

Matterhorn RDF Datamodel

The Matterhorn RDF Datamodel is developed by the [State Archives Canton of Wallis](#) and [docuteam](#). It is based both on the ICA-standards for descriptive metadata (now ISAD/ISAAR/ISDF, in the future Records in Context (RiC)) and the OAIS Information Model. There are currently two different approaches to implement the RiC conceptual model:

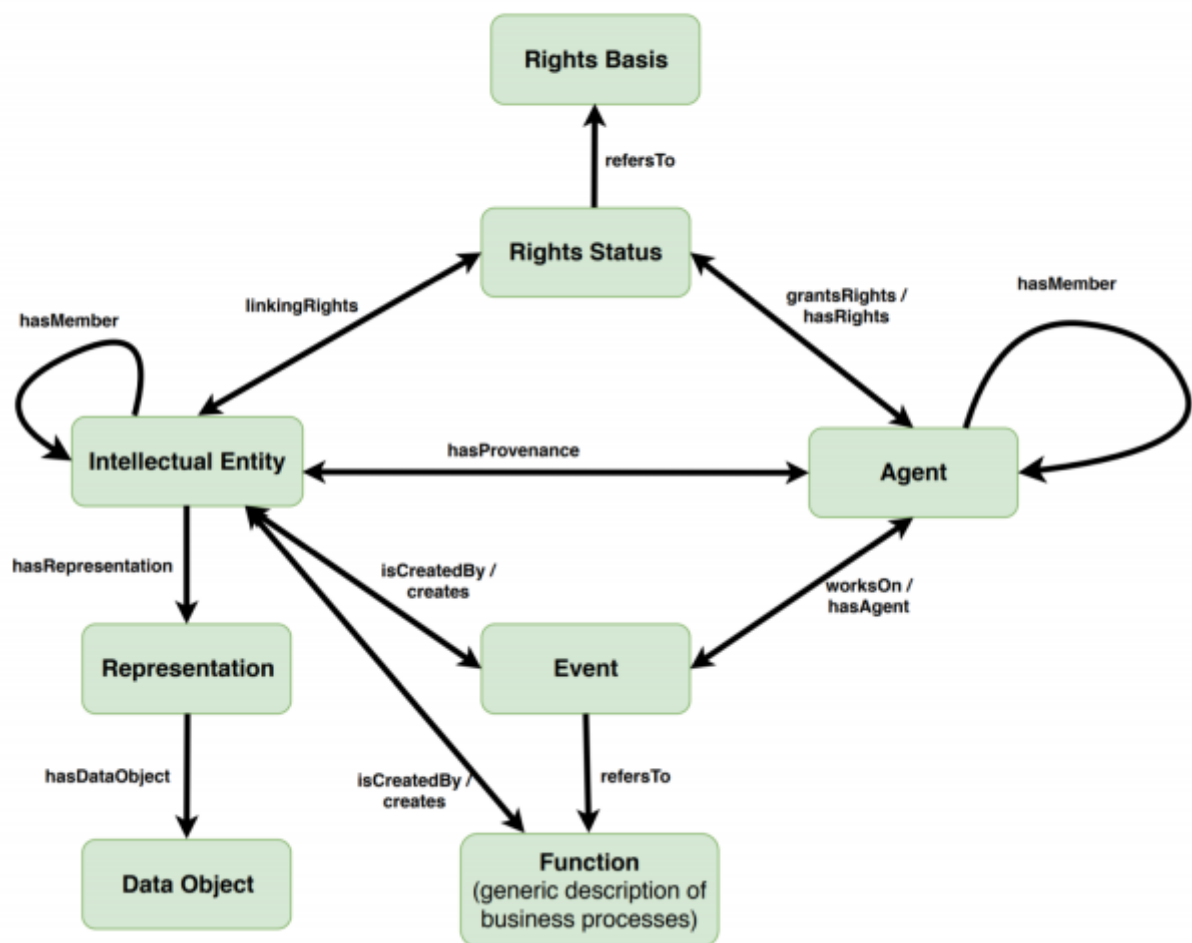
- **EGAD's nongeneric approach:** Developing an RDF standard specific to archives, with gateways to library and museum standards. The development of Records in Context Ontology (RiC-O) is a very slow process due to EGADs lacking resources. In december 2018 the EGAD opened a ["RiC-O Call for reviewers"](#), which is open until April 2019. It is important to give the EGAD the feedback it is looking for!
- **The Matterhorn RDF Data Model's generic approach:** The RiC conceptual model and the OAIS Information Model are implemented with existing ontologies, nothing new is being created. The basis for our implementation is the [PREMIS3-ontology](#).

