OpenAIRE Guidelines

Release 1.1.2-SNAPSHOT

OpenAIRE

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Contents

Introduction

These guidelines describe the CERIF-XML profile for CRIS managers to be compatible with OpenAIRE.

1.1 Aim

The Guidelines provide orientation for CRIS managers to expose their metadata in a way that is compatible with the OpenAIRE infrastructure. By implementing the Guidelines, CRIS managers support the inclusion and therefore the reuse of metadata in their systems within the OpenAIRE infrastructure. For developers of CRIS platforms, the Guidelines provide guidance to add supportive functionalities for CRIS managers and users. Exchange of information between individual CRIS systems and the OpenAIRE infrastructure is an example of point-to-point data exchange between CRIS systems, since the OpenAIRE infrastructure is itself a CRIS system.

1.2 CERIF-CRIS

CERIF (Common European Research Information Format) is a standard data model for research information and a recommendation by the European Union to Member States. The care and custody of CERIF was handed over by the European Union to euroCRIS (http://www.eurocris.org), a non-for-profit organisation dedicated to the interoperability of Research Information Systems (CRISs). In addition to a domain model and a formal data model, CERIF includes a mechanism to construct XML profiles (specialized subsets) for specific information interchange scenarios. The OpenAIRE profile of CERIF supports harvesting and importing metadata from CRIS systems.

1.3 Acknowledgements

We wish to acknowledge the following contributors and also those who provided feedback outside the formal editing and reviewing work.

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1.4 Versions

- 1.1.1, December 2018, doi:10.5281/zenodo.2316420

- 1.1.0, June 2018, doi:10.5281/zenodo.1298650

- 1.0, June 2015, doi:10.5281/zenodo.17065

### 1.4.1 List of changes in the 1.1.1 version (since 1.1.0)

1. **Digital Author Identifier** (DAI) is added as a person identifier type. (#49)

2. **Multiple person identifiers** of the same kind are allowed: where ambiguous or uncertain information is available, it should be listed in `<AlternativeXXX>` elements (where XXX is the identifier type). (#48)

3. **Multiple parents of an OrgUnit** are allowed so that e.g. interdisciplinary research centres can be represented faithfully. (#45)

4. The `xmlns:cfprocess` declaration was removed where it was not needed. (#43)

5. The upstream development of CERIF XML introduced changes in the `includes/cerif-commons.xsd` schema component.

6. Cached Schematron schemas are now being taken from a more authoritative source.

7. The documentation was improved regarding the precision of date/datetime fields (#47), regular expression constraints in the XML Schema (#50) and the DisplayName feature (#52).

8. The official location of the XML Schema files is now at https://www.openaire.eu/schema/cris/1.1/ (#51)

1.5 Feedback

We welcome your comments and suggestions. Please see https://github.com/openaire/guidelines-cris-managers#contributing

CRIS information elements relevant for OpenAIRE

CERIF is a comprehensive model for the research domain. Only a subset of that information is relevant for OpenAIRE. For example, Publications, Products (including research datasets and software), and Events fall in the scope of the OpenAIRE profile, while Prizes and Geographic bounding boxes do not. The following diagram shows the part of the CERIF model is being used in this version of the OpenAIRE Guidelines:
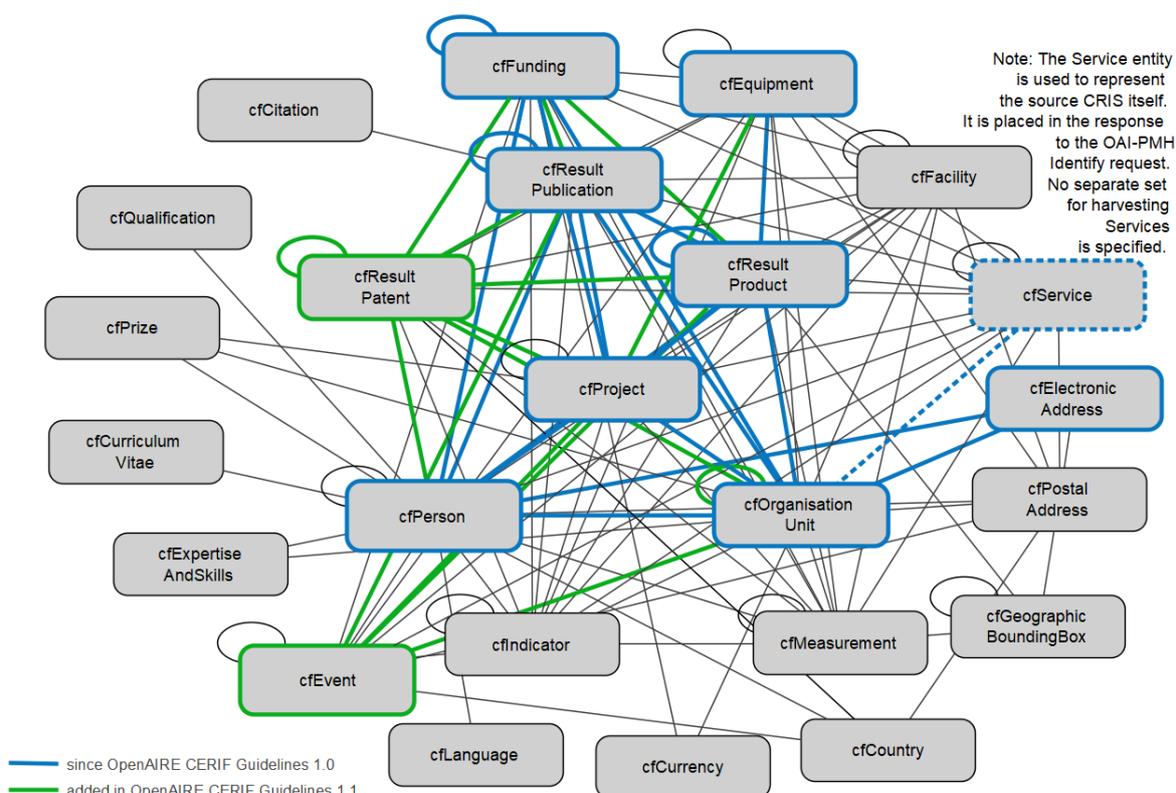
The CERIF model provides for research information objects to be classified according to their type, status, subject, etc. and for expressing the types of relationships. It does not, however, fix the semantic

vocabularies to be used for such classifications; CERIF only recommends some that may have common applicability. For information communication to be successful, any CERIF profile needs to specify the semantic vocabularies so that producers know what to produce and consumers know what to expect.

The OpenAIRE CERIF profile does precisely this and prescribes most vocabularies to be used. The most notable example is the fact that the types of research outputs are expressed using the COAR Resource Types vocabulary.[1] CERIF has three entities to represent research outputs: Publications, Products and Patents. The COAR vocabulary was broken down into thee separate sub-vocabularies to be used with the respective entities.

The following sections define the CERIF data elements for the exchange of data between individual CRIS systems and the OpenAIRE infrastructure. The exclusive use of the defined data elements and vocabularies is mandatory, i.e. no other data elements and vocabularies can be used in the CERIF XML data exposed by CRIS systems to the OpenAIRE infrastructure. The vocabularies are sourced from relevant outside sources; some of the vocabularies are based on the CERIF 1.5 Semantics. Extensions are possible in the review phase of these Guidelines.

2.1 Publication

Description A text based scholarly publication or publishing channel that contains results of research. CRISs typically record metadata about scholarly publications from the scope of the CRIS (institutional CRIS for the institution, funder CRIS for the funding it distributed, etc.) in the context of the research projects, infrastructure, funding, organization units and authors/contributors. This entity typically represents the granularity level of a single published item for which attribution information is attached (usually in the form of a list of authors and contributors). This entity is also used to represent publishing channels and sources: journals and book series (incl. continuing conference proceedings series). (Taken from https://doi.org/10.1016/j.procs.2014.06.008)

Examples openaire_cerif_xml_example_publications.xml

Representation XML element `Publication`; the rest of this section documents children of this element

CERIF the ResultPublication entity (https://w3id.org/cerif/model#ResultPublication)

2.1.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the ResultPublicationIdentifier attribute (https://w3id.org/cerif/model# ResultPublication.ResultPublicationIdentifier)

2.1.2 Type

Description The type of the publication

Use mandatory (1)

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[1] See https://www.coar-repositories.org/activities/repository-interoperability/coar-vocabularies/deliverables/

Representation XML element `Type` from namespace https://www.openaire.eu/cerif-profile/vocab/COAR_Publication_Types

CERIF the ResultPublication_Classification (https://w3id.org/cerif/model#ResultPublication_Classification)

Vocabulary Publication types extracted from the COAR Resource Types concept scheme: Types of publications as extracted from the COAR Resource Types concept scheme (http://vocabularies.coar-repositories.org/documentation/resource_types/, the term 'text' and its descendants in the hierarchy except 'patent').

- **text** (http://purl.org/coar/resource_type/c_18cf): A resource consisting primarily of words for reading. Examples include books, letters, dissertations, poems, newspapers, articles, archives of mailing lists. Note that facsimiles or images of texts are still of the genre Text.

    - **annotation** (http://purl.org/coar/resource_type/c_1162): An annotation in the sense of a legal note is a legally explanatory comment on a decision handed down by a court or arbitral tribunal.

    - **bibliography** (http://purl.org/coar/resource_type/c_86bc): A systematic list or enumeration of written works by a specific author or on a given subject.

    - **book** (http://purl.org/coar/resource_type/c_2f33): A non-serial publication that is complete in one volume or a designated finite number of volumes. (adapted from CiTO; EPrint Type vocabulary)

        * **book part** (http://purl.org/coar/resource_type/c_3248): A defined chapter or section of a book, usually with a separate title or number.

    - **conference object** (http://purl.org/coar/resource_type/c_c94f): All kind of digital resources contributed to a conference, like conference presentation (slides), conference report, conference lecture, abstracts, demonstrations. For conference papers, posters or proceedings the specific concepts should be used..

        * **conference proceedings** (http://purl.org/coar/resource_type/c_f744): Conference proceedings is the official record of a conference meeting. It is a collection of documents which corresponds to the presentations given at the conference. It may include additional content.

            · **conference paper** (http://purl.org/coar/resource_type/c_5794): A conference paper that is submitted to a conference and presented to the audience. The conference paper is published in proceedings.

            · **conference poster** (http://purl.org/coar/resource_type/c_6670): A conference poster that is submitted to a conference and presented there at a poster presentation. The conference poster is published in proceedings.

        * **conference paper not in proceedings** (http://purl.org/coar/resource_type/c_18cp): A conference paper that is submitted to a conference and presented to the audience. The conference paper is not published in proceedings.

        * **conference poster not in proceedings** (http://purl.org/coar/resource_type/c_18co): A conference poster that is submitted to a conference and presented there at a poster presentation. The conference poster is not published in proceedings.

- **lecture** (http://purl.org/coar/resource_type/c_8544): A transcription of a talk delivered during an academic event.

- **letter** (http://purl.org/coar/resource_type/c_0857): A brief description of important new research, also known as "communication". (adapted from EuroCRIS)

- **periodical** (http://purl.org/coar/resource_type/c_2659): A periodical is a publication issued on a regular and ongoing basis as a series of issues. (Adapted from fabio)

  * **journal** (http://purl.org/coar/resource_type/c_0640): A periodical of (academic) journal articles. (Adapted from bibo)

    · **contribution to journal** (http://purl.org/coar/resource_type/c_3e5a): A contribution to a journal denotes a work published in a journal. If applicable sub-terms should be chosen.

