



# **Advancing Metadata Practice: Quality, Openness, Interoperability**

**2017 Proceedings of the International  
Conference on Dublin Core and Metadata  
Applications**

**26-29 October 2017**

*Published by:*  
**Dublin Core Metadata Initiative (DCMI)**  
*A project of ASIS&T*

ISSN: 1939-1366 (Online)



## **WORKSHOPS**

- DC-1**, Dublin, Ohio USA: 1-3 March 1995
- DC-2**, Warwick, UK: 1-3 April 1996
- DC-3**, Dublin, Ohio, USA: 24-25 September 1996
- DC-4**, Canberra, Australia: 3-5 March 1997
- DC-5**, Helsinki, Finland: 6-8 October 1997
- DC-6**, Washington, D.C., USA: 2-4 November 1998
- DC-7**, Frankfurt, Germany: 25-27 October 1999
- DC-8**, Ottawa, Canada: 4-6 October 2000

## **CONFERENCES**

- DC-2001**, Tokyo, Japan: 22-26 October 2001
- DC-2002**, Florence, Italy: 14-17 October 2002
- DC-2003**, Seattle, Washington, U.S.A.: 28 September - 2 October 2003
- DC-2004**, Shanghai, China: 10-14 October 2004
- DC-2005**, Leganés (Madrid), Spain: 12-15 September 2005
- DC-2006**, Manzanillo, Colima, Mexico: 3-6 October 2006
- DC-2007**, Singapore: 27-31 August 2007
- DC-2008**, Berlin, Germany: 22-26 September 2008
- DC-2009**, Seoul, Korea: 12-16 October 2009
- DC-2010**, Pittsburgh, Pennsylvania, USA: 20-22 October 2010
- DC-2011**, The Hague, The Netherlands: 21-23 September 2011
- DC-2012**, Kuching, Sarawak, Malaysia: 3-7 September 2012
- DC-2013**, Lisbon, Portugal: 2-6 September 2013
- DC-2014**, Austin, Texas, USA, 8-11 October 2014
- DC-2015**, São Paulo, Brazil: 1-4 September 2015
- DC-2016**, Copenhagen, Denmark: 13-16 October 2016
- DC-2017**, Washington, DC, USA: 26-29 October 2017

**© DCM I 2017**

Copyright for individual articles is retained by the authors with first publication rights granted to DCM I for publication in print and electronic proceedings. By virtue of their appearance in this open access publication, articles are free to be used with proper attribution of the author for educational and other non-commercial purposes. Other uses may require the permission of the authors.



# DC-2017 Welcome

Welcome to DCMI 2017, in Crystal City, Virginia!

Having recently celebrated its twentieth anniversary and as the Dublin Core Metadata Initiative (DCMI) enters its third decade, it seems that the importance of metadata research, innovation and practice is undiminished. As an awareness of metadata becomes more mainstream, so the challenges associated with its development and management become more pressing. Looking at this year's conference programme, with peers reporting on a full range of cutting-edge innovation, ongoing development and good practice, I think you will agree that the DCMI community is rising to that challenge!

Your participation in the community's annual meeting and conference gives you a chance to rub shoulders with like-minded people, with experts in research, development and practice. DCMI is all about the community, and the contribution of people like you. As you enjoy this year's conference, we hope that you will consider how you can contribute to the ongoing success of DCMI by participating in one of the committees, or by joining as a member (either individually or as an organisation). A thriving DCMI benefits us all.

I hope that you will also take the opportunity to attend the Open Community meeting on Sunday, where you can meet some of the people active in DCMI work, and where you are invited to contribute your ideas for the future of our community

Finally, I hope that you enjoy the conference, that you manage to engage in interesting and fruitful conversation, and that you leave with ideas and inspiration for another year of working with metadata!

Paul Walk, Chair, DCMI Governing Board



## Program Committee Chairs' Welcome

In reflecting on the 2017 edition of the Dublin Core conference, we'll start out by invoking what has become a cliché, the Linked Open Data Cloud. But our community benefits from an occasional reflection on what this image reveals. The current version, published in August 2017, shows a dramatic change from the previous version published in 2014. The cloud is much denser, of course, but the pace of change has also accelerated, and now represents domains that were barely visible in earlier years, including life sciences, geography, and many cross-domain topics. In the library community, interest in structured data and semantic web technology is expanding beyond traditional areas of interest such as cultural heritage collections. New mandates are driving increased interest in institutional repositories and other digital collections outside the library domain. And as we reflect on where this expansion is occurring, it is important to understand how and why these domains are expecting to leverage the technology and research that the DCMI community supports.

