**EURIO: an ontology for publishing  
research projects’ data**

CORDIS

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# Introduction

CORDIS is the portal responsible for publishing the results of EU-funded research and innovation projects. The research activities are carried out by a wide variety of organisations from several business sectors and scientific fields. The results of these projects are mainly new scientific knowledge (publications) and others kind of assets (e.g., tools, methodologies, data, etc.). All these results are relevant assets that should be reused to stimulate the economic activities of the related innovative sectors.

EURIO (EUropean Research Information Ontology) is the conceptual data model developed by the Publications Office of the European Commission that has been designed to represent and structure the CORDIS content in a semantic format improving its visibility, reusability and accessibility. It is built drawing on a network of existing ontologies and reference data and allows to describe the administrative information of the research projects as well as their results, organisations and persons involved, among others. To formally define the meaning of the domain terms and of their interrelations EURIO uses the OWL 2[[1]](#footnote-2) Web Ontology.

EURIO forms part of the reference data assets (ontologies, thesauri, taxonomies, authority tables, etc.) that are managed by the Publications Office of the European Union. Other assets include, among others, EuroVoc thesaurus, EuroSciVoc taxonomy, ELI ontology, Language and Country authority lists. The complete list of assets can be found on the EU Vocabularies website[[2]](#footnote-3).

# Terminology used

In the following sections, classes and properties could be defined as "mandatory", “recommended” and "optional" depending on its cardinality. These terms have the following meaning.

* **Mandatory class (1/1..\*):** a receiver of data MUST be able to process information about instances of the class; a sender of data MUST provide information about instances of the class;
* **Recommended class (0..1/\*):** a receiver of data MUST be able to process information about instances of the class; a sender of data MUST provide information about instances of the class, if it is available;
* **Optional class (0..1/\*):** a receiver MUST be able to process information about instances of the class; a sender MAY provide the information but is not obliged to do so;
* **Mandatory property (1/1..\*):** a receiver MUST be able to process the information for that property; a sender MUST provide the information for that property;
* **Recommended property (0..1/\*):** a receiver MUST be able to process the information for that property; a sender SHOULD provide the information for that property if it is available;
* **Optional property (0..1/\*):** a receiver MUST be able to process the information for that property; a sender MAY provide the information for that property but is not obliged to do so.

The meaning of the terms MUST, MUST NOT, SHOULD and MAY in this section and in the following sections are as defined in RFC 2119[[3]](#footnote-4).

In the given context, the term "processing" means that receivers must accept incoming data and transparently provide these data to applications and services. It does neither imply nor prescribe what applications and services finally do with the data (parse, convert, store, make searchable, display to users, etc.).

# Context of use

The use case that this ontology intends to enable is publishing and exchange of all research data and related controlled vocabularies managed by the Publications Office of the European Union.

The basic use case involves the following actors:

* CORDIS team, which is in charge of the maintenance of EURIO and its related datasets;
* EU institutions and external stakeholders (practitioners, researchers, public administrations, among others) who wish to (re-)use EURIO and its related datasets as Linked Open Data.

# Used vocabularies

EURIO reuses classes and properties from various existing specifications. Classes and properties specified in the next sections have been taken from the following namespaces.

|  |  |  |
| --- | --- | --- |
| **Ontology** | **Prefix** | **URI** |
| Simple Knowledge Organization System | skos | http://www.w3.org/2004/02/skos/core# |
| DCMI - Dublin Cores Metadata Terms Initiative | dcterms | http://purl.org/dc/terms/ |
| OWL 2 Web Ontology Language | owl | http://www.w3.org/2002/07/owl# |
| Resource Description Framework | rdf | http://www.w3.org/1999/02/22-rdfsyntax-ns# |
| RDF Schema Vocabulary | rdfs | http://www.w3.org/2000/01/rdfschema# |
| XML Schema Definition | xsd | http://www.w3.org/2001/XMLSchema# |
| DINGO – Data INtegration for Grants Ontology | dg | https://w3id.org/dingo# |
| Schema.org | schema | http://schema.org/ |
| FOAF – Friend Of a Friend | foaf | http://xmlns.com/foaf/0.1/ |
| DCAT – Data Catalogue Vocabulary | dcat | http://www.w3.org/ns/dcat# |
| FRAPO – Funding, Research Administration and Projects Ontology | frapo | http://purl.org/cerif/frapo/ |
| The Organization Ontology | org | http://www.w3.org/ns/org# |
| Project Ontology | oegp | webode://droz.dia.fi.upm.es/Project+Ontology# |

