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# **OpenAIRE Guidelines**

*Release 1.1.1*

**OpenAIRE**

2018-12-17



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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)

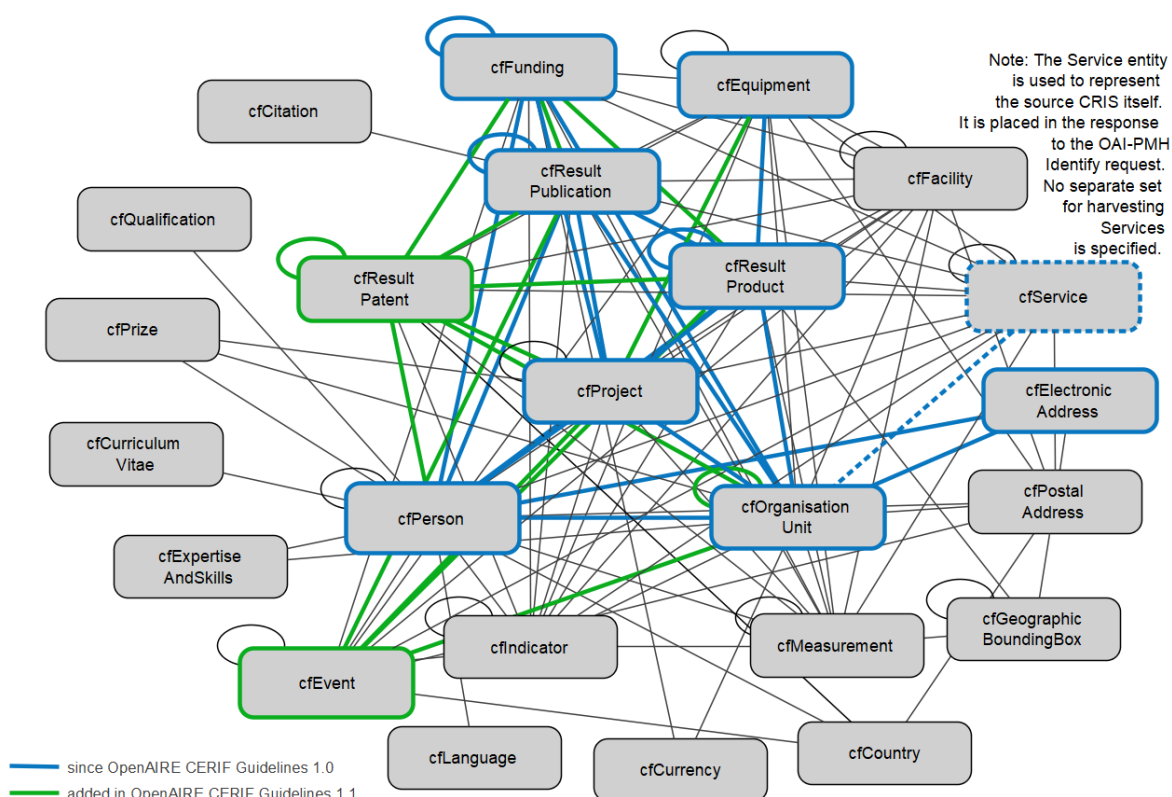
1. **Digital Author Identifier** (DAI) is added as a person identifier type. (#49)
2. **Multiple person identifiers** of the same kind are allowed: where ambiguous or uncertain information is available, it should be listed in `<AlternativeXXX>` elements (where XXX is the identifier type). (#48)
3. **Multiple 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.<sup>1</sup> CERIF has three entities to represent research outputs: Publications, Products and Patents. The COAR vocabulary was broken down into three 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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<sup>1</sup> 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](https://www.openaire.eu/cerif-profile/vocab/COAR_Publication_Types)

