Core Characteristics of Learning Resource Collectors

RDA Supporting Output

Authors: Nancy Hoebelheinrich, Elizabeth Newbold, Angus Whyte, Maria Johnsson, Kerstin Helbig, Maggie Hellström, Iryna Kuchma, Mijke Jetten, Education and Training on Handling of Research Data IG

Abstract: The issue of sustainability for learning resource collecting and service organisations is an important one for the RDM educational instruction communities. Many catalogues, registries and portals are created for the educational needs of specific research domains or for specific audiences such as data stewards or other data professionals. Significant effort is involved not only in identifying and curating learning resources that are appropriate for those subject domains and/or target audiences, but also in building the catalogues and registries themselves. These kinds of financial investments by funding organisations and human commitment are critical to the development, dissemination and reuse of learning resources, yet the life of the catalogues, registries and portals is often too short, especially given the investment of time and money. There is a problem of finding long term funding for sustainability, of course, but the focus group also noted that often times, those building and maintaining the catalogues, registries and portals do not consider or document other kinds of characteristics that will help users of the services understand and support them so that they can continue to offer and tailor services to their user communities. This problem is the one that the focus group decided to work on in hopes of providing some guidance to these kinds of organisations, and to their funders.

Impact: "Core characteristics of learning resource collecting and servicing organisations (such as catalogues and registries)" provides a set of core descriptive characteristics that can help people evaluate and understand the types and extent of service approaches and learning content offered. In addition, the identification of core characteristics can help the organisations themselves consider some of the factors that might help them build, structure and maintain their collections and the services they offer in support of researchers and data specialists who seek learning resources on research data skillbuilding topics.

The recommendations for the core characteristics are offered primarily as guidance to catalogues, registries, portals and learning platforms that collect and/or provide support services for learning resources in order to assist in structuring them for longer term sustainability. In addition, making the characteristics known that apply to the service providing organisation should help improve the organisation's ability to help learning resource searchers more easily find the resources they seek and discern whether those resources would fit their needs.

Recommendations for specific descriptors of learning resources within a catalogue or registry are out of scope for this set of core characteristics; however, a related set of recommendations for a

minimal set of descriptors for learning resources that has been developed by the RDA ETHRD IG can help in this regard (DOI: 10.15497/RDA00073). This set of core characteristics for learning resource collecting and servicing organisations is not intended to be exhaustive or listed in priority order. Characteristics may or may not apply to a given learning resource collector or service provider depending upon the services offered. Feedback from adopters of this recommendation would be welcomed by this group.

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RDA webpage: https://www.rd-alliance.org/group/education-and-training-handling-research-data-ig/outcomes/core-characteristics-learning

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Core Characteristics of Learning Resource Collecting and Servicing Organisations (such as Catalogues and Registries)

Contents

Introduction

What kind of information do you need in order to evaluate and understand how a collection of learning resources in Research Data Management (RDM) is chosen, managed and sustained over time? What are the clues that help an RDM instructor or student tell which catalogues, registries, learning platforms or portals are those most likely to sustain themselves over time, and continue to provide links to learning resources as well as teaching and learning services to support them as instructors and/or students of RDM practices and data related skills and competencies?

In this focus group we have studied the evolving landscape of learning resources in RDM. As we collected and listed a snapshot of current catalogues or registries of learning resources for review, we realized that there is a set of core characteristics which describe these types of organisations that would be useful to help people evaluate and understand the resources they offer. In addition, the identification of core characteristics could help the organisations themselves consider some of the factors that might help them build, structure and maintain

their collections and the services they offer in support of researchers and data specialists seeking learning resources on RDM and data skillbuilding topics.