Table 1*:* List of ontologies and their namespace definitions

There is also a list of controlled vocabularies used to restrict the value range on some properties. The values belong to the following namespaces.

|  |  |  |
| --- | --- | --- |
| **Vocabulary** | **Prefix** | **URI** |
| EuroSciVoc Taxonomy | esv | http://data.europa.eu/8mn/euroscivoc# |

Table 2: List of controlled vocabularies and their namespace definitions

# Graphical representation

The graphical representation of EURIO is provided in the form of an UML class diagramand is depicted in Figure 1. The boxes represent classes while the arrow connections represent properties establishing relations to other classes. The attributes inside boxes represent properties providing either literal data values or relation to other classes that omitted from the diagram.

The green boxes related with some classes represent taxonomies or controlled vocabularies that will specify through instances the type of an entity, knowledge area, business sector, and so on.

The cardinality specifications on the connector “\_ .. \_” arrows next to the relationships between classes represent constraints on how the property may be employed on the class instances and has a normative meaning. The first number means minimum cardinality constraint and the second means maximum cardinality constraint. The minimum cardinality constraint is zero “0 .. \_ “ for optional properties and one “1 .. \_” for mandatory properties. The maximum cardinality constraint is usually unspecified “ \_ .. \*” or limited to one “\_ .. 1”. If the cardinality is not specified, then the implied meaning is exactly one “1”.

The legend below the UML diagram indicates which are the classes that have been reused from other existing ontologies.

Diagrama, Esquemático

Descripción generada automáticamente

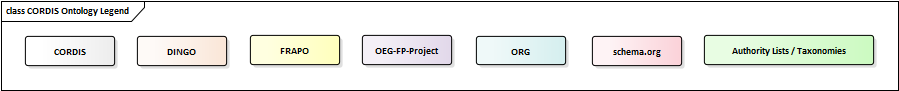


Figure 1: EURIO representation

# EURIO

The following tables provide the definitions of the ontology classes and their properties, including their equivalent mappings (if any) with other ontologies.

**Property Value**

This is a structured attribute that captures a property-value pair. Its main use is for representing the different range of identifiers of classes, e.g., projects IDs. It is aligned with schema:PropertyValue.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| name | schema:name | xsd:string | 1..1 | The name of the property. |
| value | schema:value | xsd:nonNegativeInteger, xsd:string | 1..1 | The value of the property. |
| hasidentifier | schema:identifier | PropertyValue | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme. |

**Acronym**

An acronym is an abbreviation formed from the initial letters of other words and pronounced as a word. It can refer to any type of entities in the CORDIS conceptual framework and may be stated explicitly or extracted automatically from text.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| shortForm | - | xsd:string | 1..\* | The value of the acronym. |
| definition | - | xsd:string | 0..\* | The definition of the acronym. |
| hasAcronym | - | owl:Thing | 0..\* | Relates an entity (e.g., project, grant, event, etc.) with its acronym(s). This includes acronyms representing the entity’s title as well as any additional acronyms extracted from other attributes of the entity. Inverse of isAcronymOf. |
| isAcronymOf | - | owl:Thing | 0..\* | Relates the acronym to the entity to which it belongs. Inverse of hasAcronym. |