The Matterhorn RDF Data Model follows the [best practices propagated by the W3C](#): «It is best practice to use or extend an existing vocabulary before creating a new vocabulary.» Matterhorn RDF is based on ontologies that are popular and have a large user base, that are maintained and have versioning policies. All vocabularies are attached to organizations, institutions or committees that ensure continuity over the long run.

Conceptual Model

The conceptual model describes the main entities of the Matterhorn RDF Datamodel and the relationships between the entities. The naming both of the entities and relationships is for better illustration and has nothing to do with the actual implementation.

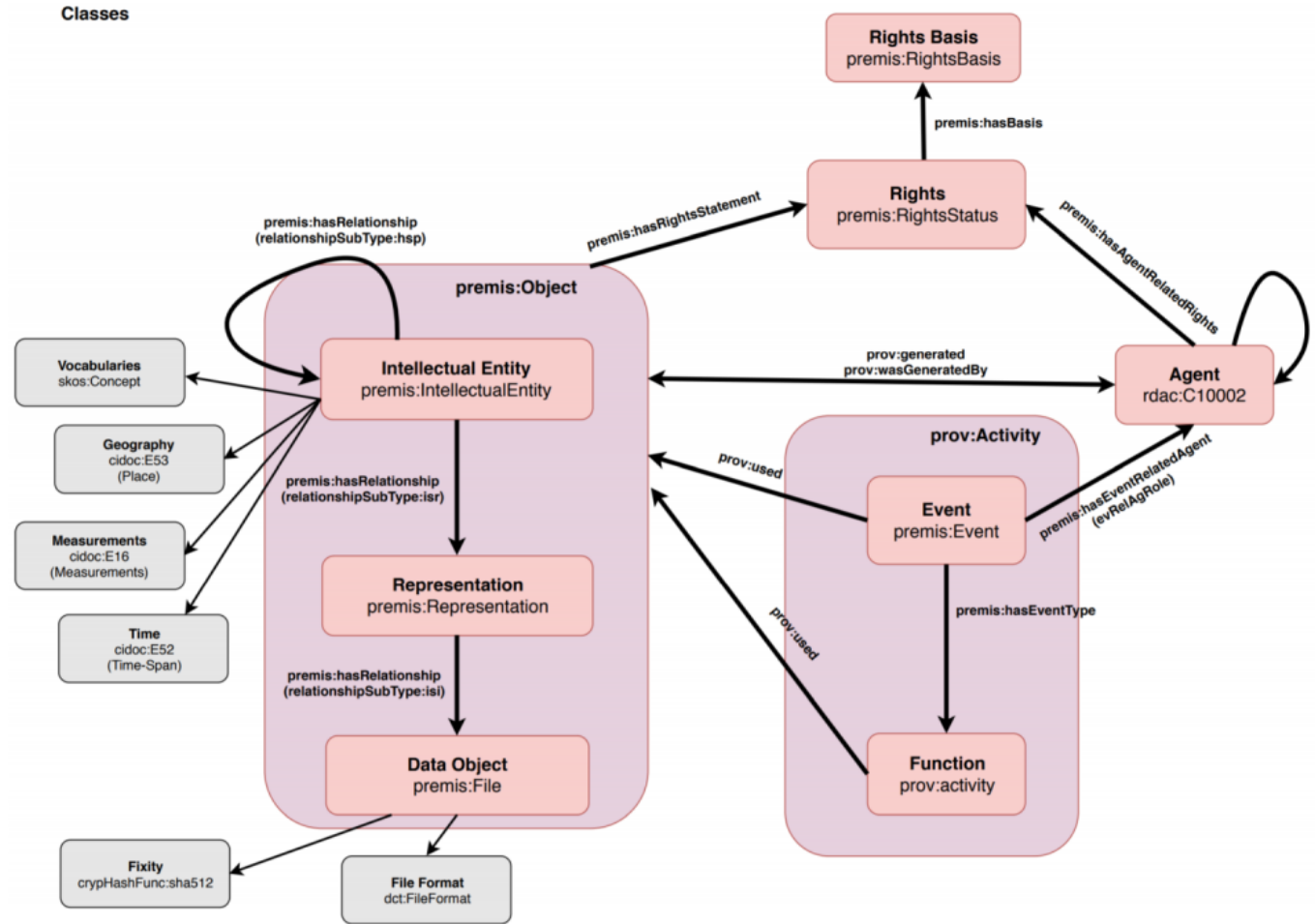
Conceptual Model



Classes

The class model of Matterhorn RDF is mainly based on the Premis 3 ontology and the library standard RDA (but not the FRBR data model). The Premis-Classes are enriched with attributes from other ontologies (mainly DC and RDA) to be able to model descriptive metadata.

Classes



Namespaces

Name	Prefix	URI	
Business Process Model and Notation	bpmn	http://dkm.fbk.eu/index.php/BPMN_Ontology#	
CIDOC Conceptual Reference Model	cidoc	http://www.cidoc-crm.org/cidoc-crm/	
Cryptographic Hash Functions	crypHashFunc	http://id.loc.gov/vocabulary/preservation/cryptographicHashFunctions/	
Dublin Core	dc	http://purl.org/dc/elements/1.1/	
DC Terms	dct	http://purl.org/dc/terms/	
LoC Event Relations Agent Role	evRelAgRole	http://id.loc.gov/vocabulary/preservation/linkingAgentRoleEvent/	
LoC Event Type	evType	http://id.loc.gov/vocabulary/preservation/eventType/	
Ebucore	ebucore	http://www.ebu.ch/metadata/ontologies/ebucore/ebucore#	
OWL	owl	http://www.w3.org/2002/07/owl#	

