Omega Catalogue Data Model

[TNA-OCDM20/1]

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9 May 2023

Proposal version: 0.8.0

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SUBSTANTIVE CHANGES

Date	Description
2020-02-19	W3C Time is now incorporated. Initially used for dct:created (i.e. TNA-CS13 “Covering Dates”) instead of dct:PeriodOfTime.
2020-02-15	dct:created is now used instead of dct:temporal for the TNA-CS13 “Covering Dates” of records.
2020-02-11	The term “Manifestation” has been replaced with the term “Realisation”. A record no longer consists of a Concept, and then multiple Descriptions, and multiple Manifestations. A record now consists of a Concept, multiple Descriptions, and multiple Realisations.
2020-03-23	The property dct:created (i.e. TNA-CS13 “Covering Dates”) has been replaced with tna:created. Notes on Vocabulary Reuse have been added in Appendix 4. Started replacing schema:identifier property with custom derived vocabulary properties - tna:classicCatalogueReference and tna:formerReferenceFromDepartment.
2020-04-06	The TNA-CS13 Data Element “Immediate Source of Acquisition” is now mapped to dct:provenance instead of dct:source.
2020-04-12	Added further properties for Corporate Bodies.
2020-04-13	Added properties for People.
2023-03-28	Updated Legal Status property values, and added definitions in Appendix 8.1.
2023-04-26	Corrected incorrectly named dct:related property to dct:relation.
2023-05-04	Added the URI Scheme for Agent Concepts and Agent Descriptions.
2023-05-09	Separate Agents (Person, Collective Agent, Family, Corporate Body, Software Agent, and Hardware Agent) into Concept and Description types. Added missing properties prov:specializationOf and prov:wasRevisionOf to section 8.2.2 Record Description Properties.

ABSTRACT

As part of The National Archives' Project Omega, development of a new data model for a pan-archival catalogue is required. This new data model, is derived from the Matterhorn RDF Model approach. This document follows on from the Project Omega document "*Catalogue Model Proposal*", and details a new graph based data model for TNA's records.

This document first briefly summarises The Matterhorn RDF Model, and then examines implementation complexities around modelling changes to TNA's records through time; design options and decisions for recording change are discussed. Henceforth a suitable pan-archival data model is described, and finally guidance for applying it to the process of cataloguing is provided.

Through the research and development undertaken for this document, we have gained some unique insights into the future of TNA's catalogue:

1. Immutability of record description is key to creating revisions of description. Allowing us to also preserve the history of public record description through the catalogue itself. However, achieving such versioned immutable descriptions in RDF is a challenge as there are no in-built tools and there are several possible approaches. We have demonstrated that we can handle this additional complexity within our data model by embracing both W3C PROV and some smaller aspects of other ontologies which describe agents.

2. Persistent and succinct identifiers for resources that are suitable for use in URI are a necessity when working with RDF and eventually LinkedData. Designing suitable identifiers is a tricky task, but once that is made easier by building upon existing schemes in use at TNA. We propose a set of identifiers, each of which is designed specifically for a particular type of resource. These identifiers collectively referred to as OCI (Omega Catalogue Identifier), bring with them a new way of addressing records, whether these will complement or replace existing schemes is yet to be determined.

3. Access to records, also known as "*Closure*", which has historically been considered a complex topic can be greatly simplified when a system of immutable record description is chosen. The access status of a record becomes a series of transitions over time, where a complete history of FOI exemption, etc, can be easily preserved and considered. We have proposed adopting W3C ODRL as a vocabulary for describing grants and constraints of access upon records. ODRL is suitable not only for TNA's traditional "Closure" approach to records access management, but can also support much more complex rules based approaches such as a *Gradated Access* methodology.

4. The Matterhorn RDF Model approach that we adopted has many advantages due to its reuse of existing ontologies that are in wide-spread use. However, we also found that we had to extend it where it was lacking some archival properties. Most often additional properties were taken from RDA, unfortunately due to RDA's canonical property naming scheme, this introduced significant complexity. A

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comprehensive archival/bibliographic ontology with semantic naming would be welcomed; perhaps after significant revision RiC-O could fulfil such a need.

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1. BACKGROUND

The original scope of Project Omega was to identify and prove a new data model and technology stack for a PROCat and ILDB replacement.

Subsequently, through the discovery phase of the project, the "*Catalogue Model Proposal*" document was developed. That document identified that alongside PROCat there were many other additional catalogue systems with varying data models in use at TNA. The document concluded that a single "Pan-Archival Catalogue" should be developed which would be suitable for any type of records and associated surrogates. After examining known data model standards that could be suitable for such a singular catalogue, the document identified The Matterhorn RDF Model as the most suitable basis for deriving a catalogue data model for Project Omega.

In brief, the new Catalogue Data Model set out in this document must:

1. hold the arrangement(s) and description(s) of physical (e.g. paper), born-digital, and digitised records.
2. describe records that may be held by TNA, or held by other organisations.
3. describe changes to records, surrogates, and their relationships over time.
4. support gradated access to records.
5. support the import of all relevant records data (i.e. record descriptions, and not application state data) from existing TNA catalogues and surrogate systems.
6. be extensible; the future is uncertain - new types of records, arrangements, or descriptive methods may emerge in future.

2. DOCUMENT SCOPE

This document concerns itself solely with a new Data Model for a Pan-Archival Catalogue. It does not consider the application UI or stateful business process data needed for replacing PROCat or any other TNA catalogue systems, those concerns will be dealt with separately. The Data Model will predominantly be considered at the Implementation Level, i.e. its technological implementation is of primary concern for this document, most concepts and terminology have been previously defined in the "*Catalogue Model Proposal*" document.

3. EVOLUTION OF RECORDS

When accessioning a Public Record, TNA creates both an identifier (CCR or GCR) and a description for the record. This identifier and description is then added to the catalogue system; ILDB via PROCat for a CCR, or the DRI Catalogue for a GCR.

Subsequently, if the description is discovered to be inaccurate, or additional information about the record surfaces, then the original description in the catalogue system is updated by the Catalogue Team.

The current catalogue systems treat the description of records as mutable, only storing the latest description. Unfortunately, this means that we are losing potentially interesting information about how a record was described (interpreted by archivists) through time.

One requirement for a new Pan-Archival Catalogue system is that it should be able to show the changes made to records over time, and describe the the purpose of those changes. Therefore the description of a record, needs to become immutable, instead becoming a description of a snapshot of the record, itself only considered valid for a period-of-time. In such a new system, when an archivist wishes to modify a description, instead of changing the existing description, the system should generate a new description which "supersedes" the existing description. The new description is linked to the previous description, with appropriate relationships and metadata detailing the purpose for the change and the time periods involved.

As well as a linear progression of improved descriptions, we could also imagine the case where a description is superseded concurrently by more than one description, for example - a human description, and an alternative machine generated description, each with different confidence (accuracy) factors.

Above we have discussed how updates should be considered distinct revisions for the description of a record, however each record does not exist in isolation. This adds further complexity. Each record has a context, in particular each record has one of more arrangements within a larger set of records and may have relationships with other records. If we wish to describe how a record has changed through time, we must also consider that updates to its arrangement(s) and relationships must also lead to distinct revisions.

3.1 Record Description Updates

All data elements making up the description of a record are subject to change over time. Such changes happen often, and improving record description is one of the core purposes of TNA's Catalogue Team.

The records CCR (or GCR), which forms part of the description, is also subject to change. Although this has occurred less often, a record may have been miscatalogued into a particular arrangement; As the CCR reflects the arrangement, any change to the arrangement would lead to a new CCR.

As a CCR is also subject to change, it is recommended to assign a new unique persistent identifier to each record in the new catalogue system. The new identifier must be independent of the arrangement and/or description the record. The new identifier would complement the CCR, but be consider canonical for the record.

3.2 Record Arrangement/Relationship Updates

Whilst it is rare to change the arrangement of a record within a larger set of records, it is not without precedent in the physical archives of TNA.

In the digital archives of TNA, and more generally within the field of digital preservation, best practice as to the arrangement of digital records is still being refined, this could lead to revising arrangements of digital records. Another concern, is that it may be desirable to later enrich digital records by computing additional arrangements based on various implicit or explicit criteria.

The Graph based model proposed for a Pan-Archival Catalogue, allows us the advantage of easily adding additional relationships between records. It is perceived that there is a desire to enrich and unlock value in the catalogue by in future establishing new and previously unknown relationships between records. Such new relationships could be provided by experts, crowd-sourced, or computed. Regardless such relationships should be considered as revisions, whereby a record at two different points in time may reflect different relationships with other records.

4. THE MATTERHORN RDF MODEL

During the discovery phase of Project OMEGA, we identified the Matterhorn RDF Model as the most suitable candidate for the basis of a TNA Pan-Archival Catalogue. Section 4.1 is reproduced from version 1.0.0 of the *Catalogue Model Proposal* document as an introductory reference.

4.1 Introduction to Matterhorn RDF Model

The Matterhorn RDF Data Model is itself not a standard, rather it is an approach published as a collaborative effort between the Archives de l'Etat du Valais (State Archives of the Canton of Valais) Switzerland and the company Docuteam GmbH Switzerland. The paper - The Matterhorn RDF Data Model, Formalizing Archival Metadata With SHACL, Wildi and Dubois, was published in the proceedings of the 16th International Conference on Digital Preservation, iPRES 2019.

It should be noted that the Matterhorn RDF Data Model published as a research paper, reflects the experience and knowledge of a collaborative effort at a point-in-time. The material published should be considered incomplete, and does not form a finished product that could be adopted whole-sale as a catalogue model. Docuteam GmbH have suggested that Matterhorn RDF is unlikely to be developed further by its technical originators unless they see a demand from the community.

However, the approach described by Matterhorn RDF fits well with TNA's aspirations of both, describing its records within a larger domain than just archives, and following W3C advice to reuse existing vocabularies to enable interoperability of Linked Data via the Web. Matterhorn RDF has already been developed far enough that it can be used as a solid starting point for a catalogue model, although further refinements and/or extensions will likely be needed. As such, we explore the suitability of the Matterhorn RDF Data Model further below.

The Matterhorn RDF Data Model is built upon lessons learn from a previous approach called the Matterhorn METS Profile. As its name might imply, it was a profile for the LoC METS (Makes data Encoding and Transmission Standard) which was registered with, and published by, the LoC in 2012. It described itself as: "*a generic profile that can be used by memory institutions for the management of archival fonds*". Matterhorn METS is an XML model based on METS, PREMIS (Preservation Metadata: Implementation Strategy), EAD and EAC-CPF, which is now in use by around 30 institutions spread across France, Germany, and Switzerland. The key thing about Matterhorn METS, which is interesting here, is that it mixes together two different conceptual models:

1. the first a model around the contextualisation of records (i.e. description/arrangement through context(s): What?, Who?, How?, and When?,
2. and the second model around the preservation of records (i.e. that our understanding, description, and arrangement of records change over time).

Matterhorn RDF keeps the blend of contextualisation and preservation, but departs from a hierarchical model to use a more flexible graph model for describing relationships between records. Thus enabling more complex arrangements of records than just mono-hierarchical. Of course, Matterhorn RDF also provides appropriate relationships so that one can still model hierarchical arrangements within the graph, thus allowing backward compatibility with records previously catalogued with ISAD(G). It covers the three ICA standards - ISAD(G), ISAAR(CPF), and ISDF, as well as the OAIS Information Model components for "Preservation Description Information" and "Representation Information".

The Matterhorn RDF Model is designed to allow for the modelling of *Records in Context* but takes a different design approach than ICA EGAD's conceptual model - Records in Context (RiC), instead proposing an alternative way to contextualise records.

Matterhorn RDF is built to describe archival records as part of a wider world. This is in direct contrast to EGAD's non-generic approach for RiC-O, of developing their own ontology and vocabulary with (future) gateways to

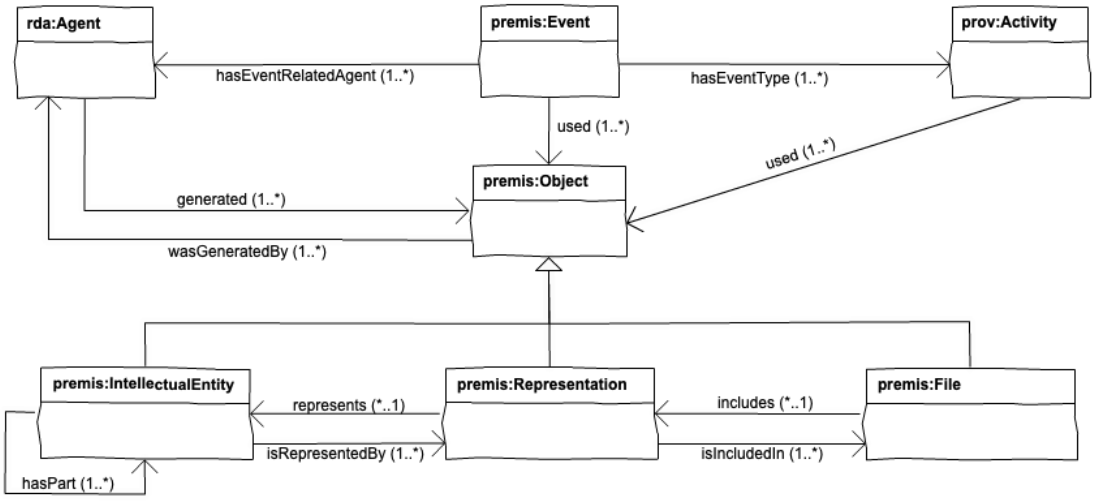
other library and museum standards. Instead, Matterhorn's RDF Data Model follows W3C's recommendation to reuse existing standardised vocabularies. Matterhorn RDF composes its model by reusing entities and properties from several vocabularies including: PREMIS3 ontology, RDA-Ontology, W3C PROV-O, EBUCore, and Dublin Core Terms.

The Matterhorn RDF Data Model paper thus describes the relationship between RiC and Matterhorn RDF:

> *"Matterhorn RDF is not to be seen as an alternative to RiC, but rather seeks to elaborate the RiC concept model in a future version, taking into account, however, different design considerations to those which EGAD currently implements."*

The core entities of the Matterhorn RDF Data Model are: Intellectual Entity, Representation, and File, all of which are taken from PREMIS3. For modelling provenance and contextualisation, the entities: Agent (from RDA), Event (from PREMIS3), and Activity (from W3C PROV), are reused by Matterhorn RDF. For access constraints it reuses the entities Rights and Rights Basis from PREMIS3.

Fig 1 - Matterhorn RDF Model Entities

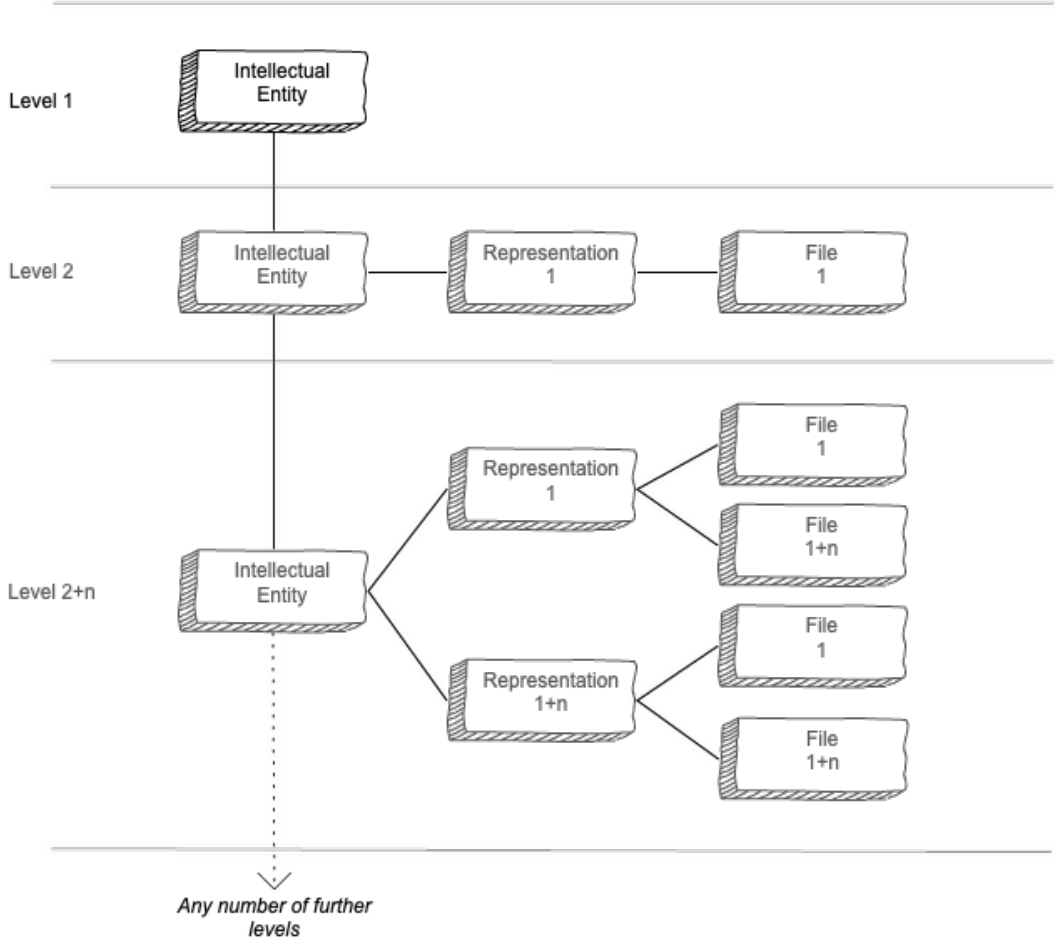


Somewhat like the FRBR WEMI concept, Matterhorn RDF separates the concept of a record from its manifestation (i.e. realisation), albeit more similarly to RiC-CM, the Matterhorn RDF Data Model splits the record into two aspects - its concept (Intellectual Entity), and its realisation (Representation).

As the Matterhorn RDF Data Model reuses existing ontologies and vocabularies, there is no singular ontology to describe it. Instead the Matterhorn RDF Data Model, provides a series of SHACL (Shape Constraint Language) files, which describe its composite ontological graph. One nice feature that falls out from this is that one can the subsequently use a SHACL validator tool against data expressed in Matterhorn's RDF Data Model to validate adherence of the data to the model. For extensibility, it is also possible to define additional *shapes* to further ensure data quality.

Interestingly there are quite a few similarities between the DRI Catalogue Model and Matterhorn RDF, this is because they both share a common ancestor in the form of OAIS. The DRI Catalogue Model was influenced by aspects of XIP which is based upon OAIS, whilst Matterhorn RDF reuses PREMIS which was built atop OAIS.