**Title Acronym**

A Title Acronym is an acronym explicitly defined as the title or name of another entity (e.g., Project, Organisation, Funding Scheme, etc.).

|  |
| --- |
| Properties |
| *Inherited from Acronym (TitleAcronym is a sub-class of Acronym).* |

**Detected Acronym**

A Detected Acronym is any acronym that has been detected, automatically or manually, from the description of a class or from any other form of natural language text.

|  |
| --- |
| Properties |
| *Inherited from Acronym (DetectedAcronym is a sub-class of Acronym).* |

**Project**

A project is a planned research work that has one or more objectives (divided or not into tasks) and is conducted by one or more organisations. In CORDIS, it represents a project funded by an EU programme. It is mapped to dg:Project

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| abstract | dg:abstract\_or\_summary\_description | xsd:string | 1..1 | The general summary and ideas of a CORDIS project. |
| hasidentifier | schema:identifier | PropertyValue | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| duration | - | xsd:integer | 1..1 | The period of time an entity (e.g., project, grant, event, etc.) has taken (use ISO 8601 duration format). |
| businessSector | - | skos:Concept | 1..\* | One or more values from the NACE taxonomy that represent the main business sectors of the project. |
| hasEuroSciVoc Classification | dg:field\_of\_work | skos:Concept | 0..\* | One or more values from the EuroSciVoc taxonomy that represent the main fields of science of the project. |
| keyword | - | xsd:string | 1..\* | Word or words that represent the main idea of the project. |
| startDate | dg:start\_time | xsd:dateTime | 1..1 | The time an entity (e.g., project, grant, event, etc.) is initialized or starts to take effect. |
| endDate | dg:end\_time | xsd:dateTime | 1..1 | The date on which an entity (e.g., project, grant, event, etc.) is finalized or ceases to exist. |
| hasProject Status | - | xsd:string, and specifically one of (“CLOSED”, “CANCEL”, “ONGOING, “SIGNED”, “TERMINATED”) | 1..1 | The current situation or progress of the project |
| subject | dg:main\_topic | xsd:string | 1..1 | One word or phrase that describes the main subject, topic or area of the project. |
| description | schema:description | xsd:string | 1..1 | A brief summary of the entity (project, event, etc.). |
| title | dg:title | xsd:string | 1..1 | The entity’s (e.g., project, work package, etc.) official name or title. |
| webLink | dg:official\_website | xsd:anyURI | 0..\* | A URL that links to other internet resources outside CORDIS environment that are related with the project. |
| webResource | - | xsd:anyURI | 0..\* | A URL that links to resources other than webpages (e.g., document, image) that are related with the project. |
| hasTotalCost | dg:budget | Monetary Amount | 1..1 | Relates the project with the amount of money expected, required, or given in payment for the project. |
| isFundedBy | dg:funded\_by | Grant | 1..\* | Relates the project with the grant(s) that completely or partially fund the project. Inverse of *funds*. |
| hasEvent | - | Event | 0..\* | Relates the project with its event(s). Inverse of *isEventOf*. |
| hasResult | dg:product\_or\_material\_produced | Result | 0..\* | Relates the project with its result(s). Inverse of *isResultOf*. |
| hasProject Division | - | Project Division | 0..\* | Relates the project with its division(s). Inverse of *IsDivisionOf*. |
| hasInvolved Party | dg:participant | Role | 1..\* | Relates the Project or Project Division to the roles that are involved in the project. Inverse of *isInvolvedIn*. |
| hasRelated Project | - | Project | 0..\* | Represents a generic non parent-child relation between two CORDIS projects. |