Following up on DC-2016 in Copenhagen, with its look at the changing role of metadata in the Second Machine Age, DC-2017 concentrates on evolving technologies and practices that are advancing how we create and manage quality, actionable metadata. Interoperability and openness have been guiding principles of the DCMI community for over twenty years, and these principles have evolved through the development of Semantic Web standards and Linked Open Data. A deluge of new data sources is magnifying the perennial challenge of metadata quality, and is now inspiring the development of innovative tools, practices, and solutions. This year's conference shows some of the possibilities when interoperability is supercharged.

With a variety of presentations, workshops, and demonstrations, the proceedings reflect the interdisciplinary nature of metadata work. The program committee co-chairs are proud to continue DCMI's tradition of bringing together a unique blend of metadata practitioners, researchers, standards developers, and visionaries to share and interact and continue the conversation.

We thank all individuals and teams who submitted proposals to DC-2017. We are grateful to the Dublin Core community for continuing to serve as a volunteer program committee, which has been incredibly responsive to our requests to review submissions and shape the conference. And as we prepare to travel to the meeting itself, we are looking forward to the chance to meet all of you.

Carol Jean Godby, OCLC Research

Michael Lauruhn, Elsevier



## ORGANIZING COMMITTEE

### Conference Co-Chairs

**Stuart A. Sutton**, University of Washington, United States  
**Paul Walk**, Dublin Core Metadata Initiative (DCMI) & Antleaf, Ltd., United Kingdom

### Program Committee Co-Chairs

**Carol Jean Godby**, OCLC, United States  
**Michael Lauruhn**, Elsevier, United States

### Program Committee

**Leif Andresen**, Royal Danish Library, Denmark  
**Thomas Baker**, Dublin Core Metadata Initiative (DCMI), Germany  
**Ana Alice Baptista**, Universidade do Minho, Portugal  
**Uldis Bojars**, National Library of Latvia, Latvia  
**Michael Robert Bolam**, University of Pittsburgh, United States  
**Dan Brickley**, Vrije Universiteit Amsterdam  
**Joseph A. Busch**, Taxonomy Strategies, United States  
**Barbara Bushman**, National Library of Medicine  
**Michael D. Crandall**, University of Washington, United States  
**Makx Dekkers**, Independent Consultant, Spain  
**Corine Deliot**, British Library, United Kingdom  
**Gordon Dunsire**, Independent Consultant, United Kingdom  
**Jane Greenberg**, Drexel University, United States  
**Corey A. Harper**, Elsevier Labs, United States  
**Diane Ileana Hillmann**, Metadata Management Associates LLC, United States  
**Eero Hyvönen**, Aalto University, Finland  
**Antoine Isaac**, Europeana & Vrije Universiteit Amsterdam, Netherlands  
**Masahide Kanzaki**, Keio University Xenon Limited Partners, Japan  
**Wouter Klapwijk**, Stellenbosch University, South Africa  
**Akira Maeda**, Ritsumeikan University, Japan  
**Mariana Curado Malta**, CEOS.PP - Polytechnic of Oporto, Portugal  
**Deborah Maron**, UNC Chapel Hill, United States  
**Filiberto Felipe Martinez-Arellano**, National Autonomus University of Mexico, Mexico  
**Shawne Miksa**, University of North Texas, United States  
**Peter E Murray**, Index Data, United States  
**Jin-Cheon Na**, Nanyang Technological University, Singapore  
**Johan Oomen**, Netherlands Institute for Sound and Vision, Netherlands  
**Oknam Park**, Sangmyung University, Republic of Korea, Korea, Republic Of  
**Cristina Pattuelli**, Pratt Institute, United States  
**Susanna Peruginelli**, Susanna Peruginelli Library consultancy, Italy  
**Jess Peterson**, Amazon, United States  
**Vivien Petras**, Humboldt-Universität zu Berlin, Germany  
**Magnus Pfeffer**, Stuttgart Media University, Germany  
**Sarah Potvin**, Texas A&M University Libraries, United States  
**Jian Qin**, Syracuse University, United States  
**John Roberts**, Archives of Ontario, Canada  
**Stefanie Ruehle**, SUB Goettingen, Germany  
**David Talley**, University of Washington & Lyons Consulting Group, United States  
**Johann Wanja Schaible**, GESIS - Leibniz-Institute for the Social Sciences, Germany  
**Ryan Shaw**, University of North Carolina at Chapel Hill, United States  
**Lars G. Svensson**, Deutsche Nationalbibliothek, Germany  
**Hannah Tarver**, University of North Texas Libraries, United States  
**Joseph T. Tennis**, University of Washington, United States  
**Anna Tordai**, Elsevier, Netherlands  
**Douglas Tudhope**, University of Glamorgan, United Kingdom  
**Paul Walk**, Dublin Core Metadata Initiative (DCMI) & Antleaf, Ltd., United Kingdom  
**Shenghui Wang**, OCLC Research, United States  
**Oksana Zavalina**, University of North Texas, United States  
**Marcia Lei Zeng**, Kent State University, United States