The issue of sustainability for learning resource collecting and service organisations is an important one for the RDM educational instruction communities. Many catalogues, registries and portals are created for the educational needs of specific research domains or for specific audiences such as data stewards or other data professionals. Significant effort is involved not only in identifying and curating learning resources that are appropriate for those subject domains and/or target audiences, but also in building the catalogues and registries themselves. These kinds of financial investments by funding organisations and human commitment are critical to the development, dissemination and reuse of learning resources, yet the life of the catalogues, registries and portals is often too short, especially given the investment of time and money. There is a problem of finding long term funding for sustainability, of course, but the focus group also noted that often times, those building and maintaining the catalogues, registries and portals do not consider or document other kinds of characteristics that will help users of the services understand and support them so that they can continue to offer and tailor services to their user communities. This problem is the one that the focus group decided to work on in hopes of providing some guidance to these kinds of organisations, and to their funders.

The initial set of core characteristics was compiled by members of the focus group with experience in building and maintaining learning resource catalogues, registries, learning platforms and portals. Given that the intention of the focus group was to offer considerations for discussion between members of an organisation as well as among like organisations rather than prescription, the characteristics were divided into sections, and formulated as questions. The focus group solicited review, feedback and comments from stakeholders in the learning resource communities including RDM educators, students, and learning resource service providers. Requests for review and comment were made to key individuals familiar with or extensively involved in building / maintaining these kinds of organisations, and to interested parties attending breakout sessions at RDA P16, P17, and P18. The feedback and comments have been incorporated into this final set of core characteristics and is offered as an output from the ETHRD-IG, but would benefit from further community testing and probable revision before adoption.

We offer the core characteristics primarily as **guidance** to catalogues, registries, portals and learning platforms that collect and/or provide support services for learning resources in order to assist in structuring them for longer term sustainability. Recommendations for how learning resources should be described within a catalogue or registry is out of scope for this document; however, a related ETHRD-IG focus group concerned with the improvement of the *discovery* of learning resources has developed recommendations for a minimal set of descriptive metadata for learning resources.[1] This set of core characteristics for learning resource collecting and servicing organisations is **not intended to be exhaustive or listed in priority order.** Characteristics may or may not apply to a given Learning Resource (LR) collector or service provider depending upon the services offered. A list of example organisations gathered by this focus group to which the set of core characteristics might apply is included as Appendix A.

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[1] See "Recommendations for a minimal metadata set to aid harmonized discovery of learning resources" for a report on the work of the RDA Minimal Metadata for Learning Resources Focus Group.

Core Characteristics

The types of learning resource content, ways of describing the content, methods of searching available and supportive service offered by Learning Resource Collecting and Service Organisations varies widely. As a result, the focus group recognizes that some of the core characteristics discussed below will not apply to every organisation. Nevertheless, we have identified the following core characteristics of learning resource catalogues or registries as important for their organisational sustainability. The characteristics are divided into five sections (content, content descriptions, governance, services and operations).

Section: Content

1. Does the catalogue/registry make publicly available (via URL links, if possible) its selection criteria or collection policy? Topics for inclusion under selection policy / collection development policy may include:
    a. Scope statement for the catalogue/registry (including what is out of scope)
    b. Range of topics included if not covered in the scope statement
    c. Intended educational context (formal e,g, university;   informal, e.g., short courses or tutorials; professional education, e.g., specific data skill acquisition for a job)
    d. Criteria that are used to select resources for inclusion in the registry
    e. Criteria used to deselect resources
    f. A statement of policy for removal of resources from public view
    g. A See Also statement pointing to the Operations section where more complete quality assurance (QA) policies considerations are described.
    h. A See Also statement that points to the Governance section below which suggests that statements on "Code of Participation" and /or "Code of Conduct" be made available which describe the terms and conditions that apply to submitting LR content and /or user ratings on the LR content to a catalogue/registry.
2. Does the catalogue/registry describe its target audience or specific community, if so, which one(s)?   For example:
    a. generic, i.e., discipline agnostic
    b. discipline-specific
    c. community-specific
3. Are the conditions of access applicable to the metadata for the learning resources readily apparent? Conditions for access that might apply could include:
    a. open (no restrictions to the learning resources)
    b. restricted (requiring group membership or subscription, for example)
    c. closed (fee required for access or download)
4. In what way is metadata about the learning resources in the catalogue/registry created? Possible options: (describe all that apply)
    - manual (small team of trained curators with varying roles associated with the quality assurance and publication workflow.)
    - crowdsourced collaboration (by the broader education & training communities)
    - machine harvested (collected by algorithm)