**Grant**

A grant is a disbursed fund paid to a recipient or beneficiary within the context of a funded research project. In the context of CORDIS, it represents a grant of a specific EU programme (e.g., an H2020 grant). It is mapped to dg:Grant.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| hasidentifier | schema:identifier | Property Value | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| duration | - | xsd:integer | 1..1 | The period of time a class (e.g., project, grant, event, etc.) has taken (use ISO 8601 duration format). |
| startDate | dg:start\_time | xsd:date Time | 1..1 | The time an entity (e.g., project, grant, event, etc.) is initialized or starts to take effect. |
| endDate | dg:end\_time | xsd:date Time | 1..1 | The date on which an entity (e.g., project, grant, event, etc.) is finalized or ceases to exist. |
| isDisbursedBy | dg:disbursed\_by | Funding Agency | 1..1 | Relates the grant to the funding agency that disburses the grant. Inverse of *disburses*. |
| hasFundingAmount | dg:economic\_value | Monetary Amount | 1..1 | Relates the grant or funding scheme to the amount of money available for funding. |
| hasFundingScheme | dg:implementation\_of | Funding Scheme | 1..\* | Relates the grant to the funding scheme of which the grant forms a part. Inverse of *hasGrant*. |
| hasPayment | dg:hasPart | Grant Payment | 0..\* | Relates the grant to its payment(s). Inverse of *isPaymentOf*. |
| funds | dg:finances | Project | 1..\* | Relates the grant with the project(s) that are completely or partially funded by it. Inverse of *isFundedBy*. |
| hasBeneficiary | dg:beneficiary | Role | 0..\* | Relates the grant to the organisation or person role(s) that are a beneficiary of the grant. Inverse of *isBeneficiaryOf*. |

**Grant Payment**

A GrantPayment is a single payment to a recipient or beneficiary of a Grant within a research project. It is mapped to dg:GrantPayement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| hasidentifier | schema:identifier | PropertyValue | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| date | dg:point\_in\_time | xsd:dateTime | 1..1 | The date in which the grant payment took place. |
| hasPaymentAmount | dg:economic\_value | Monetary Amount | 1..1 | Relates the payment to the amount of money that was given to the beneficiary of the payment. |
| isPaymentOf | dg:isPartOf | Grant | 1..1 | Relates a payment to the grant of which it is a part. Inverse of *hasPayment*. |
| hasRecipient | - | Role | 0..\* | Relates the grant payment to the organisation or person role(s) which have received the grant payment. Inverse property of *isRecipientOf*. |

**Funding Scheme**

A FundingScheme is a Set of rules and conditions which forms the basis for public funding of European research. In CORDIS, they represent the different legal frameworks (e.g., FP6, FP7, H2020). They can also be used to represent the different calls inside each framework by using the recursive relation “partOfScheme”. It is mapped to dg:FundingScheme.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| hasidentifier | schema:identifier | PropertyValue | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| startDate | dg:start\_time | xsd:dateTime | 1..1 | The time an entity (e.g., project, grant, event, etc.) is initialized or starts to take effect. |
| endDate | dg:end\_time | xsd:dateTime | 1..1 | The date on which an entity (e.g., project, grant, event, etc.) is finalized or ceases to exist. |
| hasFundingScheme Category | - | skos:Concept | 1..1 | A list of terms specifying the different categories / types of funding schemes |
| webLink | dg:official\_website | xsd:anyURI | 0..\* | A URL that links to other internet resources outside CORDIS environment that are related with the project. |
| hasFundingAmount | - | Monetary Amount | 1..1 | Relates the grant or funding scheme to the amount of money available for funding. |
| isImplementedBy | dg:is\_implemented\_by | Funding Agency | 1..1 | Relates the funding scheme with the funding agency that implements and administers the scheme. Inverse of *implements*. |
| isSubSchemeOf | dg:isPartOf | Funding Scheme | 0..1 | Relates the funding scheme to its parent scheme of which this funding scheme forms a part. Inverse of *hasSubScheme*. |
| hasSubScheme | dg:hasPart | Funding Scheme | 0..1 | Relates the funding scheme to its sub-schemes. Inverse of *isSubSchemeOf*. |
| hasGrant | dg:has\_implementation | Funding Scheme | 0..\* | Relates a funding scheme with the grants that form part of it. Inverse of *hasFundingScheme.* |