## TABLE OF CONTENTS

### SESSION 1:

#### *Metadata Theory and Practice*

- 1-12 'More Than What It Seems': How Critical Theory, Popular Engagement and Apps Like Tinder Can Help Us Reframe Metadata and Its Consequences  
*Deborah Maron & Erin Carter*
- 13-23 IFLA LRM—Finally Here  
*Maja Žumer & Pat Riva*
- 24 The Use of Digital Object Identifiers in the National Diet Library Digital Collections  
*Saho Yasumatsu & Tomoko Okuda*
- 25-26 Data and Metadata Instantiation: Use Cases and a Conceptual Model  
*Richard P. Smiraglia*

### SESSION 2:

#### *Linked Data I: Transitions from Legacy*

- 27 Using the Semantic Web to Improve Knowledge of Translations  
*Karen Smith-Yoshimura*
- 28 Enhancing Metadata through Standardization and Validation: Practical Application at the University of Kansas Libraries  
*Eric Wolfe*
- 29-38 Extending Legacy Metadata with Linked Open Data  
*Jacob Jett, Timothy W Cole, Alex Kinnamen, Deren Kudeki, Myung-Ja (MJ) K. Han & Caroline Szylowicz*

### SESSION 3:

#### *Linked Data II: In and Around the Library*

- 39-50 Metadata for the Energy Performance Certificates of Buildings in Smart Cities  
*Ana Alice Baptista*
- 51 Expanding the Institutional Repository Mission: Innovating with Linked Data for NASA Digital Curation  
*Adrienne Milner Hieb, Matthew M. Pearson, Mitchell Shelton*
- 52-61 Towards a BIBFRAME Implementation: The bibliotek-o Framework  
*Jason Kovari, Steven Folsom & Rebecca Younes*

### SESSION 4

#### *Sustainability and Preservation*

- 62-72 Applying the Levels of Conceptual Interoperability Model to a Digital Library Ecosystem—A Case Study  
*Charlotte Kostelic*
- 73-74 A Data Model for Lifecycle Management of Natural Hazards Engineering Data  
*Maria Esteva, Ashley Adair, Sivakumar Ayeegoundanpalay Kulasekaran, Josue Balandrano Coronel & Craig Jansen*
- 75 Best Practices for Software Metadata: A Report from the Software Preservation Network  
*Elizabeth Russey Roke & Daniel Noonan*



## SESSION 5

### *Teaching and Learning*

- 76-86 LD4PE: A Competency-based Guide to Linked Data Principles and Practices  
*Michael D. Crandall, Stuart A. Sutton, Marcia Zeng, Thomas Baker, Abigail Evans, Sean Dolan, Joseph Chapman, David Talley & Michael Lauruhn*
- 87 Understanding Users' Metadata Needs: How Do We Know What They Want?  
*Jeanette Norris*

## SESSION 6

### *Semantic Web Workbench—Tools, Ontologies, Software*

- 88-90 Metadata for Improving Transparency in the Credentialing Marketplace  
*Jeanne Kitchens, Stuart A. Sutton & Robert G. Sheets*
- 91 VitroLib: From an Ontology and Instance Editor to a Linked Data Cataloging Editor  
*Huda Khan, Lynette Rayle & Rebecca Younes*
- 92 Topic Maps for Digital Scholarly Monographs  
*Alexandra Alisa Provo & Michel Biezunski*

## POSTERS

- 93-96 Integrated Learning of Metadata Quality Evaluation and Metadata Application Profile Development in a Graduate Metadata Course  
*Oksana Zavalina*
- 97-99 Facilitating Information Sharing and Collaboration through Taxonomy at the Federal Reserve Board  
*Jennifer Gilbert, Alison Raab Labonte & Franz Osorio*
- 100-103 The Development of Application Profile for OAK Institutional Repository  
*Mihwa Lee, Jee-Hyun Rho, Eun-Ju Lee & Yoon Kyung Choi*
- 104-107 ORCID: Using API Calls to Assess Metadata Completeness  
*Naomi Eichenlaub & Marina Morgan*
- 108-111 Estimating Domain Models from Metadata Instances to Improve Usability of LOD Datasets  
*Ryouta Kinjou, Mitsuharu Nagamori & Shigeo Sugimoto*
- 112-116 Creating a Linked Data-Friendly Metadata Application Profile for Archival Description  
*Ryouta Kinjou, Mitsuharu Nagamori & Shigeo Sugimoto Mark A. Matienzo, Elizabeth Russey Roke & Scott Carlson*
- 117-119 Collaborative Metadata Application Profile Development for DAMS Migration  
*Anne M. Washington & Andrew Weidner*
- 120-123 SEPIA Project: Providing Access to Digital Image Content for the Blind and Visually Impaired  
*Jennifer Sweeney*