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Survival in the common information environment

Opstanak u zajedničkom informacijskom okruženju

Abstract

The paper reviews progress in the development and management of a common information environment for cultural heritage organizations and services, first discussed 15 or so years ago. While the potential for agreeing and applying international standards to improve access to a wider range of information resources for a wider range of users has not yet been realized, there have been many changes to the information ecosystem that suggest significant progress. These result from a mix of planning within the library, archive, and museum communities, initiatives from other players in the information infrastructure, and events beyond anyone's control. The growing interconnections between these developments suggest that the concepts of a common information environment remain valid and valuable, and that the cultural heritage professions must continue to adapt if they are to survive and thrive in the future.

Keywords: cultural heritage, standards, quality control, access, retrieval

Sažetak

U radu se daje pregled napretka u razvoju i upravljanju zajedničkim informacijskim okruženjem za organizacije i službe kulturne baštine, o čemu se prvi put raspravljalo prije 15-ak godina. Iako potencijal za dogovaranje i primjenu međunarodnih standarda za poboljšanje pristupa širem rasponu informacijskih resursa za širi krug korisnika još nije ostvaren, u informacijskom ekosustavu došlo je do mnogih promjena koje sugeriraju značajan napredak. One proizlaze iz mješavine planiranja unutar knjižničnih, arhivskih i muzejskih zajednica, inicijativa drugih sudionika u informacijskoj infrastrukturi i događaja koji su izvan bilo čije kontrole. Rastuće međupovezanosti ovih razvoja sugeriraju da koncepti zajedničkog informacijskog okruženja ostaju valjani i vrijedni te da se profesije kulturne baštine moraju nastaviti prilagođavati ako žele preživjeti i napredovati u budućnosti.

Ključne riječi: kulturna baština, standardi, kontrola kvalitete, pristup, pronalaženje

Introduction

This article reviews the development of the theory and practice of the common information environment since it was discussed at the AKM seminar in 2005.[1] The idea of an infrastructure that supports integrated access to scholarly information irrespective of its source or curation began as a specific research program in the United Kingdom at the beginning of the 21st century.[2] Although the research program ended many years ago, the concepts that emerged are still relevant and appropriate to the information needs of all types of user today, well beyond the higher education and research communities.

The 2005 paper presented the impact of scale as a major factor in the practical implementation of a national integrated information environment, and it seemed at the time that smaller countries were in a better position to achieve success, based on the experience of Scotland in participating in the research program. The conclusion of the 2005 paper states "A common information environment offers easy, convenient access to the widest range of information resources catering for the widest range of needs of the widest range of users. A common information environment seeks to benefit the user, and it requires the collaboration of archives, libraries, and museums. Smaller countries are at a good scale for developing an effective and efficient common information environment with quick returns on public expenditure".[3]

A paper presented at the following AKM seminar in 2006 discussed the characteristics of such an environment and the role of the information profession in developing and maintaining it.[4] The paper used a horticultural metaphor to suggest three different future scenarios for the evolution of the information ecology. The paper contrasted the characteristics of a curated information environment, the "park", with an environment that has little or

1 Dunsire, G. (2006). Zajedničko informacijsko okruženje: pojava novog koncepta. // 9. Arhivi, knjižnice, muzeji: mogućnosti suradnje u okruženju globalne informacijske infrastrukture. Zagreb: Hrvatsko knjižničarsko društvo. Str. 1-8. Preprint available at: https://www.researchgate.net/publication/228757541_The_Common_information_environment_a_newly_emerged_concept [cited: 2023-09-11].

2 Powell, A. and Lyon, L. (2002). The JISC Information Environment and Web Services. // Ariadne Issue 31 (April 2002) [cited: 2023-09-11]. Available at: http://www.ariadne.ac.uk/issue/31/information-environments/

3 Dunsire, G. Op. cit., str. 7.

4 Dunsire, G. (2007). Buduća informacijska okruženja: pustinje, džungle ili parkovi? //10. Arhivi, knjižnice, muzeji: mogućnosti suradnje u okruženju globalne informacijske infrastrukture. Zagreb: Hrvatsko knjižničarsko društvo. Str. 14-19. Preprint available at: https://www.researchgate.net/publication/28810200_Future_information_environments_deserts_jungles_or_parks [cited: 2023-09-11].

no professional intermediation: a "jungle" inhabited by a wide range of diverse information resources competing with each other for access, attention, and authority. A third scenario of a "desert" considered the case of low connectivity between the resource and its user and poor integration of multiple resources that meet the user's needs.

