humanities.

Can you cite any success stories and top-level challenges moving forward?

There have been a lot of success stories. While our understanding of "Digital Libraries" has evolved over time, there has always been an historical link between Digital Libraries and Digital Archives and humanists are highly specialised in cataloguing content.

Some good cases in point include the Blake Archive (pictured) in the U.S. and the Old Bailey (pictured) Records Online dating back to the eighteenth century in the UK, which is of general public interest, as well as early work on data services with, for instance, the Oxford Text Archives founded in 1976.

One of the main challenges is to build on successful Digital Libraries in the field and particularly to foster the shift from a situation where individual repositories operate as silos, which makes it harder for researchers to make those all-important connections that lead to new research discoveries and facilitate cross-disciplinary research.

Another challenge is inextricably linked with the Semantic Web. Humanists have fostered new ways of publishing content and resources enhanced with annotations and semantics. However, this information disappears on the traditional world wide web as a collection of documents. Hence, it is essential that we have deeper information layers bring the semantic layer to the fore to help connect content and resources. So when it comes to looking at what might be the next steps, connecting and linking-up content is key. Addressing this challenge is of great interest to the community.

In your view, what are the main specific challenges for DL interoperability?

There is no doubt that achieving DL interoperability is essential not only in the shift towards an advanced information space and cross-disciplinary research but also to foster innovation across the board. In the old days of IT, the market was dominated by a few big players, so it is important that we open up new research perspectives by enabling more players to come on board. Interoperability is one way of achieving this goal.

However, conveying the benefits of interoperability is a challenging task as most researchers are primarily interested in advancing their research and may not see the practical benefits of interoperability. They may even see interoperability as an impediment to creativity. Approaches should thus aim to demonstrate how we can combine grass-root research activities with an information and research environment that links people together and opens up new research perspectives, while at the same time seamlessly integrates additional requirements regarding the interoperability of resources.

This is very much a social challenge that needs to focus on changing mindsets. In this respect, DL.org, as a co-ordination action, has a very important role to play in conveying the benefits of interoperability for the diverse stakeholders, including key players in the Humanities space, not only DL end-users but also archivists and librarians as content curators, system librarians and decision-makers particularly on the policy and investment front. If we look back in history, all standardisation effort basically boils down to human-to-human interaction. Hence community engagement is key to bringing

interoperability benefits and best practices into sharp relief.

What approaches to interoperability would you recommend and how would you position DL.org in this landscape?

DL.org has embarked upon a strategy to enable interoperability from a multi-layered perspective. Key assets of the project certainly comprise the Technology & Methodology Cookbook, which is being developed and will leverage this successful approach in computer science. The Cookbook is an excellent example of how interoperability can be embedded into everyday work and practices.

The enhanced DL Reference Model is a formal tool of value to the community. Showcasing user models and perspectives in this context is also of interest as we widen the scope and ensure a bottom-up approach and community-driven input, which will also help to gain a critical mass around DL interoperability.

What role do standards play?

Standards and especially open standards play a very important role as the most successful means of providing interoperability. To this end, we need to pinpoint the most successful standards and understand their relevance to DL interoperability moving forward.

Looking at the success of the world wide web, we need to foster a bottom-up approach also in terms of DL interoperability. Communication is a vital part of this process, whereby expertise, knowledge and best practices should be interwoven to create a point of gravity on the development and implementation of standards, while also ensuring that any new knowledge acquired in this area is passed on to others, thereby ensuring collective knowledge and awareness. Standards are also effective in formalising the goals and outputs of any research project underpinned by advanced infrastructures, tools and systems. Ultimately, this can lead to new interoperable systems as advances are made in the field, enabling users to relate to and connect with others. It is therefore also important to showcase provision to the user.

In a nutshell, DARIAH will contribute to the shift towards collective knowledge, on which the value-add of European research infrastructures hinges.

How will DARIAH contribute to this landscape?

