



# Positioning DCMI & Dublin Core in the Metadata Ecosystem

An historical interpretation by  
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# OVERVIEW





## Historia

**“Theorist of historiography generally agree that all historical narratives contain an irreducible and inexpungible element of interpretation.”**

*—Hayden White, “Interpretation in History”*



# Key Reference Documents

*Thomas Baker, (2012) "Libraries, Languages of Description, and Linked Data: A Dublin Core Perspective", Library Hi Tech, Vol. 30  
Issue: 1, pp.116 – 133*

*Thomas Baker, (Publication Pending) "Case Study: Development of Dublin Core"*





## Parable of the Blind Men & Dublin Core & DCMI

□ *15 element core specification?* □ *dcterms?* □ *a family of specifications?* □ *an approach to principled metadata design?* □ *A Community?* □ *haphazard history or meaningful progression?*





# Historical Moments<sup>[1]</sup>

- Workshop Era
  - October 1994: W3C 2<sup>nd</sup> International Conference
  - March 1995: Dublin, Ohio (1<sup>st</sup> Workshop)
  - April 1996: Warwick, UK (2<sup>nd</sup> Workshop)
  - March 1997: Canberra, AU (3<sup>rd</sup> Workshop)
  - Oct. 1997: Helsinki, FI (4<sup>th</sup> Workshop)
  - *September 1998 IETF (RFC 2413)*
  - October 1999: Frankfurt (7<sup>th</sup> Workshop)
  - July 2000: Ottawa, CA (8<sup>th</sup> Workshop)



# Historical Moments<sup>[2]</sup>

- Post-2000 Era

- September 2001: Standing *Usage Board* (UB)
- *Sept. 2001: ANSI/NISO Z39.85-2001*
- October 2001: DC-2001 in Tokyo
- *2003: ISO 15836:2003*
- March 2005: DCMI Abstract Model (Recommendation)
- January 2008: Singapore Framework for Application Profiles
- March 2008: Description Set Profiles (DSP): A Constraint Language for Application Profiles



# October 1994: W3C 2nd International Conference

*“As the Web exploded on our desktops, it was evident that MARC cataloging of electronic resources would be too complex and costly, and might not be suitable for many electronic resources in any case. **Might there be a simpler alternative for describing Web assets that does not require the experience of expert catalogers?**”*

Weibel, Stuart L. “Dublin Core Metadata Initiative: A Personal History.” In: Marcia J. Bates and Mary Niles Maack, eds. Encyclopedia of Library and Information Science. Third Edition. Boca Raton, FL: CRC Press. Pre-print available online at: <http://www.oclc.org/research/publications/library/2009/weibel-elis.pdf>



# March 1995: Dublin, Ohio (1<sup>st</sup> Workshop)<sup>[1]</sup>

## Workshop Question:

*“Can a simple metadata record be defined that sufficiently describes a wide range of electronic objects?”*

## Workshop sought

*“...consensus on a list of metadata elements.”*

Weibel, S. (1995), “Metadata: the foundations of resource description”, D-Lib Magazine, July, available at <http://www.dlib.org/dlib/July95/07weibel.html> (accessed 14 November 2011) (emphasis added).





# March 1995: Dublin, Ohio (1<sup>st</sup> Workshop)<sup>[2]</sup>

## 13 Identified “elements”:

- Subject
- Author
- Title
- Publisher
- OtherAgent
- Date
- ObjectType
- Form
- Identifier
- Relation
- Source
- Language
- Coverage

Weibel, S. (1995), “Metadata: the foundations of resource description”, D-Lib Magazine, July, available at <http://www.dlib.org/dlib/July95/07weibel.html> (accessed 14 November 2011).



# April 1996: Warwick, UK (2<sup>nd</sup> Workshop)

- The “Warwick Framework”
  - “...a container architecture for aggregating sets of metadata.”
    - **Goal:** To avoid complexification by committing to keeping the core element set simple.
    - **How:** Create a container architecture for aggregating deliberately simple DC core “record” with other richer descriptions of a resource.

