

Evolution of Dublin Core Metadata Standard: An Analysis of the Literature from 1995-2013

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Keywords: Dublin Core; DC 1995-2013; history of Dublin Core

1. Introduction

Due to the Web development in the beginning of the 90s, new possibilities of sharing information have emerged, especially informational resources. Thus, concerns about the representation and recovery of these resources became the focus of the study of many researchers. In 1995, the Dublin Core metadata standard was proposed to locate and identify any resource in the Web like webpages, textual content and other resources.

Due to its wide scope and the possibility of being used in any context as for example libraries, files, museums, government data, questions arise as to which were the main modifications of Dublin Core since its creation until 2013, and how the development of Dublin Core has occurred in Brazil? The aim was to identify in the literature characteristics that have influenced the development of the Dublin Core standard from reports of its main events and to verify the development of studies about this topic in Brazil.

The work reported is exploratory, qualitative and theoretical research that approaches the evolution and development of Dublin Core standard as the main theme. The work is supported by the São Paulo Research Foundation (FAPESP). The methodology of the work is comprised of a bibliographic survey in the P@rthenon, Capes Portal of journals, Scientific Electronic Library Online (SciELO), Scopus and Web of Science databases. As search strategy, key words like Dublin Core, DCMI, DC, Dublin Core History, Dublin Core Metadata Initiative, Dublin Core events, DCMI Conference, Workshop Dublin Core were used in titles, key words and abstracts, in English, Portuguese and Spanish from 1995 to 2013 in order to identify the reports about Dublin Core Evolution. Later, the focus was on research published in the annals of the Dublin Core Metadata Initiative's (DCMI) *International Conference on Dublin Core and Metadata Applications*, from 1995 to 2013 with the aim of verifying the trends of metadata and Dublin Core research. For the survey in Brazil, databases like the *Biblioteca Digital Brasileira de Teses e Dissertações* (BDTD - Brazilian Digital Library of Thesis and Dissertations), *Base de Dados Referenciais de Artigos de Periódicos em Ciência da Informação* (BRAPCI - Referential Database of Journal Articles on Information Science), P@rthenon and SciELO were used. As a search strategy, the term Dublin Core was used in titles, key words and abstracts in the period from 1995 to 2013.

Therefore, the steps for developing the research were the following:

1. Selection of the material, exploratory reading, book report and critical reading;
2. Mapping of researches and characteristics of Dublin Core;
3. Systematization and identification of study characteristics.

2. Results

The research identified that the Dublin Core events can be divided in two periods. The first period corresponds to the Dublin Core Workshop series from 1995 to 2000. The second period started in 2001 and is currently going on through the DCMI conferences. In the first period, eight

events were held, five in North America, two in Europe and one in Oceania. The highlights of the events consisted of: (1) the consolidation of the Dublin Core specifications; (2) the establishment of Dublin Core Metadata Initiative (DCMI) as administrator of specification: and (3) the definition of 15 metadata elements and their qualifiers, among others (Baker, 2012).

In the second period, several themes were discussed like the Dublin Core Abstract Model (DCAM), Dublin Core Application Profile (DCAP), Semantic Web, Linked Data, interoperability among systems and other subjects (Baker, 2012). During this period, the event was held five times in Asia and five times in Europe. North America and Central America held three events. São Paulo State University (UNESP) in Brazil is organizing the first DCMI conference event in South America.

The research followed the consolidation and development of Dublin Core metadata. It work reported here highlights the main points of discussion as identified in the proceedings of the DCMI events such as metadata standardization in different contexts (application profiles), trends of worldwide research on application profiles in domains like museums, libraries, government data, studies related to controlled vocabulary, standardization, harmonization and heterogeneous metadata standard crosswalk. Other highlights are issues related to memory preservation, cultural heritage and digital trusteeship, among others. Through the research reported here, a classification of the works presented in DCMI events is presented according to the main themes studied:

1. Application Profile;
2. Languages;
3. Metadata Mapping;
4. Interference from users in the development of metadata;
5. Sharing and recovering systems information;
6. Thematic treatment;
7. Structure;
8. Bibliometrics;
9. Digital trusteeship; and
10. Web.

In relation to the development of research on the Dublin Core metadata standard in Brazil (Arakaki, Santos & Alves, 2015), 16 articles were identified, all of them in the Information Science area. The results showed research generally linked to companies and institutes of research—for example the Brazilian Agricultural Research Corporation (Embrapa) and the Instituto de Matemática Pura e Aplicada (IMPA). Concerning the thesis and dissertations, five dissertations on Information Science, eight dissertations and two thesis on Computer Science and similar areas were identified.

Among the authors who developed research in Brazil and presented works in DCMI Conferences were Maria E. Catarino from Universidade Estadual de Londrina (UEL)/Brazil, Ana Alice R. P. Baptista from Universidade do Minho/Portugal and the researcher Lucas Vegi from Universidade de Viçosa/Brazil.

3. Considerations

The research identified the evolution and characteristics of Dublin Core metadata. The research survey on Dublin Core standard in Brazil identified three researchers who had their works published in the DCMI International Conference on Dublin Core and Metadata Applications Annals.

Limitations of the work reported here include: (1) surveying the literature in only three languages, as well as the databases that supports the Brazilian literature and the English language; and (2) the classification covered a limited span of the DCMI events (2000-2013). As future work, we anticipate: (1) the classification of research methodology in articles published in

scientific journals—aiming at mapping the studies in journals about Dublin Core metadata standard; and (2) making the data available in the digital environment so that the metadata community have can full access.

Acknowledgements

The authors acknowledge São Paulo Research Foundation (FAPESP) for the financial support (process FAPESP: 12/14274-2) and the members of the New Technologies in Information Research Group (GPNTI) for the discussions during the development of the research.

References

- Arakaki, Felipe A.; Plácida L. V. A. C. Santos & Rachel C. V. Alves. (2015). Panorama das pesquisas sobre o padrão de metadados Dublin Core no Brasil (Overview of research on the pattern of Dublin Core Metadata Standard in Brazil). *Revista ACB*, 20(1), pp. 86-97. Retrieved, June 10, 2015, from <http://revista.acbsc.org.br/racb/article/view/983>
- Baker, Thomas. (2012). Libraries, languages of description, and linked data: a Dublin Core perspective, *Library Hi Tech*, 30(1), 116 - 133. Retrieved, June 10, 2015, from <http://www.emeraldinsight.com/doi/abs/10.1108/07378831211213256>