    · **journal article** (http://purl.org/coar/resource_type/c_6501): An article on a particular topic and published in a journal issue. (adapted from fabio)

    · **review article** (http://purl.org/coar/resource_type/c_dcae04bc): A review article is a secondary source, that is, it is written about other articles, and does not report original research of its own. (adapted from http://apus.libanswers.com/faq/2324)

    · **research article** (http://purl.org/coar/resource_type/c_2df8fbb1): A research article is a primary source, that is, it reports the methods and results of an original study performed by the authors. (adapted from http://apus.libanswers.com/faq/2324)

    · **editorial** (http://purl.org/coar/resource_type/c_b239): A brief essay expressing the opinion or position of the chief editor(s) of a (academic) journal with respect to a current political, social, cultural, or professional issue. Adapted from ODLIS

    · **data paper** (http://purl.org/coar/resource_type/c_beb9): A data paper is a scholarly publication describing a particular dataset or group of dataset, published in the form of a peer-reviewed article in a scholarly journal. The main purpose of a data paper is to describe data, the circumstances of their collection, and information related to data features, access and potential reuse. Adapted from https://en.wikipedia.org/wiki/Data_paper and http://www.gbif.org/publishing-data/data-papers

    · **letter to the editor** (http://purl.org/coar/resource_type/c_545b): A letter to the editor is a letter sent to a periodical about issues of concern from its readers. (adapted from Wikipedia)

- **preprint** (http://purl.org/coar/resource_type/c_816b): Pre-print describes the first draft of the article - before peer-review, even before any contact with a publisher. This use is common amongst academics for whom the key modification of an article is the peer-review process. Another use of the term preprint is for the finished article, reviewed and amended, ready and accepted for publication - but separate from the version that is type-set or formatted by the publisher. This use is more common amongst publishers, for whom the

final and significant stage of modification to an article is the arrangement of the material for putting to print.

– **report** (http://purl.org/coar/resource_type/c_93fc): A report is a separately published record of research findings, research still in progress, or other technical findings, usually bearing a report number and sometimes a grant number assigned by the funding agency. Also, an official record of the activities of a committee or corporate entity, the proceedings of a government body, or an investigation by an agency, whether published or private, usually archived or submitted to a higher authority, voluntarily or under mandate. In a more general sense, any formal account of facts or information related to a specific event or phenomenon, sometimes given at regular intervals.

  * **report part** (http://purl.org/coar/resource_type/c_ba1f): part of a report

  * **internal report** (http://purl.org/coar/resource_type/c_18ww): An internal report is a record of findings collected for internal use. It is not designed to be made public and may include confidential or proprietary information.

  * **memorandum** (http://purl.org/coar/resource_type/c_18wz): It is a note, document or other communication that helps the memory by recording events or observations on a topic. A memorandum can have only a certain number of formats; it may have a format specific to an office or institution.

  * **other type of report** (http://purl.org/coar/resource_type/c_18wq): Other types of report may include Business Plans Technical Specifications, data management plans, recommendation reports, white papers, annual reports, auditor's reports, workplace reports, census reports, trip reports, progress reports, investigative reports, budget reports, policy reports, demographic reports, credit reports, appraisal reports, inspection reports, military reports, bound reports, etc.

  * **policy report** (http://purl.org/coar/resource_type/c_186u): A policy report is a type of report that provides an in-depth look at major policy developments and events

  * **project deliverable** (http://purl.org/coar/resource_type/c_18op): A project deliverable is an "outcome" as a result of a project that is intended to be delivered to a customer (e.g. funder). Examples of deliverable are report, document, work package or any other building block of an overall project.

  * **report to funding agency** (http://purl.org/coar/resource_type/c_18hj): A report to a funding agency is a document written by beneficiaries of project grants. The reporting documents can be e.g. periodic reports about progress of scientific and technical work and final report. For deliverables use 'Project deliverable'.

  * **research report** (http://purl.org/coar/resource_type/c_18ws): Research Reports are reports that typically provide an in-depth study of a particular topic or describe the results of a research project.

  * **technical report** (http://purl.org/coar/resource_type/c_18gh): A technical report is a document that records the procedure adopted and results

obtained from a scientific or technical activity or investigation.

- **research proposal** (http://purl.org/coar/resource_type/c_baaf): documentation for grant request

- **review** (http://purl.org/coar/resource_type/c_efa0): A review of others' published work.

  * **book review** (http://purl.org/coar/resource_type/c_ba08): A written review and critical analysis of the content, scope and quality of a book or other monographic work.

- **technical documentation** (http://purl.org/coar/resource_type/c_71bd): Technical documentation refers to any type of documentation that describes handling, functionality and architecture of a technical product or a product under development or use.

- **working paper** (http://purl.org/coar/resource_type/c_8042): A working paper or preprint is a report on research that is still on-going or which has not yet been accepted for publication.

- **thesis** (http://purl.org/coar/resource_type/c_46ec): A thesis or dissertation is a document submitted in support of candidature for an academic degree or professional qualification presenting the author's research and findings.

  * **bachelor thesis** (http://purl.org/coar/resource_type/c_7a1f): A thesis reporting a research project undertaken as part of an undergraduate course of education leading to a bachelor's degree.

  * **doctoral thesis** (http://purl.org/coar/resource_type/c_db06): A thesis reporting the research undertaken during a period of graduate study leading to a doctoral degree.

  * **master thesis** (http://purl.org/coar/resource_type/c_bdcc): A thesis reporting a research project undertaken as part of a graduate course of education leading to a master's degree.

- **musical notation** (http://purl.org/coar/resource_type/c_18cw): Musical notation is any system used to visually represent aurally perceived music through the use of written symbols, including ancient or modern musical symbols.

2.1.3 Language

Description The language of the publication. Please use the IETF language tags as described in the IETF BCP 47 document.

Use optional (0..1)

Representation XML element `Language`

CERIF the ResultPublication_Classification linking entity (https://w3id.org/cerif/model#ResultPublication_Classification) with the http://publications.europa.eu/resource/authority/language semantics

2.1.4 Title

Description The title of the publication

Use optional, possibly multiple (0..*)

Representation XML element `Title` as a multilingual string

CERIF the ResultPublication.Title attribute ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication.Title)
[ResultPublication.Title](https://w3id.org/cerif/model#ResultPublication.Title))

2.1.5 Subtitle

Description The subtitle of the publication

Use optional, possibly multiple (0..*)

Representation XML element `Subtitle` as a multilingual string

CERIF the ResultPublication.Subtitle attribute ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication.Subtitle)
[ResultPublication.Subtitle](https://w3id.org/cerif/model#ResultPublication.Subtitle))

2.1.6 NameAbbreviation

Description The abbreviation of the title of the publication. E.g. the acronym of a journal.

Use optional, possibly multiple (0..*)

Representation XML element `NameAbbreviation` as a multilingual string

CERIF the ResultPublication.NameAbbreviation attribute ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication.NameAbbreviation)
[ResultPublication.NameAbbreviation](https://w3id.org/cerif/model#ResultPublication.NameAbbreviation))

2.1.7 PublishedIn

Description The source (another Publication) where this publication appeared. E.g. a journal article lists here the journal where it appeared. To be used for a publishing channel.

Use optional (0..1)

Representation XML element `PublishedIn` with embedded XML element `Publication`

CERIF the ResultPublication_ResultPublication linking entity ([https://w3id.org/cerif/](https://w3id.org/cerif/model#ResultPublication_ResultPublication)
[model#ResultPublication_ResultPublication](https://w3id.org/cerif/model#ResultPublication_ResultPublication)) with the [https://w3id.org/cerif/vocab/](https://w3id.org/cerif/vocab/InterPublicationRelations#Publication)
[InterPublicationRelations#Publication](https://w3id.org/cerif/vocab/InterPublicationRelations#Publication) semantics (direction :1)

2.1.8 PartOf

Description The Publication of which this publication is a part. E.g. a book chapter lists here the book that contains it. To be used for a containing publication.

Use optional (0..1)

Representation XML element `PartOf` with embedded XML element `Publication`

CERIF the ResultPublication_ResultPublication linking entity (https://w3id.org/cerif/model#ResultPublication_ResultPublication) with the https://w3id.org/cerif/vocab/InterPublicationRelations#Part semantics (direction :1)

2.1.9 PublicationDate

Description The date the publication appeared

Use optional (0..1)

Representation XML element `PublicationDate`

CERIF the ResultPublication.ResultPublicationDate attribute (https://w3id.org/cerif/model#ResultPublication.ResultPublicationDate)

Format any of:

- year (`YYYY`) with optional time zone indication
- year and month (`YYYY-MM`) with optional time zone indication
- full date (`YYYY-MM-DD`) with optional time zone indication
- date and time (`YYYY-MM-DD'T'hh:mm:ss(.SSS)`) with optional time zone indication

2.1.10 Number

Description The number of the publication (e.g. Article Number)

Use optional (0..1)

Representation XML element `Number`

CERIF the ResultPublication.Number attribute (https://w3id.org/cerif/model#ResultPublication.Number)

2.1.11 Volume

Description The volume of the publishing channel where this publication appeared

Use optional (0..1)

Representation XML element `Volume`

CERIF the ResultPublication.Volume attribute (https://w3id.org/cerif/model#ResultPublication.Volume)

2.1.12 Issue

Description The issue of the publishing channel where this publication appeared

Use optional (0..1)

Representation XML element `Issue`

CERIF the ResultPublication.Issue attribute (https://w3id.org/cerif/model#ResultPublication.Issue)

2.1.13 Edition

Description The edition of the publication

Use optional (0..1)

Representation XML element `Edition`

CERIF the ResultPublication.Edition attribute (https://w3id.org/cerif/model#ResultPublication.Edition)

2.1.14 StartPage

Description The page where this publication starts, in case the publishing channel or containing publication has numbered pages

Use optional (0..1)

Representation XML element `StartPage`

CERIF the ResultPublication.StartPage attribute (https://w3id.org/cerif/model#ResultPublication.StartPage)

2.1.15 EndPage

Description The page where this publication ends, in case the publishing channel or containing publication has numbered pages

Use optional (0..1)

Representation XML element `EndPage`

CERIF the ResultPublication.EndPage attribute (https://w3id.org/cerif/model#ResultPublication.EndPage)

2.1.16 DOI

Description The Digital Object Identifier

Use optional (0..1)

Representation XML element `DOI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `10\.\d{4,}(\.\d+)*/[^\s]+` (as per https://www.crossref.org/blog/dois-and-matching-regular-expressions/)

2.1.17 Handle

Use optional (0..1)

Representation XML element `Handle`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.1.18 PMCID

Use optional (0..1)

Representation XML element `PMCID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.1.19 ISI-Number

Use optional (0..1)

Representation XML element `ISI-Number`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.1.20 SCP-Number

Use optional (0..1)

Representation XML element `SCP-Number`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.1.21 ISSN

Description The International Standard Serial Number

Use optional, possibly multiple (0..*)

Representation XML element `ISSN`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `\d{4}-?\d{3}[\dX]` and length between 8 and 9 characters (as per https://data.crossref.org/reports/help/schema_doc/4.4.1/schema_4_4_1.html#issn_t)

medium

Use optional

Representation XML attribute `medium`

Vocabulary ISSN Media List

- **Print** (http://issn.org/vocabularies/Medium#Print): Print (paper)

- **Online** (http://issn.org/vocabularies/Medium#Online): Online (online publication)

- **Digital carrier** (http://issn.org/vocabularies/Medium#DigitalCarrier): Digital carrier (CD-ROM, USB keys)

- **Other** (http://issn.org/vocabularies/Medium#Other): Other (Loose-leaf publications, braille, etc.)