Dempsey, Lorcan, and Stuart L. Weibel. “The Warwick Metadata Workshop: A Framework for the Deployment of Resource Description.” D-Lib Magazine, July/August 1996, 2 (7/8). <http://www.dlib.org/dlib/july96/07weibel.html>



# March 1997: Canberra, AU (3<sup>rd</sup> Workshop)<sup>[1]</sup>

## The “Warwick Framework” revisited...

In Canberra, representatives of a W3C Working Group discussed plans for providing a similarly generic context for metadata under the name Resource Description Framework (RDF).



Resource Description Framework (RDF) [website]. W3C Semantic Web. <http://www.w3.org/RDF/>



# Toward More Precision

- As early as 1997, there was movement within the initiative toward richer, more precise description through principled “refinement” of the core elements
  - **Canberra Qualifiers**
    - Element refinement
    - Scheme refinement (prescribed value vocabularies)
    - Language designation
  - Canberra qualifiers were originally thought of in the context of refining the core and not as a general principle.





# October 1997: Helsinki, FI (4<sup>th</sup> Workshop)

- In Helsinki, the topic of RDF was a key discussion
- BUT, the community wasn't yet ready
  - Fault lines were developing between the XML Mindset (format) and the RDF Mindset (dictionary)...and a sense that RDF was a “research project”, too complex, just a flavor of XML etc.

DCMI (1999), “Dublin Core Data Model Working Group”, available at: <http://dublincore.org/archives/1998/1998-09-24.decisions.html> (accessed 14 November 2011).



# Consolidation Around 15 Elements

The result of the Dublin, Warwick, Canberra and Helsinki workshops was a rough consensus

## 15 core “elements”:

- Title
- Subject
- Description
- Type
- Source
- Relation
- Coverage
- Creator
- Publisher
- Contributor
- Rights
- Date
- Format
- Identifier
- Language

In September 1998, the first step toward formalization of the core 15 was the IETF RFC 2413



# *Dublin Core Data Model Working Group & the Start of Concerted Movement toward RDF*

- In September, 1998, the *Dublin Core Data Model Working Group* decided that a “DC data model” should be founded on RDF.
- Eric Miller –Deputy Director of what would ultimately become DCMI and key member of the W3C’s RDF effort and tomorrow’s Keynote speaker— began to publish the Dublin Core metadata element set in RDF.
- Thus, Dublin Core was among the first set of RDF vocabularies with terms identified by URI and referenced by W3C.

DCMI (1999), “Dublin Core Data Model Working Group”, available at: <http://dublincore.org/archives/1998/1998-09-24.decisions.html> (accessed 14 November 2011).



# Two Camps—The “Minimalists” & “Structuralists”

- As work on the core 15 stabilized and discussions of qualifying elements increased in the late 1990s, there was a growing division of the community into two (overlapping) camps:
  - The “minimalists” who wished to keep the standard simple at all costs; and
  - The “structuralists” who wished to enable Dublin Core descriptions to become more specific and detailed.





# Key Compromise

*Principle:* “Structure should not be imposed on the minimalist.”

and

*Principle:* “Minimalism should not be forced on the structuralists.”



# October 1999: Frankfurt, DE (7<sup>th</sup> Workshop) and the Beginning of Domain Communities<sup>[1]</sup>

- As work on the the original core was finalized and movement to element qualifier approval approaching, community attention was broadened (narrowed?) to include domain communities
- DC-Education was formed in 1999 with first meeting in Frankfurt to create a set of properties to meet the domain needs of education and training.
- DC-Ed developments were running parallel to IEEE LTSC's LOM efforts



# July 2000: Ottawa, CA (8th (and last) Workshop) & July 2000: Qualifiers Publication<sup>[2]</sup>

- Education and the “Ottawa Accord”
  - In a joint DC-Education/IEEE LTSC meeting, it was formally agreed that the DC-Education work would not replicate elements from the IEEE LOM but reference/include elements from the LOM in DC-Ed contexts.
    - This commitment to aggregate properties defined using the RDF information model (i.e., DC-Ed) with elements defined using the XML information model (i.e., IEEE LOM) would prove immensely challenging over the next decade!