Fig 2 - Matterhorn RDF Model - Record Levels



To express TNA catalogue records in the Matterhorn RDF Data Model, the following mappings from our Conceptual Vocabulary to Matterhorn RDF Data Model entities would be established:

Basic Mapping of Conceptual Vocabulary to Matterhorn RDF Data Model

Conceptual Vocabulary Term	Matterhorn RDF Entity
Record	Intellectual Entity
Record Set	Intellectual Entity
Realisation	Representation
Digital File	File
Activity	Event/Activity
Agent	Agent
Access Channel	Agent and Rule (TBC)
Access Constraints	Rights Basis and Rights Status

4.2 Challenges of Adopting The Matterhorn RDF Model

At the time of writing The Matterhorn RDF Model (Matterhorn) is incomplete, and there is a general lack of concrete information and examples of how it should be implemented in practice. Although since the delivery of the initial Matterhorn paper, further work in progress can be found at: https://wiki.docuteam.ch/doku.php?id=docuteam:matterhornrdf. It was envisaged that the SHACL (Shapes and Constraints Language) files produced by Docuteam for Matterhorn (https://bitbucket.org/docuteam/matterhorn/src/master/) would help guide our implementation, unfortunately upon closer examination these appear to be somewhat incomplete.

Another aspect which is lacking in the current state of Matterhorn is the ability to express changes to records over time. As detailed previously in the section on the Evolution of Records, modelling changes to the description and arrangement of records over time is an important concern for our Catalogue Model. Likewise, there is nothing in the PREMIS3 model used by Matterhorn that allows us to express the enduring (or abstract concept) of a public-record.

It is worth noting that Matterhorn does incorporate aspects of W3C PROV, specifically its Activity entity, and uses RDA's Agent entity in place of PROV's Agent. However, it does not make clear which relationships should be used from PROV or RDA. W3C PROV has a number of facilities that could allow us to model changes to records over time, so it is possible that use of PROV will need to be expanded over what is suggested in Matterhorn.

Finally, a perceived strength of Matterhorn which contributed to our choosing it, was its reuse of existing vocabularies, predominantly Dublin Core, PREMIS3, PROV, and RDA. Whilst this is indeed a strength for interoperability with the wider-world and those already familiar with those vocabularies, Matterhorn requires a steep learning curve for the uninitiated, RDA in particularly is a huge vocabulary with thousands of properties whose canonical naming (see: https://github.com/RDARegistry/RDA-Vocabularies/issues/38) makes assimilation difficult. In places, there is also cross-over between the vocabularies suggested by Matterhorn, this can make choosing the most appropriate entity, property, or relationship, more challenging.

Due to Matterhorn's lack of specification, our approach will be to use the core of Matterhorn's ideas as a strong guide for our Catalogue Model rather than as a template. If Matterhorn has a suitable way of modelling something, then we will use it, we will only diverge or extend where absolutely necessary.

5. MODELLING TEMPORAL VARIANCE IN RDF

We have a requirement to be able to describe changes to both the description and arrangement of records within the catalogue through time (see: Evolution of Records). To support such "time-travel" views of our catalogue, we need to enforce one golden rule - any potential change to a record's description or arrangement, generates a new description and/or arrangement. That is to say that any fact established in the past is immutable, and that we can only add new revisions reflecting our current understanding of our records. We can extrapolate that we will need a facility for modelling the temporal validity of a records description and/or arrangement.

The W3C RDF 1.1 Concepts and Abstract Syntax specification states the following:

> *"The RDF data model is atemporal: RDF graphs are static snapshots of information.*
>
> *However, RDF graphs can express information about events and about temporal aspects of other entities, given appropriate vocabulary terms."*

As RDF itself cannot provide our temporality, we next look to our vocabulary base, The Matterhorn RDF Model, but likewise that unfortunately does not provide any explicit facility or guidance for such a purpose (see: Challenges of Adopting The Matterhorn RDF Model).

Therefore we must either, develop our own vocabulary terms, reuse a suitable existing vocabulary, or find some other such mechanism for versioning. Further research identified five possible approaches to modelling changes through time in RDF:

1. Using a single RDF graph where each revision to a public-record creates a new entity with appropriate properties for describing its relationship with other such versions and temporal extent.
2. Making use of an extension to RDF called Named Graphs, to create multiple graphs. Each revision of a public-record creates a new named graph, where the revision is encoded into the graph's name.
3. Similar in approach to (2), but using reification to encode the information; so as to remove the requirement of an RDF implementation that supports Named Graphs.
4. The research paper: "A Mechanism for the Representation of Versions in Linked Administrative Geographic Data. Lohfink and McPhee. 2010", presents a mechanism of using RDF Collections to group properties with their temporal validity.
5. Using a single RDF graph which holds the latest state, with an external VCS (Version Control System) such as Git holding historical states.

Regarding approach (2): Whilst both W3C RDF 1.1 and SPARQL 1.1 specifications support Named Graphs, not all RDF tools have caught up with support for these. Querying across a potentially large amount of named graphs could also make SPARQL queries complex to compose, and we felt that this could also impact query run-time performance (although we have as yet no evidence to support this theory).

Regarding approach (3): Reification itself is not a simple concept, and can make both understanding RDF and querying it with SPARQL difficult due to its recursive meta nature.

Regarding approach (4): Whilst an intriguing approach, we could not find evidence of this approach having been adopted in practice by those outside of the research paper. This made us somewhat reticent to reuse it here, but it remains a possible option for future consideration, should the approach taken prove lacking.

Regarding approach (5): Whilst this would be the simplest approach to implement as we could ignore temporality, making use of historical data for would be very difficult; without importing historical data from the VCS it would be impossible to create and run queries about the evolution of record description and/or arrangement.

Ultimately, at this stage of the Project Omega PoC (Proof-of-Concept), we believe that using the full W3C PROV vocabulary to implement approach (1), both fulfils TNA's requirements, and offers the simplest and most flexible mechanism for implementation.

6. OMEGA CATALOGUE IDENTIFIERS

To express the records of TNA in the Omega Catalogue, due to our adoption of an RDF Graph approach we need to assign a URI to every resource. Each URI must be unique and should be persistent.

For further background on the design of these identifiers see the article: Archival Catalogue Record Identifiers.

The URI consists of two components, a *base,* and an *identifier* which is appended to the *base.* In Omega we will be using a Slash based scheme. The Slash scheme has the advantage that the URI of each resource when de-referenced results in a single document per URI. As TNA's catalogue is very large, the multi-URI but single document approach as used by the alternative Hash scheme would be unwieldy.

The absolute base of the URI for the Omega Catalogue is:

```
http://cat.nationalarchives.gov.uk
```

Omega will likely use a flat URI addressing scheme, although for disambiguation different types of resources *may* introduce 1 additional level to the absolute base URI.

Herein we refer to both the URI, or just the identifier component of the URI, as OCIs (Omega Catalogue Identifiers).

6.1 Identifiers for the Concept of a Record

Identifiers for the Concept of a Record are formed from four components: Creator Reference, Accession Year, Record Number, and Accession Format. The values of three of these components are taken from properties of the resource representing the Concept of the a Record, and are considered to be immutable. The other, Record Number, can be generated by machine.

Identifier Component	Description
Creator Reference	This is the unique identifier of the Agent (e.g organisation, group, or individual) that created the record. Historically at TNA this has been the Government Department, known as "Department reference" in CCR terms. For example, "WO" for the War Office.
Accession Year	The year in which the record was accessioned into the archive. This is always expressed as a four digit year, for example: "2020".

Identifier Component	Description
Record Number	A monotonically increasing number starting at 1, which is initialised per Creator Reference and Accession Year pair. This number is encoded into a string using a special purpose alphabet. See The OCIb25 Alphabet.
Accession Format	A single character to indicate the format of the accessioned record. Currently limited to "P" for physical records, or "D" for digital records. Note that whilst the accession format is useful to indicate the format of the public record that was initially accessioned, it should be remembered that there might also be subsequent realisations of the record available in complementary formats, e.g. a digitisation of a physical record.

6.1.1 Identifier Syntax for the Concept of a Record

Each component of the identifier is separated by a single "." (Full stop) character. The template for the syntax of the identifier is:

```
{Creator Reference}.{Accession Year}.{Record Number}.{Accession Format}
```

Two examples of (fictional) identifiers using this syntax are:

1. `MSW.1970.7GH.P`

   This is the OCI for the concept of a physical record numbered 4037 (encoded as 7GH) which was created by MSW (The Ministry of Silly Walks) and accessioned by TNA in 1970.

2. `DDPE.2014.L4F.D`

   This is the OCI for the concept of a digital record numbered 9460 (encoded as L4F) which was created by DDPE (The Department for Dead Parrot Enquiries) and accessioned by TNA in 2014.

6.2 Identifiers for the Description of a Record

Identifiers for the Description of a Record are formed by appending a single component to the Identifier for the Concept of a Record. The additional component is: Description Number. The value for the Description Number can be generated by machine.

Identifier Component	Description
Description Number	A monotonically increasing number starting at 1, which is initialised per "Identifier for the Concept of a Record". This number is *not* encoded.

6.2.1 Identifier Syntax for the Description of a Record

Each component of the identifier is separated by a single "." (Full stop) character. The template for the syntax of the identifier is:

```
{Creator Reference}.{Accession Year}.{Record Number}.{Accession Format}.{Description Number}
```

Two examples of (fictional) identifiers using this syntax are:

1. `MSW.1970.7GH.P.1`

   This is the OCI for the 1st description of, the physical record numbered 4037 (encoded as 7GH) which was created by MSW and accessioned by TNA in 1970.

2. `MSW.1970.7GH.P.2`

   This is the OCI for the 2nd description of, the physical record numbered 4037 (encoded as 7GH) which was created by MSW and accessioned by TNA in 1970.

6.3 Identifiers for the Realisation of a Record

Identifiers for the Realisation of a Record are formed by appending a single component to the Identifier for the Concept of a Record. The additional component is: Description Number. The value for the Description Number can be generated by machine.

Identifier Component	Description
Realisation Number	A monotonically increasing number starting at 1, which is initialised per "Identifier for the Concept of a Record". This number is *not* encoded.

6.3.1 Identifier Syntax for the Realisation of a Record

Each component of the identifier is separated by a single "." (Full stop) character. The Realisation Number is prefixed by an "M" character. The template for the syntax of the identifier is:

```
{Creator Reference}.{Accession Year}.{Record Number}.{Accession Format}.M{Realisation Number}
```

Two examples of (fictional) identifiers using this syntax are:

1. `DDPE.2014.L4F.D.M1`

   This is the OCI for the 1st realisation of, the digital record numbered 9460 (encoded as L4F) which was created by DDPE (The Department for Dead Parrot Enquiries) and accessioned by TNA in 2014.

2. `DDPE.2014.L4F.D.M2`

   This is the OCI for the 2nd realisation of, the digital record numbered 9460 (encoded as L4F) which was created by DDPE (The Department for Dead Parrot Enquiries) and accessioned by TNA in 2014.

6.4 Identifiers for Digital Files

Identifiers for digital files are very different from those of records. The identifiers for digital files are not designed with consideration to human use, rather they are designed to be suitable for preservation and use by machines. Identifiers for Digital Files are computed from a hash digest of the file's content.

For further background on the design of these digital file identifiers see the articles: Archival Identifiers for Digital Files, and Extreme Identifiers (for use in URIs).

The identifier of a Digital File is formed from two components: Hash Type, and Hash Digest.

Digest Type	Description
Hash Type	This is a number between 0 and 67, that identifies the hash algorithm that was used to compute the Hash Digest. This number is encoded into a single character using a special purpose alphabet. See The OCIb68 Alphabet. The hash algorithms in use are detailed in:
Hash Digest	This is the numeric result of the hash algorithm indicated by the Hash Digest. This number is encoded into a string using a special purpose alphabet. See The OCIb68 Alphabet.

6.4.1 Identifier Syntax for a Digital File

There are no separators between the components of the identifier. The template for the syntax of the identifier is:

```
{Hash Type}{Hash Digest}
```

Two examples of (fictional) identifiers using this syntax are:

1. `!94TTsZ-tsvNkZzcM2jWXYCy,ym4d1XZ8N7).8:N9v6`

   This is the OCI for the digital file https://www.apache.org/licenses/LICENSE-2.0.txt using the Hash Type Blake2b 256-bit.

2. `&$$3@rW0&91*k9W4)*B=v=DY3@)5'0H,HPCc&JbQRnKj`

   This is the OCI for the digital file https://www.apache.org/licenses/LICENSE-2.0.txt using the Hash Type SHA-256.

6.5 Identifiers for the Concept of an Agent

Identifiers for the Concept of an Agent are formed from two components: a prefix indicating that the subject of the identifier is that of an Agent, and an Agent Number. The value of the prefix is simply "`agent`". The Agent Number, can be generated by machine.

Identifier Component	Description
Identifier Subject (prefix)	Indicates that this is an identifier for an Agent. The constant value “`agent`”.
Agent Number	A monotonically increasing number starting at 1, which is initialised once for all agents. This number is encoded into a string using a special purpose alphabet. See The OCIb25 Alphabet.

6.5.1 Identifier Syntax for the Concept of an Agent

Each component of the identifier is separated by a single “.” (Full stop) character. The template for the syntax of the identifier is:

```
{Identifier Subject}.{Agent Number}
```

Two examples of (fictional) identifiers using this syntax are:

1. `agent.7GX`

   This is the OCI for the concept of an agent numbered 4048 (encoded as 7GX).

2. `agent.L7N`

   This is the OCI for the concept of an agent numbered 9541 (encoded as L7N).

6.6 Identifiers for the Description of an Agent

Identifiers for the Description of an Agent are formed by appending a single component to the Identifier for the Concept of an Agent. The additional component is: Description Number. The value for the Description Number can be generated by machine.

Identifier Component	Description
Description Number	A monotonically increasing number starting at 1, which is initialised per "Identifier for the Concept of an Agent”. This number is *not* encoded.

6.6.1 Identifier Syntax for the Description of an Agent

Each component of the identifier is separated by a single "." (Full stop) character. The template for the syntax of the identifier is:

```
{Identifier Subject}.{Agent Number}.{Description Number}
```

Two examples of (fictional) identifiers using this syntax are:

1. `agent.7GX.1`

   This is the OCI for the 1st description of, an agent numbered 4048 (encoded as 7GX).

2. `agent.L7N.15`

   This is the OCI for the 15th description, of an agent numbered 9541 (encoded as L7N).

6.7 Identifiers for the Concept of a Location

TBC

6.7.1 Identifier Syntax for the Concept of a Location

TBC

6.8 Identifiers for the Description of a Location

TBC

6.8.1 Identifier Syntax for the Description of a Location

TBC

7. OMEGA CATALOGUE DATA MODEL

In this section we describe the OCDM (Omega Catalogue Data Model), a catalogue data model for Project Omega. RDF diagrams are used to demonstrate the model alone with explanations. Each sub-section builds upon the previous.

Fig 3 - RDF Diagrams Key

7.1 Modelling the Concept of a Record

The concept of a Record is the abstraction of the record itself. It is not the description or arrangement of the record as those properties may change through time, rather it is the notion that there is a record. The concept is immutable and enduring. The concept of the record exists first and foremost, it may subsequently have different interpretations (through time) which are stored externally and form its description(s) and arrangement(s).

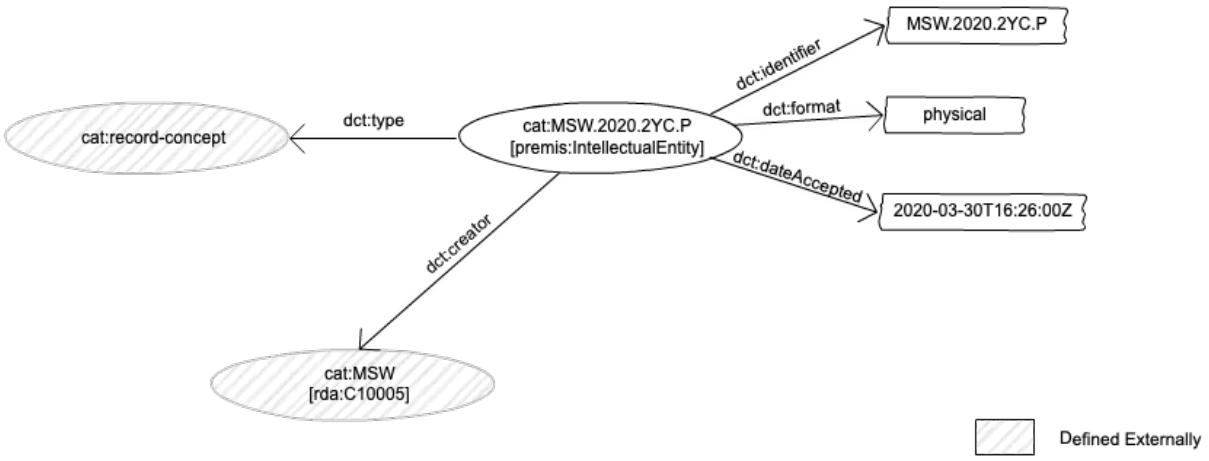
The concept of a Record is modelled using an Intellectual Entity with a type property indicating that it is a type of Record Concept. This enduring form of a Record has only four configurable properties (see: Intellectual Entity (Record Concept) Properties):

1. An identifier
2. The creating department
3. The date the record was accepted (accessioned)
4. Whether the record is a physical or digital record

Figure 4 shows *RecordA* at the centre along with its five configurable properties:

1. *dct:identifier* - the identifier of the record: *MSW.2020.2YC.P*
2. *dct:creator* - the creating department: *MSW*
3. *dct:dateAccepted* - the date the record was accessioned: *30th March 2020 at 16:26 UTC*
4. *dct:format* - indicating that the format of the record was: *Physical*

Fig 4 - Concept of a Record



The additional fifth property, *dct:type*, has a URI value of *cat:record-concept* that indicates that this Intellectual Entity is modelling the enduring form of the record, i.e. the abstract concept of the record.

7.1.1 Provenance of the Concept of a Record

The creation of any entity in the OCDM must be accompanied with provenance information about whom created the entity, when, and how; the Concept of a Record is no exception! OCDM makes use of a mix of provenance entities and properties from W3C PROV, PREMIS 3, and RDA.

Figure 5 shows the concept of the record ***MSW.2020.2YC.P*** from Figure 2 at its top-right corner, however its configurable properties have been hidden, instead the Agent(s) and Activity involved in the insertion of record *MSW.2020.2YC.P* into the catalogue are shown. The entities and properties which describe the provenance of the creation of record *MSW.2020.2YC.P* in the system have been outlined in the colour blue.