The added value of DARIAH for national activities is that it provides a framework for pan-European cooperation and the sharing of work and experience. To this end, DARIAH has established relationships with national infrastructures to ensure a mutually beneficial approach to research infrastructures for the Arts and Humanities.

On the one hand, DARIAH can foster the development of new national infrastructures. DARIAH's governance model is highly distributed, too, and based on four core virtual competency centres that cover scholarly content expertise, technological expertise, research expertise and outreach.

These VCC's are our model for advanced international collaboration in the field of research infrastructures in the arts and humanities. One of the main challenges that need addressing lies in bringing together heterogeneous archives and resources to facilitate research in the Arts and Humanities and open up new, collaborative perspectives.

Tobias Blanke is a Research Fellow for the Arts and Humanities eScience Support Centre (AHeSSC) at King's College London.

His main interests are in the development and research of digital libraries and infrastructures for research, particularly in the arts and humanities.

He is secretary of the Humanities, Arts and Social Science Community Group (HASS-CG) of the Open Grid Forum (OGF) and Co-Theme Leader for the e-Science in the Arts and Humanities Theme at the e-Science Institute in Edinburgh. He leads CeRch's technical architecture work package in DARIAH, a European ESFRI project to create an integrated research infrastructure for arts, humanities and cultural heritage data and is also Co-Investigator on the EPSRC network DReSNet which is hosted at CeRch.

Face-to-face with Jane Mandelbaum and Martha Anderson

Library of Congress & National Digital Information Infrastructure & Preservation Program
Interoperability & the pioneering role of the Library of Congress

"The collections of the Library of Congress constitute the most comprehensive repository of human knowledge in history. Today, extraordinary advances are revolutionizing scientific research and technology discovery at an astonishingly fast rate."

Peter Young, Library of Congress, U.S.

The Library of Congress (http://www.loc.gov/index.html) is playing a pioneering role in tackling such challenges not only on an institutional level but also through the National Digital Information Infrastructure and Preservation Program or NDIIPP for short (http://www.digitalpreservation.gov/). Its mission is to develop a national strategy to collect, archive and preserve the burgeoning amounts of digital content for current and future generations. With a preservation network of over 130 partners, the Program is based on the understanding that digital stewardship on a national scale depends on public and private communities working together. DL.org interviewed Jane Mandelbaum, Manager of Special Projects, Information Technology Services and Martha Anderson, Director of NDIIPP, to explore top-level challenges and milestones achieved.

What are the main challenges surrounding interoperability related to the management of digital content?

One of the main challenges the Library of Congress and the U.S. National Digital Information & Preservation Program faces is the very broad range of communities we engage with that produce and preserve content. These communities span commercial organizations, such as movies, TV and radio; universities, research institutions and other cultural institutions that collect and preserve content from more open channels like the Web and the geospatial and geographic communities. Each of these communities has its own approach to describing, preserving and formatting content. This diversity is a major challenge for interoperability.

What are the main requirements for users of the Library of Congress and how does your mission and work aim to respond to these needs?

There are different viewpoints that we need to take on board when it comes to users. The main set of users are the American people who contribute and actively use the content of the Library of Congress meaning that the library nurtures the preservation of different kinds of content. The Library specifically serves the U.S. Congress, the American people and citizens from all over the world. The Library provides digital content, particularly primary source materials, and research products that support public policy research, educational institutions (including teachers and students) as well as researchers and general public with an interest in cultural heritage and public policy. A major challenge for the Library is that all of these people need to access content in way that is user-friendly and that enables users to discover the information that is useful to them, so we seek to understand how we can cater for these needs.

The vision and strategy of the National Digital Information Infrastructure Program is to preserve content for the years to come through a nationally distributed system under the stewardship of distributed organizations. The main aim is to understand how best to bring together the huge collections and understand what's in the content and items, bearing in mind the different institutional needs and capabilities.

What is the overall expected impact with regard to the long-term strategy for preservation?