Name	Prefix	URI	
Pronom	info:pronom	http://www.nationalarchives.gov.uk/pronom/ Provenance-Family PROV prov http://www.w3.org/ns/prov# Premis premis http://id.loc.gov/vocabulary/preservation/properties/rdau RDA Unconstrained hierarchies rdac http://rdaregistry.info/Elements/u/ RDA Class hierarchies rdac http://rdaregistry.info/Elements/c/ RDF rdf http://www.w3.org/1999/02/22-rdf-syntax-ns# LoC Relations Sub Type LOC relSubType http://id.loc.gov/vocabulary/preservation/relationshipSubType/ SKOS Simple Knowledge Organization System skos http://www.w3.org/2004/02/skos/core# Time Ontology in OWL time http://www.w3.org/2006/time# (Searching for namespaces? Go to http://prefix.cc) ====Classes==== Class: <code>^Intellectual Concept^Class^</code> Activity prov:Activity Agent rdac:C10002 Event (Subclass of prov:Activity) premis:Event File Format dct:FileFormat Fixity Information premis:fixity Data Object (Subclass of premis:Object) premis:File Intellectual Entity (Subclass of premis:Object) premis:IntellectualEntity Representation (Subclass of premis:Object) premis:Representation Rights premis:RightsStatus Rights Basis premis:RightsBasis ====Activity==== An activity is a generic term for work that a person or an organization performs. An activity can be atomic or non-atomic (compound). The types of activities that are a part of a Process Model are: Process, Sub-Process, and Task. Class: <code>prov:Activity ^Property^Values^Standard^</code> bpmn:has_activity_activity_type Literal (Process, Sub-Process, Task) ISDF 1.1 Function Type dc:title Literal ISDF 1.2 Name dct:alternative Literal ISDF 1.3 Parallel Name; ISDF 1.4 Other Name bpmn:has_BPMN_element_category Literal ISDF 1.5 Classification (classify the function according to a classification scheme) dc:date Literal ISDF 2.1 Date (identify the date or range of dates of the function) dct:issued Literal ISDF 2.1 Date of issuance / enactment of the activity dct:valid Literal ISDF 2.1 Date (often a range) of validity of an activity bpmn:has_BPMN_element_documentation Literal ISDF 2.2 Description rdau:P60491 Literal ISDF 2.3 History; RDA „has history of the resource“ dct:rights Literal ISDF 2.4 Legislation pcdm:hasRelatedObject URI of linked bpmn:activity (via its bpmn:has_BPMN_element_id) ISDF 3.1 Related activity bpmn:has_BPMN_element_id Literal ISDF 4.1 Function Identifier bpmn:has_activity_performers Literal or URI of premis:agent ISDF 4.2 Responsible Agent dct:conformsTo Literal ISDF 4.3 Rules & Conventions dct:hasVersion Literal ISDF 4.4 Status of description (draft, final) dct:language Literal ISDF 4.7 Language of description dct:source Literal ISDF 4.8 Sources consulted for description dct:modified Literal ISDF 4.9 Maintenance notes ====Agent==== The „Agent“-class of RDA (rdac:C10002) can be