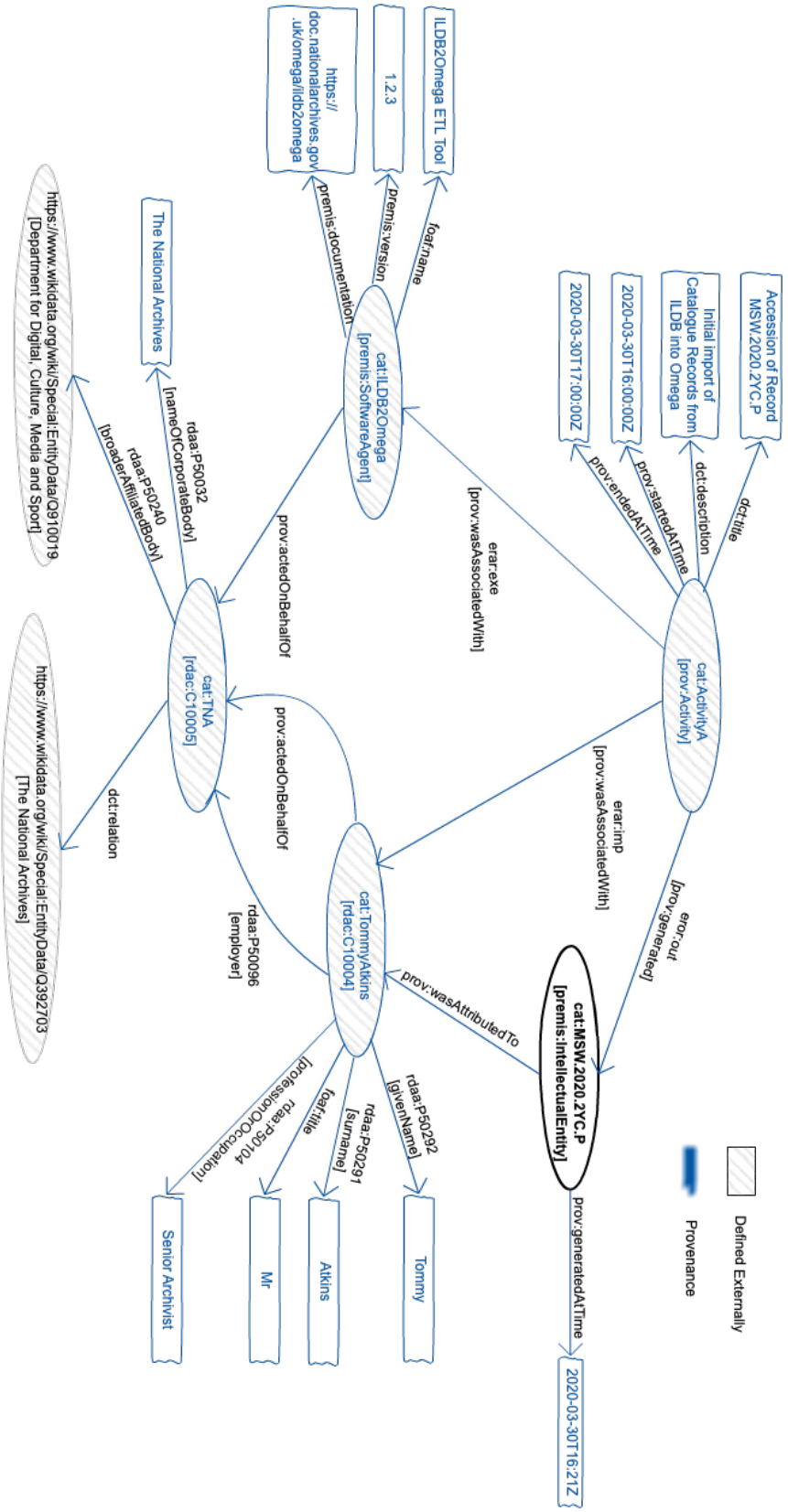


Fig 5 - Concept of a Record with Provenance

The figure illustrates that *TommyAtkins* (a Person Agent) and *ILDB2Omega* (a Software Agent), acting on behalf of TNA (a Corporate Body Agent), was associated with *ActivityA* which generated record *MSW.2020.2YC.P.* The figure also shows that *TommyAtkins* was the implementor of *ActivityA*, whilst it was *ILDB2Omega* that executed *ActivityA*.

Also shown in the figure is that record *MSW.2020.2YC.P* gains two additional properties. The sixth property of the concept of the record, *prov:wasAttributedTo*, which indicates the Agent, in this case *Tommy Atkins*, that generated the catalogue entry. The seventh property of the concept of the record, *prov:generatedAtTime,* which indicates the time at which the record was created in the system.

We recognise that the activity of entering a new entry into the catalogue likely always involves a human member of staff, and thus can be modelled as a Person Agent. The same is often true for the activity of importing existing data (e.g. from ILDB or DRI) into the OCDM, whilst the process itself is likely a Software Agent, this is usually at the control of a Person Agent. In this instance where both a Person Agent and a Software Agent were involved, we have decided to attribute the creation of record *MSW.2020.2YC.P* in the system to the Person Agent (via *prov*:*wasAttributedTo*), but it could just as easily be attributed to just the Software Agent, or even both Agents.

7.2 Modelling the Description of a Record

The description of a record represents a subjective interpretation of that record at a point-in-time. Descriptions of records change as new information comes to light or past mistakes are corrected. A record may also have more than one active description, in theory there may be alternative, competing, or complimentary descriptions.

In the Omega Catalogue Model each description is immutable, so any changes to a previous description create a new revision of the description. A succeeding revision is linked to its predecessor by the Activity and Agent that resulted in the succeeding revision.

The description of a Record is modelled using an Intellectual Entity with a type property indicating that it is a type of Record Description. The descriptive form of a Record has many possible properties of which the use and content of these can vary widely depending on the record that is being described (see: Intellectual Entity (Record Description) Properties).

Figure 6 includes the concept of the record from Figure 4, *MSW.2020.2YC.P (with its properties hidden),* it then expands by showing the 1st description of that record - ***MSW.2020.2YC.P.1***. The figure specifically uses the example of a record which was previously described at “Item” level according to TNA-CS13. The record description illustrates some of the properties available. Two properties which deserve further explanation are: *dct:accessRights* and *premis:rightsStatus*.

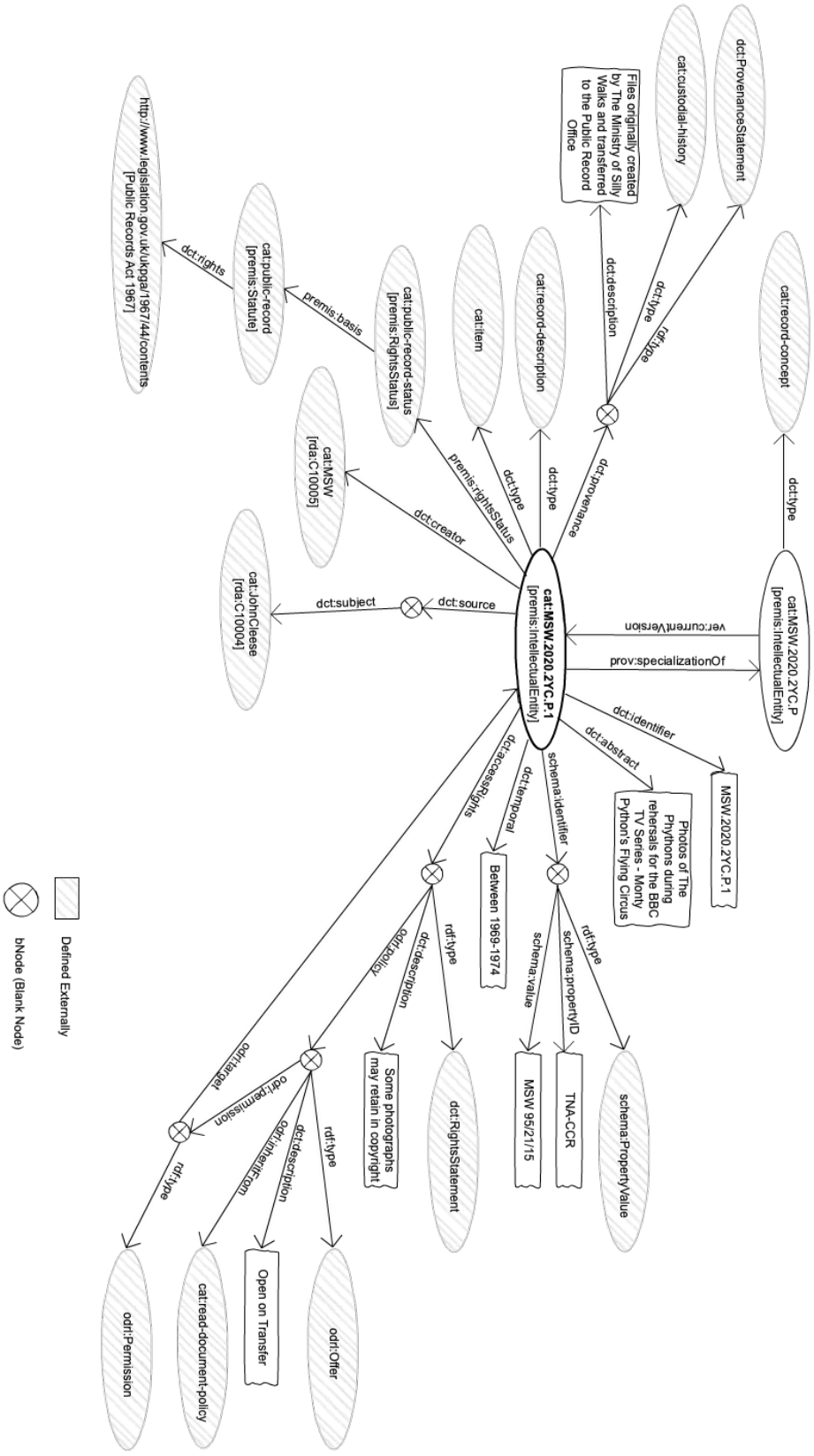


Fig 6 - Description of a Record

The *dct:accessRights* property is an instance of a dct:RightsStatement and encompasses all of the access conditions for the record. This typically includes one or more ODRL (Open Digital Rights Language) policies which are used to express specific access conditions. Such conditions may include TNA-CS13 Closure and/or Gradated Access constraints.

The *premis:rightsStatus* property describes the legal status of the record, this is one of Public Record, Public Record Unless Otherwise Stated (TBC - redundant after denormalisation?), Non-Public Record, Welsh Public Record, or Non-Record Material. Those with a keen eye, may have also noticed that through the use of Linked Data, we can relate the legal status of the record to the Public Records Act 1967 as described by legislation.gov.uk.

Also shown in the figure is that the concept of the record *MSW.2020.2YC.P* gains another additional property. The eighth property of the concept of the record, *ver:currentVersion.* This is a somewhat special property of the concept of the record, as it is the only property that is allowed to mutate. This relationship property always points from the Concept of a Record to the latest Description of a Record. Each Concept of a Record *should* always be accompanied by at least one corresponding Description of a Record.

7.2.1 Provenance of the Description of a Record

Just like the Concept of a Record, the Description of a Record must also be accompanied with provenance information about whom created the entity, when, and how.

Figure 7 is a small extension of Figure 5, however it shows not only the Concept of the Record, but also its 1st description, ***MSW.2020.2YC.P.1,*** likewise with its configurable properties hidden. The property *eror:out* for the activity *ActivityA* which generated the Concept of the Record has now been enhanced to represent a list of the resources that were generated. The list includes both, the Concept of the Record: ***MSW.2020.2YC.P***, and the first Description of a Record (for that concept): ***MSW.2020.2YC.P.1***.

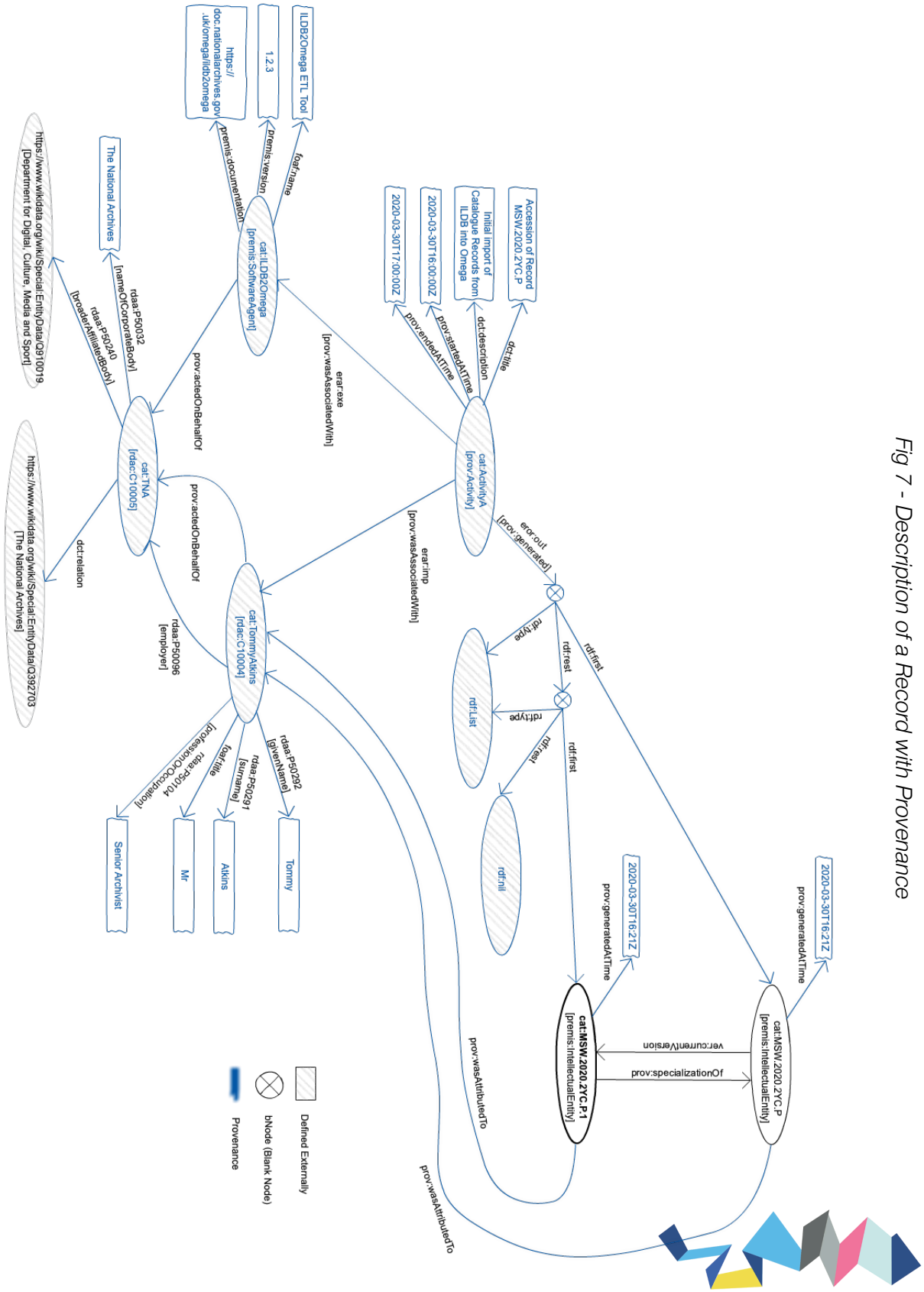


Fig 7 - Description of a Record with Provenance

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Also shown in the figure is that the Description of a Record *MSW.2020.2YC.P.1*, just like the Concept of a Record, gains the two additional properties: *prov:wasAttributedTo* and *prov:generatedAtTime*.

7.2.2 Adding further Descriptions of a Record

Adding additional descriptions of a record about the concept of a record will likely occur over time as TNA's understanding of its records evolves. Adding further descriptions builds up a chain of revisions between the Description of a Record.

It is important to recognise that:

1. Each Description of a Record has a *prov:specializationOf* relationship with the corresponding Concept of a Record.
2. A revision of a Description of a Record, creates a new Description of a Record, which has a *prov:wasRevisionOf* relationship with the original description.
3. The *ver:currentVersion* relationship property of the Concept of a Record is updated to point to the latest description.

Figure 8 initially shows the Concept of the Record - *MSW.2020.2YC.P*, and its 1st description, *MSW.2020.2YC.P.1*. It also shows a revision of the description *MSW.2020.2YC.P.1* to create the subsequent description ***MSW.2020.2YC.P.2.*** The figure also tries to show that it was the *dct:abstract* property of the description that was revised. It should be noted that all unchanged data properties are copied from a description to a revised description.