**CERIF** the ResultPublication\_Classification ([https://w3id.org/cerif/model#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/](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](http://purl.org/coar/resource_type/c_ba1f)): part of a report
  - \* **internal report** ([http://purl.org/coar/resource\\_type/c\\_18ww](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](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](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](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](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](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](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](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](http://purl.org/coar/resource_type/c_baaf)): documentation for grant request
  - **review** ([http://purl.org/coar/resource\\_type/c\\_efa0](http://purl.org/coar/resource_type/c_efa0)): A review of others' published work.
    - \* **book review** ([http://purl.org/coar/resource\\_type/c\\_ba08](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](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](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](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](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](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](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](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](https://w3id.org/cerif/model#ResultPublication_Classification)) with the <https://w3id.org/cerif/vocab/LanguageTags> 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#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#ResultPublication.Subtitle>)

### 2.1.6 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/model#ResultPublication\\_ResultPublication](https://w3id.org/cerif/model#ResultPublication_ResultPublication)) with the <https://w3id.org/cerif/vocab/Inter-PublicationRelations#Publication> semantics (direction :1)

### 2.1.7 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](https://w3id.org/cerif/model#ResultPublication_ResultPublication)) with the <https://w3id.org/cerif/vocab/Inter-PublicationRelations#Part> semantics (direction :1)

### 2.1.8 PublicationDate

**Description** The date the publication appeared

**Use** optional (0..1)

**Representation** XML element `PublicationDate`

**CERIF** the `ResultPublication.ResPublDate` attribute (<https://w3id.org/cerif/model#ResultPublication.ResPublDate>)

**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

## 2.1.9 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>)

## 2.1.10 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>)

## 2.1.11 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>)

## 2.1.12 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>)

### 2.1.13 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>)

### 2.1.14 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>)

### 2.1.15 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/does-and-matching-regular-expressions/>)

### 2.1.16 Handle

**Use** optional (0..1)

**Representation** XML element `Handle`

**CERIF** the `FederatedIdentifier` entity (<https://w3id.org/cerif/model#FederatedIdentifier>)

### 2.1.17 PMCID

**Use** optional (0..1)

**Representation** XML element `PMCID`

**CERIF** the `FederatedIdentifier` entity (<https://w3id.org/cerif/model#FederatedIdentifier>)

### 2.1.18 ISI-Number

Use optional (0..1)

**Representation** XML element `ISI-Number`

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

### 2.1.19 SCP-Number

Use optional (0..1)

**Representation** XML element `SCP-Number`

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

### 2.1.20 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](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.)

### 2.1.21 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.)

### 2.1.22 URL

Use optional (0..1)

**Representation** XML element `URL`

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

### 2.1.23 URN

Use optional (0..1)

**Representation** XML element URN

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

### 2.1.24 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](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](https://w3id.org/cerif/model#OrganisationUnit_ResultPublication)) with the <https://w3id.org/cerif/vocab/OrganisationOutputContributions#Author> semantics

### 2.1.25 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](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](https://w3id.org/cerif/model#OrganisationUnit_ResultPublication)) with the <https://w3id.org/cerif/vocab/OrganisationOutputContributions#Editor> semantics

OrganisationUnit\_ResultPublication) with the <https://w3id.org/cerif/vocab/OrganisationOutputContributions#Editor> semantics

### 2.1.26 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](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](https://w3id.org/cerif/model#Person_ResultPublication)) with the <https://w3id.org/cerif/vocab/PersonOutputContributions#Publisher> semantics

### 2.1.27 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#ResultPublication\\_Classification](https://w3id.org/cerif/model#ResultPublication_Classification))

### 2.1.28 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#ResultPublication\\_Classification](https://w3id.org/cerif/model#ResultPublication_Classification))

### 2.1.29 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#ResultPublication.Keywords>)

### 2.1.30 Abstract

**Use** optional, possibly multiple (0..\*)

**Representation** XML element `Abstract` as a multilingual string

**CERIF** the `ResultPublication.Abstract` attribute (<https://w3id.org/cerif/model#ResultPublication.Abstract>)

### 2.1.31 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#ResultPublication\\_Classification](https://w3id.org/cerif/model#ResultPublication_Classification))