Section: Content Descriptions

5. What are the descriptive standards used for describing the LRs in the catalogue/registry?
   a. What is the metadata scheme?
   b. Are publicly available, community-maintained / governed controlled vocabularies or thesauri used for terms within the metadata scheme? If so, what are they?
   c. Is there a publicly available application profile available for the metadata scheme used/adapted?

6. Does the catalogue/registry have a policy for the assignment and upkeep of Persistent Identifiers (PIDs) to the learning resources (needed for FAIR); if so, which Persistent Identifier schemes are used, e.g., DOI, LSID, ARK, PURL? NOTE: An option might be included in the PID policy which offers an option for "Other" along with a free-text field for a description of the identifier.

7. Does the catalogue/registry have a policy for the assignment and upkeep of Persistent Identifiers to the learning resource metadata records describing the learning resources included in the catalogue /registry (needed for FAIR: F1. (meta)data are assigned a globally unique and persistent identifier[2]); if so, which Persistent Identifier schemes are used, e.g., DOI, LSID, ARK, PURL? NOTE: An option might be included in the PID policy which offers an option for "Other" along with a free-text field for a description of the identifier.

8. For the metadata descriptions in the catalogue/registry inventory, is contact information available or a mechanism shown to report errors in the metadata descriptions or requests to remove metadata descriptions from public view?

Section: Governance

9. Is a public statement available on the catalogue/registry website that makes clear how the site is governed? Issues to consider in a governance statement:
   a. Authority / organization sponsoring or hosting the catalogue/registry
   b. Funding, sponsoring and/or endorsing organisations that support the catalogue/registry (including organisational PIDs, if available)
   c. Brief description of how external funding is used to support the catalogue / registry
   d. Whether and how the catalogue / registry is being actively maintained
   e. Names or departments of those who are responsible for maintaining the inventory of LRs in the catalogue/registry [3]

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[2] Wilkinson, M., Dumontier, M., Aalbersberg, I. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* **3,** 160018 (2016). https://doi.org/10.1038/sdata.2016.18

[3] For an example of a public statement that contains some of the issues discussed below, see https://portagenetwork.ca/tools-and-resources/training-resources/

    f.   Contact details with brief explanation of who to contact for what, (more complete information about contacts should be included in the Operations section, see below)

    g.   The plan for sustainability or time frame for sunsetting the catalogue/registry based on the conclusion of the project that supports it

10. Does the catalogue/registry have a publicly available policy defining on what conditions the catalogued learning resources may be accessed?
    a.   This should be a simple statement within Governance, with a more complete description of access conditions included in Operations below.

11. Does the catalogue/registry have a continuity plan to ensure ongoing access to and preservation of its metadata ? (e.g., if this is for the lifetime of the project only, this should be clearly indicated)

12. Does the catalogue/registry state terms and conditions that apply to submitting content?
    a.   Is a Code of Participation posted for those contributing content? Topics to consider may include:
        i.   Roles or "personas" for those who participate in the maintenance of the catalogue/registry inventory
        ii.   Brief description of workflow associated with submission, review, publication, and deprecation or takedown of the metadata associated with the LRs in the inventory or maintenance of the associated services.
    b.   Copyright, license for reuse of the exposed metadata in the catalogue/registry , if applicable

13. Does the catalogue/registry have a publicly available Code of Conduct (if adding annotations or ratings by content users, for example)?