Fig 8 - 2nd Description of a Record

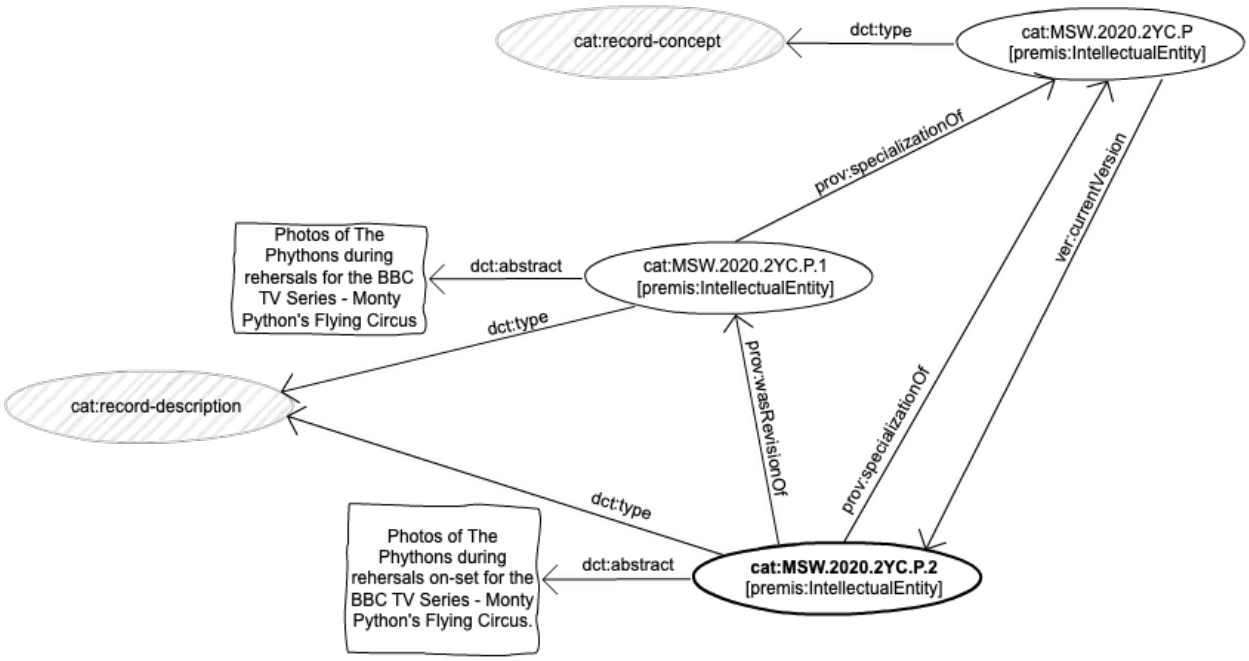

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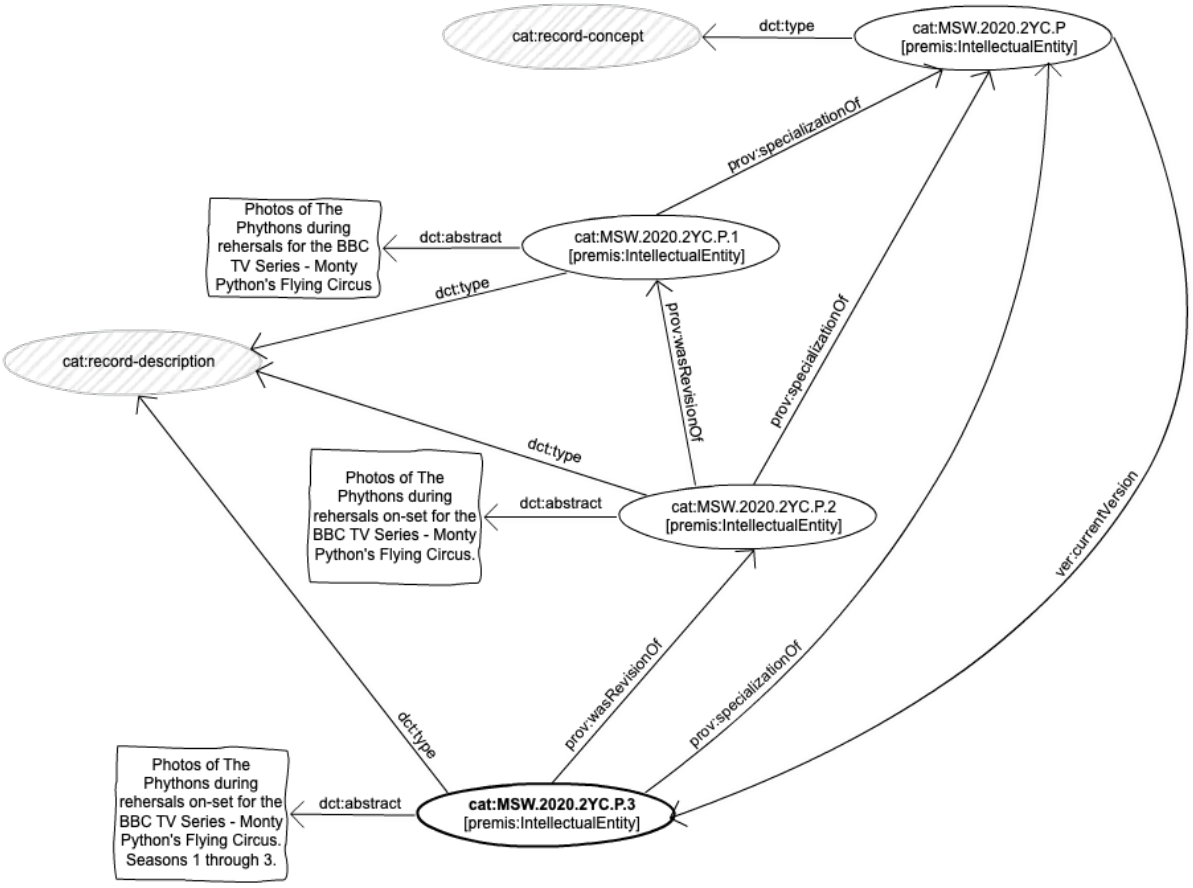
Figure 9 continues from Figure 8 and shows a second revision of the original description, creating a 3rd description of the record: ***MSW.2020.2YC.P3***. It should now be clear to see that the ver:currentRevision relationship property of the Concept of a Record has against been updated to point at the latest revision.

Fig 9 - 3rd Description of a Record



Of course each of these additional Descriptions of a Record are also subject to the provenance requirements of the OCDM, and as such will also need to have all of the additional provenance data properties as illustrated in 7.2.1 Provenance of the Description of a Record, however for simplicities sake we have omitted them in Figures 6 and 7.

7.3 Modelling Relationships Between Records

As well as the relationships between the Concept of a Record and the Descriptions of a Record. There are also relationships that can be expressed to form groupings of records. These relationships have three main forms:

1. Parent from Child
   These relationships express that a child record plays some part in the understanding of the parent record.
2. Sibling to Sibling
   These relationships express a connection records at the same level of granularity, and may form an ordered sequence.
3. Ad-hoc
   These are much more general relationships, which can be used for grouping, tagging, or labelling of records.

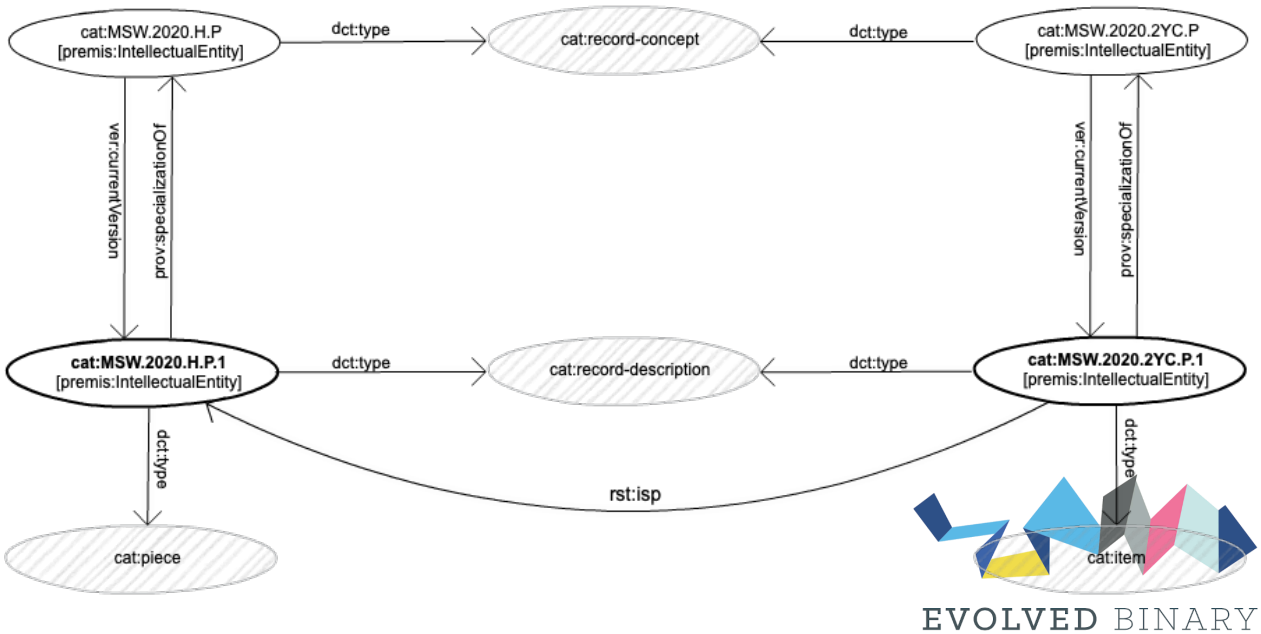
As such relationships are transient, they are established between descriptions of records. They are modelled as additional properties of The Description of a Record. Therefore a change to a relationship means a new revision of a description of the record.

7.3.1 Parent from Child Record Relationships

Parent from Child Relationships are most often used for expressing mono or poly hierarchical relationship(s) between records.

Figure 10 illustrates both a TNA-CS13 Piece (MSW.2020.H.P.1) and a TNA-CS13 Item (MSW.2020.2YC.P.1). The relationship between the child (the Item) and the parent (the Piece) is illustrated by the *rst:isp* (Relationship SubType - Is Part Of) relationship property upon the descriptions of the record. The relationship always points from the child to the parent.

Fig 10 - Parent from Child Record Relationships

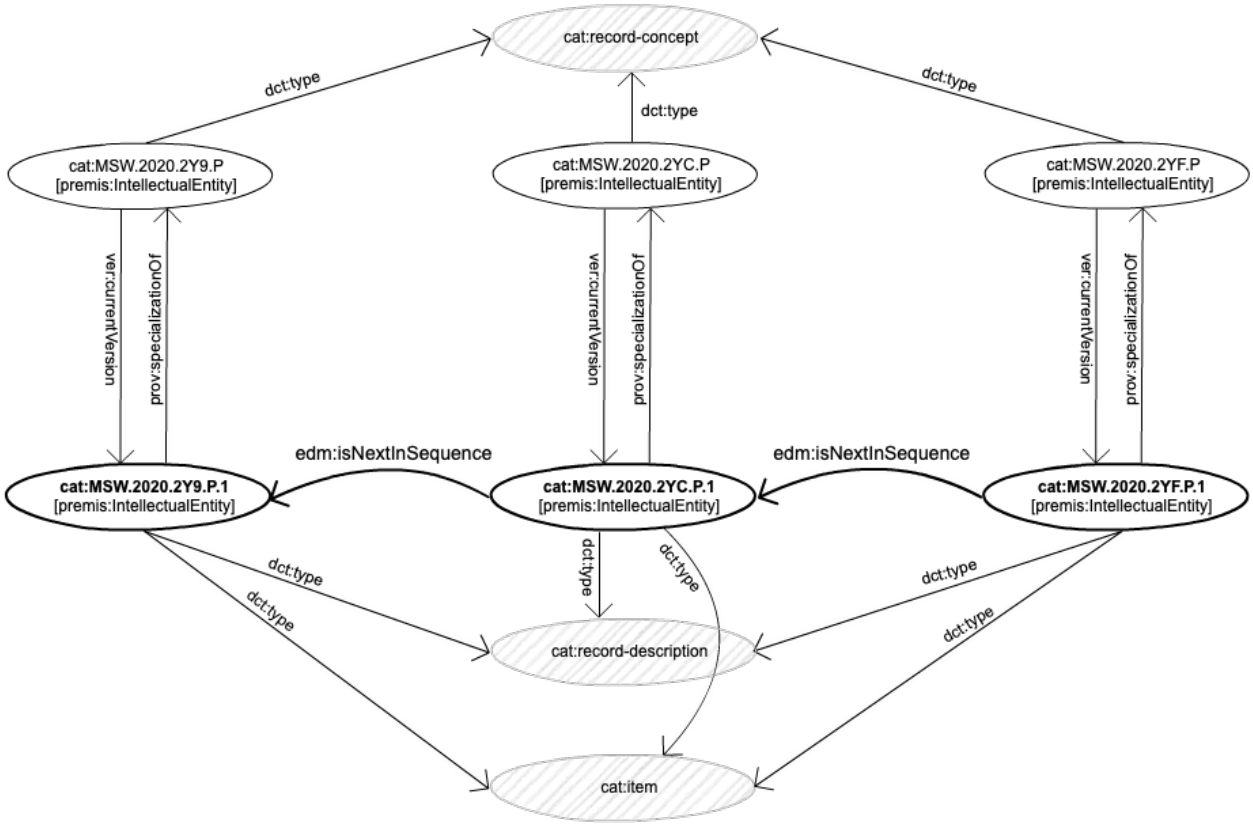


7.3.1 Sibling to Sibling Record Relationships

Sibling to Sibling Relationships are most often used for expressing a sequential ordering relationship(s) between records.

Figure 11 illustrates three records - MSW.2020.2Y9.P, MSW.2020.2YC.P, and MSW.2020.2YF.P. Each record has a description, which indicates that records are TNA-CS13 Items. The Items have a sequential relationship which is illustrated by the *edm:isNextInSequence* (read - *is next in sequence of*) relationship property. The relationship always points backwards, i.e. from the following resource to the preceding resource. Therefore the order of the items is from left-to-right in the illustration, the opposite direction of the relationships, i.e.: the 1st record is MSW.2020.2Y9.P, 2nd record is MSW.2020.2YC.P, and the final record (in the sequence) is MSW.2020.2YF.P.

Fig 11 - Sibling to Sibling Record Relationships



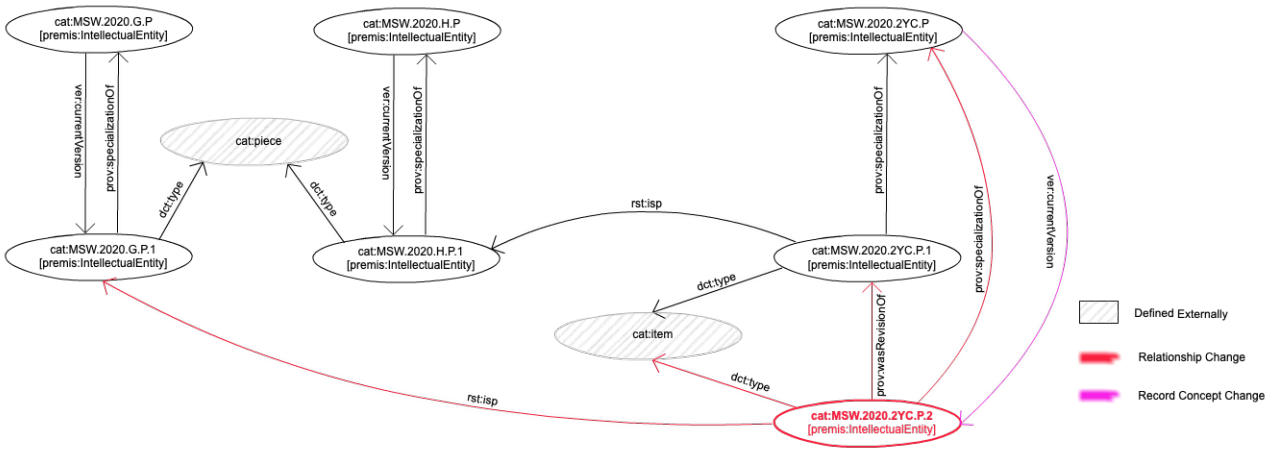
7.4 Modelling changes to Relationships Between Records

Descriptive changes to records are made by creating a new Description of a Record. If we remember that relationships between records are established at the Description of a Record, we can therefore infer that likewise when we want to change the relationship between two or more records, we again need to create new descriptions for some of those records.

7.4.1 Changing the Parent of a Record

Figure 12 shows the process of modifying a Parent from Child relationship. In the figure, the record *MSW.2020.2YC.P* was a child of the parent record *MSW.2020.H.P* through the *rst:isp* relationship of their first descriptions *MSW.2020.2YC.P.1 and MSW.2020.H.P.1* respectively. The record *MSW.2020.2YC.P* was then moved from the parent *MSW.2020.H.P* to the parent *MSW.2020.G.P*, this is illustrated by the revision of the records description *MSW.2020.2YC.P.1* to create the description *MSW.2020.2YC.P.2* whose *rst:isp* relationship then points to *MSW.2020.G.P.1*.

Fig 12 - Modifying a Parent from Child Relationship



7.4.2 Changing the Order of a Record

The order of a record amongst its sibling records is determined by a chain of *edm:isNextInSequence* relationships where each points from the *following record* to the *preceding record*. Moving a record within this

sequence may involve creating one or more new descriptions of records, this depends on the original and new positions for the record.

Fig 13 - Swapping the order of Siblings 1 and 2

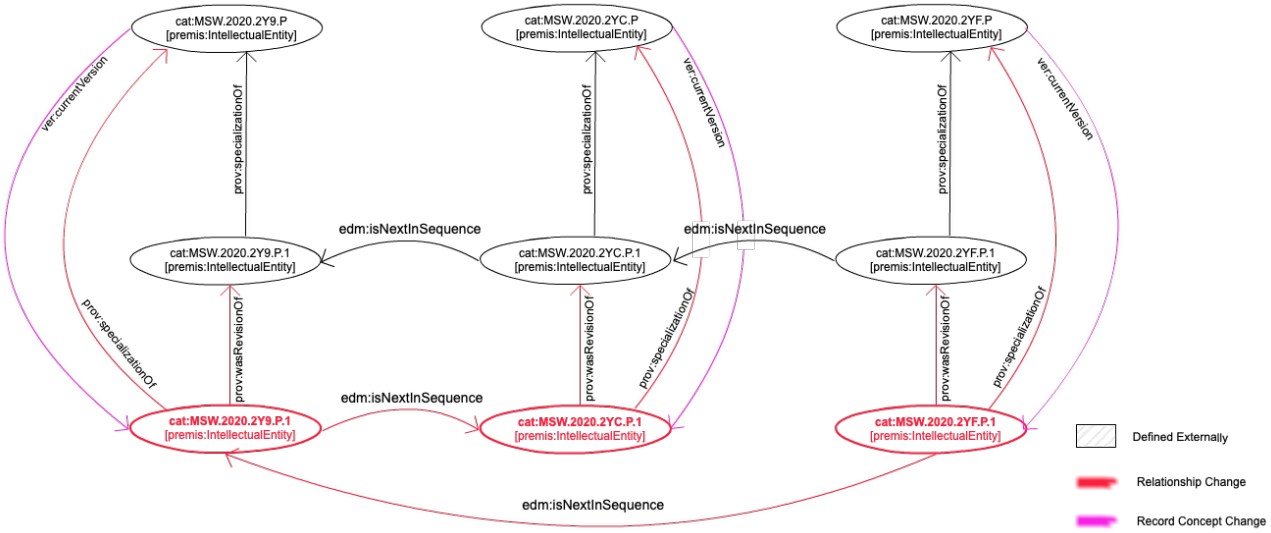


Figure 13 shows three records with the original order: *MSW.2020.2Y9.P*, *MSW.2020.2YC.P*, *MSW.2020.2YF.P*. Remember that the *edm:isNextInSequence* relationship points backwards! To swap the position of the 1st and 2nd siblings (i.e. *MSW.2020.2Y9.P* and *MSW.2020.2YC.P),* we are compelled to create new descriptions for all three records, as we need to:

1. Add a new *edm:isNextSequence* property for record *MSW.2020.2Y9.P*.
2. Remove the *edm:isNextSequence* property for record *MSW.2020.2YC.P*.
3. Update the *edm:isNextSequence* property for record *MSW.2020.2YF.P*.