2.1.22 ISBN

Description The International Standard Book Number

Use optional, possibly multiple (0..*)

Representation XML element `ISBN`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format any of:

- regular expression `978-\d+-\d+-\d+-\d` and length of exactly 17 characters (ISBN-13, human readable form)

- regular expression `978 \d+ \d+ \d+ \d` and length of exactly 17 characters (ISBN-13, human readable form)

- regular expression `979-[1-9]\d*-\d+-\d+-\d` and length of exactly 17 characters (ISBN-13, human readable form)

- regular expression `979 [1-9]\d* \d+ \d+ \d` and length of exactly 17 characters (ISBN-13, human readable form)

- regular expression `978\d{10}` and length of exactly 13 characters (ISBN-13, concise form)

- regular expression `979[1-9]\d{9}` and length of exactly 13 characters (ISBN-13, concise form)

- regular expression `\d+-\d+-\d+-[\dX]` and length of exactly 13 characters (ISBN-10, human readable form)

- regular expression `\d+ \d+ \d+ [\dX]` and length of exactly 13 characters (ISBN-10, human readable form)

- regular expression `\d{9}[\dX]` and length of exactly 10 characters (ISBN-10, concise form)

medium

Use optional

Representation XML attribute `medium`

Vocabulary ISSN Media List

- **Print** (http://issn.org/vocabularies/Medium#Print): Print (paper)

- **Online** (http://issn.org/vocabularies/Medium#Online): Online (online publication)

- **Digital carrier** (http://issn.org/vocabularies/Medium#DigitalCarrier): Digital carrier (CD-ROM, USB keys)

- **Other** (http://issn.org/vocabularies/Medium#Other): Other (Loose-leaf publications, braille, etc.)

2.1.23 URL

Use optional (0..1)

Representation XML element `URL`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.1.24 URN

Use optional (0..1)

Representation XML element `URN`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.1.25 ZDB-ID

Use optional (0..1)

Representation XML element `ZDB-ID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `\d{1,7}-[Xx\d]` (as per https://www.wikidata.org/wiki/Property:P1042)

2.1.26 Authors

Description The authors of this publication

Use optional (0..1)

Representation XML element `Authors` with ordered embedded XML elements `Author` that can contain an embedded person with affiliations or organisation unit

Author

Use optional, possibly multiple (0..*)

Representation XML element `Author` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements, or `OrgUnit`. A `DisplayName` may be specified, too.

CERIF the Person_ResultPublication linking entity (https://w3id.org/cerif/model#Person_ResultPublication) with the https://w3id.org/cerif/vocab/PersonOutputContributions#Author semantics; the OrganisationUnit_ResultPublication linking entity (https://w3id.org/cerif/model#OrganisationUnit_ResultPublication) with the https://w3id.org/cerif/vocab/OrganisationOutputContributions#Author semantics

2.1.27 Editors

Description The editors of this publication

Use optional (0..1)

Representation XML element `Editors` with ordered embedded XML elements `Editor` that can contain an embedded person with affiliations or organisation unit

Editor

Use optional, possibly multiple (0..*)

Representation XML element `Editor` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements, or `OrgUnit`. A `DisplayName` may be specified, too.

CERIF the Person_ResultPublication linking entity (https://w3id.org/cerif/model#Person_ResultPublication) with the https://w3id.org/cerif/vocab/PersonOutputContributions#Editor semantics; the OrganisationUnit_ResultPublication linking entity (https://w3id.org/cerif/model#OrganisationUnit_ResultPublication) with the https://w3id.org/cerif/vocab/OrganisationOutputContributions#Editor semantics

2.1.28 Publishers

Description The publishers of this publication

Use optional (0..1)

Representation XML element `Publishers` with ordered embedded XML elements `Publisher` that can contain an embedded organisation unit or person

Publisher

Use optional, possibly multiple (0..*)

Representation XML element `Publisher` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the OrganisationUnit_ResultPublication linking entity (https://w3id.org/cerif/model#OrganisationUnit_ResultPublication) with the https://w3id.org/cerif/vocab/OrganisationOutputContributions#Publisher semantics; the Person_ResultPublication linking entity (https://w3id.org/cerif/model#Person_ResultPublication) with the https://w3id.org/cerif/vocab/PersonOutputContributions#Publisher semantics

2.1.29 License

Description The license of the publication

Use optional, possibly multiple (0..*)

Representation XML element `License` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the ResultPublication_Classification ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication_Classification) [ResultPublication_Classification)](https://w3id.org/cerif/model#ResultPublication_Classification)

2.1.30 Subject

Description The subject of the publication from a classification

Use optional, possibly multiple (0..*)

Representation XML element `Subject` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the ResultPublication_Classification ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication_Classification) [ResultPublication_Classification)](https://w3id.org/cerif/model#ResultPublication_Classification)

2.1.31 Keyword

Description A single keyword or key expression. Please repeat to serialize separate keywords or key expressions.

Use optional, possibly multiple (0..*)

Representation XML element `Keyword` as a multilingual string

CERIF the ResultPublication.Keywords attribute ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication.Keywords) [ResultPublication.Keywords)](https://w3id.org/cerif/model#ResultPublication.Keywords)

2.1.32 Abstract

Use optional, possibly multiple (0..*)

Representation XML element `Abstract` as a multilingual string

CERIF the ResultPublication.Abstract attribute ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication.Abstract) [ResultPublication.Abstract)](https://w3id.org/cerif/model#ResultPublication.Abstract)

2.1.33 Status

Use optional, possibly multiple (0..*)

Representation XML element `Status` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the ResultPublication_Classification ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#ResultPublication_Classification) [ResultPublication_Classification)](https://w3id.org/cerif/model#ResultPublication_Classification)

2.1.34 OriginatesFrom

Use optional, possibly multiple (0..*)

Representation XML element `OriginatesFrom` with embedded XML element `Project` or `Funding`

CERIF the Project_ResultPublication linking entity (https://w3id.org/cerif/model#Project_ResultPublication) with the https://w3id.org/cerif/vocab/ProjectOutputRoles#Originator semantics; the ResultPublication_Funding linking entity (https://w3id.org/cerif/model#ResultPublication_Funding) with the https://w3id.org/cerif/vocab/OutputFundingRoles#Originator semantics

2.1.35 PresentedAt

Description The event where this publication was presented.[1]

Use optional, possibly multiple (0..*)

Representation XML element `PresentedAt` with embedded XML element `Event`

CERIF the ResultPublication_Event linking entity (https://w3id.org/cerif/model#ResultPublication_Event) with the https://w3id.org/cerif/vocab/EventOutputRelationships#Presented semantics

2.1.36 OutputFrom

Description This publication contains the proceedings from the linked event

Use optional, possibly multiple (0..*)

Representation XML element `OutputFrom` with embedded XML element `Event`

CERIF the ResultPublication_Event linking entity (https://w3id.org/cerif/model#ResultPublication_Event) with the https://w3id.org/cerif/vocab/EventOutputRelationships#Output semantics

2.1.37 Coverage

Description The event that is covered by this publication (e.g. a report about the event)

Use optional, possibly multiple (0..*)

Representation XML element `Coverage` with embedded XML element `Event`

CERIF the ResultPublication_Event linking entity (https://w3id.org/cerif/model#ResultPublication_Event) with the https://w3id.org/cerif/vocab/EventOutputRelationships#Coverage semantics

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[1] Note: Video recordings of conference presentations are stored as alternative representations of the primary object: the conference paper. It would be unneccessarily complex to represent them as separate, linked Products.

2.1.38 References

Description Result outputs that are referenced by this publication

Use optional, possibly multiple (0..*)

Representation XML element `References` with embedded XML element `Publication` or `Patent` or `Product`

CERIF the ResultPublication_ResultPublication linking entity (https://w3id.org/cerif/model#ResultPublication_ResultPublication) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1); the ResultPublication_ResultProduct linking entity (https://w3id.org/cerif/model#ResultPublication_ResultProduct) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1); the ResultPublication_ResultPatent linking entity (https://w3id.org/cerif/model#ResultPublication_ResultPatent) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1)

2.1.39 ns4:Access

Description The open access type of the publication

Use optional (0..1)

Representation XML element `Access` from namespace http://purl.org/coar/access_right

CERIF the ResultPublication_Classification (https://w3id.org/cerif/model#ResultPublication_Classification)

Vocabulary

- **open access** (http://purl.org/coar/access_right/c_abf2): Open access refers to a resource that is immediately and permanently online, and free for all on the Web, without financial and technical barriers.The resource is either stored in the repository or referenced to an external journal or trustworthy archive.

- **embargoed access** (http://purl.org/coar/access_right/c_f1cf): Embargoed access refers to a resource that is metadata only access until released for open access on a certain date. Embargoes can be required by publishers and funders policies, or set by the author (e.g such as in the case of theses and dissertations).

- **restricted access** (http://purl.org/coar/access_right/c_16ec): Restricted access refers to a resource that is available in a system but with some type of restriction for full open access. This type of access can occur in a number of different situations. Some examples are described below: The user must log-in to the system in order to access the resource The user must send an email to the author or system administrator to access the resource Access to the resource is restricted to a specific community (e.g. limited to a university community)

- **metadata only access** (http://purl.org/coar/access_right/c_14cb): Metadata only access refers to a resource in which access is limited to metadata only. The resource itself is described by the metadata, but neither is directly available through the system or platform nor can be referenced to an open access copy in an external journal or trustworthy archive.

2.2 Product

Description Any result of research other than Publication or Patent. This includes: (1) research datasets, (2) software, (3) visualisations: still or moving images, including maps and other cartographic material, (4) audio recordings, (5) other objects that can be perceived through human senses.

Examples openaire_cerif_xml_example_products.xml

Representation XML element `Product`; the rest of this section documents children of this element

CERIF the ResultProduct entity (https://w3id.org/cerif/model#ResultProduct)

2.2.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the ResultProductIdentifier attribute (https://w3id.org/cerif/model#ResultProduct.ResultProductIdentifier)

2.2.2 Type

Description The type of the resulting product (other than publication or patent)

Use mandatory (1)

Representation XML element `Type` from namespace https://www.openaire.eu/cerif-profile/vocab/COAR_Product_Types

CERIF the ResultProduct_Classification (https://w3id.org/cerif/model#ResultProduct_Classification)

Vocabulary Product types extracted from the COAR Resource Types concept scheme: Types of products as extracted from the COAR Resource Types concept scheme (http://vocabularies.coar-repositories.org/documentation/resource_types/, all types that do not descend from 'text').

- **interactive resource** (http://purl.org/coar/resource_type/c_e9a0): A resource requiring interaction from the user to be understood, executed, or experienced. Examples include forms on Web pages, applets, multimedia learning objects, chat services, or virtual reality environments.

  - **website** (http://purl.org/coar/resource_type/c_7ad9): A website, also written as web site or simply site, is a set of related web pages typically served from a single web domain. A website is hosted on at least one web server, accessible via a network such as the Internet or a private local area network through an Internet address known as a uniform resource locator (URL). All publicly accessible websites collectively constitute the World Wide Web.

- **dataset** (http://purl.org/coar/resource_type/c_ddb1): A collection of related facts and data encoded in a defined structure. (adapted from fabio; DataCite)

- **image** (http://purl.org/coar/resource_type/c_c513): A visual representation other than text, including all types of moving image and still image.

  – **moving image** (http://purl.org/coar/resource_type/c_8a7e): A moving display, either generated dynamically by a computer program or formed from a series of pre-recorded still images imparting an impression of motion when shown in succession. (adapted from fabio)

    * **video** (http://purl.org/coar/resource_type/c_12ce): A recording of visual images, usually in motion and with sound accompaniment.