divided into the subclasses Person (rdac:C10004), Corporate Body (rdac:C10005) and Family (rdac:C10008), see: https://www.rdaregistry.info/rgAbout/rdaont/ontHierarchies.html. The Matterhorn RDF-model includes only the top class rdac:C10002 and describes it with unconstrained RDAU-properties. It's of course open to the user to divide rdac:C10002 into its subclasses if more granularity is needed. Class: <code>rdac:C10002 ^Property^Values^Standard^</code> rdau:P60047 Literal (person, family, organization, software, algorithm, AI) ISAAR 1.1 Type of entity; RDA „has type of agent“ rdau:P60368 Literal ISAAR 1.2 Name; RDA „has name of agent“ rdau:P60119 Literal ISAAR 1.3, 1.5; RDA „has variant name for corporate body“ rdau:P60549 Literal ISAAR 1.4; RDA „has preferred name for agent“ rdau:P60053 Literal (e.g. UUID) ISAAR 1.6; RDA „has identifier for agent“ rdau:P60524 Literal ISAAR 2.1; RDA „has date of establishment“ rdau:P60525 Literal ISAAR 2.1; RDA „has date of termination“ rdau:P60599 Literal ISAAR 2.1; RDA „has date of birth“ rdau:P60598 Literal ISAAR 2.1; RDA „has date of death“ rdau:P60484 Literal ISAAR 2.2; RDA „has agent history“ rdau:P60325 Literal ISAAR 2.3; RDA „has place associated with agent“ rdau:P60370 Literal ISAAR 2.4-2.6; RDA „has other designation associated with agent“ dct:conformsTo Literal ISAAR 4.3 Rules & Conventions dct:hasVersion Literal ISAAR 4.4 Status of description (draft, final) dct:language Literal ISAAR 4.7 Language of description dct:source Literal ISAAR 4.8 Sources consulted for description dct:modified Literal ISAAR 4.9 Maintenance notes ====Event==== Class: <code>premis:Event</code> The event type is expressed by subclasses of premis:Event, declared at http://id.loc.gov/vocabulary/preservation/eventType <code>^Property^Values^Standard^</code> dc:date Literal Timestamp of event premis:note Literal Event detail premis:outcome Literal or premis:OutcomeStatus or http://id.loc.gov/vocabulary/preservation/eventOutcome (TBD)	Event outcome

Name	Prefix	URI	
premis:outcomeNote	Literal	Event outcome note	
evRelAgRole:exe	Literal or URI of Agent	Executing Software	
evRelAgRole:aut	Literal or URI of Agent	Authorizing Agent	
prov:used	URI of premis:Object		

File Format

Class: `dct:FileFormat`

Property	Values	Standard
<code>rdfs:label</code>	Literal	File format name
premis:version	Literal	File format version
premis:note	Literal	File format notes
<code>ebucore:hasMimeType</code>	Literal	MIME-Type
<code>owl:sameAs</code>	URI	Link to external description of file format eg. in Pronom file registry

Fixity

Class: The LoC classes for [cryptographic hash functions](#) like [crypHashFunc:md5](#) or [crypHashFunc:sha512](#) are subclasses of `premis:fixity`.

Fixity-information is attached to a data object `premis:file`.