**Funding Agency**

A Funding Agency is an organisation that materially administrates funding schemes and disburses related grants. In the context of CORDIS, it represents the various European agencies responsible for funding research projects (e.g., ERC, EASME, REA, etc.). It is aligned with dg:FundingAgency.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from Organization (FundingAgency is a subclass of Organisation).* | | | | |
| implements | dg:implements | Funding Scheme | 0..\* | Relates a funding agency to the funding schemes that it implements and administers. Inverse of *isImplementedBy*. |
| disburses | dg:disburses | Grant | 1..1 | Relates the funding agency to the grant that it disburses. Inverse of *isDisbursedBy*. |

**Project Division**

A project division is an abstract entity that represents a part of the work and activities that need to be carried out within a project. This entity can be specialized through different sub-entities to represent the different types of project divisions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Class | Mappings | Type | Cardinality | Definition |
| hasidentifier | schema:identifier | PropertyValue | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| description | schema:description | xsd:string | 1..1 | A brief summary of the entity (project, event, etc.). |
| title | oegp:name | xsd:string | 1..1 | The entity’s (e.g., project, work package, etc.) official name or title. |
| startDate | oegp:start\_date | xsd:dateTime | 1..1 | The time an entity (e.g., project, grant, event, etc.) is initialized or starts to take effect. |
| endDate | oegp:end\_date | xsd:dateTime | 1..1 | The date on which an entity (e.g., project, grant, event, etc.) is finalized or ceases to exist. |
| person Months | oegp:person\_months | xsd:nonNegativeInteger | 0..1 | The effort needed to carry out work contained in the project division, estimated in person-months. |
| hasResult | - | Result | 0..\* | Relates the project division to the result(s) stemming from the work contained in the division. Inverse of *isResultOf*. |
| isDivisionOf | - | ProjectDivision | 0..\* | Relates the project division to the project of which it is part. Inverse of *hasProjectDivision*. |
| hasInvolvedParty | dg:participant | Role | 1..\* | Relates the Project or Project Division to the roles that are involved in the project. Inverse of *isInvolvedIn*. |

**Work Package**

A Work Package is a major subdivision of a project which leads to the completion of one of the goals, objectives or major deliverables within the project. Different work packages can proceed in parallel within a project. It is aligned with oegp:WorkPackage

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from ProjectDivision (WorkPackage is a sub-class of ProjectDivision).* | | | | |
| hasTask | oegp:isMadeUpOf | Task | 1..\* | Relates the work package to the task(s) that make up the package. Inverse of *isTaskOf*. |

**Task**

A task is a sub-division of a Work Package. Different tasks can proceed in parallel, within a work package, and cover one or more reporting periods of the project. A task must start and end with the time range of its parent Work Package. It is aligned with oegp:Task.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from ProjectDivision (WorkPackage is a sub-class of ProjectDivision).* | | | | |
| isTaskOf | oegp:isMadeUpOf | Work Package | 1..\* | Relates the work package to the task(s) that make up the package. Inverse of *isTaskOf*. |

**Result**

A Result is any tangible or intangible output of the project (such as data, knowledge and information, whatever their form or nature, whether or not they can be protected), which are generated in the project. It is aligned with frapo:Output.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| description | schema:description | xsd:string | 1..1 | A brief summary of the entity. |
| hasidentifier | schema:identifier | Property Value | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| title | dg:title | xsd:string | 1..1 | The entity’s (e.g., project, work package, etc.) official name or title. |
| hasPublished Year | - | xsd: nonNegativeInteger | 1..1 | Represents the year when this Result was published. |
| hasAuthor | - | xsd:string | 1..\* | Represents the list of authors that have contributed to the creation of the Result. |
| hasJourna lNumber | - | xsd:string | 0..1 | Represents the journal number of the Result. |
| hasJournalTitle | - | xsd:string | 0..1 | Represents the title of the journal where the information about the result can be located. |
| hasPublished Pages | - | xsd:string | 0..1 | Represents the number of pages that this Result is published under. |
| hasPublisher | - | xsd:string | 1..\* | Represents the publishing body of this Result. |
| fullText | - | xsd:string | 0..\* | Represents the location of the full text of the Result online. |
| isResultOf | - | Project Division; Project | 0..\* | Relates the result to the project or project division of which the result is an outcome. Inverse of *hasResult*. |