  – **still image** (http://purl.org/coar/resource_type/c_ecc8): A recorded static visual representation. This class of image includes diagrams, drawings, graphs, graphic designs, plans, photographs and prints.

- **other** (http://purl.org/coar/resource_type/c_1843): A rest category which may cover text, interactive, sound, or image-based resources not explicitly addressed in any concept in this vocabulary

- **software** (http://purl.org/coar/resource_type/c_5ce6): A computer program in source code (text) or compiled form.

- **workflow** (http://purl.org/coar/resource_type/c_393c): A recorded sequence of connected steps, which may be automated, specifying a reliably repeatable sequence of operations to be undertaken when conducting a particular job, for example an in silico investigation that extracts and processes information from a number of bioinformatics databases.

- **cartographic material** (http://purl.org/coar/resource_type/c_12cc): Any material representing the whole or part of the earth or any celestial body at any scale. Cartographic materials include two- and three-dimensional maps and plans (including maps of imaginary places); aeronautical, navigational, and celestial charts; atlases; globes; block diagrams; sections; aerial photographs with a cartographic purpose; bird's-eye views (map views), etc.

  – **map** (http://purl.org/coar/resource_type/c_12cd): Defined as a representation normally to scale and on a flat medium, of a selection of material or abstract features on, or in relation to, the surface of the earth or of another celestial body.

- **sound** (http://purl.org/coar/resource_type/c_18cc): A resource primarily intended to be heard. Examples include a music playback file format, an audio compact disc, and recorded speech or sounds.

  – **musical composition** (http://purl.org/coar/resource_type/c_18cd): Musical composition can refer to an original piece of music, the structure of a musical piece, or the process of creating a new piece of music.

2.2.3 Language

Description The language or languages of the product, if applicable. Please use the IETF language tags as described in the IETF BCP 47 document.

Use optional, possibly multiple (0..*)

Representation XML element `Language`

CERIF the ResultProduct_Classification linking entity (https://w3id.org/cerif/model# ResultProduct_Classification) with the http://publications.europa.eu/resource/ authority/language semantics

2.2.4 Name

Use optional, possibly multiple (0..*)

Representation XML element `Name` as a multilingual string

CERIF the ResultProduct.Name attribute (https://w3id.org/cerif/model#ResultProduct. Name)

2.2.5 VersionInfo

Use optional, possibly multiple (0..*)

Representation XML element `VersionInfo` as a multilingual string

CERIF the ResultProduct.VersionInfo attribute (https://w3id.org/cerif/model# ResultProduct.VersionInfo)

2.2.6 ARK

Use optional (0..1)

Representation XML element `ARK`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.2.7 DOI

Description The Digital Object Identifier

Use optional (0..1)

Representation XML element `DOI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `10\.\d{4,}(\.\d+)*/[^\s]+` (as per https://www. crossref.org/blog/dois-and-matching-regular-expressions/)

2.2.8 Handle

Use optional (0..1)

Representation XML element `Handle`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.2.9 URL

Use optional (0..1)

Representation XML element `URL`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.2.10 URN

Use optional (0..1)

Representation XML element `URN`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.2.11 Creators

Description The creators of this product

Use optional (0..1)

Representation XML element `Creators` with ordered embedded XML elements `Creator` that can contain an embedded person with affiliations or organisation unit

Creator

Use optional, possibly multiple (0..*)

Representation XML element `Creator` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements, or `OrgUnit`. A `DisplayName` may be specified, too.

CERIF the Person_ResultProduct linking entity (https://w3id.org/cerif/model#Person_ ResultProduct) with the https://w3id.org/cerif/vocab/PersonOutputContributions# Creator semantics; the OrganisationUnit_ResultProduct linking entity (https://w3id. org/cerif/model#OrganisationUnit_ResultProduct) with the https://w3id.org/cerif/ vocab/OrganisationOutputContributions#Creator semantics

2.2.12 Publishers

Description The publisher or publishers of this product

Use optional (0..1)

Representation XML element `Publishers` with ordered embedded XML elements `Publisher` that can contain an embedded organisation unit or person

Publisher

Use optional, possibly multiple (0..*)

Representation XML element `Publisher` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the OrganisationUnit_ResultProduct linking entity (https://w3id.org/cerif/ model#OrganisationUnit_ResultProduct) with the https://w3id.org/cerif/vocab/ OrganisationOutputContributions#Publisher semantics; the Person_ResultProduct linking entity (https://w3id.org/cerif/model#Person_ResultProduct) with the https://w3id.org/cerif/vocab/PersonOutputContributions#Publisher semantics

2.2.13 License

Description The license of the product

Use optional, possibly multiple (0..*)

Representation XML element `License` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the ResultProduct_Classification (https://w3id.org/cerif/model#ResultProduct_ Classification)

2.2.14 Description

Use optional, possibly multiple (0..*)

Representation XML element `Description` as a multilingual string

CERIF the ResultProduct.Description attribute (https://w3id.org/cerif/model# ResultProduct.Description)

2.2.15 Subject

Description The subject of the product from a classification

Use optional, possibly multiple (0..*)

Representation XML element `Subject` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the ResultProduct_Classification (https://w3id.org/cerif/model#ResultProduct_ Classification)

2.2.16 Keyword

Description A single keyword or key expression. Please repeat to serialize separate keywords or key expressions.

Use optional, possibly multiple (0..*)

Representation XML element `Keyword` as a multilingual string

CERIF the ResultProduct.Keywords attribute (https://w3id.org/cerif/model# ResultProduct.Keywords)

2.2.17 PartOf

Description Link to the research output of which this product is a part (e.g. a data set collection that contains it)

Use optional (0..1)

Representation XML element `PartOf` with embedded XML element `Publication` or `Patent` or `Product`

CERIF the ResultProduct_ResultProduct linking entity (https://w3id.org/cerif/model#ResultProduct_ResultProduct) with the https://w3id.org/cerif/vocab/InterProductRelations#Part semantics (direction :1)

2.2.18 OriginatesFrom

Use optional, possibly multiple (0..*)

Representation XML element `OriginatesFrom` with embedded XML element `Project` or `Funding`

CERIF the Project_ResultProduct linking entity (https://w3id.org/cerif/model#Project_ResultProduct) with the https://w3id.org/cerif/vocab/ProjectOutputRoles#Originator semantics; the ResultProduct_Funding linking entity (https://w3id.org/cerif/model#ResultProduct_Funding) with the https://w3id.org/cerif/vocab/OutputFundingRoles#Originator semantics

2.2.19 GeneratedBy

Description The equipment that generated this product

Use optional, possibly multiple (0..*)

Representation XML element `GeneratedBy` with embedded XML element `Equipment`

CERIF the ResultProduct_Equipment linking entity (https://w3id.org/cerif/model#ResultProduct_Equipment) with the https://w3id.org/cerif/vocab/OutputResearchInfrastructureRelations#Generation semantics

2.2.20 PresentedAt

Description The event where this product was presented

Use optional, possibly multiple (0..*)

Representation XML element `PresentedAt` with embedded XML element `Event`

CERIF the ResultProduct_Event linking entity (https://w3id.org/cerif/model#ResultProduct_Event) with the https://w3id.org/cerif/vocab/EventOutputRelationships#Presented semantics

2.2.21 Coverage

Description The event that is covered by this product (e.g. a video or audio interview about the event)

Use optional, possibly multiple (0..*)

Representation XML element `Coverage` with embedded XML element `Event`

CERIF the ResultProduct_Event linking entity (https://w3id.org/cerif/model#ResultProduct_Event) with the https://w3id.org/cerif/vocab/EventOutputRelationships#Coverage semantics

2.2.22 References

Description Result outputs that are referenced by this product

Use optional, possibly multiple (0..*)

Representation XML element `References` with embedded XML element `Publication` or `Patent` or `Product`

CERIF the ResultPublication_ResultProduct linking entity (https://w3id.org/cerif/model#ResultPublication_ResultProduct) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1); the ResultProduct_ResultProduct linking entity (https://w3id.org/cerif/model#ResultProduct_ResultProduct) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1); the ResultProduct_ResultPatent linking entity (https://w3id.org/cerif/model#ResultProduct_ResultPatent) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1)

2.2.23 ns4:Access

Description The open access type of the product

Use optional (0..1)

Representation XML element `Access` from namespace http://purl.org/coar/access_right

CERIF the ResultProduct_Classification (https://w3id.org/cerif/model#ResultProduct_Classification)

Vocabulary

- **open access** (http://purl.org/coar/access_right/c_abf2): Open access refers to a resource that is immediately and permanently online, and free for all on the Web, without financial and technical barriers.The resource is either stored in the repository or referenced to an external journal or trustworthy archive.

- **embargoed access** (http://purl.org/coar/access_right/c_f1cf): Embargoed access refers to a resource that is metadata only access until released for open access on a certain date. Embargoes can be required by publishers and funders policies, or set by the author (e.g such as in the case of theses and dissertations).

- **restricted access** (http://purl.org/coar/access_right/c_16ec): Restricted access refers to a resource that is available in a system but with some type of restriction for full open access. This type of access can occur in a number of different situations. Some examples are described below: The user must log-in to the system in order to access the resource The user must send an email to the author or system administrator to access the resource Access to the resource is restricted to a specific community (e.g. limited to a university community)

- **metadata only access** (http://purl.org/coar/access_right/c_14cb): Metadata only access refers to a resource in which access is limited to metadata only. The resource itself is described by the metadata, but neither is directly available through the system or platform nor can be referenced to an open access copy in an external journal or trustworthy archive.

2.3 Patent

Description A set of exclusive rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention. Source: Wikipedia

Examples openaire_cerif_xml_example_patents.xml

Representation XML element `Patent`; the rest of this section documents children of this element

CERIF the ResultPatent entity (https://w3id.org/cerif/model#ResultPatent)

2.3.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the ResultPatentIdentifier attribute (https://w3id.org/cerif/model#ResultPatent. ResultPatentIdentifier)

2.3.2 Type

Description The type of the patent (currently just one option)

Use mandatory (1)

Representation XML element `Type` from namespace https://www.openaire.eu/ cerif-profile/vocab/COAR_Patent_Types

CERIF the ResultPatent_Classification (https://w3id.org/cerif/model#ResultPatent_ Classification)

Vocabulary Patent types extracted from the COAR Resource Types concept scheme: Types of patents as extracted from the COAR Resource Types concept scheme (http:// vocabularies.coar-repositories.org/documentation/resource_types/, the term 'patent' only).

- **patent** (http://purl.org/coar/resource_type/c_15cd): A patent or patent application.

2.3.3 Title

Use optional, possibly multiple (0..*)

Representation XML element `Title` as a multilingual string

CERIF the ResultPatent.Title attribute (https://w3id.org/cerif/model#ResultPatent.Title)

2.3.4 VersionInfo

Use optional, possibly multiple (0..*)

Representation XML element `VersionInfo` as a multilingual string

CERIF the ResultPatent.VersionInfo attribute (https://w3id.org/cerif/model#ResultPatent.VersionInfo)

2.3.5 RegistrationDate

Use optional (0..1)

Representation XML element `RegistrationDate`

CERIF the ResultPatent.RegistrationDate attribute (https://w3id.org/cerif/model#ResultPatent.RegistrationDate)

Format full date (`YYYY-MM-DD`) with optional time zone indication

2.3.6 ApprovalDate

Use optional (0..1)

Representation XML element `ApprovalDate`

CERIF the ResultPatent.ApprovalDate attribute (https://w3id.org/cerif/model#ResultPatent.ApprovalDate)

Format full date (`YYYY-MM-DD`) with optional time zone indication

2.3.7 CountryCode

Use optional (0..1)

Representation XML element `CountryCode`

CERIF the ResultPatent.CountryCode attribute (https://w3id.org/cerif/model#ResultPatent.CountryCode)

2.3.8 Issuer

Description The issuer of the patent: the patent office

Use optional, possibly multiple (0..*)

Representation XML element `Issuer` with embedded XML element `OrgUnit`. A `DisplayName` may be specified, too.