Property	Values	Standard
<code>rdf:value</code>	Literal	Value of message digest algorithm
<code>dct:creator</code>	Literal or URI of Agent	Message digest originator

Object, Representation and File

Class: [premis:Object](#) and subclasses [premis:IntellectualEntity](#), [premis:Representation](#), [premis:File](#)

ISAD(G)

Property	Values	Standard	Accessor	EAD 2002
<code>rdau:P60049</code>	Literal either „root“ or „node“	categorization		
<code>premis:objectCategory</code>	Literal either „IntellectualEntity“, „Representation“ or „File“			
<code>dc:identifier</code>	Literal	ISAD 1.1	<code>refCode</code>	<code>EAD:did/EAD:unitid[@type = 'refCode']</code>

Property	Values	Standard	Accessor	EAD 2002
dc:title	Literal	ISAD 1.2; RDA „has title“	unitTitle	EAD:did/EAD:unittitle[@label = 'main']
rdau:P60493	Literal	ISAD 1.2; RDA „has other title information“	unitTitleAdditional	EAD:did/EAD:unittitle[@label = 'additional']
rdau:P60515	Literal	ISAD 1.2; RDA „has title proper“	unitTitleOriginal	EAD:did/EAD:unittitle[@label = 'original']
rdau:P60355	Literal	ISAD 1.2; RDA „has variant title“	unitTitleVarying	EAD:did/EAD:unittitle[@label = 'varying']
rdau:P60597	Literal	ISAD 1.2; RDA „has key title“	uniformTitle	EAD:did/EAD:unittitle[@label = 'uniform']
dc:date	Literal	ISAD 1.3	date	EAD:did/EAD:unitdate[@label = 'date']
time:hasBeginning	Literal	ISAD 1.3	from	
time:hasEnd	Literal	ISAD 1.3	to	
dc:type	Literal	ISAD 1.4	otherLevelName	[@level = 'otherlevel']/@otherlevel
rdau:P60550	Literal	ISAD 1.5; RDA „has extent“	extent	EAD:did/EAD:physdesc/EAD:extent[not(@type)]
rdau:P60134	Literal	ISAD 1.5; RDA „has note on extent of resource“	extentNote	EAD:did/EAD:physdesc/EAD:extent[@type = 'note']
rdau:P60539	Literal	ISAD 1.5; RDA „has dimensions“	dimensions	EAD:did/EAD:physdesc/EAD:dimensions
rdau:P60159	Literal	ISAD 1.5; RDA „has applied material“	material	EAD:did/EAD:physdesc/EAD:physfacet
prov:wasGeneratedBy	Literal or URI of rdac:C10002	ISAD 2.1	origination	
rdau:P60484	Literal	ISAD 2.2; RDA „has agent history“	biographicalHistory	EAD:bioghist/EAD:p
rdau:P60176	Literal	ISAD 2.3; RDA „has custodial history of resource“	archivalHistory	EAD:custodhist/EAD:p
rdau:P60583	Literal	ISAD 2.4; RDA „„has immediate source of acquisition of resource“„	accessNr (eigentlich acquisitionInfo)	EAD:acqinfo/EAD:p
dc:description	Literal	ISAD 3.1	scopeContent	EAD:scopecontent/EAD:p
dct:accrualPolicy	Literal	ISAD 3.2	appraisalAndDestruction	EAD:appraisal/EAD:p
dct:accrualMethod	Literal	ISAD 3.3	accruals	EAD:accruals/EAD:p
rdau:P60348	Literal	ISAD 3.4; RDA „has system of organization“	arrangement	EAD:arrangement/EAD:p
premis:hasRightsGranted	Literal or URI of premis:RightsStatement	ISAD 4.1	accessRestriction	EAD:accessrestrict[@type = 'restrictions']/EAD:p
premis:hasRightsGranted	Literal or URI of premis:RightsStatement	ISAD 4.2	conditionsOfReproductions	EAD:userrestrict/EAD:p
dct:language	Literal	ISAD 4.3	language	EAD:did/EAD:langmaterial/EAD:language
rdau:P60528	Literal	ISAD 4.4; RDA „has equipment or system requirement“	characteristics	EAD:phystech/EAD:p
rdau:P60262	Literal	ISAD 4.5; RDA „is finding aid“	findingAids	EAD:otherfindaid/EAD:p
dct:isVersionOf	Literal or URI of pcdm:object	ISAD 5.1	locationOfOriginals	EAD:originalsloc/EAD:p

Property	Values	Standard	Accessor	EAD 2002
rdau:P60272	Literal or URI of pcdm:object	ISAD 5.2; RDA „is reproduced as“	reproductions	EAD:altformavail/EAD:p
pcdm:hasRelatedObject	URI of pcdm:object	ISAD 5.3	relatedMaterial	EAD:relatedmaterial/EAD:p
rdau:P60333	Literal	ISAD 5.4; RDA „has publication statement“	bibliography	EAD:bibliography/EAD:p
rdau:P60470	Literal	ISAD 6.1; RDA „has note on resource“	comment	EAD:note/EAD:p
dct:conformsTo	Literal	ISAD 7.2 Rules & Conventions	descriptionRules	EAD:processinfo[@type = 'rules']/EAD:p
dct:modified	Literal	ISAD 7.3		