Section: Services

14. Is it clear from the catalogue/registry/portal website what the services are that are offered in support of the LRs included in the inventory?[4] Examples of such services might include:
    a.   Offering links to upcoming training events on topics appropriate to the target audience
    b.   Providing learning paths/workflows in addition to the training materials; see an example of learning path /training workflow service[5]
    c.   Offering end user annotations or rating services for the LRs in the inventory, (e.g. star or other rating system)?
    d.   Maintaining an active blog on topics of interest to the target audience and/or recent additions to the inventory

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[4] For one example, see TeSS: ELIXIR's Training Portal which briefly describes its services on the home page with further descriptions available at https://tess.elixir-europe.org/.
5 Workflows - TeSS (Training eSupport System)

   e. Providing the means to automatically include appropriate LR content from other catalogues/registries/
   f. Facilitating the development and active engagement of participants in a "community of practice" for instructors, trainers and other educators
15. Are the conditions of access applicable to the services for the learning resources readily apparent? Conditions for access that might apply could include:
   a. open (no restrictions to the services)
   b. restricted (requiring group membership or subscription, for example)
   c. closed (fee required for use of the services)

Section: Operations

16. Is detailed contact information available with explanations of who to contact for what (include PIDs for the names, if available, e.g., ORCIDs)
17. What is the method for exposing metadata about learning resources, i.e. the formats (e.g. XML, HTML, JSON, RDF) mechanisms (e.g. HTML headers, API, Web-accessible folders) and protocols (e.g. OAI-PMH, SPARQL)
   a. the formats (e.g. XML, HTML, JSON, RDF)
   b. mechanisms (e.g. HTML headers, API)
   c. protocols (e.g. OAI-PMH, SPARQL) as well as
   d. other
   e. all of the above?
18. Does the descriptive metadata for the LRs adhere to any community vetted and maintained recommendations? If yes, which community recommendation? (e.g., Research Data Alliance Education and Handling of Research Data Interest Group – RDA ETHRD-IG Recommendations for a Minimal Set of Metadata for Learning Resources.
   a. Provide citation or link to the community recommendation, if available
19. Does the portal include a sitemap so web crawlers can easily navigate the pages and access the exposed metadata?
20. Are metrics available on the LRs, e.g., number of downloads (if the site also includes a repository of LRs), or are there connections to the repositories that can help track these metrics?
21. Does the catalogue/registry support end user feedback and/or annotation/rating of the resources (e.g. star or other rating systems)?
22. Are any community recommendations or endorsements for the LRs included either individually or as a collected set of resources?
23. Are any community agreed upon educational frameworks included to which the catalogue/registry refers in describing or annotating the LR, e.g., data stewardship competence frameworks?
24. Does the catalogue/registry support the collection of user feedback related to the catalogue/registry itself?
25. Does the catalogue/ registry have a publicly available document explaining process/procedures for quality assurance for the learning resource? And for the metadata? Topics to include might be:
   a. Information about who to contact with respect to errors, or other quality assurance (QA) and publication issues, e.g.,
     i. Error detection (typos, broken URLs, etc.)
     ii. Suggestions for content to add

          iii.   Questions re: participation or acceptance of submitted material

    b. Explanation of levels of access to metadata for the LRs within the publishing / registering workflow system in terms of roles/authentication / privileges assigned.

    c. Mechanisms used to document how and when the content is maintained, e.g. a timestamp on updates to the metadata and a modification date to the resource.

26. Does the catalogue/registry have a publicly available document to explain the review schedule and owner of the schedule for review of the LRs that are included in the inventory?

27. Does the catalogue/registry have a publicly available document to explain how version control for the metadata is managed and documented?

28. Does the catalogue/registry include a public statement about its policies for deprecating metadata for a deselected item? (This is important to adhere to FAIR Principle Accessible – A2: Metadata are accessible, even when the data are no longer available[6])

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Maria Johnsson, Lund University
Emma Lazzeri, CNR, Italy, OpenAIRE
Elizabeth Newbold, Science and Technology Facilities Council (STFC)/ FAIRsFAIR project
Ellen Leenarts, Data Archiving and Networked Services (DANS)
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Maggie Hellström - Lund University (Sweden) and ICOS research infrastructure

Other consultants:
Professor Karl Benedict, University of New Mexico, Albuquerque, New Mexico