CERIF the OrganisationUnit_ResultPatent linking entity (https://w3id.org/cerif/model#OrganisationUnit_ResultPatent) with the https://w3id.org/cerif/vocab/OrganisationOutputContributions#PatentIssuer semantics

2.3.9 PatentNumber

Use optional (0..1)

Representation XML element `PatentNumber`

CERIF the ResultPatent.PatentNumber attribute (https://w3id.org/cerif/model#ResultPatent.PatentNumber)

2.3.10 URL

Use optional (0..1)

Representation XML element `URL`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.3.11 Inventors

Description The inventors of this patent

Use optional (0..1)

Representation XML element `Inventors` with ordered embedded XML elements `Inventor`

Inventor

Description The inventor: The actual devisor of an invention that is the subject of a patent.

Use optional, possibly multiple (0..*)

Representation XML element `Inventor` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements. A `DisplayName` may be specified, too.

CERIF the Person_ResultPatent linking entity (https://w3id.org/cerif/model#Person_ResultPatent) with the https://w3id.org/cerif/vocab/PersonOutputContributions#Inventor semantics

2.3.12 Holders

Description The holders of this patent

Use optional (0..1)

Representation XML element `Holders` with ordered embedded XML elements `Holder` that can contain an embedded organisation unit or person

Holder

Description The patent rights holder, also known as the patentee or assignee

Use optional, possibly multiple (0..*)

Representation XML element `Holder` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Person_ResultPatent linking entity (https://w3id.org/cerif/model#Person_ResultPatent) with the https://w3id.org/cerif/vocab/PersonOutputContributions#PatentHolder semantics; the OrganisationUnit_ResultPatent linking entity (https://w3id.org/cerif/model#OrganisationUnit_ResultPatent) with the https://w3id.org/cerif/vocab/OrganisationOutputContributions#PatentHolder semantics

2.3.13 Abstract

Use optional, possibly multiple (0..*)

Representation XML element `Abstract` as a multilingual string

CERIF the ResultPatent.Abstract attribute (https://w3id.org/cerif/model#ResultPatent.Abstract)

2.3.14 Subject

Description The subject of the patent from a classification

Use optional, possibly multiple (0..*)

Representation XML element `Subject` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the ResultPatent_Classification (https://w3id.org/cerif/model#ResultPatent_Classification)

2.3.15 Keyword

Description A single keyword or key expression. Please repeat to serialize separate keywords or key expressions.

Use optional, possibly multiple (0..*)

Representation XML element `Keyword` as a multilingual string

CERIF the ResultPatent.Keywords attribute (https://w3id.org/cerif/model#ResultPatent.Keywords)

2.3.16 OriginatesFrom

Use optional, possibly multiple (0..*)

Representation XML element `OriginatesFrom` with embedded XML element `Project` or `Funding`

CERIF the Project_ResultPatent linking entity (https://w3id.org/cerif/model#Project_ResultPatent) with the https://w3id.org/cerif/vocab/ProjectOutputRoles#Originator semantics; the ResultPatent_Funding linking entity (https://w3id.org/cerif/model#ResultPatent_Funding) with the https://w3id.org/cerif/vocab/OutputFundingRoles#Originator semantics

2.3.17 Predecessor

Description Patents that precede (i.e., have priority over) this patent

Use optional, possibly multiple (0..*)

Representation XML element `Predecessor` with embedded XML element `Patent`

CERIF the ResultPatent_ResultPatent linking entity (https://w3id.org/cerif/model#ResultPatent_ResultPatent) with the https://w3id.org/cerif/vocab/InterPatentRelations#Predecessor semantics (direction :1)

2.3.18 References

Description Result outputs that are referenced by this patent

Use optional, possibly multiple (0..*)

Representation XML element `References` with embedded XML element `Publication` or `Patent` or `Product`

CERIF the ResultPublication_ResultPatent linking entity (https://w3id.org/cerif/model#ResultPublication_ResultPatent) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1); the ResultProduct_ResultPatent linking entity (https://w3id.org/cerif/model#ResultProduct_ResultPatent) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1); the ResultPatent_ResultPatent linking entity (https://w3id.org/cerif/model#ResultPatent_ResultPatent) with the https://w3id.org/cerif/vocab/InterOutputRelations#Reference semantics (direction :1)

2.4 Person

Description A human being as an individual. Source: https://en.oxforddictionaries.com/definition/person The kind of involvement of a Person in the research ecosystem is specified in the links with the organisations, the services, etc. This typically includes: (1) researchers (Persons performing research in an Organisation Unit as employees or

students); (2) authors and contributors (Persons signing a publication, creators of data sets, software developers, etc.); (3) investigators and project participants (Persons involved in a Project as principal investigators, co investigators, project managers, consultants, etc.); (4) management (directors, rectors, deans, department heads, etc.); (5) support staffs (technicians, responsible for Equipment, librarians and digital asset curators, administrative staff, etc.). One Person typically has many of these relationships.

Examples openaire_cerif_xml_example_persons.xml

Representation XML element `Person`; the rest of this section documents children of this element

CERIF the Person entity (https://w3id.org/cerif/model#Person)

2.4.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the PersonIdentifier attribute (https://w3id.org/cerif/model#Person.PersonIdentifier)

2.4.2 PersonName

Description The name of the person

Use optional (0..1)

Representation XML element `PersonName` containing optional `FamilyNames`, optional `FirstNames` and optional `OtherNames`

CERIF the PersonName entity (https://w3id.org/cerif/model#PersonName) and the corresponding link (https://w3id.org/cerif/model#Person_PersonName)

FamilyNames

Use optional (0..1)

Representation XML element `FamilyNames`

CERIF the PersonName.FamilyNames attribute (https://w3id.org/cerif/model#PersonName.FamilyNames)

FirstNames

Use optional (0..1)

Representation XML element `FirstNames`

CERIF the PersonName.FirstNames attribute (https://w3id.org/cerif/model#PersonName.FirstNames)

OtherNames

Use optional (0..1)

Representation XML element `OtherNames`

CERIF the PersonName.OtherNames attribute ([https://w3id.org/cerif/model#](https://w3id.org/cerif/model#PersonName.OtherNames) [PersonName.OtherNames](https://w3id.org/cerif/model#PersonName.OtherNames))

2.4.3 Gender

Description The gender of the person. Leave out in case the gender is unknown or not communicated.

Use optional (0..1)

Representation XML element `Gender`

CERIF the Person.Gender attribute (https://w3id.org/cerif/model#Person.Gender)

Vocabulary Genders (sociocultural, not linguistic)

- **Masculine** (`m`):

- **Feminine** (`f`):

2.4.4 ORCID

Description The ORCID identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `ORCID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `https://orcid\.org/` `0000-000(1-[5-9]|2-[0-9]|3-[0-4])[0-9]{3}-[0-9]{3}[0-9X]` (as per [https://support.orcid.org/knowledgebase/articles/](https://support.orcid.org/knowledgebase/articles/116780-structure-of-the-orcid-identifier) [116780-structure-of-the-orcid-identifier](https://support.orcid.org/knowledgebase/articles/116780-structure-of-the-orcid-identifier))

2.4.5 AlternativeORCID

Description The ORCID identifiers in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeORCID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `https://orcid\.org/` `0000-000(1-[5-9]|2-[0-9]|3-[0-4])[0-9]{3}-[0-9]{3}[0-9X]`

(as per https://support.orcid.org/knowledgebase/articles/ 116780-structure-of-the-orcid-identifier)

2.4.6 ResearcherID

Description The ResearcherID identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `ResearcherID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `[A-Z]-[0-9]{4}-(19|20)[0-9][0-9]` (as per https://www.wikidata.org/wiki/Property:P1053)

2.4.7 AlternativeResearcherID

Description The ResearcherID identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeResearcherID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `[A-Z]-[0-9]{4}-(19|20)[0-9][0-9]` (as per https://www.wikidata.org/wiki/Property:P1053)

2.4.8 ScopusAuthorID

Description The Scopus Author ID identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `ScopusAuthorID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `[0-9]{10,11}` (as per https://www.wikidata.org/wiki/Property:P1153)

2.4.9 AlternativeScopusAuthorID

Description The Scopus Author ID identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeScopusAuthorID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `[0-9]{10,11}` (as per https://www.wikidata.org/wiki/Property:P1153)

2.4.10 ISNI

Description The ISNI identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `ISNI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `\d{4} \d{4} \d{4} \d{3}[\dX]` (as per https://www.wikidata.org/wiki/Property:P213)

2.4.11 AlternativeISNI

Description The ISNI identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeISNI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `\d{4} \d{4} \d{4} \d{3}[\dX]` (as per https://www.wikidata.org/wiki/Property:P213)

2.4.12 DAI

Description The Digital Author Identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `DAI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `info\:eu\-repo/dai/nl/\d{8}[\dxX]` (as per https://wiki.surfnet.nl/display/standards/DAI)

2.4.13 AlternativeDAI

Description The Digital Author Identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeDAI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `info\:eu\-repo/dai/nl/\d{8}[\dxX]` (as per https://wiki.surfnet.nl/display/standards/DAI)

2.4.14 ElectronicAddress

Description An electronic address associated with the person

Use optional, possibly multiple (0..*)

Representation XML element `ElectronicAddress`

CERIF the ElectronicAddress entity (https://w3id.org/cerif/model#ElectronicAddress) and the corresponding link (https://w3id.org/cerif/model#Person_ElectronicAddress)

2.4.15 Affiliation

Description The organisation or organisation unit the person is affiliated with

Use optional, possibly multiple (0..*)

Representation XML element `Affiliation` with embedded XML element `OrgUnit`

CERIF the Person_OrganisationUnit linking entity (https://w3id.org/cerif/model#Person_OrganisationUnit) with the https://w3id.org/cerif/vocab/PersonOrganisationRoles#Affiliation semantics

2.5 OrgUnit

Description Organisation Unit: an organisation, a unit therein, a committee or any other group of people that has a collective goal. Organisation Units are not necessarily formalized as legal entities. In the research information domain Organisation Units typically represents: (1) organisations that perform research (universities, research institutes, corporations) and their subdivisions (faculties, schools, departments, research groups) and other associated bodies (boards, advisory bodies); (2) organisations that fund research (funders, their divisions and evaluation panels); (3) scientific associations and networks; (4) publishers, facility operators and other service providers in the research space; (5) authorities, such as patent offices and standardization or supervision bodies; and (6) other bodies: editorial boards, evaluation panels, or committees of all kinds.