**Event**

An Event is an happening at a certain time and location, such as a meeting, lecture, or conference. In CORDIS, it represents the events are organized as part of or are related to research projects. It is aligned with schema:Event.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| description | schema:description | xsd:string | 1..1 | A brief summary of the entity (project, event, etc.). |
| hasidentifier | schema:identifier | Property Value | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| hasEvent Type | - | skos:Concept | 1..1 | A controlled list of types of events |
| startDate | dg:start\_time | xsd:dateTime | 1..1 | The time an entity (e.g., project, grant, event, etc.) is initialized or starts to take effect. |
| endDate | dg:end\_time | xsd:dateTime | 1..1 | The date on which an entity (e.g., project, grant, event, etc.) is finalized or ceases to exist. |
| title | dg:title | xsd:string | 1..1 | The entity’s (e.g., project, work package, etc.) official name or title. |
| webLink | dg:official\_website | xsd:anyURI | 0..\* | A URL that links to other internet resources outside CORDIS environment that are related with the project. |
| isHeldAt | schema:location | Site | 0..\* | The site where the event is happening. |
| isEventOf | - | Project | 0..\* | Relates the event to the project(s) of which it is part. Inverse of *hasEvent*. |

**Role**

A Role is the function assumed by or ascribed to an entity (typically a person or organisation) in a particular project. It can be used to precise or represent additional information about a relationship or property such as participation or membership. In CORDIS, it represents the participation of a person or organisation in a research project. It is aligned with dg:Role.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| title | dg:title | xsd:string | 1..1 | The entity’s (e.g., project, work package, etc.) official name or title. |
| startDate | dg:start\_time | xsd:date Time | 1..1 | The time an entity (e.g., project, grant, event, etc.) is initialized or starts to take effect. |
| endDate | dg:end\_time | xsd:date Time | 1..1 | The date on which an entity (e.g., project, grant, event, etc.) is finalized or ceases to exist. |
| isBeneficiary Of | dg:beneficiary\_of | Grant | 0..\* | Relates the role to the grant(s) of which the role is a beneficiary. Inverse of *hasBeneficiary.* |
| hasContact Details | - | Contact Details | 0..1 | Relates the role to the contact details of the entity taking the role (person or organisation) which are valid during the project of which the role forms a part. |
| isInvolvedIn | dg:participant\_of | Project Division; Project | 1..1 | Relates the role to the Project or Project Division in which it is involved. Inverse of *hasInvolvedParty*. |
| isRecipientOf | - | Grant Payment | 1..\* | Relates the organisation or person role with the grant payment(s) which they have received. Inverse property of hasRecipient. |

**Person Role**

A Person Role is a Function assumed by or ascribed to a person that takes part in a particular project. In CORDIS, it represents roles such as contact person, PI, etc.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from Role (PersonRole is a sub-class of Role).* | | | | |
| isEmployedBy | dg:employer | Organisation | 0..1 | Relates the person role to the organisation in which the person is employed during the project. Inverse of *employs*. |
| isRoleOf | dg:entity\_taking \_role | Person | 1..1 | Relates the person role to the person which assumes the role. Inverse of *hasPersonRole*. |