Fig 14 - Swapping the order of Siblings 2 and 3

Figure 14 shows the same original three records as Figure 13, with the original order: *MSW.2020.2Y9.P*, *MSW.2020.2YC.P*, *MSW.2020.2YF.P*. To swap the position of the 2nd and 3rd siblings, we need only create new descriptions for the two records *MSW.2020.2YC.P* and *MSW.2020.2YF.P,* this is due to the fact that the first record, *MSW.2020.2Y9.P*, does not need to be updated.

Fig 15 - Swapping the order of Siblings 1 and 3

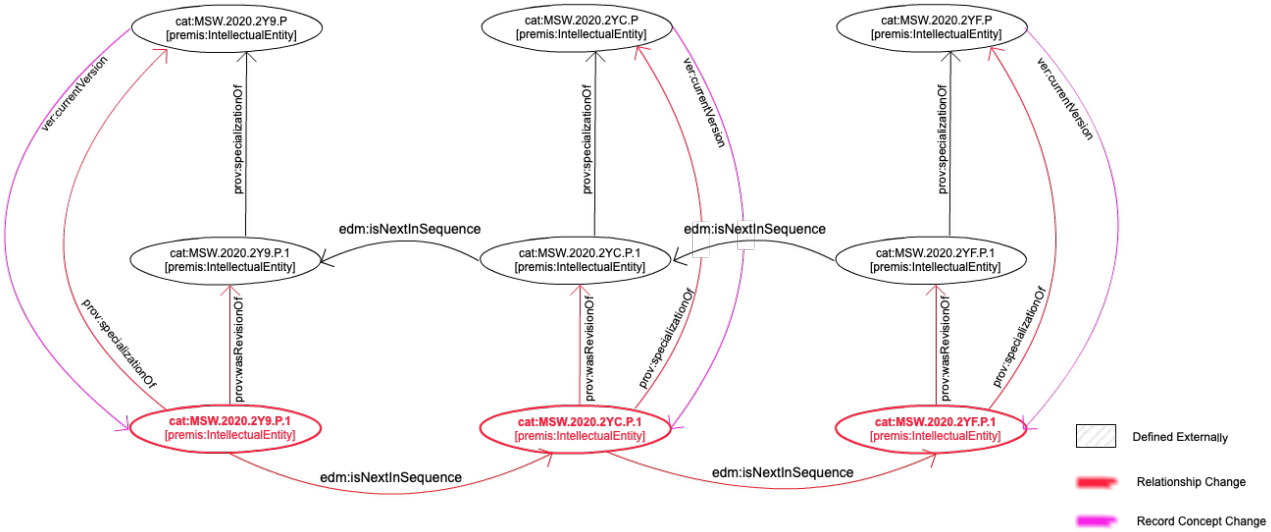


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Figure 15 shows the same original three records as Figure 13, with the original order: *MSW.2020.2Y9.P*, *MSW.2020.2YC.P*, *MSW.2020.2YF.P*. To swap the position of the 1st and 3rd siblings , we are compelled to create new descriptions for all three records, as we need to:

1. Add a new *edm:isNextSequence* property for record *MSW.2020.2Y9.P*.
2. Update the *edm:isNextSequence* property for record *MSW.2020.2YC.P*.
3. Remove the *edm:isNextSequence* property for record *MSW.2020.2YF.P*.

7.4.3 Inserting a Record

As records may accumulate over time, new records which arrive may of course need to be appended to an ordering of records. However, such new arrivals may provide new insight which requires new records to be inserted within the ordering of existing records.

Figure 16 shows the same original three records as Figure 13, with the original order: *MSW.2020.2Y9.P*, *MSW.2020.2YC.P*, *MSW.2020.2YF.P.* It then shows the new record *MSW.2020.C34.P* which needs to be inserted at the start (head) of an ordering of records. To achieve this, as we want to add a new *edm:isNextInSequence* relationship on *MSW.2020.2Y9.P.1* we need to create a new description of the record which gives us *MSW.2020.2Y9.P.2*.

Fig 16 - Insert at Head

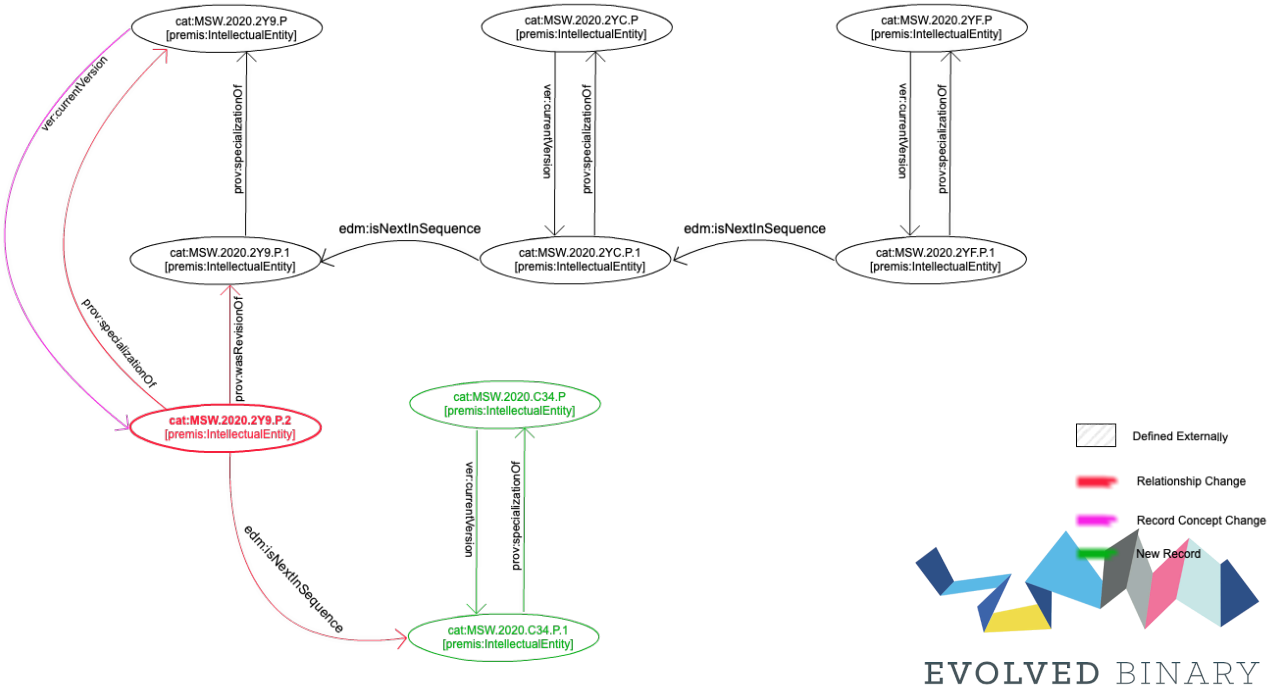


Fig 17 - Insert at Tail

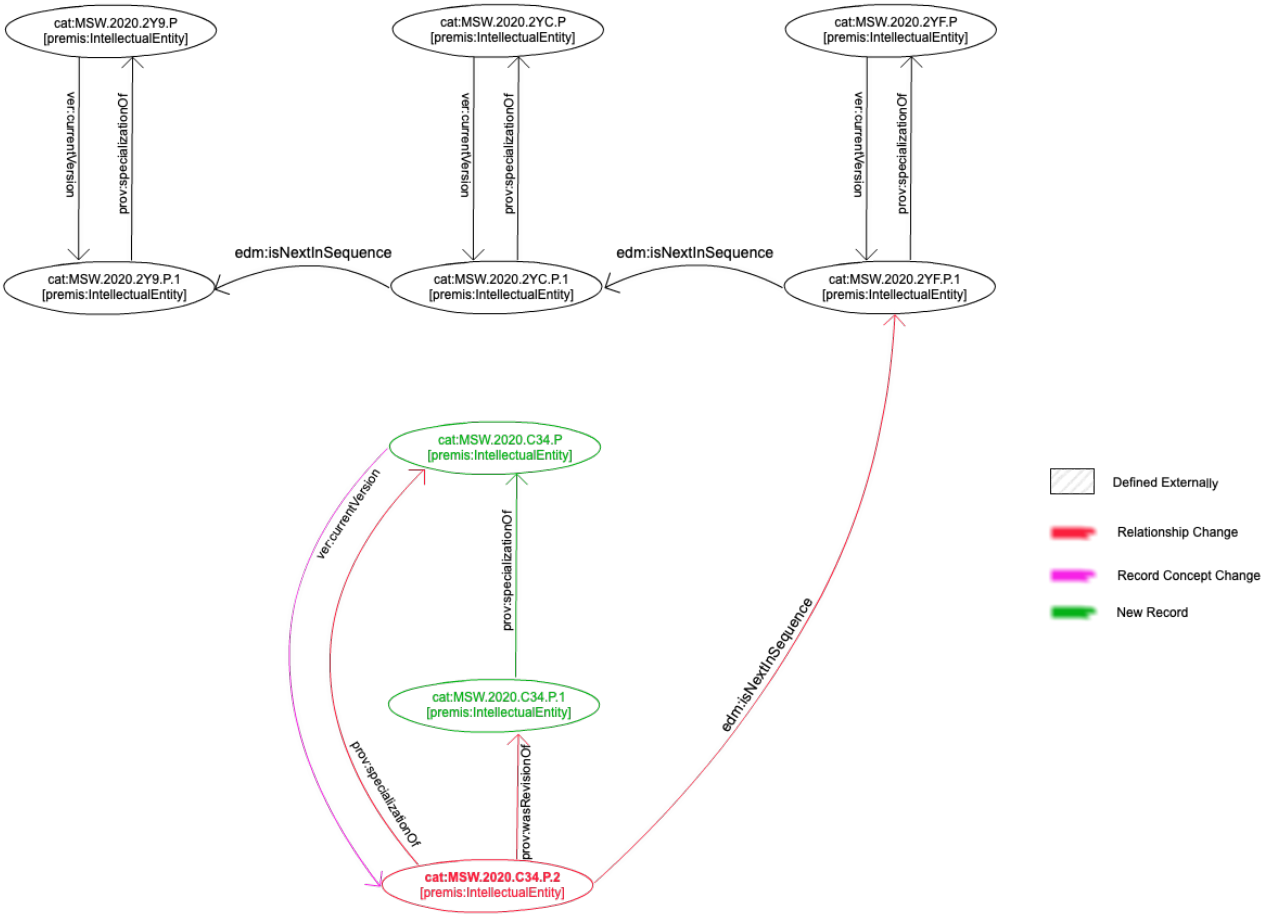


Figure 17 shows the same original three records as Figure 13, with the original order: *MSW.2020.2Y9.P*, *MSW.2020.2YC.P*, *MSW.2020.2YF.P*. It then shows the new record *MSW.2020.C34.P* which needs to be inserted at the end (tail) of an ordering of records. To achieve this, as we want to add a new *edm:isNextInSequence* relationship on *MSW.2020.C34.P,* if there is already a description in the catalogue, we have to create the new description *MSW.2020.C34.P.2.*

Fig 18 - Insert between Siblings

Figure 18 shows the same original three records as Figure 13, with the original order: *MSW.2020.2Y9.P*, *MSW.2020.2YC.P*, *MSW.2020.2YF.P.* It then shows the new record *MSW.2020.C34.P* which needs to be inserted between the 2nd and 3rd siblings of the original order of records, *MSW.2020.2Y9.P and MSW.2020.2YC.P*, respectively. To achieve this, as we want to add a new *edm:isNextInSequence* relationship on *MSW.2020.C34.P,* if there is already a description in the catalogue, we have to create the new description

MSW.2020.C34.P.2. Likewise as we want to add a new *edm:isNextInSequence* relationship on *MSW.2020.2YF.P,* we also have to create the new description, *MSW.2020.2YF.P.2*.

7.5. Modelling the Realisation of a Record

TBC

7.6 Modelling the Concept of an Agent

The concept of an Agent is the abstraction of the agent itself. It is not the description of the agent as those properties may change through time, rather it is the notion that there is an agent. The concept is immutable and enduring. The concept of the agent exists first and foremost, it may subsequently have different interpretations (through time) which are stored externally and form its description(s).

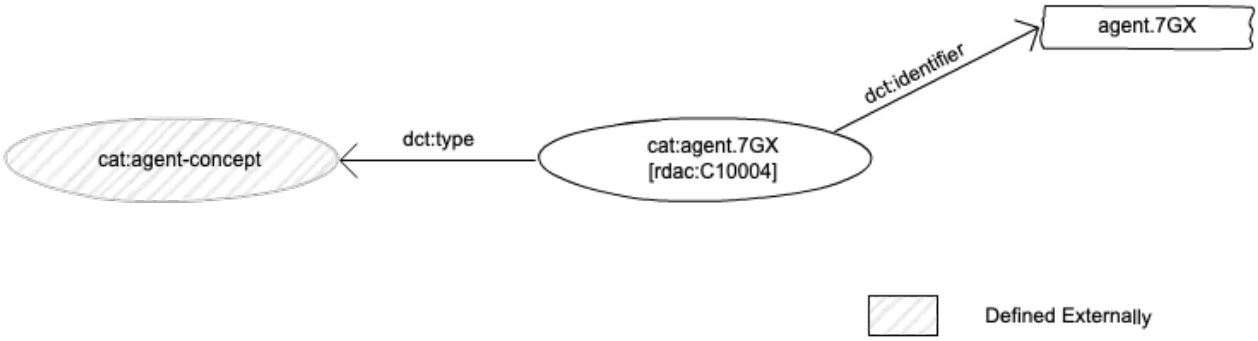
The concept of an Agent is modelled using an Agent sub-class with a type property indicating that it is a type of Agent Concept. The sub-class used is specific on the type of the Agent that is being modelled. The sub-class will be at least one sub-class of RDA Agent, possibly also a FOAF Agent sub-class, and if the Agent is involved in an event within the system, then it must also be a W3C PROV Agent sub-class.
This enduring form of an Agent has only one configurable property (see: Person Concept Properties, Collective Agent Concept Properties, Family Concept Properties, Corporate Body Concept Properties, Software Agent Concept Properties, and Hardware Agent Concept Properties):

1. An identifier

Figure 19 shows *AgentA* at the centre along with its one configurable property:

1. *dct:identifier* - the identifier of the agent: *agent.7GX*

Fig 19 - Concept of an Agent



The additional second property, *dct:type*, has a URI value of *cat:agent-concept* that indicates that this Agent is modelling the enduring form of the agent, i.e. the abstract concept of the agent.

7.6.1 Provenance of the Concept of an Agent

The creation of any entity in the OCDM must be accompanied with provenance information about whom created the entity, when, and how; the Concept of an Agent is no exception! OCDM makes use of a mix of provenance entities and properties from W3C PROV, PREMIS 3, and RDA.

Figure 20 shows the concept of the agent agent.7GX from Figure 19 at its top-right corner, however its configurable properties have been hidden, instead the Agent(s) and Activity involved in the insertion of agent agent.7GX into the catalogue are shown. The entities and properties which describe the provenance of the creation of agent agent.7GX in the system have been outlined in the colour blue.

The figure illustrates that TommyAtkins (a Person Agent) and ILDB2Omega (a Software Agent), acting on behalf of TNA (a Corporate Body Agent), was associated with ActivityB which generated agent agent.7GX. The figure also shows that TommyAtkins was the implementor of ActivityB, whilst it was ILDB2Omega that executed ActivityB.

Also shown in the figure is that agent agent.7GX gains two additional properties. The third property of the concept of the agent, prov:wasAttributedTo, which indicates the Agent, in this case Tommy Atkins, that generated the catalogue entry. The fourth property of the concept of the agent, prov:generatedAtTime, which indicates the time at which the agent was created in the system.

We recognise that the activity of entering a new entry into the catalogue likely always involves a human member of staff, and thus can be modelled as a Person Agent. The same is often true for the activity of importing existing data (e.g. from ILDB or DRI) into the OCDM, whilst the process itself is likely a Software Agent, this is usually at the control of a Person Agent. In this instance where both a Person Agent and a Software Agent were involved, we have decided to attribute the creation of agent agent.7GX in the system to the Person Agent (via prov:wasAttributedTo), but it could just as easily be attributed to just the Software Agent, or even both Agents.

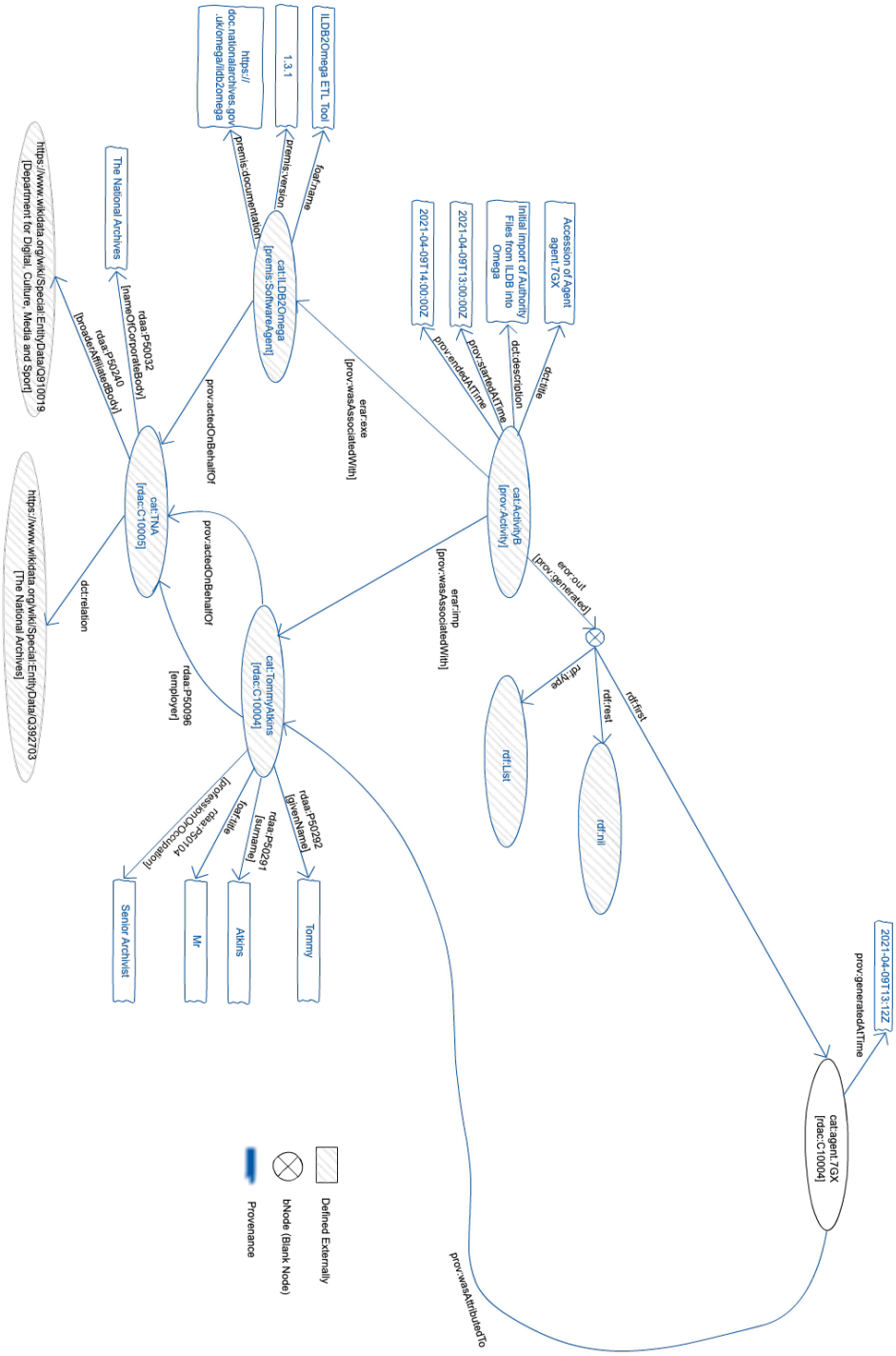


Fig 20 - Concept of an Agent with Provenance

7.7 Modelling the Description of an Agent

The description of an agent represents a subjective interpretation of that agent at a point-in-time. Descriptions of agents change as new information comes to light or past mistakes are corrected. An agent may also have more than one active description, in theory there may be alternative, competing, or complimentary descriptions.