Contributions:

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[6] See https://www.go-fair.org/fair-principles/

List of training resources related to research data management,
Appendix A to "Core Characteristics of Learning Resource Collecting and Servicing Organisations"
Catalogues and registries collected by the RDA ETHRD-IG Learning Resource Collectors Focus Group, 2020-2021

Title of resource	Name of organisation	URL	Subject	Comments/description
CESSDA Data Management Expert Guide	CESSDA	https://www.cessda.eu/Training/Training-Resources/Library/Data-Management-Expert-Guide	Social science	Training guide for social science on research data management and how to make research FAIR
TeSS: ELIXIR's Training Portal	ELIXIR	https://tess.elixir-europe.org/	Life science	Training portal for ELIXIR
FOSTER	FOSTER Plus (EU Horizon 2020 Project)	https://www.fosteropenscience.eu/	General/All	Complete training portal for Open Science
Research data management (RDM) open training materials	Curated by LauraMolloy	https://zenodo.org/communities/dcc-rdm-training-materials	General/All	"We accept submissions of openly available online RDM training materials which can be re-used by others either in a class environment or for self-teaching."
The ENVRI Community Training Platform	The ENVRI community	https://training.envri.eu/	Earth science & environmental research	Website backed by an underlying learning resource catalogue from Environmental Research Infrastructures, projects, networks
The ENVRI-FAIR Training Catalogue	The ENVRI community	https://trainingcatalogue.envri.eu/	Earth science & environmental research	Website backed by an underlying learning resource catalogue from Environmental Research Infrastructures, projects, networks
SSHOC Training Discovery toolkit	SSHOC/CESSDA	https://training-toolkit.sshopencloud.eu/	Social sciences and Humanities	Inventory of SSH training materials
Photon and Neutron E-learning platform	PaNOSC/ExPaNDS	https://pan-learning.org/	Photon and neutron scattering	An online course system featuring exercises and quizzes provided by a Moodle installation; a set of wiki pages provided by a MediaWiki installation; an online simulator platform based on McStas and Django
The Data Management Training (DMT) Clearinghouse	ESIP/University of New Mexico Libraries/Knowledge Motifs LLC	http://dmtclearinghouse.esipfed.org	General/All	A registry for online learning resources focusing on RDM and research data skillbuilding more generally
Materialsammlung der UAG Schulungen/Fortbildungen	DINI/nestor-AG Forschungsdaten	https://rs.cms.hu-berlin.de/uag_fdm	General/All	Training materials, resources, exercices, slides, training concepts and teaching scripts for RDM (in German)

Research Data Management E-Learning Platform	HTW Chur	https://campus.hesge.ch/researchdatamanagement/	General/All	E-Learning Platform (content in German and French)
RDM Training Materials for the Engineering Sciences	TU9 universities in Germany	https://zenodo.org/communities/rdm_training_engineering_sciences/?page=1&size=20	Engineering Sciences	Slides, exercices and materials for RDM in the Engineering Sciences
USGS Data Management and Data Release Training Modules	United States Geological Survey	https://www.usgs.gov/products/data-and-tools/data-management/training	GIS	Training materials and resources for finding, managing and preserving data aimed at employees of USGS, but cover broadly applicable topics
Data Management: Data Management Training	Northwestern University Libraries (United States)	https://libguides.northwestern.edu/datamanagement/datamanagementtraining	General/All	Lists in-house trainings as well as outside groups
DataOne Education Modules	DataOne	https://old.dataone.org/education-modules	Earth science & environmental research	This is the older version of their website; the new website will be post the adapted in-person training soon (https://www.dataone.org/training/)
Open Scholarship Knowledge Base	Center for Open Science	https://www.oercommons.org/hubs/OSKB	general/All	Focused upon Open Educational Resources (OER)
Research Support Games List	Robert Gordon University, curated by George Bray	https://figshare.com/articles/online_resource/Research_Support_Games_List/16652701/1	general/All	Games based resources for engaging researchers in data management