### 2.1.32 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](https://w3id.org/cerif/model#Project_ResultPublication)) with the [https://w3id.org/cerif/vocab/Project\\_Output\\_Roles#Originator](https://w3id.org/cerif/vocab/Project_Output_Roles#Originator) semantics; the `ResultPublication_Funding` linking entity ([https://w3id.org/cerif/model#ResultPublication\\_Funding](https://w3id.org/cerif/model#ResultPublication_Funding)) with the [https://w3id.org/cerif/vocab/Funding\\_Output\\_Roles#Originator](https://w3id.org/cerif/vocab/Funding_Output_Roles#Originator) semantics

### 2.1.33 PresentedAt

**Description** The event where this publication was presented.<sup>1</sup>

**Use** optional, possibly multiple (0..\*)

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

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<sup>1</sup> Note: Video recordings of conference presentations are stored as alternative representations of the primary object: the conference paper. It would be unnecessarily complex to represent them as separate, linked Products.

**CERIF** the `ResultPublication_Event` linking entity ([https://w3id.org/cerif/model#ResultPublication\\_Event](https://w3id.org/cerif/model#ResultPublication_Event)) with the <https://w3id.org/cerif/vocab/EventOutputRelationships#Presented> semantics

### 2.1.34 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](https://w3id.org/cerif/model#ResultPublication_Event)) with the <https://w3id.org/cerif/vocab/EventOutputRelationships#Output> semantics

### 2.1.35 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](https://w3id.org/cerif/model#ResultPublication_Event)) with the <https://w3id.org/cerif/vocab/EventOutputRelationships#Coverage> semantics

### 2.1.36 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](https://w3id.org/cerif/model#ResultPublication_ResultPublication)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1); the `ResultPublication_ResultProduct` linking entity ([https://w3id.org/cerif/model#ResultPublication\\_ResultProduct](https://w3id.org/cerif/model#ResultPublication_ResultProduct)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1); the `ResultPublication_ResultPatent` linking entity ([https://w3id.org/cerif/model#ResultPublication\\_ResultPatent](https://w3id.org/cerif/model#ResultPublication_ResultPatent)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1)

### 2.1.37 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](http://purl.org/coar/access_right)

**CERIF** the `ResultPublication_Classification` ([https://w3id.org/cerif/model#ResultPublication\\_Classification](https://w3id.org/cerif/model#ResultPublication_Classification))

### Vocabulary

- **open access** ([http://purl.org/coar/access\\_right/c\\_abf2](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.
- **embargoed access** ([http://purl.org/coar/access\\_right/c\\_f1cf](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](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](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 is not directly available through the system or platform. This type of access can occur in a number of different situations. Some examples are described below: There is no electronic copy of the resource available (record links to a physical resource) The resource is only available elsewhere for a fee (record links to a subscription-based publisher version) The resource is available open access but at a different location (record links to a version at an open access publisher or archive) The resource is available elsewhere, but not in a fully open access format (record links to a read only, or other type of resources that is not permanent or in some way restricted)

## 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](https://www.openaire.eu/cerif-profile/vocab/COAR_Product_Types)