Non-ISAD(G)-properties for objects

Property	Values	Standard	Accessor	EAD 2002
dct:format	Literal	Dateifformat	format	EAD:did/EAD:physdesc[@label = 'format']
rdau:P60073	Literal	RDA „has date of publication“		
rdau:P60163	Literal	RDA „has place of publication“		
rdau:P60518	Literal	RDA „Relates a work to a chronological or geographic coverage of the content of a resource.“; rdaw:P10216		
rdau:P60061	Literal	RDA „Has host institution“; rdaw:P10007	institution	EAD:controlaccess/EAD:corpname
rdau:P60203	Literal or URI of pcdm:object	RDA „is abstracted as“	abstract	EAD:did/EAD:abstract
rdau:P60434	Literal	RDA „has author“	author	EAD:controlaccess/EAD:persname[@role = 'author']
rdau:P60444	Literal	RDA „has publisher“	publisher	EAD:controlaccess/EAD:name[@role = 'publisher']
rdau:P60483	Literal	RDA „has granting institution or faculty“	fundingSource	EAD:controlaccess/EAD:name[@role = 'fundingSource']
pcdm:hasMember	URI of pcdm:object	Link to Childelements		

Technical Metadata for objects

Property	Values	Standard
ebucore:filename	Literal	File name
premis:compositionLevel	Literal	0 = basic object or if there is only one compositionLevel in the repository
ebucore:fileSize	Literal	File size in Byte
ebucore:dateCreated	Literal	create date
ebucore:dateModified	Literal	last modified date
premis:originalName	Literal	original name of file
dct:FileFormat	URI	Description of file format
premis:fixity	URI	Link to fixity information encoded in premis:fixity subclasses like crypHashFunc:MD5
rdac:C10002	URI	Application used to create the file

Rights

Class: [premis:RightsStatus](#)

Property	Values	Standard
premis:allows	Literal	
premis:prohibits	Literal	
premis:basis	URI	Links from a RightsStatus to the RightsBasis instance that supports or documents it.
premis:endDate	Literal	
premis:startDate	Literal	