Now, 16 years later, it seems that the common information environment has become a jungle. The cultural heritage domains have not yet succeeded in developing a coordinated framework for the curation of information resources and access to them, at national or international levels. The quantity of resources and methods of access have continued to increase, and the current generation of users lives in an information environment of unparalleled richness with instance access to a vast choice of resources. Recent years have seen the development and expansion of services offering enormous online collections of recorded information, such as music recordings (for example Spotify, starting in 2006), documentary and other videorecordings (for example YouTube, from 2005 onwards), and entertainment films (for example Netflix, launched in 2007). Some of these are fee-based, giving a competitive advantage to publicly-funded libraries that provide free access to similar resources, but other factors such as choice and convenient access and delivery systems do not favour comparisons with "official" cultural heritage collections.

There have been other significant changes in the information ecosystem since 2006. The following cases are selected to illustrate threats and opportunities for a curated environment, and to exemplify the connections between what appear to be disconnected developments.

False information

"Fake news", including low quality or false metadata, has become a major social problem. It is confirmation that the "anyone can say anything about any thing" (AAA) principle of the Semantic Web applies beyond metadata to the information resources that are described by metadata. This is just another incarnation of IFLA's Freedom of Access to Information and Freedom of Expression (FAIFE) program "to promote intellectual freedom and achieve the vital mission of supporting libraries in their role as gateways to knowledge and ideas".[5] Fake data is antithetical to knowledge and ideas,

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5   Advisory Committee on Freedom of Access to Information and Freedom of Expression [cited: 2023-09-11].

and libraries require specific methods to balance freedom of expression with freedom of access. Fake news has become a ubiquitous issue, and even the world-renowned BBC has developed a special category for the topic.[6]

A specific example of fake data and metadata is an entry in Wikipedia which remained undetected for over 10 years. The entry under "Alan Mc-Masters" purported to be about a Scot who was the inventor of the electric toaster, but it was eventually exposed as a prank intended to expose the ease with which an entry could be added to Wikipedia, rather than an attempt to mislead or defraud anybody; fake news is not always malignant. The entry survived for so long because its references are circular and it was assumed that the checks and processes used by Wikipedia editors were sufficient to guarantee authenticity. The entry was removed from Wikipedia after it was exposed as a fake, and now a search for "Alan McMasters" brings up an article on the reliability of Wikipedia.[7]

The incident is amusing, but it may also have serious, negative consequences beyond the quality of a major reference source. The information in the fake entry has been repeated by newspapers and in discussions on the impact of national cultures on the international culture of the modern world. A search for "Alan MacMasters" on Google produces a mix of sources that either repeat the falsehood or debunk it. At the time of writing, the first result listed is from a blog that repeats the content of Wikipedia entry under the title "Who invented the household appliance we call the toaster?". No attempt has been made to amend it, despite the single comment submitted by a reader who points out that the entry was fake. There is no way of telling, within the source, if the comment itself was fake; indeed, politicians and others who wish to sow confusion will routinely decry the truth as fake, and vice-versa. The persistence of the fake data and metadata from Wikipedia may have a cumulative impact on the perception of "the Scots' invention of the modern world" and the economic and cultural benefits of investment, tourism, and national pride.[8] The cumulative effect of fake information resources is the destruction of cultural coherency, and fake news is increasingly used as a weapon in so-called culture wars.

Available at: https://www.ifla.org/units/faife/

6   BBC News, "Fake news" [cited: 2023-09-11]. Available at: https://www.bbc.co.uk/news/topics/cjxv13v27dyt

7   Wikipedia, "Reliability of Wikipedia" [cited: 2023-09-11]. Available at: https://en.wikipedia.org/wiki/Reliability_of_Wikipedia

8   Herman, A. (2002). The Scottish Enlightenment: the Scots' invention of the modern world. London: Fourth Estate.

Global pandemic

The COVID-19 pandemic of 2020 is likely, in due course, to have a huge impact on the information environment for cultural heritage. At the time, lockdowns prevented physical access to the collections of national cultural heritage organizations. End-users had to find other ways of satisfying their needs for recorded cultural memory, restricted to what was available online. There was a significant shift towards using online resources for education, entertainment, and support for employees working from home, presumably with an improvement in digital information literacy skills. At the same time, many creators of cultural information, including writers, musicians, and artists, shifted their activities to a home-grown, domestic environment. The processes of production and publication of cultural output can be easily carried out "in-house" and disseminated with freely available world-wide distribution systems. This has accelerated the dilution of cultural elitism, making it much more difficult to identify "published authors" worthy of inclusion in collections and to select resources of "cultural importance". The AAA principle allows any person to be any kind of agent in the creation and dissemination of any cultural object.