**CERIF** the ResultProduct\_Classification ([https://w3id.org/cerif/model#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/](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](https://w3id.org/cerif/model#ResultProduct_Classification)) with the <https://w3id.org/cerif/vocab/LanguageTags> 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](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](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](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](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](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](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](https://w3id.org/cerif/model#ResultProduct_ResultProduct)) with the <https://w3id.org/cerif/vocab/Inter-ProductRelations#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](https://w3id.org/cerif/model#Project_ResultProduct)) with the [https://w3id.org/cerif/vocab/Project\\_Output\\_Roles#Originator](https://w3id.org/cerif/vocab/Project_Output_Roles#Originator) semantics; the `ResultProduct_Funding` linking entity ([https://w3id.org/cerif/model#ResultProduct\\_Funding](https://w3id.org/cerif/model#ResultProduct_Funding)) with the [https://w3id.org/cerif/vocab/Funding\\_Output\\_Roles#Originator](https://w3id.org/cerif/vocab/Funding_Output_Roles#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](https://w3id.org/cerif/model#ResultProduct_Equipment)) with the <https://w3id.org/cerif/vocab/InfrastructureOutputRelations#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](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](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](https://w3id.org/cerif/model#ResultPublication_ResultProduct)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1); the `ResultProduct_ResultProduct` linking entity ([https://w3id.org/cerif/model#ResultProduct\\_ResultProduct](https://w3id.org/cerif/model#ResultProduct_ResultProduct)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1); the `ResultProduct_ResultPatent` linking entity ([https://w3id.org/cerif/model#ResultProduct\\_ResultPatent](https://w3id.org/cerif/model#ResultProduct_ResultPatent)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#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](http://purl.org/coar/access_right)

**CERIF** the `ResultProduct_Classification` ([https://w3id.org/cerif/model#ResultProduct\\_Classification](https://w3id.org/cerif/model#ResultProduct_Classification))

### Vocabulary

- **open access** ([http://purl.org/coar/access\\_right/c\\_abf2](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.
- **embargoed access** ([http://purl.org/coar/access\\_right/c\\_f1cf](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](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](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 is not directly available through the system or platform. This type of access can occur in a number of different situations. Some examples are described below: There is no electronic copy of the resource available (record links to a physical resource) The

resource is only available elsewhere for a fee (record links to a subscription-based publisher version) The resource is available open access but at a different location (record links to a version at an open access publisher or archive) The resource is available elsewhere, but not in a fully open access format (record links to a read only, or other type of resources that is not permanent or in some way restricted)

## 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](https://www.openaire.eu/cerif-profile/vocab/COAR_Patent_Types)

**CERIF** the `ResultPatent_Classification` ([https://w3id.org/cerif/model#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/](http://vocabularies.coar-repositories.org/documentation/resource_types/), the term ‘patent’ only).

- **patent** ([http://purl.org/coar/resource\\_type/c\\_15cd](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](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 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](https://w3id.org/cerif/model#Person_ResultPatent)) with the <https://w3id.org/cerif/vocab/PersonOutputContributions#Inventor> semantics

### 2.3.11 Holders

**Description** The holders of this patent

**Use** optional (0..1)

**Representation** XML element `Holder` 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](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](https://w3id.org/cerif/model#OrganisationUnit_ResultPatent)) with the <https://w3id.org/cerif/vocab/OrganisationOutputContributions#PatentHolder> semantics

### 2.3.12 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>)

### 2.3.13 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](https://w3id.org/cerif/model#ResultPatent_Classification))

### 2.3.14 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>)

### 2.3.15 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](https://w3id.org/cerif/model#Project_ResultPatent)) with the [https://w3id.org/cerif/vocab/Project\\_OutputRoles#Originator](https://w3id.org/cerif/vocab/Project_OutputRoles#Originator) semantics; the `ResultPatent_Funding` linking entity ([https://w3id.org/cerif/model#ResultPatent\\_Funding](https://w3id.org/cerif/model#ResultPatent_Funding)) with the [https://w3id.org/cerif/vocab/Funding\\_OutputRoles#Originator](https://w3id.org/cerif/vocab/Funding_OutputRoles#Originator) semantics

### 2.3.16 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](https://w3id.org/cerif/model#ResultPatent_ResultPatent)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Predecessor> semantics (direction :1)