There is a growing volume of content and diversity of content under national stewardship. As this volume grows so do the expectations of the users, who want to do different things with the data, not only discover it but also use it in their applications. Indeed, in recent years, students have increasingly been using the services for their studies. As mentioned earlier, making this data user friendly and easily accessible to users is a major challenge that the Library is confronting.

Furthermore, current access is a prerequisite for the long-term preservation strategy as we seek to build on and improve this moving forward. Engagement with both users and creators of data from a broad range of communities is a vital part in addressing this challenge.
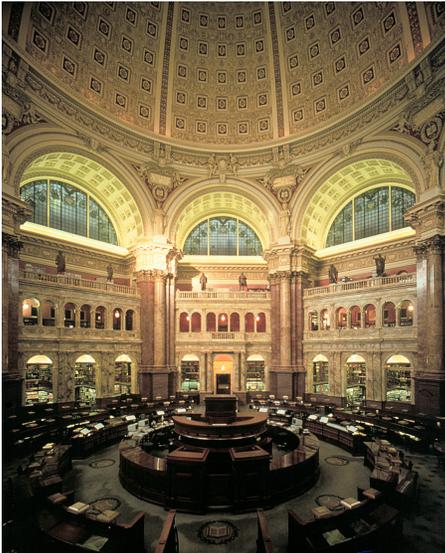
Main Reading Room, Library of Congress
Image courtesy of the Library of Congress

How does the program for interoperability build on existing foundations?

The Library of Congress is a leader in the development and management of standards in the library world (www.loc.gov/standards), and has been leading and nurturing standards over the years. One of the pioneering roles played by libraries over the last 40 to 50 years is the exchange of documents, which has built trust and a good foundation on which to build interoperability. Trust is key to interoperability and an important part of the foundation is when both sides work to make interoperability possible. Trust has been a very important part of the Library's role in the community. The Library strives for agreements with other institutions to build on mutual strengths and develop roles and services to support the management of the digital lifecycle. These agreements are the building blocks for the future and provide a model for developing stewardship in the next generation. Through the Program partners have affirmed the value of our leadership and role in serving as a neutral broker across industries. In

this respect, the Library acts as a convener, helping to connect and catalyze different communities.

From a technical perspective, how are you tackling the metadata challenge ?

One of the key issues that has emerged is the need to search and discover information in ways that are useful to the members of different communities, which is not as easy as it may seem. When metadata comes into play, it becomes apparent that it is never perfect and never complete, hence we need to understand what specific metadata is needed by the target users. For decades discussions among cultural heritage institutions have been dominated by the idea of the "perfect set" of metadata that is globally applied by information managers and users alike. Future information environments are likely to allow for variations in metadata implementations and encourage participation rather than enforce it. In these environments, infrastructure provides the tools to mediate between different data, to simplify metadata creation and to raise its quality. Seemingly simple things can turn out to be utterly complex: e.g. how to convert existing long titles of history videos into short titles as required by *YouTube*.

At a workshop in June 2009 led by the Open Grid Forum's Digital Repository Research Group (OGF26, 25-29 May 2009, Chapel Hill, U.S. - http://www.ogf.org/gf/event_schedule/index.php?id=1738), this point resonated with other participants who also agreed that automatic metadata creation/conversion, and encouraging early metadata creation were amongst the key opportunities in their communities.

Our approach is to focus on specific key elements of metadata and understand how users perceive information. If we take, for example, geographic metadata and online maps, one can provide useful search and discovery of cultural heritage materials in a context of place that people find useful. Specific contexts are useful pointers for users to access information. Time and time-periods and contexts such as events and place are a good case in point. With the broad diversity of descriptive elements of metadata from various communities that the library deals with, time and place are often elements which bridge data diversity enabling users to navigate content. This is part of our focus, along with web-based tools that can be applied to metadata.

While the communities are diverse, we can pinpoint a set of commonalities. These common elements help bridge diversities and help people navigate in the sea of digital content, bearing in mind the different data that people need and fostering broad and interdisciplinary approaches.