**Organisation Role**

An Organisation Role is a function assumed by or ascribed to an organisation that takes part in a particular project. In CORDIS, it represents roles such as coordinator, partner, consortium member, etc.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from Role (PersonRole is a sub-class of Role).* | | | | |
| isRoleOf | dg:entity\_taking \_role | Person | 1..1 | Relates the person role to the person which assumes the role. Inverse of *hasPersonRole*. |

**Person**

A Person represents the different people assuming roles in research projects (e.g., PhD students, PIs, administrative contacts, etc.). It is aligned with dg:Person.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| givenName | schema:givenName | xsd:string | 1..1 | The given name (first name) of the person. |
| honorificTitle | schema:honorificPrefix | xsd:string | 1..1 | An honorific prefix preceding a Person's name such as Dr, Mrs, Mr. |
| familyName | schema:familyName | xsd:string | 1..1 | The family name (last name) of the person. |
| profession | schema:hasOccupation | xsd:string | 1..\* | The Person's occupation. In CORDIS, the values of this property may come from the NACE taxonomy. |
| additionalName | schema:additionalName | xsd:string | 1..\* | An additional name for a Person, can be used for a middle name. |
| hasidentifier | schema:identifier | Property Value | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| hasRole | schema:takes\_role | Role | 1..\* | Relates the person to the roles that the person takes. Inverse of isRoleOf. |

**Organisation**

An Organisation is a group of people, with the same purpose, organized together into a community or other social, commercial, or political structure that participate in CORDIS projects. It is aligned with org:Organization.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| legalName | schema:legalName | xsd:string | 1..1 | The official name of the organization, e.g., the registered company name. |
| hasidentifier | schema:identifier | PropertyValue | 1..\* | A character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme |
| hasOrganisationCategory | - | skos:Concept | 1..1 | A list of terms specifying the different types of organisations |
| VATNumber | schema:vatID | xsd:string | 1..1 | The unique number that identifies a taxable organisation or non-taxable legal entity that is registered for VAT. |
| webLink | dg:official\_website | xsd:anyURI | 0..\* | A URL that links to other internet resources outside CORDIS environment that are related with the project. |
| hasSite | org:hasSite | Site | 0..\* | Relates an organisation with the premise where the organisation is located. Inverse of *isSiteOf*. |
| hasUnit | org:hasUnit | Organisation Unit | 0..\* | Relates the organisation with a unit or department that forms part of the organisation. Inverse of *isUnitOf*. |
| hasSubOrganisation | org:hasSubOrganization | Organisation | 0..\* | Relates the organisation with another organisation which is a sub-part or child of it. Inverse of *isSubOrganisationOf*. |
| isSubOrganisationOf | org:subOrganizationOf | Organisation | 0..\* | Relates the organisation with another organisation of which it is a sub-part. Inverse of *hasSubOrganisation*. |
| hasRole | dg:takes\_role | OrganisationRole | 0..\* | Relates the organisation to the roles that the organisation takes. Inverse of *isRoleOf*. |
| employs | - | PersonRole | 0..\* | Relates the organisation to the role representing a person that the organisation employs. Inverse of *isEmployedBy*. |

**Organisation Unit**

An Organisational Unit is a department or unit which is part of some larger Organization and only has full recognition within the context of that Organization. In CORDIS, it represents for instance the different departments of a university that participate in a particular project. It is aligned with org:OrganizationalUnit.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from Organisation (OrganisationUnit is a subclass of Organisation).* | | | | |
| isUnitOf | Org:unitOf | Organisation | 1..\* | Relates the unit to the organisation of which the unit forms a part. Inverse of *hasUnit*. |