Examples openaire_cerif_xml_example_orgunits.xml

Representation XML element `OrgUnit`; the rest of this section documents children of this element

CERIF the OrganisationUnit entity (https://w3id.org/cerif/model#OrganisationUnit)

2.5.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the OrganisationUnitIdentifier attribute (https://w3id.org/cerif/model# [OrganisationUnit.OrganisationUnitIdentifier](https://w3id.org/cerif/model#OrganisationUnit.OrganisationUnitIdentifier))

2.5.2 Type

Description The type of the organisation unit

Use optional, possibly multiple (0..*)

Representation XML element `Type` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the OrganisationUnit_Classification (https://w3id.org/cerif/model# [OrganisationUnit_Classification](https://w3id.org/cerif/model#OrganisationUnit_Classification))

2.5.3 Acronym

Description The acronym of the organisation unit

Use optional (0..1)

Representation XML element `Acronym`

CERIF the OrganisationUnit.Acronym attribute (https://w3id.org/cerif/model# [OrganisationUnit.Acronym](https://w3id.org/cerif/model#OrganisationUnit.Acronym))

2.5.4 Name

Description The name of the organisation unit

Use optional, possibly multiple (0..*)

Representation XML element `Name` as a multilingual string

CERIF the OrganisationUnit.Name attribute (https://w3id.org/cerif/model# [OrganisationUnit.Name](https://w3id.org/cerif/model#OrganisationUnit.Name))

2.5.5 RORID

Description The ROR identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `RORID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `https:\/\/ror\.org\/` `0[\da-hj-km-np-tv-zA-HJ-KM-NP-TV-Z]{6}\d{2}` (as per https://ror.org/facts/)

2.5.6 AlternativeRORID

Description The ROR identifiers in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeRORID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `https:\/\/ror\.org\/0[\da-hj-km-np-tv-zA-HJ-KM-NP-TV-Z]{6}\d{2}` (as per https://ror.org/facts/)

2.5.7 GRID

Description The GRID identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `GRID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `grid\.\d{4,}\.[0-9a-f]{1,2}` (as per https://www.wikidata.org/wiki/Property_talk:P2427)

2.5.8 AlternativeGRID

Description The GRID identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeGRID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `grid\.\d{4,}\.[0-9a-f]{1,2}` (as per https://www.wikidata.org/wiki/Property_talk:P2427)

2.5.9 ISNI

Description The ISNI identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `ISNI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `\d{4} \d{4} \d{4} \d{3}[\dX]` (as per https://www.wikidata.org/wiki/Property:P213)

2.5.10 AlternativeISNI

Description The ISNI identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeISNI`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `\d{4} \d{4} \d{4} \d{3}[\dX]` (as per https://www.wikidata.org/wiki/Property:P213)

2.5.11 FundRefID

Description The FundRef Registry Identifier in case its value is certain or known to be a preferred one.

Use optional (0..1)

Representation XML element `FundRefID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `https:\/\/doi.org\/10\.13039\/\d+` (as per https://www.crossref.org/display-guidelines/ https://www.wikidata.org/wiki/Q19822542)

2.5.12 AlternativeFundRefID

Description The FundRef Registry Identifier in case the value is not certain, e.g. because there is a conflicting statement with a different value. This can also represent deprecated identifiers/profiles that have been merged into a single, current one that is preferred.

Use optional, possibly multiple (0..*)

Representation XML element `AlternativeFundRefID`

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

Format regular expression `https:\/\/doi.org\/10\.13039\/\d+` (as per https://www.crossref.org/display-guidelines/ https://www.wikidata.org/wiki/Q19822542)

2.5.13 Identifier

Description A generic identifier, to be used only if your identifier does not fit in any of the above specific identifier types.

Use optional, possibly multiple (0..*)

Representation XML element `Identifier`

2.5.14 ElectronicAddress

Description An electronic address associated with the organisation unit

Use optional, possibly multiple (0..*)

Representation XML element `ElectronicAddress`

CERIF the ElectronicAddress entity (https://w3id.org/cerif/model#ElectronicAddress) and the corresponding link (https://w3id.org/cerif/model#OrganisationUnit_ ElectronicAddress)

2.5.15 PartOf

Description Link to the larger unit that encompasses this unit. To be used for the immediate parents only. In order to represent the full path up through the hierarchy of an institution, use this construct recursively. In specific cases there may be several such parents at one time in parallel. An example: a interdisciplinary research centre within a university can be subordinated to several faculties.

Use optional, possibly multiple (0..*)

Representation XML element `PartOf` with embedded XML element `OrgUnit`

CERIF the OrganisationUnit_OrganisationUnit linking entity (https://w3id.org/cerif/ model#OrganisationUnit_OrganisationUnit) with the https://w3id.org/cerif/vocab/ InterOrganisationalStructure#Part semantics (direction :1)

2.6 Project

Description A temporary endeavor undertaken to create a unique product, service or result. Source: the Project Management Institute, https://www.pmi.org/about/ learn-about-pmi/what-is-project-management In the research information domain, one typically tracks: (1) research projects, where the result is an addition to the body of knowledge of the mankind, (2) technology development projects, where the result is a particular technology or product, (3) innovation projects, where the result is an improvement of a product or process, and (4) projects that create or enhance infrastructure for research, technology development or innovation. Depending on the scope one can also track finer levels of granularity: stages, work packages, sometimes even down to individual tasks. All such activities are also modelled using the Project entity and linked using the recursive link relationship. The Project entity only captures details of the project scope and plan. Information about the resources needed to execute the project such as the funding (i.e., the grants received), the people and organisations involved, the supporting infrastructures, the outputs produced, etc. is contained in separate entities (the Funding entity, the Person entity, the OrgUnit entity, the infrastructure entities, the result entities respectively) and is linked to the Project.

Examples openaire_cerif_xml_example_projects.xml

Representation XML element `Project`; the rest of this section documents children of this element

CERIF the Project entity (https://w3id.org/cerif/model#Project)

2.6.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the ProjectIdentifier attribute (https://w3id.org/cerif/model#Project.ProjectIdentifier)

2.6.2 Type

Description The type of the project

Use optional, possibly multiple (0..*)

Representation XML element `Type` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Project_Classification (https://w3id.org/cerif/model#Project_Classification)

2.6.3 Acronym

Description The acronym of the project

Use optional (0..1)

Representation XML element `Acronym`

CERIF the Project.Acronym attribute (https://w3id.org/cerif/model#Project.Acronym)

2.6.4 Title

Description The title of the project

Use optional, possibly multiple (0..*)

Representation XML element `Title` as a multilingual string

CERIF the Project.Title attribute (https://w3id.org/cerif/model#Project.Title)

2.6.5 Identifier

Description An identifier of the project

Use optional, possibly multiple (0..*)

Representation XML element `Identifier` with mandatory `type` attribute

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.6.6 StartDate

Description The start date of the project

Use optional (0..1)

Representation XML element `StartDate`

CERIF the Project.StartDate attribute (https://w3id.org/cerif/model#Project.StartDate)

Format full date (`YYYY-MM-DD`) with optional time zone indication

2.6.7 EndDate

Description The end date of the project

Use optional (0..1)

Representation XML element `EndDate`

CERIF the Project.EndDate attribute (https://w3id.org/cerif/model#Project.EndDate)

Format full date (`YYYY-MM-DD`) with optional time zone indication

2.6.8 Consortium

Description The consortium of the project: the organisations (persons) who are contractually bound to do the work in the project

Use optional (0..1)

Representation XML element `Consortium` with unordered embedded XML elements `Coordinator` that can contain an embedded organisation unit or person or `Partner` that can contain an embedded organisation unit or person or `Contractor` that can contain an embedded organisation unit or person or `InkindContributor` that can contain an embedded organisation unit or person or `Member` that can contain an embedded organisation unit or person

Coordinator

Description Project coordinator

Use optional, possibly multiple (0..*)

Representation XML element `Coordinator` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Project_OrganisationUnit linking entity (https://w3id.org/cerif/model#Project_OrganisationUnit) with the https://w3id.org/cerif/vocab/OrganisationProjectEngagements#Coordinator semantics; the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#Coordinator semantics

Partner

Description Project partner

Use optional, possibly multiple (0..*)

Representation XML element `Partner` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Project_OrganisationUnit linking entity (https://w3id.org/cerif/model#Project_OrganisationUnit) with the https://w3id.org/cerif/vocab/OrganisationProjectEngagements#Partner semantics; the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#Partner semantics

Contractor

Description Project contractor

Use optional, possibly multiple (0..*)

Representation XML element `Contractor` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Project_OrganisationUnit linking entity (https://w3id.org/cerif/model#Project_OrganisationUnit) with the https://w3id.org/cerif/vocab/OrganisationProjectEngagements#Contractor semantics; the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#Contractor semantics

InkindContributor

Description Project in kind contributor

Use optional, possibly multiple (0..*)

Representation XML element `InkindContributor` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Project_OrganisationUnit linking entity (https://w3id.org/cerif/model#Project_OrganisationUnit) with the https://w3id.org/cerif/vocab/OrganisationProjectEngagements#InkindContributor semantics; the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#InkindContributor semantics

Member

Description A member of the project consortium

Use optional, possibly multiple (0..*)

Representation XML element `Member` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Project_OrganisationUnit linking entity (https://w3id.org/cerif/model#Project_OrganisationUnit) with the https://w3id.org/cerif/vocab/OrganisationProjectEngagements#ConsortiumMember semantics; the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#ConsortiumMember semantics

2.6.9 Team

Description The project team: the persons who carry out the work in the project, typically as a part of their job at the organisations from the consortium

Use optional (0..1)

Representation XML element `Team` with unordered embedded XML elements `PrincipalInvestigator` or `Contact` or `Member`

PrincipalInvestigator

Description The principal investigator: the person responsible for the whole project, the head of the project team

Use optional, possibly multiple (0..*)

Representation XML element `PrincipalInvestigator` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements. A `DisplayName` may be specified, too.

CERIF the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#PrincipalInvestigator semantics

Contact

Description A person to contact in matters connected with her/his organisations' participation in the project

Use optional, possibly multiple (0..*)

Representation XML element `Contact` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements. A `DisplayName` may be specified, too.

CERIF the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#OrganisationContact semantics

Member

Description A member of the project team

Use optional, possibly multiple (0..*)

Representation XML element `Member` with embedded XML element `Person` optionally followed by one or several `Affiliation` elements. A `DisplayName` may be specified, too.

CERIF the Project_Person linking entity (https://w3id.org/cerif/model#Project_Person) with the https://w3id.org/cerif/vocab/PersonProjectEngagements#TeamMember semantics

2.6.10 Funded

Description Information about funding of this project

Use optional, possibly multiple (0..*)

Representation XML element `Funded` with unordered embedded XML elements `By` that can contain an embedded organisation unit or person or `As`

By

Description The funder of the project

Use optional (0..1)

Representation XML element `By` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Project_OrganisationUnit linking entity (https://w3id.org/cerif/model#Project_OrganisationUnit) with the https://w3id.org/cerif/vocab/OrganisationProjectEngagements#Funder semantics

As

Description The specific funding device (grant, award, contract) for the project

Use optional (0..1)

Representation XML element `As` with embedded XML element `Funding`

CERIF the Project_Funding linking entity (https://w3id.org/cerif/model#Project_Funding) with the https://w3id.org/cerif/vocab/ProjectFundingRelations#Support semantics

2.6.11 Subject

Description The subject classification(s) of the project

Use optional, possibly multiple (0..*)

Representation XML element `Subject` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Project_Classification (https://w3id.org/cerif/model#Project_Classification)

2.6.12 Keyword

Description A single keyword or key expression that characterize the project. Please repeat to serialize separate keywords or key expressions.