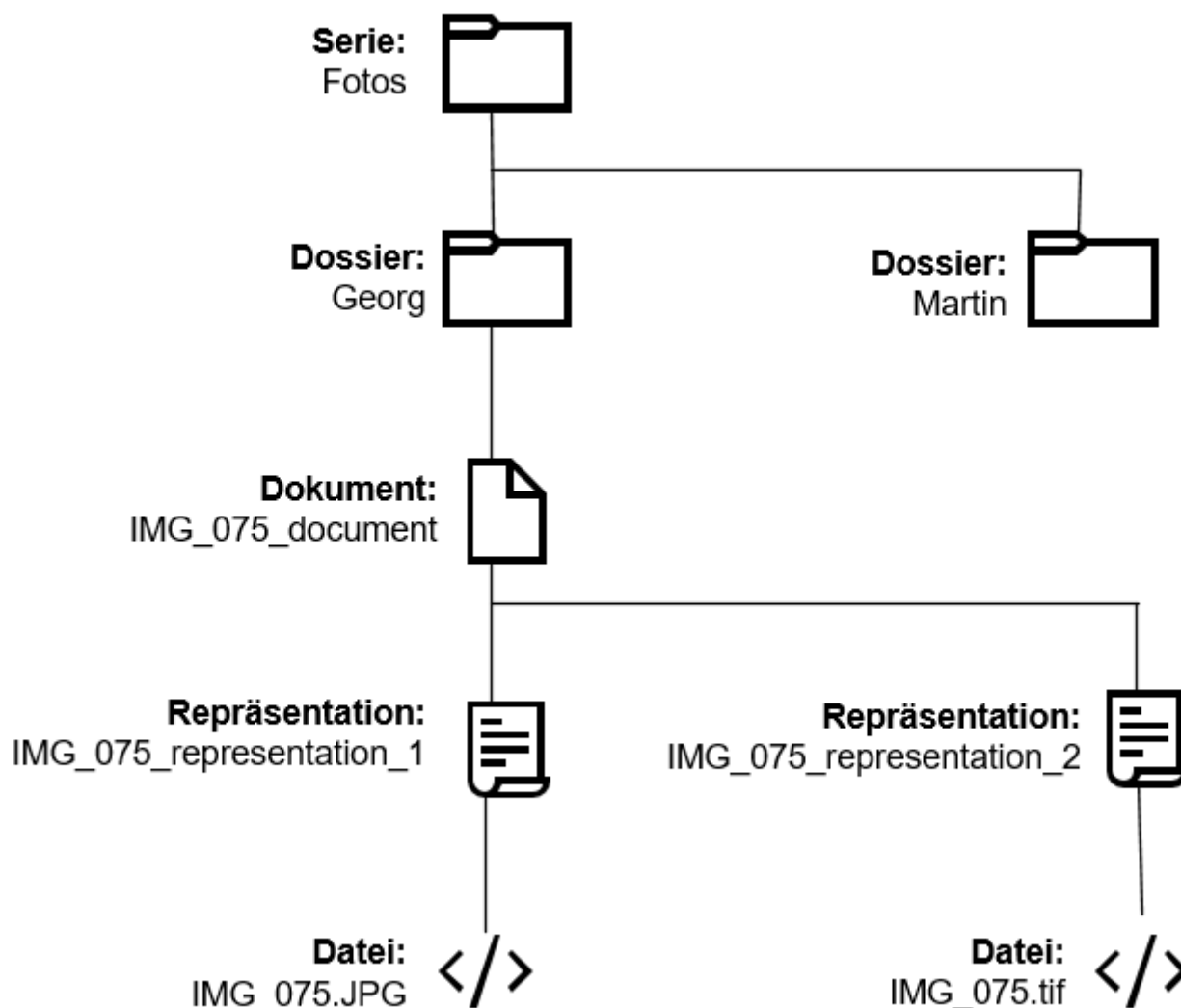
Rights Basis

Class: [premis:RightsBasis](#)

Specifies the rights basis of any rights statement that is expressed in [premis:RightsStatus](#). To describe copyrights, licences, statue (law that grants or revokes rights) or institutional policies use the respective PREMIS Subclasses.

Property	Values	Standard
premis:jurisdiction	Literal or URI	Jurisdiction to which the rights basis applies
premis:note	Literal	Free-text note about the rights basis

Example



```

@prefix cryptoHashFunc:
<http://id.loc.gov/vocabulary/preservation/cryptographicHashFunctions> .
@prefix dct: <http://purl.org/dc/terms/> .
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix ebucore: <http://www.ebu.ch/metadata/ontologies/ebucore/ebucore#> .
@prefix evRelAgRole:
<http://id.loc.gov/vocabulary/preservation/linkingAgentRoleEvent/> .
@prefix evType: <http://id.loc.gov/vocabulary/preservation/eventType> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix premis: <http://id.loc.gov/vocabulary/preservation/> .
@prefix pronom: <http://reference.data.gov.uk/technical-registry/> .
@prefix prov: <http://www.w3.org/ns/prov#> .
@prefix rdac: <http://rdaregistry.info/Elements/c/> .
@prefix rdau: <http://rdaregistry.info/Elements/u/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

```

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix relSubType:
<http://id.loc.gov/vocabulary/preservation/relationshipSubType/> .
@prefix time: <http://www.w3.org/2006/time#> .
```

```
# ===== intellectual entities
<_20180417150218369> a premis:IntellectualEntity ;
    ebucore:filename "Fotos" ;
    relSubType:hsp <_20180417150218421> ;
    relSubType:hsp <_20180417150218728> ;
    dc:title "Titel der Serie" ;
    dc:identifier "A-01" ;
    dc:type "Serie" ;
    time:hasBeginning "20120000" ;
    time:hasEnd "20140000" ;
    dct:language "deutsch" ;
    rdau:P60484 "administrative history" ;
    rdau:P60176 "the archival history" ;
    rdau:P60583 "Source of acquisition" ;
    dc:description "ISAD 3.1 for Scope and content" ;
    dct:accrualPolicy "Appraisal" .
```