# July 2000: Ottawa, CA (8th (and last) Workshop) & July 2000: Qualifiers Publication<sup>[3]</sup>

- Solution to the challenge would lead us from concerns of metadata interoperability to focus on metadata harmonization.
  - Harmonization meant mapping from the incompatible, disparate information model(s) to a common abstract data model.
  - The DCAM (*Dublin Core Abstract Model*) is the result of that pursuit of a common abstract data model.
- And, by the way, became the subject matter for Mikael Nilsson's PhD thesis!





# July 2000: Ottawa, CA (8th (and last) Workshop) & July 2000: Qualifiers Publication<sup>[4]</sup>

- Also in Ottawa—Application Profiles
  - Heery & Patel, in their seminal work defining what would become DCMI's notion of “application profiles” as the “mixing and matching” of terms from multiple namespaces, reference the DC-Ed work as an example of a application profile.

Heery, R. and Patel, M. (2000), “Application profiles: mixing and matching metadata schemas”, Ariadne, Vol. 25, September, available at:  
[www.ariadne.ac.uk/issue25/app-profiles/](http://www.ariadne.ac.uk/issue25/app-profiles/) .



## July 2000: Ottawa, CA (8th (and last) Workshop) & July 2000: Qualifiers Published<sup>[2]</sup>

- It is here in Ottawa that DCMI begins a shift away from “coining” terms to looking to domain communities for that work through application profiles
- Also in July 2000, the element qualifiers voting has finished and the qualifiers published in their own namespace (dcterms).
  - From this time forward, DCMI metadata terms would be published as RDF schemas in parallel to the Web documents.



# Creation of the Usage Board: 2001<sup>[1]</sup>

- The Usage Board (UB) was created (now the Usage Committee)
  - Fixed membership
  - Formal processes
  - Mission “to ensure an orderly evolution of metadata vocabularies grounded in grammatical principles”



# Creation of the Usage Board: 2000<sup>[2]</sup>

- In 2003, the conceptual basis for Usage Board decisions was formalized in DCMI Grammatical Principles (closely aligned with RDF)
- In 2003, an editorial team of the Architecture Forum began work on what would become the DCMI Abstract Model
- The 2007 revision of the Abstract model mapped almost every aspect of the native-DCMI metadata Model to RDF



# Dublin Core Abstract Model & RDF Alignment

The Dublin Core	DCMI Grammatical Principles	DCAM	RDF
→ Element	→ Element → Qualifier Element refinement  → Encoding scheme	→ Property or element → Property with <i>sub-property-of</i> relation  → Syntax encoding scheme → Vocabulary encoding scheme	→ rdf:Property → rdf:Property with rdfs:subPropertyOf relation  → rdfs:DataType → skos:ConceptScheme?
1995	2001	2007	2007-2009

...from “format” to “dictionary”



# Most Recent Events

- 2008: Singapore Framework for Application Profiles
- 2008: Description Set Profiles (DSP)—A constraint language for Dublin Core Application Profiles
- 2008: Major update of the Terms (Domains/Ranges)
- 2011: Published (multiple formats)



# And the Future...

- Since Ottawa (2000), DCMI has been focused on application profiles and reconciliation of the need for fixed validatable data formats (DCAM & DSP) and pushing past the silos with flexibly recombinant, statement-based metadata.
- Over the next few days here at DC-2014, discussion will focus on this “reconciliation”—the unfinished intersection between the closed world of our ‘local’ systems and the open world of the Semantic Web and Linked Data.



and DCMI's future work...

**INVOLVES YOU!**





# DCMI Restructuring & It's Implications