Use optional, possibly multiple (0..*)

Representation XML element `Keyword` as a multilingual string

CERIF the Project.Keywords attribute (https://w3id.org/cerif/model#Project.Keywords)

2.6.13 Abstract

Description The abstract of the project

Use optional, possibly multiple (0..*)

Representation XML element `Abstract`

CERIF the Project.Abstract attribute (https://w3id.org/cerif/model#Project.Abstract)

2.6.14 Status

Description The status of the project

Use optional, possibly multiple (0..*)

Representation XML element `Status` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Project_Classification (https://w3id.org/cerif/model#Project_Classification)

2.6.15 Uses

Description The equipment this project uses

Use optional, possibly multiple (0..*)

Representation XML element `Uses` with embedded XML element `Equipment`

CERIF the Project_Equipment linking entity (https://w3id.org/cerif/model#Project_Equipment) with the https://w3id.org/cerif/vocab/ProjectResearchInfrastructureRelations#User semantics

2.6.16 OAMandate

Description Information about the Open Access mandate that applies to this project

Use optional, possibly multiple (0..*)

Representation XML element `OAMandate`

mandated

> **Description** The flag if Open Access is mandated in the project
>
> **Use** required
>
> **Representation** XML attribute `mandated`
>
> **Format** `true` or `false` (data type `xs:boolean`)

uri

> **Description** The Open Access policy that applies to the project
>
> **Use** optional
>
> **Representation** XML attribute `uri`
>
> **Format** URI (data type `xs:anyURI`)

2.7 Funding

> **Examples** openaire_cerif_xml_example_fundings.xml
>
> **Representation** XML element `Funding`; the rest of this section documents children of this element
>
> **CERIF** the Funding entity (https://w3id.org/cerif/model#Funding)

2.7.1 Internal Identifier

> **Use** mandatory (1)
>
> **Representation** XML attribute `id`
>
> **CERIF** the FundingIdentifier attribute (https://w3id.org/cerif/model#Funding. FundingIdentifier)

2.7.2 Type

> **Description** The type of the funding
>
> **Use** mandatory (1)
>
> **Representation** XML element `Type` from namespace https://www.openaire.eu/ cerif-profile/vocab/OpenAIRE_Funding_Types
>
> **CERIF** the Funding_Classification (https://w3id.org/cerif/model#Funding_Classification)
>
> **Vocabulary** Types of funding for the OpenAIRE Guidelines for CRIS Managers
>
> > • **Funding Programme** (https://www.openaire.eu/cerif-profile/vocab/ OpenAIRE_Funding_Types#FundingProgramme): A funding programme or a similar scheme that funds some number of proposals. Funding programmes can be broken down into sub-programmes.

- **Call** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Call): Call for proposals: a specific campaign for the funder to solicit proposals from interested researchers and institutions.

- **Tender** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Tender): Tender for services or deliveries: a specific campaign for the funder to solicit offers for services or deliveries.

- **Gift** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Gift): A donation connected with specific terms and conditions.

- **Internal Funding** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#InternalFunding): Internal funds used to amend or replace external funding.

- **Contract** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Contract):

- **Award** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Award):

- **Grant** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Grant):

2.7.3 Acronym

Description The acronym of the funding

Use optional (0..1)

Representation XML element `Acronym`

CERIF the Funding.Acronym attribute (https://w3id.org/cerif/model#Funding.Acronym)

2.7.4 Name

Description The name of the funding

Use optional, possibly multiple (0..*)

Representation XML element `Name` as a multilingual string

CERIF the Funding.Name attribute (https://w3id.org/cerif/model#Funding.Name)

2.7.5 Amount

Description The amount of the funding and its currency

Use optional (0..1)

Representation XML element `Amount`

CERIF the Funding.Amount https://w3id.org/cerif/model#Funding.CurrencyCode attribute (https://w3id.org/cerif/model#Funding.Amounthttps://w3id.org/cerif/model#Funding.CurrencyCode)

2.7.6 Identifier

Description An identifier of the funding

Use optional, possibly multiple (0..*)

Representation XML element `Identifier` with mandatory `type` attribute

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.7.7 Description

Description A description of the funding

Use optional, possibly multiple (0..*)

Representation XML element `Description` as a multilingual string

CERIF the Funding.Description attribute (https://w3id.org/cerif/model#Funding.Description)

2.7.8 Subject

Description The subject classification(s) of the funding

Use optional, possibly multiple (0..*)

Representation XML element `Subject` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Funding_Classification (https://w3id.org/cerif/model#Funding_Classification)

2.7.9 Keyword

Description A single keyword or key expression that characterize the funding. Please repeat to serialize separate keywords or key expressions.

Use optional, possibly multiple (0..*)

Representation XML element `Keyword` as a multilingual string

CERIF the Funding.Keywords attribute (https://w3id.org/cerif/model#Funding.Keywords)

2.7.10 Funder

Description The funder or funders

Use optional, possibly multiple (0..*)

Representation XML element `Funder` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the OrganisationUnit_Funding linking entity (https://w3id.org/cerif/model#OrganisationUnit_Funding) with the https://w3id.org/cerif/vocab/OrganisationFundingRoles#Financier semantics

2.7.11 PartOf

Description Chain up to the larger funding that encompasses this funding

Use optional (0..1)

Representation XML element `PartOf` with embedded XML element `Funding`

CERIF the Funding_Funding linking entity (https://w3id.org/cerif/model#Funding_Funding) with the https://w3id.org/cerif/vocab/InterFundingRelations#Part semantics (direction :1)

2.7.12 Duration

Description Duration of the funding

Use optional (0..1)

Representation XML element `Duration` *TODO*

CERIF the Funding_Classification linking entity (https://w3id.org/cerif/model#Funding_Classification) with the https://w3id.org/cerif/vocab/Durations#FundingDuration semantics

2.7.13 OAMandate

Description Information about the Open Access mandate that applies to this funding

Use optional, possibly multiple (0..*)

Representation XML element `OAMandate`

mandated

Description The flag if Open Access is mandated for this funding

Use required

Representation XML attribute `mandated`

Format `true` or `false` (data type `xs:boolean`)

uri

Description The Open Access policy that applies to this funding

Use optional

Representation XML attribute `uri`

Format URI (data type `xs:anyURI`)

2.8 Service

Description CRIS compatible with the OpenAIRE Guidelines for CRIS Managers

Examples sample Identify response

Representation XML element `Service`; the rest of this section documents children of this element

CERIF the Service entity (https://w3id.org/cerif/model#Service)

2.8.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the ServiceIdentifier attribute (https://w3id.org/cerif/model#Service.ServiceIdentifier)

2.8.2 Compatibility

Description OpenAIRE compatibility of the CRIS

Use optional, possibly multiple (0..*)

Representation XML element `Compatibility` from namespace https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Service_Compatibility

CERIF the Service_Classification (https://w3id.org/cerif/model#Service_Classification)

Vocabulary Compatibility of service with the OpenAIRE Guidelines for CRIS Managers

- **OpenAIRE Guidelines 1.1.1 compatible CRIS** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Service_Compatibility#1.1.1): CRIS compatible with OpenAIRE Guidelines for CRIS managers version 1.1.1

- **OpenAIRE Guidelines 1.1 compatible CRIS** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Service_Compatibility#1.1): CRIS compatible with OpenAIRE Guidelines for CRIS managers version 1.1

- **OpenAIRE Guidelines 1.0 compatible CRIS** (https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Service_Compatibility#1.0): CRIS compatible with OpenAIRE Guidelines for CRIS managers version 1.0

2.8.3 Acronym

Description Acronym of the service

Use optional (0..1)

Representation XML element `Acronym`

CERIF the Service.Acronym attribute (https://w3id.org/cerif/model#Service.Acronym)

2.8.4 Name

Description Name of the service

Use optional, possibly multiple (0..*)

Representation XML element `Name` as a multilingual string

CERIF the Service.Name attribute (https://w3id.org/cerif/model#Service.Name)

2.8.5 Identifier

Description An identifier of this service

Use optional, possibly multiple (0..*)

Representation XML element `Identifier` with mandatory `type` attribute

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.8.6 Description

Description Description of the service

Use optional, possibly multiple (0..*)

Representation XML element `Description` as a multilingual string

CERIF the Service.Description attribute (https://w3id.org/cerif/model#Service. Description)

2.8.7 WebsiteURL

Description URL of the website of the CRIS

Use optional (0..1)

Representation XML element `WebsiteURL`

CERIF the FederatedIdentifier linking entity (https://w3id.org/cerif/model# FederatedIdentifier) with the https://w3id.org/cerif/vocab/IdentifierTypes#URL semantics; the FederatedIdentifier linking entity (https://w3id.org/cerif/model# FederatedIdentifier) with the https://w3id.org/cerif/vocab/ElectronicAddressTypes# Website semantics

2.8.8 OAIPMHBaseURL

Description Base URL for the OAI-PMH protocol endpoint of the CRIS

Use optional (0..1)

Representation XML element `OAIPMHBaseURL`

CERIF the FederatedIdentifier linking entity (https://w3id.org/cerif/model# FederatedIdentifier) with the https://w3id.org/cerif/vocab/IdentifierTypes#URL semantics; the FederatedIdentifier linking entity (https://w3id.org/cerif/model# FederatedIdentifier) with the https://w3id.org/cerif/vocab/ElectronicAddressTypes# OAI-PMH_Base semantics

2.8.9 SubjectHeadingsURL

Description The URL where the subject classification used by the CRIS can be obtained (using the HTTP GET)

Use optional, possibly multiple (0..*)

Representation XML element `SubjectHeadingsURL`

CERIF the FederatedIdentifier linking entity (https://w3id.org/cerif/model# FederatedIdentifier) with the https://w3id.org/cerif/vocab/IdentifierTypes#URL semantics; the FederatedIdentifier linking entity (https://w3id.org/cerif/model# FederatedIdentifier) with the https://w3id.org/cerif/vocab/ElectronicAddressTypes# SubjectHeadings semantics

2.8.10 Owner

Description The owner of the CRIS: The organisation the research of which the CRIS documents

Use optional, possibly multiple (0..*)

Representation XML element `Owner` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the OrganisationUnit_Service linking entity (https://w3id.org/cerif/ model#OrganisationUnit_Service) with the https://w3id.org/cerif/vocab/ OrganisationResearchInfrastructureRoles#Owner semantics

2.9 Equipment

Description An equipment is an instrumentality needed for an undertaking or to perform a service: Definition Source: http://wordnetweb.princeton.edu/perl/webwn?s= equipment

Examples openaire_cerif_xml_example_equipments.xml

Representation XML element `Equipment`; the rest of this section documents children of this element

CERIF the Equipment entity (https://w3id.org/cerif/model#Equipment)

2.9.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the EquipmentIdentifier attribute ([https://w3id.org/cerif/model#Equipment.](https://w3id.org/cerif/model#Equipment.EquipmentIdentifier) [EquipmentIdentifier](https://w3id.org/cerif/model#Equipment.EquipmentIdentifier))

2.9.2 Type

Description The type of the equipment

Use optional, possibly multiple (0..*)

Representation XML element `Type` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Equipment_Classification ([https://w3id.org/cerif/model#Equipment_](https://w3id.org/cerif/model#Equipment_Classification) [Classification](https://w3id.org/cerif/model#Equipment_Classification))

2.9.3 Acronym

Description Acronym of the equipment

Use optional (0..1)

Representation XML element `Acronym`

CERIF the Equipment.Acronym attribute ([https://w3id.org/cerif/model#Equipment.](https://w3id.org/cerif/model#Equipment.Acronym) [Acronym](https://w3id.org/cerif/model#Equipment.Acronym))

2.9.4 Name

Description Name of the equipment

Use optional, possibly multiple (0..*)

Representation XML element `Name` as a multilingual string

CERIF the Equipment.Name attribute (https://w3id.org/cerif/model#Equipment.Name)

2.9.5 Identifier

Description An identifier of this equipment

Use optional, possibly multiple (0..*)

Representation XML element `Identifier` with mandatory `type` attribute

CERIF the FederatedIdentifier entity (https://w3id.org/cerif/model#FederatedIdentifier)

2.9.6 Description

Description Description of the equipment

Use optional, possibly multiple (0..*)

Representation XML element `Description` as a multilingual string

CERIF the Equipment.Description attribute (https://w3id.org/cerif/model#Equipment.Description)

2.9.7 Owner

Description The owner of the piece of equipment

Use optional, possibly multiple (0..*)

Representation XML element `Owner` with embedded XML element `OrgUnit` or `Person`. A `DisplayName` may be specified, too.