In the Omega Catalogue Model each description is immutable, so any changes to a previous description create a new revision of the description. A succeeding revision is linked to its predecessor by the Activity and Agent that resulted in the succeeding revision.

The description of an Agent is modelled using a sub-class of Agent with a type property indicating that it is a type of Agent Description. The descriptive form of an Agent has many possible properties of which the use and content of these can vary widely depending on the agent that is being described (see: Person Description Properties, Collective Agent Description Properties, Family Description Properties, Corporate Body Description Properties, Software Agent Description Properties, and Hardware Agent Description Properties).

Figure 21 includes the concept of the agent from Figure 19, *agent.7GX (with its properties hidden),* it then expands by showing the 1st description of that record - ***agent.7GX.1***. The agent description illustrates some of the properties available.

Also shown in the figure is that the concept of the agent agent.7GX gains another additional property. The fifth property of the concept of the agent, ver:currentVersion. This is a somewhat special property of the concept of the agent, as it is the only property that is allowed to mutate. This relationship property always points from the Concept of an Agent to the latest Description of an Agent. Each Concept of an Agent should always be accompanied by at least one corresponding Description of an Agent.

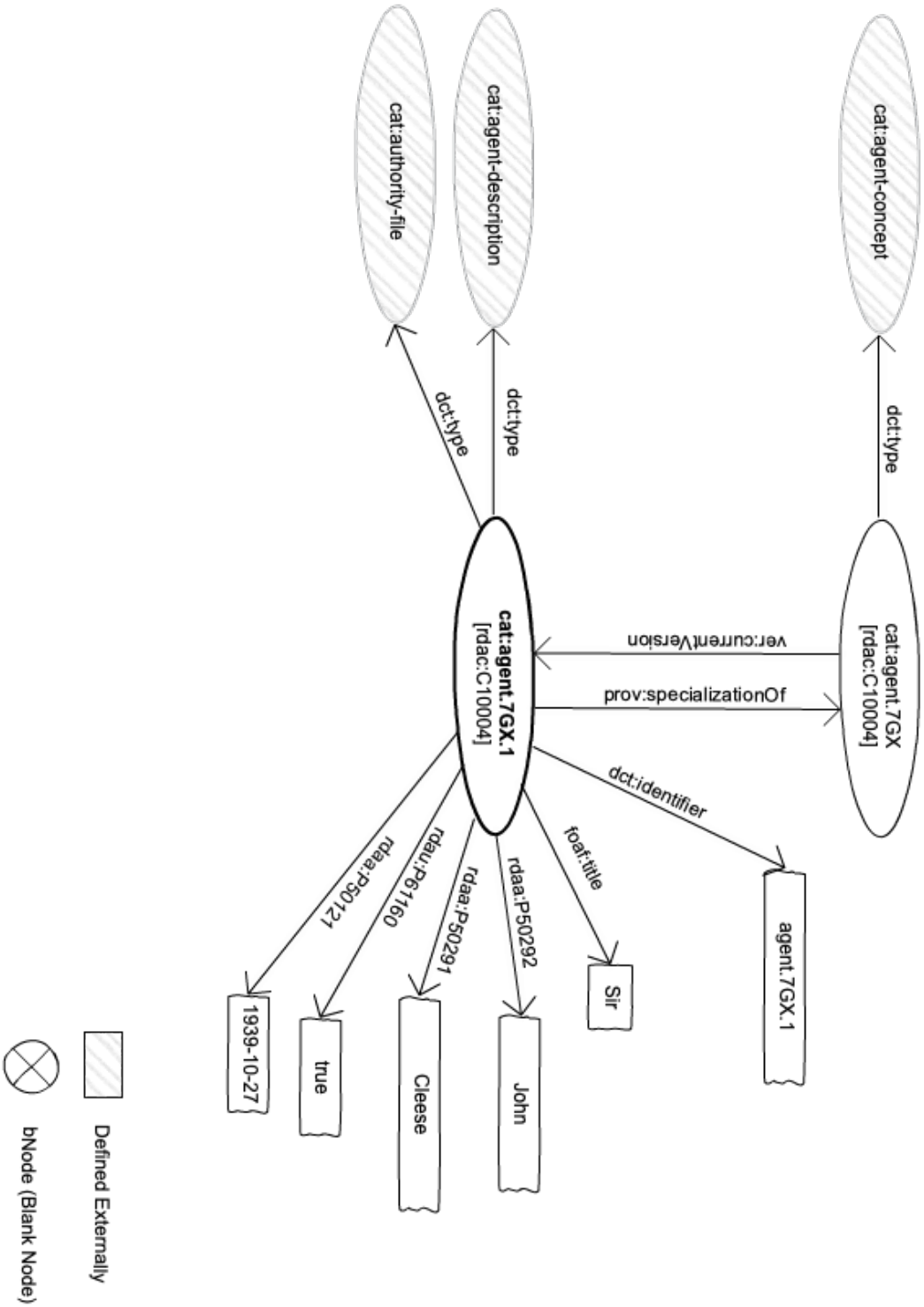


Fig 21 - Description of an Agent

7.7.1 Provenance of the Description of an Agent

Just like the Concept of an Agent, the Description of an Agent must also be accompanied with provenance information about whom created the entity, when, and how.

Figure 22 is a small extension of Figure 209, however it shows not only the Concept of the Agent, but also its 1st description, ***agent.7GX.1,*** likewise with its configurable properties hidden. The property *eror:out* for the activity *ActivityB* which generated the Concept of the Agent has now been enhanced to represent a list of the resources that were generated. The list includes both, the Concept of the Agent: ***agent.7GX***, and the first Description of an Agent (for that concept): ***agent.7GX.1***. Also shown in the figure is that the Description of an Agent agent.7GX.1, just like the Concept of an Agent, gains the two additional properties: prov:wasAttributedTo and prov:generatedAtTime.

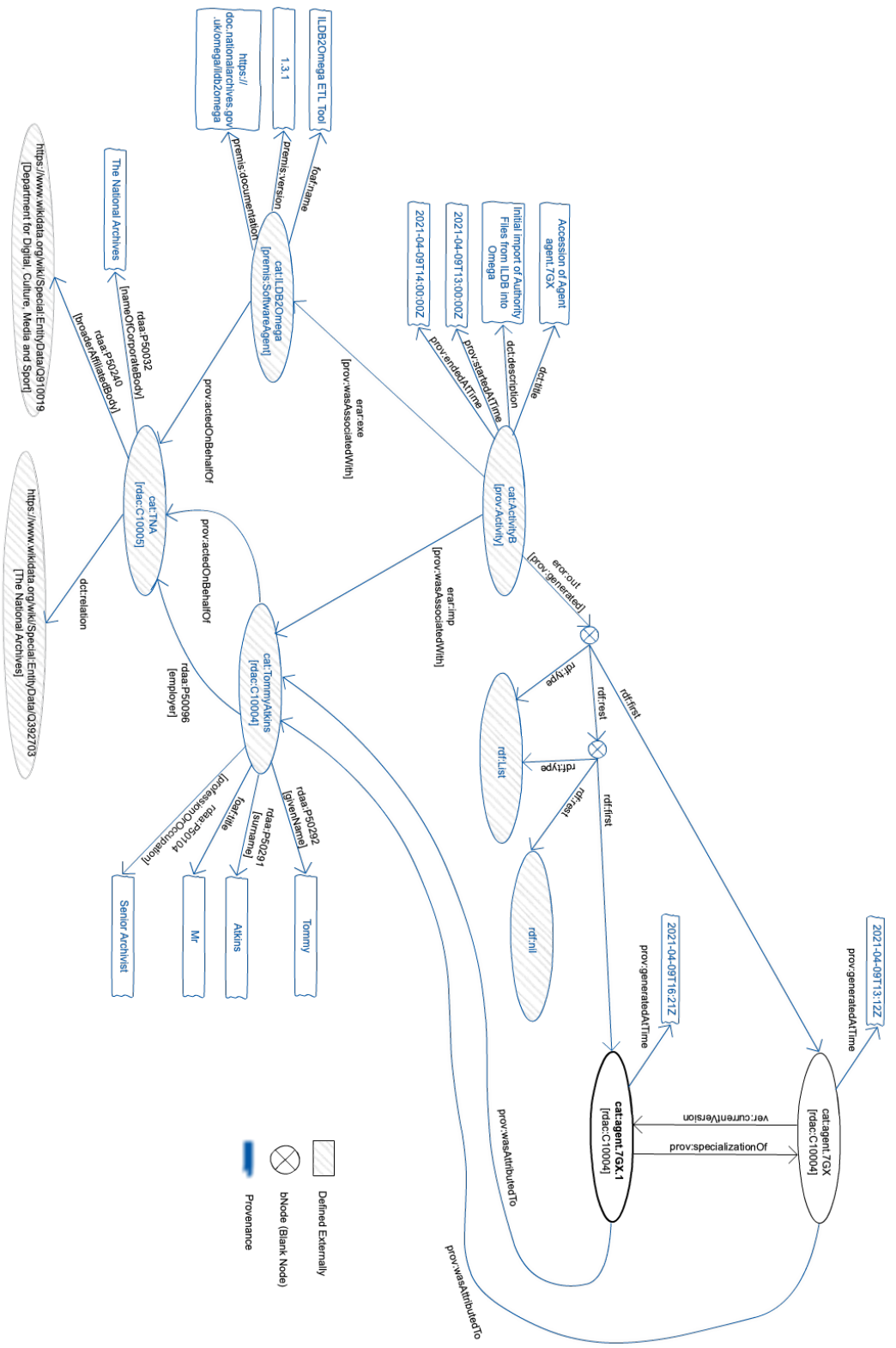


Fig 22 - Description of an Agent with Provenance

7.7.2 Adding further Descriptions of an Agent

Adding additional descriptions of an agent about the concept of an agent will likely occur over time as TNA's understanding of its Authority Files evolves. Adding further descriptions builds up a chain of revisions between the Description of an Agent.

It is important to recognise that:

1. Each Description of an Agent has a *prov:specializationOf* relationship with the corresponding Concept of an Agent.
2. A revision of a Description of an Agent, creates a new Description of an agent, which has a *prov:wasRevisionOf* relationship with the original description.
3. The *ver:currentVersion* relationship property of the Concept of an Agent is updated to point to the latest description.

Figure 23 initially shows the Concept of the Agent - *agent.7GX*, and its 1st description, *agent.7GX.1*. It also shows a revision of the description *agent.7GX.1* to create the subsequent description ***agent.7GX.2.*** The figure also tries to show that it was the addition of an *rdaa:P50115* property of the description that was the impetus for the revision. It should be noted that all unchanged data properties are copied from a description to a revised description.

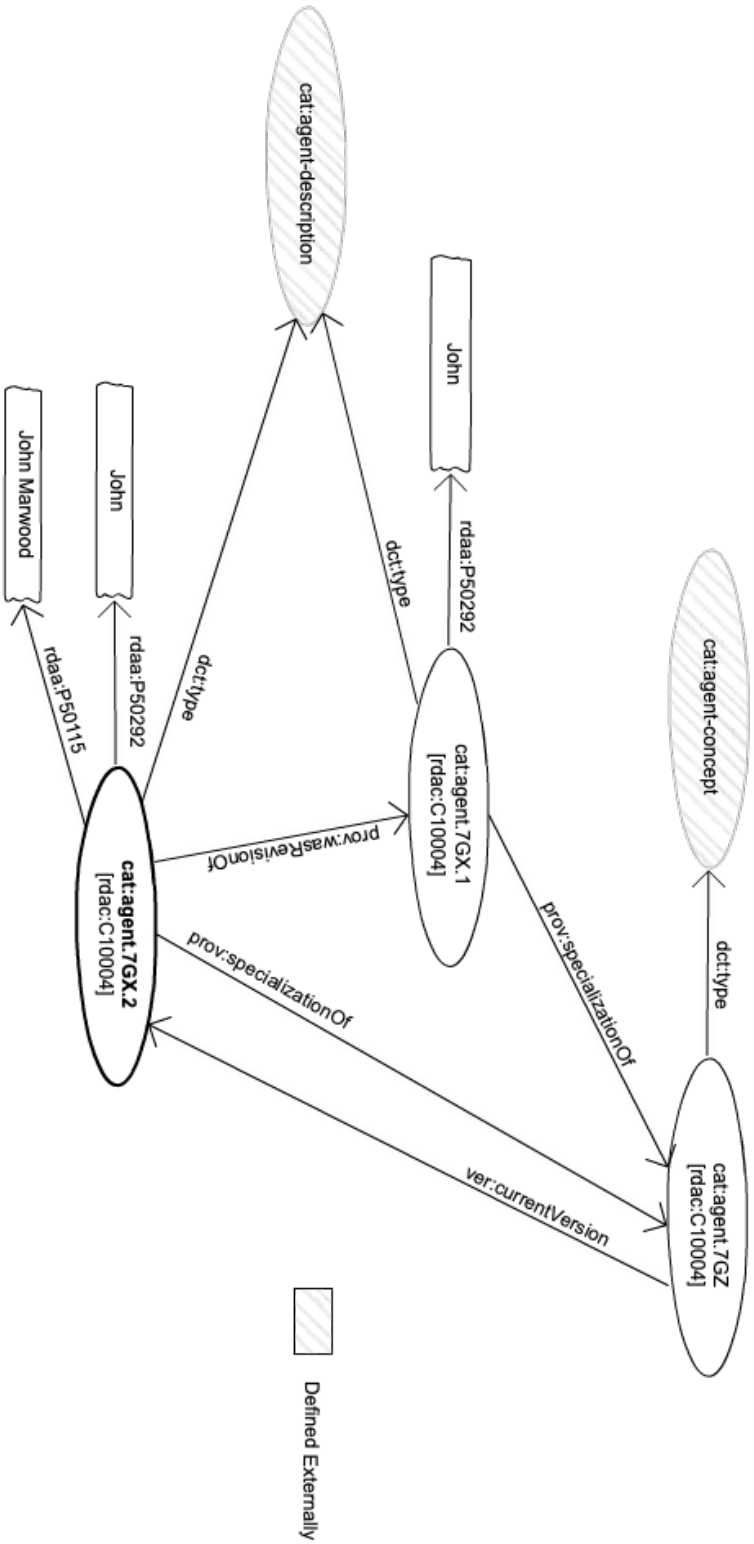


Fig 23 - 2nd Description of an Agent

Figure 24 continues from Figure 23 and shows a second revision of the original description, creating a 3rd description of the agent: agent.7GX.3. It should now be clear to see that the ver:currentRevision relationship property of the Concept of an Agent has against been updated to point at the latest revision.

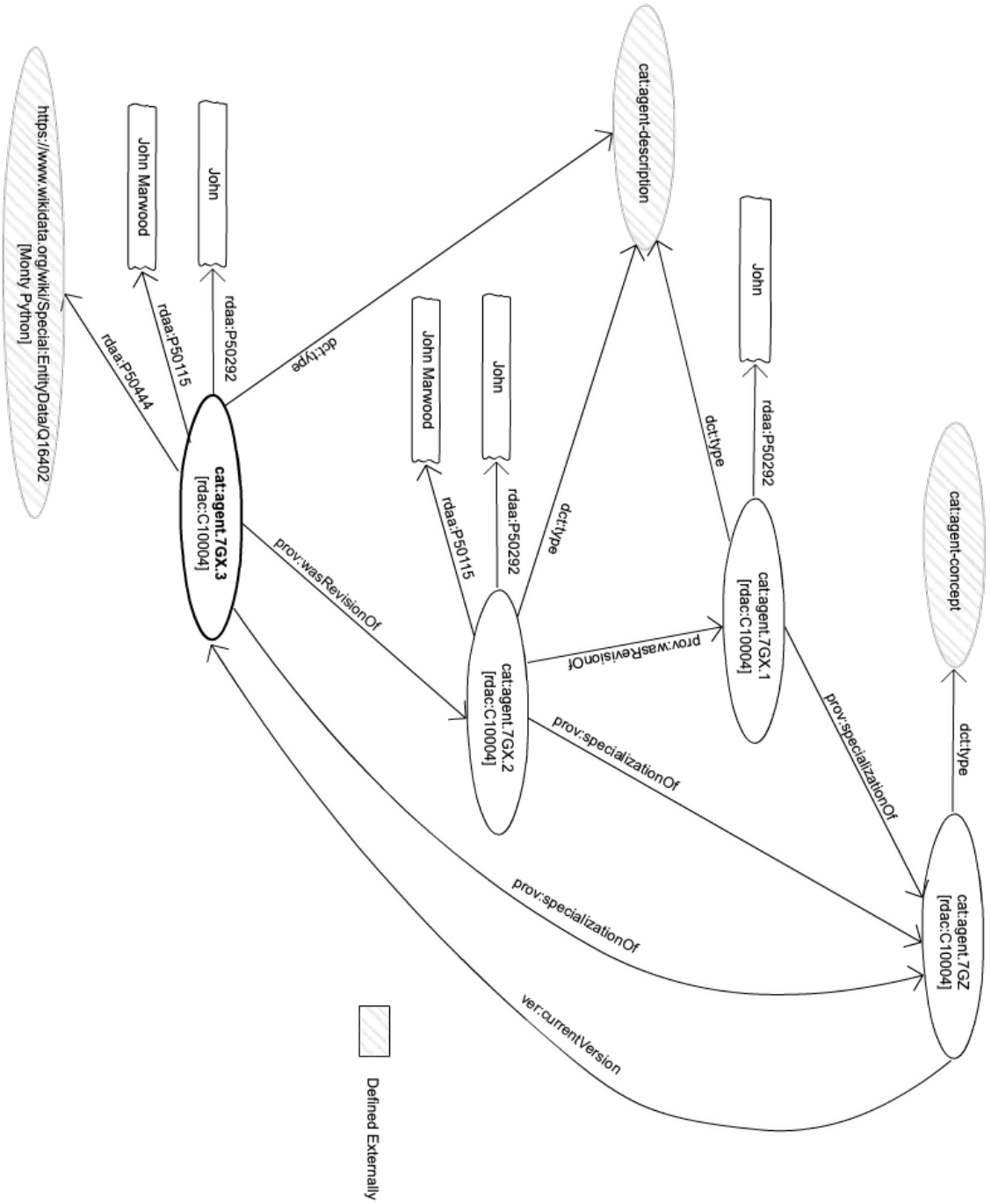


Fig 24 - 3rd Description of an Agent

Of course each of these additional Descriptions of an Agent are also subject to the provenance requirements of the OCDM, and as such will also need to have all of the additional provenance data properties as illustrated in 7.7.1 Provenance of the Description of an Agent, however for simplicities sake we have omitted them in Figures 23 and 24.