Wikipedia, if it is to be believed, has a lengthy article on the impact of the pandemic on cultural heritage.[9] It calls attention to the disruption of physical access to information resources with an illustration of a "closed" notice at a public library. It is interesting to note the contents headings, which specifically focus on the impact on libraries, archives, and museums. The long-term effect is likely to be an increase in demand for remote access to cultural heritage, using digitization and online metadata. This offers an opportunity to develop the common information environment by applying common standards and changing focus from curation (archive, library, or museum) to content.

Wikidata

Wikidata opens another opportunity for the common information environment. The availability and functionality of commercial information man-

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9   Wikipedia, "Impact of the COVID-19 pandemic on the arts and cultural heritage" [cited: 2023-09-11]. Available at: https://en.wikipedia.org/wiki/Impact_of_the_COVID_19_pandemic_on_the_arts_and_cultural_heritage

agement systems has declined rather than improved in the past 10 years. Keyword indexing of data and metadata is the ubiquitous solution to integrating access across disparate information resources instead of developing common standards, resulting in a general dumbing-down of structured metadata and a reduced cost-benefit ratio. Wikidata and associated services such as Wikimedia offer a common platform for cultural heritage metadata at scale that is intended for the Semantic Web and linked open data. It has considerable potential as a tool for universal bibliographic control from the bottom-up, an essential process for the common information environment.[10]

Wikidata is free and easy to access, and is suitable for ad hoc metadata publishing by a wide range of agencies. Minimal barriers to re-use and application of the metadata may help to encourage the development of a new generation of online information retrieval systems. An important utility of Wikidata is the assignment and maintenance of global identifiers for the instances of entities that are described by metadata and the attribute and relationship elements used in descriptions. Entities and elements from multiple sources are organized in semantic hierarchies to ensure coherency and interoperability between different descriptions irrespective of the community standards that are used. This has the potential to be a universal bridge for bringing together cultural heritage metadata from different domains and traditions: "Wikidata acts as central storage for the structured data of its Wikimedia sister projects including Wikipedia, Wikivoyage, Wiktionary, Wikisource, and others … The content of Wikidata is available under a free license, exported using standard formats, and can be interlinked to other open data sets on the linked data web".[11]

Entity-based metadata

There has been increasing interest in an entity-based approach to metadata, in which the focus of a description is a single instance of an entity that is linked to the descriptions of other instances of the same or different entity. This has followed the development of entity-relationship models, such as the IFLA Library Reference Model (LRM) published in 2017.[12] Such models

10 Bianchini, C. and Sardo, L. (2022). Wikidata: a new perspective towards universal bibliographic control. // JLIS.it: 13, 1: Bibliographic Control in the Digital Ecosystem [cited: 2023-09-11]. Available at: https://www.jlis.it/index.php/jlis/article/view/439/432

11 Wikidata [cited: 2023-09-11]. Available at: https://www.wikidata.org/wiki/Wikidata:Main_Page

12 Riva, P.; Le Bœuf, P. and Žumer, M. (2017). IFLA Library Reference Model: a conceptual model

are suitable for implementation in relational database management systems for local metadata applications and Resource Description Framework (RDF) for linked open data and Semantic Web applications. In particular, RDF has the atomic structure of triples; that is, two instances of entities linked by a relationship, with descriptive metadata for an attribute treated as a relationship to an instance of a string entity. The effectiveness of RDF depends on the use of global identifiers for instances of entities, relationship elements, and controlled string values.

This approach is essential for the common information environment. A focus on individual kinds of things of interest allows combinations of related entities to be constructed for a wider range of contexts and information retrieval functions. The same descriptive metadata for an instance of an entity can be used in different description sets, or "records", for library, archive, and museum applications. For example, the traditional analytical and hierarchical records for library and archive resources, respectively, can be built up from the same atomic metadata statements in distinct relationship structures.

A move towards entity-based metadata is having a significant impact on the development of metadata standards across the cultural heritage communities. In the library domain, *RDA: resource description and access* was completely redesigned and restructured to align with the LRM in 2020. It describes itself as "a package of data elements, guidelines, and instructions for creating library and cultural heritage resource metadata that are well-formed according to international models for user-focused linked data applications".[13] The International Council on Archives has developed the *Records in context* standard, including a conceptual model and related linked data ontology, as "a reference model for publishing archival metadata sets as Linked Data".[14] The latest version was published in 2021. In the museum domain, the CIDOC Conceptual Reference Model (CRM) has been in continuous development for over 20 years, with the latest major version (7.0) published in 2020. The CRM aims to "provide the ''semantic glue" needed to mediate between different sources of cultural heritage information, such as that published by museums, libraries and archives".[15] The CRM is integrated