CERIF the Person_Service linking entity (https://w3id.org/cerif/model#Person_Service) with the https://w3id.org/cerif/vocab/PersonResearchInfrastructureRoles#Owner semantics; the OrganisationUnit_Service linking entity (https://w3id.org/cerif/model#OrganisationUnit_Service) with the https://w3id.org/cerif/vocab/OrganisationResearchInfrastructureRoles#Owner semantics

2.10 Event

Description An event is something that happens at a given place and time. Definition Source: http://wordnetweb.princeton.edu/perl/webwn?s=event

Examples openaire_cerif_xml_example_events.xml

Representation XML element `Event`; the rest of this section documents children of this element

CERIF the Event entity (https://w3id.org/cerif/model#Event)

2.10.1 Internal Identifier

Use mandatory (1)

Representation XML attribute `id`

CERIF the EventIdentifier attribute (https://w3id.org/cerif/model#Event.EventIdentifier)

2.10.2 Type

Description The type of the event

Use optional, possibly multiple (0..*)

Representation XML element `Type` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Event_Classification (https://w3id.org/cerif/model#Event_Classification)

2.10.3 Acronym

Description Acronym of the event

Use optional (0..1)

Representation XML element `Acronym`

CERIF the Event.Acronym attribute (https://w3id.org/cerif/model#Event.Acronym)

2.10.4 Name

Description Name of the event

Use optional, possibly multiple (0..*)

Representation XML element `Name` as a multilingual string

CERIF the Event.Name attribute (https://w3id.org/cerif/model#Event.Name)

2.10.5 Place

Description Location of the event (the city or town)

Use optional (0..1)

Representation XML element `Place`

CERIF the Event.CityTown attribute (https://w3id.org/cerif/model#Event.CityTown)

2.10.6 Country

Description Country of the location of the event

Use optional (0..1)

Representation XML element `Country`

CERIF the Event.CountryCode attribute (https://w3id.org/cerif/model#Event.CountryCode)

2.10.7 StartDate

Description The start date of the event

Use optional (0..1)

Representation XML element `StartDate`

CERIF the Event.StartDate attribute (https://w3id.org/cerif/model#Event.StartDate)

Format full date (`YYYY-MM-DD`) with optional time zone indication

2.10.8 EndDate

Description The end date of the event

Use optional (0..1)

Representation XML element `EndDate`

CERIF the Event.EndDate attribute (https://w3id.org/cerif/model#Event.EndDate)

Format full date (`YYYY-MM-DD`) with optional time zone indication

2.10.9 Description

Description Description of the event

Use optional, possibly multiple (0..*)

Representation XML element `Description` as a multilingual string

CERIF the Event.Description attribute (https://w3id.org/cerif/model#Event.Description)

2.10.10 Subject

Description The subject category of the event from a classification

Use optional, possibly multiple (0..*)

Representation XML element `Subject` containing the classification identifier and having a `scheme` attribute to specify the classification scheme identifier

CERIF the Event_Classification (https://w3id.org/cerif/model#Event_Classification)

2.10.11 Keyword

Description A single keyword or key expression that characterize the event. Please repeat to serialize separate keywords or key expressions.

Use optional, possibly multiple (0..*)

Representation XML element `Keyword` as a multilingual string

CERIF the Event.Keywords attribute (https://w3id.org/cerif/model#Event.Keywords)

2.10.12 Organizer

Description The organizer of the event

Use optional, possibly multiple (0..*)

Representation XML element `Organizer` with embedded XML element `OrgUnit` or `Project`

CERIF the OrganisationUnit_Event linking entity (https://w3id.org/cerif/model#OrganisationUnit_Event) with the https://w3id.org/cerif/vocab/EventRelationshipKinds#Organizer semantics; the Project_Event linking entity

(https://w3id.org/cerif/model#Project_Event) with the https://w3id.org/cerif/vocab/
EventRelationshipKinds#Organizer semantics

2.10.13 Sponsor

Description The sponsor of the event

Use optional, possibly multiple (0..*)

Representation XML element `Sponsor` with embedded XML element `OrgUnit` or
`Project`

CERIF the OrganisationUnit_Event linking entity (https://w3id.org/cerif/
model#OrganisationUnit_Event) with the https://w3id.org/cerif/vocab/
EventRelationshipKinds#Sponsor semantics; the Project_Event linking entity
(https://w3id.org/cerif/model#Project_Event) with the https://w3id.org/cerif/vocab/
EventRelationshipKinds#Sponsor semantics

2.10.14 Partner

Description The partner of the event

Use optional, possibly multiple (0..*)

Representation XML element `Partner` with embedded XML element `OrgUnit` or
`Project`

CERIF the OrganisationUnit_Event linking entity (https://w3id.org/cerif/
model#OrganisationUnit_Event) with the https://w3id.org/cerif/vocab/
EventRelationshipKinds#Partner semantics; the Project_Event linking entity
(https://w3id.org/cerif/model#Project_Event) with the https://w3id.org/cerif/vocab/
EventRelationshipKinds#Partner semantics

Technical Implementation Guidelines

3.1 Metadata representation in CERIF XML

The CRIS-to-OpenAIRE information interchange uses the OAI-PMH 2.0 protocol with the CERIF XML defined by these Guidelines as the metadata language. This CERIF XML uses the namespace https://www.openaire.eu/cerif-profile/1.1/. Its structure is defined and constrained by the corresponding XML Schema.[1] Accompanying these Guidelines is a comprehensive set of examples.[2]

Each metadata object is represented as a top-level XML element: `Publication`, `Product`, `Patent`, `Person`, `OrgUnit`, `Project`, `Funding`, `Event`, `Equipment`. The content model for each of these elements is specified in the previous section; the rest of this subsection gives guidelines to its usage.

CERIF represents titles, names, abstracts and similar text attributes as multi-lingual. In CERIF XML the language is expressed using the standard `xml:lang` attribute. Unless stated otherwise this is considered to be the value in the original language.

While syntactically, the CERIF profile XML allows to construct structures of any depth, the contents of each metadata record should be kept limited to the nearest objects that are representable by a top-level element. These neighboring objects should be expressed using as much detail as is practical to identify them. This includes links to any higher level structures of which the object is part, e.g. to an institution of which an organisation unit is part.

However, the neighboring object XML shall never contain more information or different information from what is expressed in the main record for that object i.e., where the object is retrieved as a top-level object. This is a stronger form of a requirement of functional dependency.

Display names. In some cases it is important to represent the name of a person or organisation as it appeared in a document (e.g. in the list of authors of a journal article): it can differ from the current official name. The OpenAIRE CERIF profile XML Schema allows to place such a name in a `DisplayName`

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[1] The XML schema is located at https://www.openaire.eu/schema/cris/1.1/openaire-cerif-profile.xsd. This has changed in the 1.1.1 release of these Guidelines.

[2] Please see an overview map at https://github.com/openaire/guidelines-cris-managers/blob/v1.1/docs/_illustrations/OpenAIRE-examples-map.png; the individual examples as full OAI-PMH 2.0 response messages https://github.com/openaire/guidelines-cris-managers/tree/v1.1/samples

XML element on some links. Where admissible, it shall occur before the `Person` or `OrgUnit` XML element.

In the extreme case where just the display name of a person or an organisation is known, the `DisplayName` with an empty `Person` or `OrgUnit` XML element can be used. However, it is recommended that CRIS managers keep curated authority lists everywhere where these are feasible.

3.2 OAI-PMH for Harvesting

OpenAIRE uses the OAI-PMH 2.0 protocol for harvesting metadata from CRIS systems.

3.2.1 Metadata Format and Prefix

OpenAIRE Guidelines 1.1 compatible CRIS should use the OAI-PMH metadata prefix `oai_cerif_openaire` and XML metadata contents from the https://www.openaire.eu/cerif-profile/1.1/ namespace.

A sample response to a ListMetadataFormats OAI-PMH request is available in openaire_oaipmh_example_ListMetadataFormats.xml.

3.2.2 OpenAIRE OAI-PMH Sets

For harvesting the records relevant to OpenAIRE, the use of specific OAI-PMH sets at the local CRIS system is mandatory. All of the following OAI-PMH sets shall be recognized by the CRIS, even if not all of them are populated.

OpenAIRE_CRIS_publications (setSpec: `openaire_cris_publications`): The list of CERIF XML records for publications and publishing channels.

OpenAIRE_CRIS_products (setSpec: `openaire_cris_products`): The list of CERIF XML records for datasets and other research products.

OpenAIRE_CRIS_patents (setSpec: `openaire_cris_patents`): The list of CERIF XML records for patents.

OpenAIRE_CRIS_persons (setSpec: `openaire_cris_persons`): The list of CERIF XML records for persons.

OpenAIRE_CRIS_orgunits (setSpec: `openaire_cris_orgunits`): The list of CERIF XML records for organisations and organisation units.

OpenAIRE_CRIS_projects (setSpec: `openaire_cris_projects`): The list of CERIF XML records for projects.

OpenAIRE_CRIS_funding (setSpec: `openaire_cris_funding`): The list of CERIF XML records for funding.

OpenAIRE_CRIS_events (setSpec: `openaire_cris_events`): The list of CERIF XML records for events.

OpenAIRE_CRIS_equipments (setSpec: `openaire_cris_equipments`): The list of CERIF XML records for equipment.

A sample response to a ListSets OAI-PMH request is available in openaire_oaipmh_example_ListSets.xml.

Referential integrity constraints for all relationships among entities must be satisfied in the CERIF XML data provided by the CRIS system.

Note that there is no set for services. Exactly one Service record, namely the one representing the CRIS, shall be given in the response to an OAI-PMH Identify request. For an example please see openaire_oaipmh_example_Identify.xml.

3.2.3 OAI identifiers

The identifiers of objects from the source CRIS shall be represented as OAI identifier of the form `oai:{service}:{internal ID}` where `{service}` denotes the internet domain name of the CRIS, and `{internal ID}` denotes an internal identifier of the object that MUST be unique within the CRIS across all the entity types. This is usually the case when UUIDs are used, but it can also be achieved by adding the entity type as a prefix to serially generated id numbers (when other distinction is not available and there is a possibility of conflicts), as illustrated in the accompanying examples (e.g. Publications/893204).

The types are expressed by the plural form of the XML element that represents the object i.e., the name of the collection of all such objects.

The internal identifiers are also used in the `id` attributes in the CERIF XML mark-up. If several candidate internal identifiers are available, the most persistent one should be preferred. In many cases a UUID – if it is assigned – is more likely to be persistent than integer IDs.

For example a publication with internal ID of 560d48b6-42c3-4ef9-81d6-32c949fb2cdb (a UUID) from a CRIS running on behalf of the University of Exampleton (www.exampleton.ac.uk with a cris running at cris.exampleton.ac.uk) could have the OAI identifier `oai:cris.exampleton.ac.uk:560d48b6-42c3-4ef9-81d6-32c949fb2cdb`

If the CRIS system provides also PID such as an handle, for instance 123456789/1, the OAI identifier could be `oai:cris.exampleton.ac.uk:123456789/1` Finally, in the case the CRIS system has only numeric ID not unique across the whole system, the OAI identifier could be `oai:cris.exampleton.ac.uk:Publications/1`

3.2.4 Compatibility of aggregators

Aggregating CRISs (e.g. at the regional or national levels) can also become compliant to these Guidelines. These CRISs should provide additional provenance information about its records. The relevant section of the Literature Repository Guidelines should be followed.