In many respects, information from harvested and archived websites is one source that has brought data from unexpected areas. The Web has brought not only documents but also other formats, hence a rich source of information about national events, such as elections or natural disasters. Understanding how this information is brought together has been a valuable asset. Such events serve as an important catalyst, building a community around a set of information stemming from an event and enabling us to work towards coherence. This entails a lot of interaction with library staff, who deal with requests from all over the world. It is important for the library to tap into the global community of library staff in order to address another layer of interoperability.

Library of Congress
Image courtesy of the Library of Congress

What targeted improvements has the evaluation of use cases brought to light?

Use cases play an essential role in working towards interoperability. We cannot simply focus on all the requirements of users, so the use cases we have evaluated are very important for pinpointing specific needs and requests from users to which we seek to respond. One example is our work with educational outreach staff dealing with teachers and their need to teach children how to use primary sources, for example on a specific state. By leveraging metadata around specific use cases we can improve the services provided.

What achievements have been made to date and what challenges lie ahead?

One of the important stepping stones has been fostering collaboration on different levels. No single institution can achieve interoperability by itself. Collaboration and mutual trust have proven to be invaluable and will continue into the future. Major achievements have been a series of social successes, as opposed to technical achievements, such as building bridges, creating new communities and providing entry into existing communities, which in turn ensures engagement and enables us to understand the challenges they face.

Interoperability is the most challenging of all. This approach means we can look beyond the local context towards a more diverse set of content and pinpoint communities of best practices, key to interoperability. Another achievement is fostering better metadata in new ways. We have a use case where photographers are encouraging commercial vendors to improve metadata.

In terms of the challenges ahead, XML has proved to be a valuable tool to bridge diversity but when it comes to growing volumes and mass, such as hundreds of thousands of items, then we are facing a huge challenge. Different communities have different needs. The key is to understand these different roles and foster continued engagement, moving forward.

Jane Mandelbaum, Manager of Special Projects, Information Technology Services at the Library of Congress, is currently guiding enterprise-wide projects and architecture initiatives for large-scale high-performance digital storage and archiving. Jane works with users, system engineers, high performance experts and library managers to define, design, develop, implement, operate and model projects and systems for an environment with a multi-petabyte capacity.

Previously at the Library of Congress, Jane served as IT implementation and operations manager for the Library's first integrated library system, the largest known single-library metadata catalog. She led the team to establish and operate Library's LAN and workstation environment; and served as the automation officer for the National Library Service for the Blind and Physically Handicapped.

Martha Anderson, is Director of Program Management for the National Digital Information Infrastructure and Preservation Program (NDIIPP) at the Library of Congress. Early in the program, she participated in the Preservation Architecture Working Group and managed the Archive Ingest and Handling Test (AIHT) with four University partners – Harvard, Stanford, John Hopkins and Old Dominion University. The AIHT, the first practical test of the NDIIPP preservation architectural model, simulated migration and transfer of an archive of web content over time. Martha also manages the archiving of web content in support of the Library's Digital Strategic Initiatives Program. She serves on the Steering Committee of the International Internet Preservation Consortium (IIPC), an international organization of 37 national libraries and archives dedicated to collecting and archiving significant content from the Web.

Face-to-Face with Jill Cousins
Director of Europeana

The EC-funded Europeana project, a digital library network at EU level aimed at creating a cross-domain (museums, libraries, archives, and audio-visual collections) portal, is marking a concrete step towards a common, co-ordinated access point to Europe's culture. An interview with Jill Cousins, Programme Director of Europeana, has helped spotlight the project's significance, challenges and links with DL.org.

What is the significance of Europeana?
With a network of over 90 cultural organisations, Europeana is addressing the human, political, technical and semantic issues of creating a joint portal. The significance of Europeana lies in its drive towards enabling access to EU culture to all citizens in Europe, bringing to one place all the treasures currently located elsewhere. In a nutshell, Europeana will provide a single-point access and end-to-end service to all the sources on artists such as van Gogh and musicians such as Mozart in the same place, ultimately making a total of five million items accessible. All citizens in EU will therefore benefit from access to and the sharing of cultural resources with the potential to increase cultural awareness.