### 2.3.17 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 `ResultPatent_ResultPublication` linking entity ([https://w3id.org/cerif/model#ResultPatent\\_ResultPublication](https://w3id.org/cerif/model#ResultPatent_ResultPublication)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1); the `ResultPatent_ResultProduct` linking entity ([https://w3id.org/cerif/model#ResultPatent\\_ResultProduct](https://w3id.org/cerif/model#ResultPatent_ResultProduct)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#Reference> semantics (direction :1); the `ResultPatent_ResultPatent` linking entity ([https://w3id.org/cerif/model#ResultPatent\\_ResultPatent](https://w3id.org/cerif/model#ResultPatent_ResultPatent)) with the <https://w3id.org/cerif/vocab/Inter-OutputRelations#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](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#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): Man
- **Feminine** (f): Woman

#### 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/0000-0001-1234-5678>  
(as per <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/0000-0001-1234-5678>  
(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 `[0-9]{4} [0-9]{4} [0-9]{4} [0-9]{3} [0-9X]` (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 `[0-9]{4} [0-9]{4} [0-9]{4} [0-9]{3} [0-9X]`  
(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](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](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>)

### 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>)

### 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>)

### 2.5.5 Identifier

**Description** An identifier of the organisation unit

**Use** optional, possibly multiple (0..\*)

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

**CERIF** the `FederatedIdentifier` entity (<https://w3id.org/cerif/model#FederatedIdentifier>)

### 2.5.6 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](https://w3id.org/cerif/model#OrganisationUnit_ElectronicAddress))

### 2.5.7 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](https://w3id.org/cerif/model#OrganisationUnit_OrganisationUnit)) with the <https://w3id.org/cerif/vocab/Inter-\discretionary{-}{-}{-}OrganisationRelations#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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](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](https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types)

**CERIF** the `Funding_Classification` ([https://w3id.org/cerif/model#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](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](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](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](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](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](https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Contract)):
- **Award** ([https://www.openaire.eu/cerif-profile/vocab/OpenAIRE\\_Funding\\_Types#Award](https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Funding_Types#Award)):
- **Grant** ([https://www.openaire.eu/cerif-profile/vocab/OpenAIRE\\_Funding\\_Types#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](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](https://w3id.org/cerif/model#OrganisationUnit_Funding)) with the <https://w3id.org/cerif/vocab/OrganisationFundingEngagements#Funder> 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](https://w3id.org/cerif/model#Funding_Funding)) with the <https://w3id.org/cerif/vocab/Inter-discretionary{-}{-}{-}FundingRelations#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](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](https://www.openaire.eu/cerif-profile/vocab/OpenAIRE_Service_Compatibility)

**CERIF** the `Service_Classification` ([https://w3id.org/cerif/model#Service\\_Classification](https://w3id.org/cerif/model#Service_Classification))

**Vocabulary** Compatibility of service with the OpenAIRE Guidelines for CRIS Managers

- **OpenAIRE Guidelines 1.1 compatible CRIS** ([https://www.openaire.eu/cerif-profile/vocab/OpenAIRE\\_Service\\_Compatibility#1.1](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](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/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/ElectronicAddressTypes#OAI-PMH\\_Base](https://w3id.org/cerif/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/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](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.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\\_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.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](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](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](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](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](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](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](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](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](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](https://w3id.org/cerif/model#Project_Event)) with the <https://w3id.org/cerif/vocab/EventRelationshipKinds#Partner> semantics

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## Technical Implementation Guidelines

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### 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.<sup>1</sup> Accompanying these Guidelines is a comprehensive set of examples.<sup>2</sup>

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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<sup>1</sup> 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.

<sup>2</sup> Please see an overview map at [https://github.com/openaire/guidelines-cris-managers/blob/v1.1/docs/\\_illustrations/OpenAIRE-examples-map.png](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}:{type}/{internal ID}` where `{service}` denotes the internet domain name of the CRIS, `{type}` stands for the type of the object, and `{internal ID}` denotes an internal identifier of the object within the CRIS.

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](#)) will have the OAI identifier `oai:cris.exampleton.ac.uk:Publications/560d48b6-42c3-4ef9-81d6-32c949fb2cdb`.

### **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.