7.8 Modelling Activities

TBC

7.9 Modelling Locations

TBC

8. OMEGA CATALOGUE DATA MODEL ONTOLOGY

This section details the entities and properties that make up the Omega Catalogue Data Model, and provides guidance around their use. The properties and entities, as set out by The Matterhorn RDF Model are reused from various other ontology namespaces.

Prefix	Namespace	Description
cat	http://cat.nationalarchives.gov.uk/	The National Archives Catalogue
dct	http://purl.org/dc/terms/	Dublin Core Terms
edm	http://www.europeana.eu/schemas/edm/	Europeana Data Model
erar	http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole	LoC Event Related Agent Role
eror	http://id.loc.gov/vocabulary/preservation/eventRelatedObjectRole	LoC Event Related Object Role
foaf	http://xmlns.com/foaf/0.1/	FOAF (Friend Of A Friend)
locah	http://data.archiveshub.ac.uk/def/	Linked Open COPAC and Archives Hub
odrl	http://www.w3.org/ns/odrl/2/	W3C ODRL
premis	http://www.loc.gov/premis/rdf/v3/	LoC PREMIS 3
prov	http://www.w3.org/ns/prov#	W3C PROV
rdaa	http://rdaregistry.info/Elements/a/	RDA Agent Properties
rdac	http://rdaregistry.info/Elements/c/	RDA Classes
rdat	http://rdaregistry.info/Elements/t/	RDA Timespan Properties
rdau	http://rdaregistry.info/Elements/u/	RDA Unconstrained Properties
rst	http://id.loc.gov/vocabulary/preservation/relationshipSubType	LoC Relationship Subtype
schema	https://schema.org/	Schema.org
skos	http://www.w3.org/2004/02/skos/core	W3C Simple Knowledge Organisation System
time	http://www.w3.org/2006/time#	W3C Time Ontology
ver	http://purl.org/linked-data/version#	Versioning ontology

8.1 Entities

The core entities for the Omega Catalogue Model following The Matterhorn RDF Model approach are:

Entity Name	Description	Vocabulary Source
Intellectual Entity	Models a Record (i.e. Public Record), or potentially a grouping of Records (e.g. a Series or Piece in TNA-CS13 terms). If modelling a record, then this has an associated property type (*dct:type*) of either "record-concept" or "record-description".	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#c_IntellectualEntity http://www.loc.gov/premis/rdf/v3/IntellectualEntity
Representation	Models a Realisation of a Record, i.e. a physical or digital realisation of a record. Could also be a digital-surrogate realisation or redacted realisation.	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#c_Representation http://www.loc.gov/premis/rdf/v3/Representation
File	Models a Digital File; Only used for digital records.	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#c_File http://www.loc.gov/premis/rdf/v3/File
Activity	Models a process that is performed upon other Entities. Involves the concept of time and Agents that are involved in the process. Intellectual Entities, Representations, and/or Files, are the outcome of an Activity.	PROV https://www.w3.org/TR/prov-o/#Activity http://www.w3.org/ns/prov#Activity
Agent	Models a person, organisation of people, or autonomous operator (e.g. software). One or more Agents may be involved in an Activity. Additionally, can be used to model TNA-CS13 Authority Files.	RDA Classes http://www.rdaregistry.info/Elements/c/#C10002 http://rdaregistry.info/Elements/c/C10002 PROV https://www.w3.org/TR/prov-o/#Agent http://www.w3.org/ns/prov#Agent

Entity Name	Description	Vocabulary Source
- Person	Subclass of Agent for modelling an individual.	RDA Classes http://www.rdaregistry.info/Elements/c/#C10004 http://rdaregistry.info/Elements/c/C10004 FOAF http://xmlns.com/foaf/spec/#term_Person http://xmlns.com/foaf/0.1/Person PROV https://www.w3.org/TR/prov-o/#Person http://www.w3.org/ns/prov#Person
- Collective Agent	Subclass of Agent for modelling a group of people acting under a singular name.	RDA Classes http://www.rdaregistry.info/Elements/c/#C10011 http://rdaregistry.info/Elements/c/C10011 FOAF http://xmlns.com/foaf/spec/#term_Group http://xmlns.com/foaf/0.1/Group
- Family	Subclass of Collective Agent for modelling a group of two or more individuals that present as a “family” due to a legally recognised personal relationship between the individuals.	RDA Classes http://www.rdaregistry.info/Elements/c/#C10008 http://rdaregistry.info/Elements/c/C10008 FOAF http://xmlns.com/foaf/spec/#term_Group http://xmlns.com/foaf/0.1/Group

Entity Name	Description	Vocabulary Source
- Corporate Body	Subclass of Collective Agent for modelling a group of individual(s) that is capable of acting as a unit and identified by a singular name.	RDA Classes http://www.rdaregistry.info/Elements/c/#C10005 http://rdaregistry.info/Elements/c/C10005 FOAF http://xmlns.com/foaf/spec/#term_Organization http://xmlns.com/foaf/0.1/Organization PROV https://www.w3.org/TR/prov-o/#Organization http://www.w3.org/ns/prov#Organization
- Software Agent	Subclass of Agent for modelling a piece of software.	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#c_SoftwareAgent http://www.loc.gov/premis/rdf/v3/SoftwareAgent
- Hardware Agent	Subclass of Agent for modelling a piece of hardware.	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#c_HardwareAgent http://www.loc.gov/premis/rdf/v3/HardwareAgent

8.1.1 Entity Inheritance

As influenced by The Matterhorn RDF Model, the OCDM makes use of a number of entities from different vocabularies. The various entities are each defined in their respective OWL Ontologies, however there is some overlap between vocabularies, for example PREMIS3, PROV, and RDA, all define their own concept of an *Agent,* see: Figure 4 - UML Diagram of RDF Class Inheritance.

The Matterhorn RDF model states that an RDA Agent should be used for modelling Authorities as an equivalence to ISAAR (CPF). This however raises two limitations that need to be overcome:

1. An RDA Agent (unlike a PREMIS Agent), does not inherit from PROV Agent. This makes it difficult to make clear provenance statements using the PROV ontology when we substitute PROV Agent for RDA Agent.

2. An RDA Agent (similarly to a PREMIS Agent), does not inherit from a PROV Entity. With the OCDM we would like to understand the provenance of (description of) Authorities not just Records. This makes it difficult to make provenance statements about an RDA Agent using the PROV ontology.

To overcome this perceived limitation with a lack of PROV inheritance at the RDA Class level, we can instead define the inheritance at the instance level of our data; in RDF we can state that an instance has multiple types, e.g. `cat:TommyAtkins rdf:type rda:Person ; rdf:type prov:Entity`. This means that Tommy Atkins is both an RDA Person and a PROV Entity. Figure 5 - UML Diagram of Class/Instance Inheritance, shows an extension of Figure 4, with the addition of instance based inheritance.

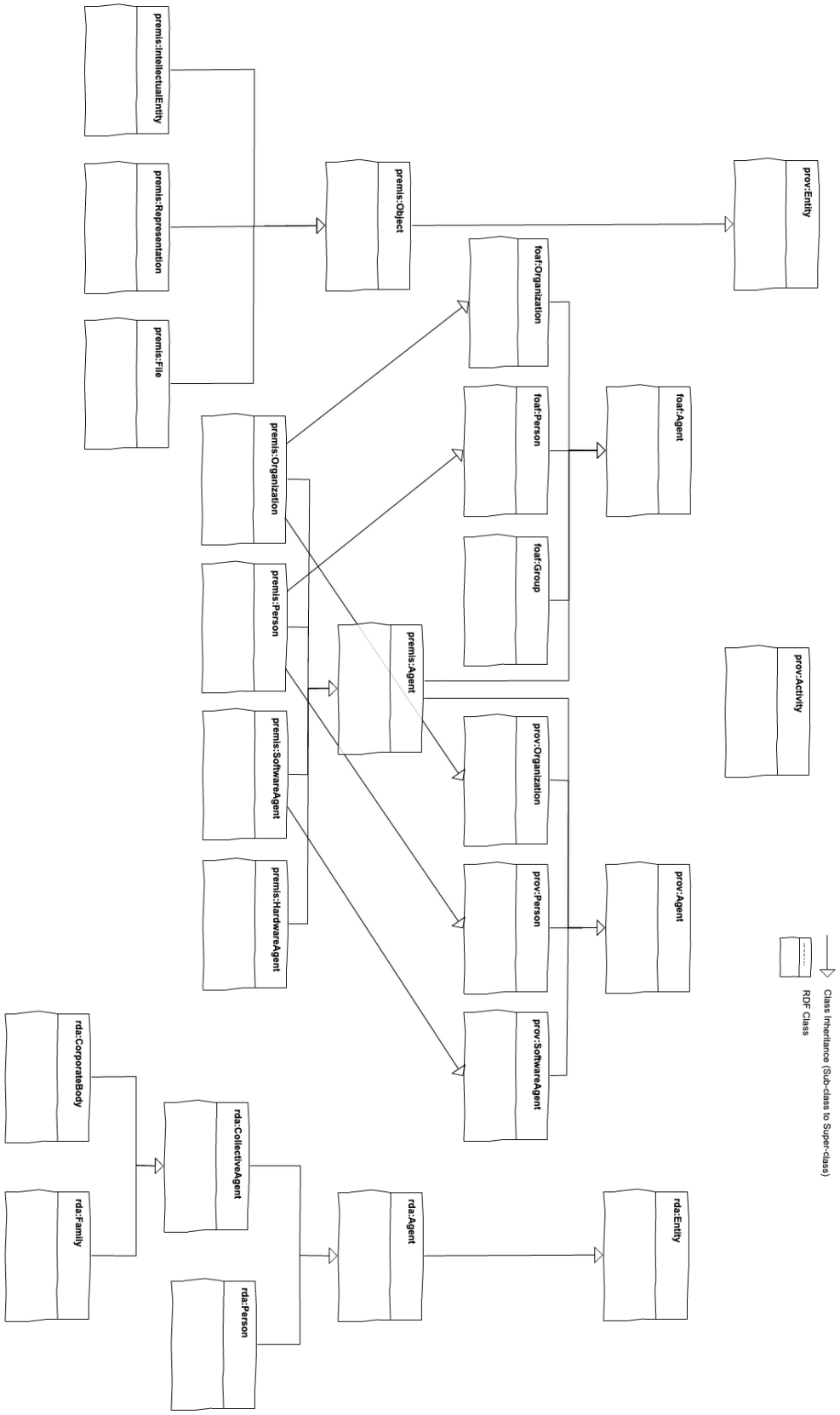


Fig 25 - UML Diagram of RDF Class Inheritance

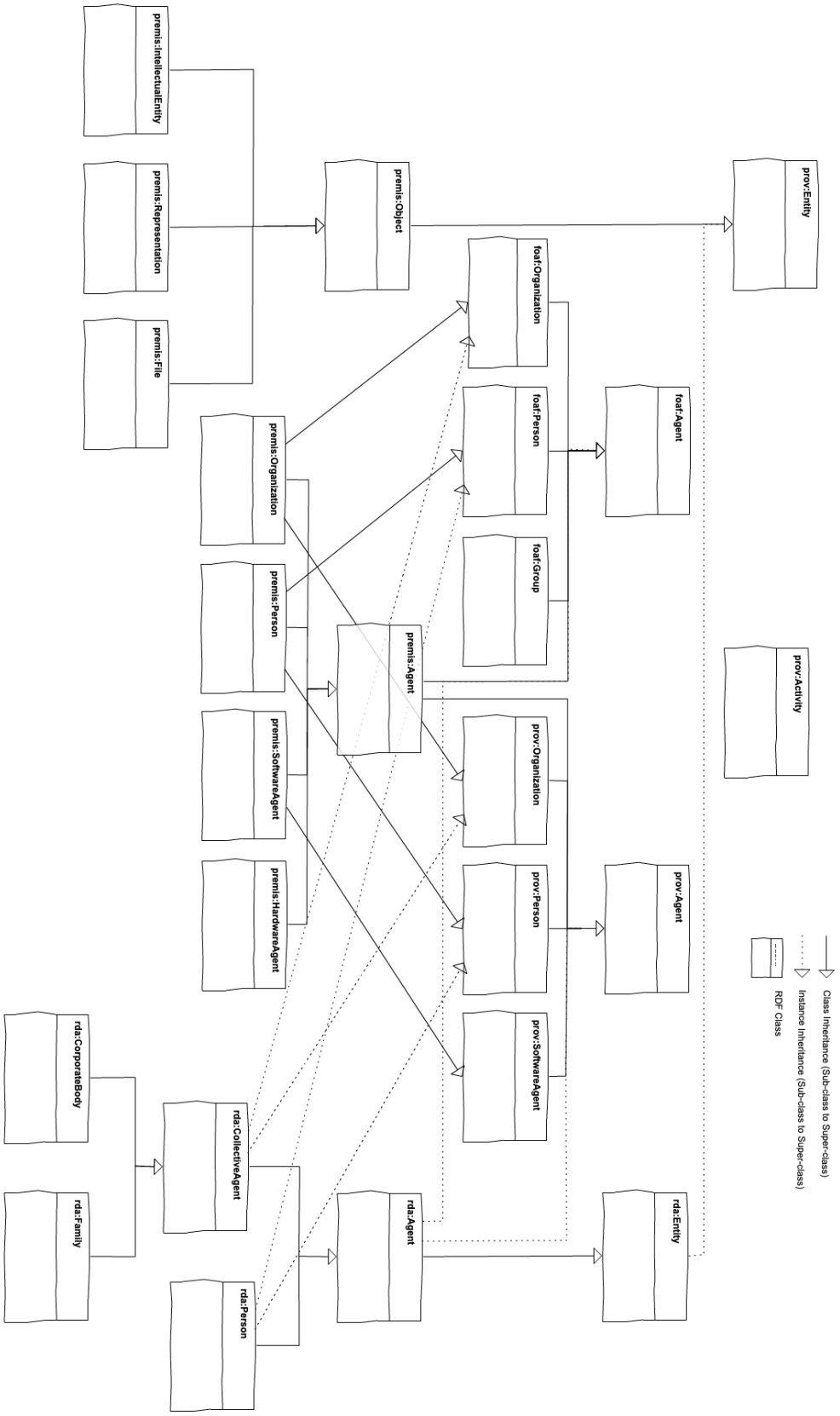


Fig 26 - UML Diagram of RDF Class/Instance Inheritance


EVOLVED BINARY


EVOLVED BINARY

8.2 Properties

The core properties for the Omega Catalogue Model entities are described herein by entity.

8.2.1 Record Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Record. A literal value as defined in Identifiers for the Concept of a Record.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:creator	This is the organisation that created the records. Most often a Government Department. The URI of the creating Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/creator http://purl.org/dc/terms/creator
dct:dateAccepted	The date and time (if available) that the record was accessioned. A literal xsd:dateTime or xsd:date value.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/dateAccepted http://purl.org/dc/terms/dateAccepted
dct:format	This is the format of the record as accessioned by TNA. A URI of either http://www.nationalarchives.gov.uk/ont.physical-record or http://www.nationalarchives.gov.uk/ont.digital-record. **NOTE:** Digital Surrogates of accessioned physical records are realisations of those records and should be added as such and not as new record concepts.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/format http://purl.org/dc/terms/format
dct:type	Indicates that this is the enduring concept of the record. Fixed URI of cat:record-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type

Property Name	Description	Req.	Vocabulary Source
prov:wasAttributedTo	The agent that caused the creation of this entity. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Intellectual Entity was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime
ver:currentVersion	The latest record description Intellectual Entity for this record concept. The URI of the record description Intellectual Entity.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.2 Record Description Properties

- OM.1 - Requires one-or-more of the properties in Group 1 (*dct:title, dct:description*, and/or *rdau:P60365*).