What specific challenges is Europeana tackling?
Europeana faces the challenges intimately bound up with providing a service that is beneficial to all citizens in Europe. To this end, the major requirement is to be able to give access to the material held in the cultural heritage sector that will meet user requirements. This can be done by means of the state-of-the-art W3C architecture and includes awareness of semantic and multilingual interoperability. This means the ability to find things without determining first where they are housed. Searching should be seamless and results integrated and ranked. There is still some way to go in the cross domain field for this to happen. One of the main challenges is responding to specific

partner needs in a way that enables searches across archives, libraries and museums with the aim of simplifying the approach as much as possible with the focus very much on practical application.

What are the main interoperability and core technical requirements?
Data needs to be truly interoperable regardless of its original format. There are several requirements closely connected with this challenge:

- A functional & architecture model built on the standards of W3C architecture.
- A model for digital information objects that works across the cultural heritage divide.
- New solutions for data presentation & visualisation.
- Systematic automatic generation & improvement of metadata so that basic fields such as author, title, subject, description, time, place are standardised and shown.
- Basic centralised tools accessible to all research. This includes multi-lingual searches with an inventory and mapping of all relevant ontologies and tools for use with various software tools, requiring a knowledge of all online dictionaries and currently non accounted for languages.

What is the main expected impact in terms of Europeana outputs?

Key Europeana outputs include the maquette showing what has been requested by users and Initial Semantic & Technical Interoperability Requirements. Further outputs from the project will be very important in informing the state of the art and recommendations for research in digital libraries.

How are DL.org and Europeana working together to pave the way for interoperability?

DL.org is instrumental in moving research forward through the focused activities on issues and challenges surrounding interoperability underpinned by the experts forming part of the Working Groups. The participation of Europeana in these Groups is key to fostering high-level knowledge exchange on Digital Libraries and interoperability. DL.org workshops and DL events provide an additional forum for consolidating this knowledge exchange on topics of mutual interest and benefit.

> **Jill Cousins** is Director of the European Library (Netherlands), Programme Director of Europeana and Executive Director of the EDL Foundation. Jill has many years experience in web publishing. Her past includes moving from the extremely commercial publishing world where she was European Business Development Director of VNU New Media to scholarly publishing.

About **DL**.org

The European project, DL.org, is the first initiative to address interoperability from the perspectives of the six core concepts characterising a Digital Library: content, functionality, user, policy, quality and architecture. To achieve its goals, DL.org harnesses the expertise that exists on a global level in six thematic working groups, one for each concept, a Liaison Group and an External Advisory Board. By serving these goals, DL.org is paving the way for the embedding of new research achievements into real-world systems, opening up new cross-domain research perspectives and supporting the advancement of the European Information Space for the knowledge-based economy.

DL.org's key outputs focus on strengthening the modelling foundations of the field and identifying requirements, solutions and future challenges for achieving DL interoperability by targeting diverse players in the Digital Library Space. The **D**igital **L**ibrary **R**eference **M**odel introduces the principles governing the Digital Library realm as well as the set of concepts and relationships that collectively capture the intrinsic nature of the various entities characterising it. It includes the Digital Library Manifesto, i.e. the motivations and views leading to a foundational theory for Digital Libraries. It results from the experience and knowledge gained by various efforts in the Digital Library Community. A revised version was published in January 2010. An enhanced version will be published in September 2010.

The **D**igital **L**ibrary **T**echnology and **M**ethodology **C**ookbook, which will be published in November 2010 is an innovative artefact that collects and describes a portfolio of best practices and pattern solutions to common issues faced when developing large-scale interoperable Digital Library systems. It proposes an interoperability model that can be used to characterise – in a systematic way – facets of interoperability challenges, as well as existing and forthcoming solutions and approaches so as to have a framework to select and assess them.