**Site**

An office or other premise at which an entity is located. For instance, many organizations are spread across multiple sites and many sites will host multiple locations. It is aligned with org:Site.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| name | xsd:schema | xsd:string | 0..1 | The name of the entity. |
| hasCoordinates | schema:geo | Coordinates | 1..1 | The geo coordinates of an entity of physical extension. |
| hasGeographicalLocation | schema:location | Administrative Area | 1..\* | The geographical administrative area (city, country, etc.) in which an entity of physical extension is located. |
| hasAddress | schema:address | Postal Address | 1..1 | The physical address of an entity of physical extension. |
| isSiteOf | org:siteOf | Organisation | 1..\* | Indicates an organisation which has a physical presence at a given site. |

**Administrative Area**

An administrative area is a geographical region, typically under the jurisdiction of a particular government. It is aligned with schema:AdministrativeArea.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| name | schema:name | xsd:string | 1..1 | The name of the administrative area in which an entity is located. |
| NUTSCode | - | PropertyValue | 1..1 | A PropertyValue pair representing the NUTS-1, NUTS-2 or NUTS-3 code of a place or address. |

**Country**

The country where an entity is located. It is aligned with schema:Country.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| *Inherited properties from Administrative Area (Country is a subclass of Administrative Area)* | | | | |
| euCountryCode |  | skos:Concept | 0..1 | The country code according to the EU country codes nomenclature. |

**Coordinates**

The coordinates of the physical location of an entity. In CORDIS, it is used to represent the coordinates of the physical location of organisations that participate in research projects, as well as of physical locations where events related to research projects take place. It is aligned with schema:GeoCoordinates.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| latitude | schema:latitude | xsd:decimal | 1..1 | The latitude of a location. For example, 37.42242 (WGS 84). |
| longitude | schema:longitude | xsd:decimal | 1..1 | The longitude of a location. For example, 122.08585 (WGS 84). |

**Postal Address**

The postal address of an entity that has a fixed physical location. In CORDIS, it is used to represent the addresses of organisations that participate in research projects as well as of venue where events to research projects are taking place. It is aligned with schema:PostalAddress

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| addressCountry | schema: addressCountry | xsd:string | 1..1 | The country of the place |
| addressLocality | schema: addressLocality | xsd:string | 1..1 | The locality, town or city, of the place. |
| addressRegion | schema: addressRegion | xsd:string | 1..1 | The region of the place, in which the locality is. |
| postalCode | schema: postalCode | xsd:string | 1..1 | The postal code of the place. |
| streetAddress | streetAddress | xsd:string | 1..1 | The street name and number of the place. |
| fullAddress | - | xsd:string | 1..1 | The full address of the place. |

**Contact Point**

The contact point of an organisation or a person. It is aligned with schema:ContactPoint.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Properties | Mappings | Type | Cardinality | Definition |
| email | schema: email | xsd:anyURI | 0..\* | Email address. |
| faxNumber | schema: faxNumber | xsd:string | 0..\* | The fax number. |
| telephone | schema: telephone | xsd:string | 0..\* | The telephone number. |

# Concept evolution and versioning

The publication of a new release of EURIO takes place at most every 6 months, depending on whether there have been enough changes to warrant an updated version of the ontology.

The ontology revision process addresses the following tasks:

1. **CORDIS data model** **update:** this task is based on multiple factors:
   1. The new requirements identified from curation of CORDIS data;
   2. The changes requested by its stakeholders;
   3. The evolution and alignment with the reused ontologies such as DINGO, Schema.org, ORG., etc. If there is a modification in these vocabularies that have an impact on EURIO, this will be updated as well.
2. Update of the ontology file.

With the v1.1 release, EURIO allows for a more accurate representation of location information through the classes Site, Administrative Area, Country, and Coordinates, and their interrelations. Moreover, minor datatype range revisions were carried out.

1. <https://www.w3.org/TR/owl2-primer/> [↑](#footnote-ref-2)
2. <https://op.europa.eu/en/web/eu-vocabularies> [↑](#footnote-ref-3)
3. IETF. RFC 2119. Key words for use in RFCs to Indicate Requirement Levels. <http://www.ietf.org/rfc/rfc2119.txt> [↑](#footnote-ref-4)