```
<_20180417150218421> a premis:IntellectualEntity ;
    ebucore:filename "Georg" ;
    relSubType:hsp <_20180417150218464> ;
    dc:title "description of the dossier" ;
    dc:type "Dossier" .
```

```
<_20180417150218728> a premis:IntellectualEntity ;
    dc:title "Martin" ;
    ebucore:filename "Martin" ;
    dc:type "Dossier" .
```

```
<_20180417150218464> a premis:IntellectualEntity ;
    relSubType:hsp <_20180417150218516> ;
    relSubType:hsp <_20180430153716970> ;
    ebucore:filename "IMG_075_document" ;
    dc:type "Dokument" ;
    dc:date "20120610" ;
    dc:title "Das ist der Titel des Dokuments" ;
    prov:wasGeneratedBy <Georg_Buechler> .
```

```
# ===== representations
<_20180417150218516> a premis:Representation ;
    relSubType:isr <IMG_075_file1> ;
    ebucore:filename "IMG_075_representation_1" ;
    dc:title "Representation 1" .
```

```
<_20180430153716970> a premis:Representation ;
    relSubType:isr <IMG_075_file2> ;
    ebucore:filename "IMG_075_representation_2" ;
```

```
dc:title "Representation 2" .

# ===== files
<IMG_075_file1> a premis:File ;
    ebucore:filename "IMG_075.JPG" ;
    premis:hasCompositionLevel "0" ;
    ebucore:hasSize "1609735" ;
    premis:hasOriginalName "IMG_075.JPG" ;
    dct:FileFormat <fmt/43> ;
    premis:hasFixity <IMG_075_file1_fixity> .

<IMG_075_file2> a premis:File ;
    ebucore:filename "IMG_075.tif" ;
    premis:hasCompositionLevel "0" ;
    ebucore:hasSize "6370960" ;
    dct:FileFormat <fmt/353> ;
    premis:hasFixity <IMG_075_file2_fixity> .

# ===== fixity
<IMG_075_file1_fixity> a crypHashFunc:sha512 ;
    rdf:value "1e0d392f890b635c507a35962b49b80e1c580ed4..." .

<IMG_075_file2_fixity> a crypHashFunc:sha512 ;
    rdf:value "5fe3a08a12e3709c11a2f4f09a4d624d60908cbe..." .

# ===== file format
<fmt/43> a dct:FileFormat ;
    rdfs:label "JPEG File Interchange Format" ;
    premis:formatVersion "1.01" ;
    ebucore:hasMimeType "image/jpeg" ;
    owl:sameAs <https://www.nationalarchives.gov.uk/pronom/fmt/42> .

<fmt/353> a dct:FileFormat ;
    rdfs:label "Tagged Image File Format" ;
    ebucore:hasMimeType "image/tiff" ;
    owl:sameAs <https://www.nationalarchives.gov.uk/pronom/fmt/353> .

# ===== events
<_20180417150218685> a evType:creation ;
    dct:date: "2018-04-17T15:02:18" ;
    evRelAgRole:exe <docuteam darc_2.18.14> ;
    evRelAgRole:aut "t.wildi" ;
    premis:hasOutcome: "Success" ;
    prov:used "IMG_075_file1" .

<_20180417150218685> a evType:creation ;
    dct:date: "2018-04-17T15:02:18" ;
    evRelAgRole:exe <docuteam darc_2.18.14> ;
    evRelAgRole:aut "t.wildi" ;
    premis:hasOutcome: "Success" ;
    prov:used "IMG_075_file2" .
```

===== agents

```
<Georg_Buechler> a rdac:C10002 ;
    rdau:P60047 "person" ;
    rdau:P60368 "Büchler, Georg" ;
    rdau:P60599 "1.1.1111" ;
    rdau:P60484 "Studium: 1995-2001 Griechische Sprache und Literatur,
Klassische Archäologie und Informatik an den Universitäten Fribourg und
Athen" .
    owl:sameAs <http://d-nb.info/gnd/128413468>
    owl:sameAs <https://viaf.org/viaf/65058495/>
```

```
<docuteam darc_2.18.14> a rdac:C10002 ;
    rdau:P60047 "software" ;
    rdau:P60368 "docuteam darc" ;
    dct:hasVersion "2.18.14" ;
    dct:abstract "digital preservation software developped by
www.docuteam.ch, published under GPL3" .
```

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