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for bibliographic information". IFLA [cited: 2023-09-11]. Available at: https://repository.ifla.org/bitstream/123456789/40/1/ifla-lrm-august-2017_rev201712.pdf

13 RDA Toolkit [cited: 2023-09-11]. Available at: https://access.rdatoolkit.org/

14 International Council on Archives. Records in Contexts – Ontology [cited: 2023-09-11]. Available at: https://www.ica.org/en/records-in-contexts-ontology

15 CIDOC CRM [cited: 2023-09-11]. Available at: https://cidoc-crm.org/

with the object-oriented version of the LRM. The latest library standard to be remodelled for entity-based cataloguing is IFLA's ISBD: *International Standard Bibliographic Description. ISBD for Manifestation* is a metadata content standard for the LRM's Manifestation entity only.[16] If successful, the development will be extended to other entities of the LRM in due course.[17]

The trend towards entity-based metadata has encouraged the development of international identifier management. This supports metadata interoperability and linked open data by providing a "reference" identifier for instances of entities that can be used to refer to a specific instance and link to it from other instances. An example is ISNI, the International Standard Name Identifier. It has attracted the participation of many national libraries as registration agencies, and as experts in their national cultural environments. ISNI assigns identifiers to instances of agent entities who are associated with "creative works", and is "part of a family of international standard identifiers that includes identifiers of works, recordings, products and right holders in all repertoires".[18] ISNI identifiers are coordinated with identifiers for entities in VIAF, the Virtual International Authority File, which also covers work, expression, and place entities.[19] ISNI and VIAF identifiers are incorporated into Wikidata, as are many other local sources of identifiers; for example, see the author's entry in Wikidata.[20] This allows the integration of entity-based metadata for a specific instance from a wide range of cultural heritage domains and local finding-aids.

Conclusion

Progress in developing and improving the common information environment has been slower than the 2005 paper anticipated. The reasons are many and varied, but include lack of resourcing and funding, the problems of changing traditional processes and applications, and the negative impact

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16 ISBD for Manifestation [cited: 2023-09-11]. Available at: https://www.iflastandards.info/ISBDM/

17 Dunsire, G. (2023). Entity-based cataloguing: the new environment for ISBD. Presented to the IFLA webinar "From ISBD to ISBDM", 26 January 2023 [cited: 2023-09-11]. Available at: https://repository.ifla.org/bitstream/123456789/2507/1/Entity-based%20cataloguing%20-%20the%20new%20environment%20of%20ISBD.pptx

18 ISNI [cited: 2023-09-11]. Available at: https://isni.org/

19 MacEwan, A. (2016). ISNI and VIAF: authority files and identity management. Presented at Authority Data on the Web, Dublin, OH August 2016 [cited: 2023-09-11]. Available at: https://www.oclc.org/content/dam/oclc/events/2016/IFLA2016/presentations/ISNI-and-VIAF-Authority-Files-and-Identity-Management.pdf

20 Wikidata, Gordon Dunsire [cited: 2023-09-11]. Available at: https://www.wikidata.org/wiki/Q60661673

on motivation for 'thinking globally' in an unstable international geopolitical world. Cyber and cultural warfare is on the increase, while cultural heritage domains continue to maintain information silos and fail to recognize the existential threats or opportunities posed by technology. This is epitomized by the "warm havens" proposal for the United Kingdom's public libraries and museums.[21] The emphasis is on physical buildings and the social environment, rather than the opportunities for resource curation or information literacy programs in combatting the effects of the Covid pandemic and international de-stabilization.

However, there is no sign that the direction of evolution of the information environment has changed; we are still heading towards collaboration and commonality of purpose. That purpose is, as always, to connect the user to their information resource: the modern equivalent of Ranganathan's "Every reader his or her book" and "Every book its reader".

The cultural heritage communities must expect the environment to suffer "the slings and arrows of outrageous fortune" that is beyond professional control. But these communities should remain alert and focused on using the opportunities that will arise in a rapidly-changing scenario. The antidote to fake news is a well-curated cultural heritage collection.

This was the vision in 2006, and it remains a valid vision for 2022.

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21 Brahde, R.; Ungoed-Thomas, J.; Wall, T. and Fazackerley, A. (2022). Libraries and museums to be 'warm havens' for people struggling with energy bills. // Guardian (20 August) [cited: 2023-09-11]. Available at: https://www.theguardian.com/business/2022/aug/20/libraries-and-museums-to-be-warm-havens-for-people-struggling-with-energy-bills#:~:text=Britain's%20libraries%20and%20museums%20are,visitors%20during%20the%20coldest%20months

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