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Record. A literal value as defined in Identifiers for the Description of a Record.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier

Property Name	Description	Req.	Vocabulary Source
schema:identifier	This is a unique secondary identifier for the record. May appear multiple times if there is more than one secondary identifier. A bNode or URI of a schema:PropertyValue; The schema:propertyID should identify the identifier scheme, and the schema:value be the literal value of the identifier.	N	Schema.org https://schema.org/identifier http://schema.org/identifier
dct:creator	This is the organisation or individual that is attributed with creating the record. Most often a Government Department. May appear multiple times if there is more than one creator. The URI of the creating Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/creator http://purl.org/dc/terms/creator
premis:rightsStatus	The legal status of the record. Typically this is one of: Public Record, Public Record Unless Otherwise Stated (TBC - redundant after denormalisation?), Non-Public Record, Welsh Public Record, or Non-Record Material. A bNode or URI of a premis:RightsStatus whose premis:basis is typically a URI of cat:public-record, cat:non-public-record, cat:public-record-unless-otherwise-stated (TBC - redundant after denormalisation?), cat:welsh-public-record, or cat:non-record-material.	Y	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#p_rightsStatus http://www.loc.gov/premis/rdf/v3/rightsStatus
dct:type (1)	Indicates that this is the transient description of the record. Fixed URI of cat:record-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
dct:type (2)	Indicates a sub-type of the description of the record. Differs depending on the type of the record itself. For records imported from TNA-CS this would likely be the URI of cat:piece or cat:item, see Appendix 1.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type

Property Name	Description	Req.	Vocabulary Source
dct:title	The title of the record. A literal string value.	OM.1	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/title http://purl.org/dc/terms/title
dct:abstract	The abstract of the record. A literal string or XML value.	OM.1	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/abstract http://purl.org/dc/terms/abstract
designationOfEdition rdau:P60365	Description identifying an edition to which a record (e.g. Map) belongs. A literal value containing the designation.	OM.1	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P60365 http://rdaregistry.info/Elements/u/P60365
tna:created	The date (or date period) during which the record was created. A bNode or URI of a time:Instant or time:ProperInterval; presenting at least a dct:description and start/end/instants as appropriate.	Y	The National Catalogue Vocabulary TODO
dct:temporal	The time period which the record describes. A bNode or URI of a dct:PeriodOfTime; presenting either a dct:date, dct:title, or dct:description as appropriate.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/temporal http://purl.org/dc/terms/temporal
premis:note	An archivists note about the record. A literal string or XML value.	N	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#p_note http://www.loc.gov/premis/rdf/v3/note
dct:accessRights	The access rights for the record. A bNode or URI of a dct:rightsStatement; presenting at least a odrl:policy, and optionally a dct:abstract and dct:description, see: ODRL Examples.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/accessRights http://purl.org/dc/terms/accessRights

Property Name	Description	Req.	Vocabulary Source
dct:source	The source of acquisition of the record. Either as an Agent and/or a textual description. A bNode or URI of an entity; presenting a dct:subject and/or a dct:description as appropriate.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/source http://purl.org/dc/terms/source
dct:provenance (1)	A textual (provenance) statement about the custodianship of the record. A bNode or URI of a dct:ProvenanceStatement; presenting a dct:type and a dct:description. The dct:type must have the URI of cat:custodial-history. The dct:description is a literal value containing the statement text.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/provenance http://purl.org/dc/terms/provenance
dct:provenance (2)	A textual (provenance) statement about the administrate and/or biographical background of the record. A bNode or URI of a dct:ProvenanceStatement; presenting a dct:type and a dct:description. The dct:type must have the URI of cat:adminstrative-biographical-background. The dct:description is a literal value containing the statement text.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/provenance http://purl.org/dc/terms/provenance
dct:dateSubmitted	Accumulation date or period of the record. A literal value containing the date, date/time, or period of time according to W3CDTF format.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/dateSubmitted http://purl.org/dc/terms/dateSubmitted
locah:appraisal	Information on the Appraisal/Destruction of the record. A literal string or XML value.	N	Linked Open COPAC and Archives Hub http://data.archiveshub.ac.uk/def/appraisal
dct:accrualPolicy	The accrual policy of the record. A bNode or URI of a dct:Policy; presenting one of more of dct:description, dct:accrualPolicy, and dct:accrualPeriodicity.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/accrualPolicy http://purl.org/dc/terms/accrualPolicy

Property Name	Description	Req.	Vocabulary Source
detailsOfLayout rdau:P60784	Additional textual information adding context around the arrangement/layout of the record. A literal string or XML value.	N	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P60784 http://rdaregistry.info/Elements/u/P60784
noteOnPublicationStatement rdau:P60128	A note about the publication of the record. A literal string or XML value.	N	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P60128 http://rdaregistry.info/Elements/u/P60128
dct:isReferencedBy	Links to other resource which reference this record. May appear multiple times if there is more than one referencing resource. A bNode or URI of an entity; presenting one of more of dct:title, dct:description, dct:subject. The dct:subject should be a URI to the referencing resource.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/isReferencedBy http://purl.org/dc/terms/isReferenceBy
dct:relation (1)	Links to related material. May appear multiple times if there is more than one related resource. A bNode or URI of an entity; presenting dct:type, and one of more of dct:title, dct:description, dct:subject. The dct:subject should be a URI to the related resource. The dct:type must be the URI of cat:related-material.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
dct:relation (2)	Links to separated material. May appear multiple times if there is more than one related resource. A bNode or URI of an entity; presenting dct:type, and one of more of dct:title, dct:description, dct:subject. The dct:subject should be a URI to the separated resource. The dct:type must be the URI of cat:separated-material.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation

Property Name	Description	Req.	Vocabulary Source
dct:subject	Links to subjects. Typically these are URI of Agent, Person, or Location entities. They may also be URI of terms from a controlled vocabulary. May appear multiple times if there is more than one subject. The value is the URI of the subject.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/subject http://purl.org/dc/terms/subject
rst:isp	Links to the parent Intellectual Entity of which this *is part of.* The value is the URI of the parent Intellectual Entity.	N	LoC Relationship Subtype http://id.loc.gov/vocabulary/preservation/relationshipSubType/isp.html http://id.loc.gov/vocabulary/preservation/relationshipSubType/isp
edm:isNextInSequence	Links to the previous sibling Intellectual Entity. Used when there is an order of resources to be applied across siblings. The value is the URI of the previous Intellectual Entity in the sequence.	N	Europeana Data Model https://pro.europeana.eu/files/Europeana_Professional/Share_your_data/Technical_requirements/EDM_Documentation/EDM_Definition_v5.2.8_102017.pdf#page31 http://www.europeana.eu/schemas/edm/isNextInSequence
prov:specializationOf	The Record Concept that this Record Description describes. The URI of the Record Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf
prov:wasRevisionOf	The Record Description of which this is a revision. The URI of the “previous version” of the Record Description. Required for every version of a Record Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf

Property Name	Description	Req.	Vocabulary Source
prov:wasAttributedTo	The agent that caused the creation of this entity. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Intellectual Entity was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

8.2.3 Activity Properties

- OM.2 - Requires one-or-more of the properties in Group 2 (*dct:title* and/or *dct:description*).
- OM.3 - Requires one-or-more of the properties in Group 3 (sub-properties of *prov:wasAssociatedWith*).
- OM.4 - Requires one-or-more of the properties in Group 4 (sub-properties of *prov:used* and *prov:generated*).

Property Name	Description	Req.	Vocabulary Source
dct:title	Title of the Activity.	OM.2	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/title http://purl.org/dc/terms/title
dct:description	Description of the Activity.	OM.2	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/description http://purl.org/dc/terms/description

Property Name	Description	Req.	Vocabulary Source
prov:endedAtTime	The time at which the activity ended. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#endedAtTime http://www.w3.org/ns/prov#endedAtTime
prov:invalidated	One or more entities which are invalidated as a result of this activity. An rdf:List whose members are the URI of Intellectual Entity.	N	PROV https://www.w3.org/TR/prov-o/#invalidated http://www.w3.org/ns/prov#invalidated
prov:startedAtTime	The time at which the activity started. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#startedAtTime http://www.w3.org/ns/prov#startedAtTime
erar:aut	aut = authorizer, i.e the Agent that gave permission for the activity. This is a sub-property of prov:wasAssociatedWith. The URI of the authorising Agent.	OM.3	Event Related Agent Role http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/aut.html http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/aut
ear:exe	exe = executor, i.e. the Software Agent that performed the activity. This is a sub-property of prov:wasAssociatedWith. The URI of the Software Agent.	OM.3	Event Related Agent Role http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/exe.html http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/exe
erar:imp	imp = implementer, i.e the Agent that is assigned responsibility for the activity. This is a sub-property of prov:wasAssociatedWith. The URI of the implementing Agent. (not Software or Hardware).	OM.3	Event Related Agent Role http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/imp.html http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/imp

Property Name	Description	Req.	Vocabulary Source
erar:val	val = validator, i.e. the Agent that validates the activity. This is a sub-property of prov:wasAssociatedWith. The URI of the validating Agent.	OM.3	Event Related Agent Role http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/val.html http://id.loc.gov/vocabulary/preservation/eventRelatedAgentRole/val
prov:qualifiedAssociation	Qualifies the role of the prov:wasAssociatedWith (sub-)property. A blank node, containing prov:agent, prov:hadRole, and optionally rdfs:comment. Requires one of erar:aut, erar:exe, erar:imp, or erar:val.	OM.3	PROV https://www.w3.org/TR/prov-o/#qualifiedAssociation http://www.w3.org/ns/prov#qualifiedAssociation
eror:out	out = outcome, i.e. one or more entities which are generated as the result of the event. This is a sub-property of prov:generated. An rdf:List whose members are the URI of Intellectual Entity.	OM.4	Event Related Object Role http://id.loc.gov/vocabulary/preservation/eventRelatedObjectRole/out.html http://id.loc.gov/vocabulary/preservation/eventRelatedObjectRole/out
eror:sou	sou = source, i.e. one or more entities that existed prior to the activity, and were used by the activity. This is a sub-property of prov:used An rdf:List whose members are the URI of the Intellectual Entity.	OM.4	Event Related Object Role http://id.loc.gov/vocabulary/preservation/eventRelatedObjectRole/sou.html http://id.loc.gov/vocabulary/preservation/eventRelatedObjectRole/sou

8.2.4 Person Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Person. A literal value as defined in Identifiers for the Concept of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type	Indicates that this is the enduring concept of the agent. Fixed URI of cat:agent-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime
ver:currentVersion	The latest agent description Agent for this person concept. The URI of the person description Agent.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.5 Person Description Properties

- OM.5 - Requires one-or-more of the properties in Group 5. The properties *givenName* and *surname* are preferred.
- ZM.6 - Zero or more of the properties in Group 6. The property *prominentMemberOfFamilyOf* should be preferred over *personMemberOfFamilyOf* where appropriate.

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Person. A literal value as defined in Identifiers for the Description of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type (1)	Indicates that this is the transient description of the agent. Fixed URI of cat:agent-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
dct:type (2)	Indicates whether this is a TNA Authority File. Fixed URI of cat:authority-file.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
givenName rdaa:P50292	A name of person given at birth or at some later point in addition to, or instead of, a surname. A literal value containing the given name.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50292 http://rdaregistry.info/Elements/a/P50292
surname rdaa:P50291	A name of person that is used as a family name. A literal value containing the surname.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50291 http://rdaregistry.info/Elements/a/P50291
nameOfPerson rdaa:50111	The name of a person as used in common discourse. A literal value containing the name.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50111 http://rdaregistry.info/Elements/a/P50111

Property Name	Description	Req.	Vocabulary Source
foaf:title	The common title of a person as used in discourse. A literal value containing the title. Examples include: ‘Mr’, ‘Mrs’, ‘Ms’, ‘Dr.’ Prefer rdaa:P50110 when appropriate.	OM.5	FOAF http://xmlns.com/foaf/spec/#term_title http://xmlns.com/foaf/0.1/title
termOrRankHonourOrOffice rdaa:P50110	Phrase indicative of royalty, nobility, ecclesiastical rank or office, or a term of address for a person of religious vocation. A literal value containing the term of rank, honour, or office.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50110 http://rdaregistry.info/Elements/a/P50110
variantNameOfPerson rdaa:P50103	A non-preferred name of a person as used in common discourse. A literal value containing the variant name. Requires rdaa:50111 or rdaa:50117.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50103 http://rdaregistry.info/Elements/a/P50103
preferredNameOfPerson rdaa:P50117	A preferred name of a person as used in common discourse. A literal value containing the preferred name. Requires rdaa:50111 or rdaa:50103.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50117 http://rdaregistry.info/Elements/a/P50117
fullerFormOfName rdaa:P50115	The fuller form of a name or part of a name represented by an initial, abbreviation, or shortened or otherwise modified form. A literal value containing the preferred name. Requires rdaa:50111, rdaa:P50291, or rdaa:P50292.	OM.5	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50115 http://rdaregistry.info/Elements/a/P50115
hasSourceConsulted rdau:P61101	Relates a resource to a resource in which there is evidence for a metadata resource.	N	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P61101 http://rdaregistry.info/Elements/u/P61101

Property Name	Description	Req.	Vocabulary Source
hasStatusOfIdentification rdau:P61160	Relates a nomen to an indication of a level of authentication of the nomen of an entity.	Y	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P61160 http://rdaregistry.info/Elements/u/P61160
hasDateOfBirth rdaa:P50121	Relates a person to a timespan during which a person was born.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50121 http://rdaregistry.info/Elements/a/P50121
hasNoteOnTimespan rdat:P70045	Relates a timespan to a broad unstructured description of one or more attributes of a timespan.	N	RDA Timespan Properties http://www.rdaregistry.info/Elements/6/#P70045 http://rdaregistry.info/Elements/t/P70045
hasDateOfDeath rdaa:P50120	Relates a person to a timespan during which a person died.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50120 http://rdaregistry.info/Elements/a/P50120
personMemberOfCollectiveAgent rdaa:P50444	Indicates the Collective Agent of which the person is a member of. The URI of the Collective Agent. Preference should be given to rdaa:P50096, rdaa:P50223, rdaa:P50253, or rdaa:P50288.	ZM.6	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50444 http://rdaregistry.info/Elements/a/P50444
personMemberOfFamilyOf rdaa:P50233	Indicates the family to which the person belongs. The URI of the family. Prefer rdaa:P50417 if appropriate.	ZM.6	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50233 http://rdaregistry.info/Elements/a/P50233

Property Name	Description	Req.	Vocabulary Source
prominentMemberOfFamilyOf rdaa:P50417	Indicates the family to which the person belongs as a prominent member. The URI of the family.	ZM.6	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50417 http://rdaregistry.info/Elements/a/P50417
dct:relation	Indicates another resource which is related to this Person. The URI of the related resource. This should be used as a last resort when another qualified relationship is not appropriate.	ZM.6	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
noteOnPerson rdaa:50395	Unstructured description of a Person. A literal value containing the description.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50395 http://rdaregistry.info/Elements/a/P50395
prov:actedOnBehalfOf	Delegates the authority and responsibility to a different agent. The URI of the resource which delegated the authority.	N	PROV https://www.w3.org/TR/prov-o/#actedOnBehalfOf http://www.w3.org/ns/prov#actedOnBehalfOf
prov:specializationOf	The Agent Concept that this Agent Description describes. The URI of the Agent Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf
prov:wasRevisionOf	The Agent Description of which this is a revision. The URI of the “previous version” of the Agent Description. Required for every version of an Agent Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf

Property Name	Description	Req.	Vocabulary Source
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

8.2.6 Collective Agent Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Collective Agent. A literal value as defined in Identifiers for the Concept of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type	Indicates that this is the enduring concept of the agent. Fixed URI of cat:agent-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

Property Name	Description	Req.	Vocabulary Source
ver:currentVersion	The latest agent description Agent for this collective agent concept. The URI of the person description Agent.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.7 Collective Agent Description Properties

- OM.7 - Requires one-or-more of the properties in Group 7. The property *nameOfCollectiveAgent* is preferred.
- ZM.8 - Zero or more of the properties in Group 8.

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Collective Agent. A literal value as defined in Identifiers for the Description of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type (1)	Indicates that this is the transient description of the agent. Fixed URI of cat:agent-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
dct:type (2)	Indicates whether this is a TNA Authority File. Fixed URI of cat:authority-file.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
nameOfCollectiveAgent rdaa:P50386	The name of a collective as used in common discourse. A literal value containing the name.	OM.7	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50386 http://rdaregistry.info/Elements/a/P50386

Property Name	Description	Req.	Vocabulary Source
variantNameOfCollectiveAgent rdaa:P50416	A non-preferred name of a collective as used in common discourse. A literal value containing the variant name. Requires rdaa:50386 or rdaa:50414.	OM.7	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50416 http://rdaregistry.info/Elements/a/P50416
preferredNameOfCollectiveAgent rdaa:P50414	A preferred name of a collective as used in common discourse. A literal value containing the preferred name. Requires rdaa:50386 or rdaa:50416.	OM.7	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50414 http://rdaregistry.info/Elements/a/P50414
predecessorOfCollectiveAgent rdaa:P50421	Relates this family to another collective which precedes this collective. The URI of the preceding Collective Agent.	ZM.8	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50421 http://rdaregistry.info/Elements/a/P50421
successorOfCollectiveAgent rdaa:P50423	Relates this collective to anther collective which succeeds this collective. The URI of the succeeding Collective Agent.	ZM.8	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50423 http://rdaregistry.info/Elements/a/P50423
dct:relation	Indicates another resource which is related to this Collective Agent. The URI of the related resource. This should be used as a last resort when another qualified relationship is not appropriate.	ZM.8	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
relatedPlaceOfCollectiveAgent rdaa:P50342	Indicates the Place related with the Collective Agent. The URI of the Place.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50342 http://rdaregistry.info/Elements/a/P50342

Property Name	Description	Req.	Vocabulary Source
noteOnCollectiveAgent rdaa:P50392	Unstructured description of a Collective Agent. A literal value containing the description.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50392 http://rdaregistry.info/Elements/a/P50392
prov:actedOnBehalfOf	Delegates the authority and responsibility to a different agent. The URI of the resource which delegated the authority.	N	PROV https://www.w3.org/TR/prov-o/#actedOnBehalfOf http://www.w3.org/ns/prov#actedOnBehalfOf
prov:specializationOf	The Agent Concept that this Agent Description describes. The URI of the Agent Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf
prov:wasRevisionOf	The Agent Description of which this is a revision. The URI of the “previous version” of the Agent Description. Required for every version of an Agent Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

8.2.8 Family Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Family. A literal value as defined in Identifiers for the Concept of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type	Indicates that this is the enduring concept of the agent. Fixed URI of cat:agent-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime
ver:currentVersion	The latest agent description Agent for this family concept. The URI of the person description Agent.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.9 Family Description Properties

- OM.9 - Requires one-or-more of the properties in Group 9. The property *nameOfFamily* is preferred.
- ZM.10 - Zero or more of the properties in Group 10.
- ZM.11 - Zero or more of the properties in Group 11. The property *familyMemberOfCorporateBodyOf* is preferred over *familyMemberOfCollectiveAgentOf* where appropriate.

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Family. A literal value as defined in Identifiers for the Description of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type (1)	Indicates that this is the transient description of the agent. Fixed URI of cat:agent-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
dct:type (2)	Indicates whether this is a TNA Authority File. Fixed URI of cat:authority-file.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
nameOfFamily rdaa:50061	The name of a family as used in common discourse. A literal value containing the name.	OM.9	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50061 http://rdaregistry.info/Elements/a/P50061
hereditaryTermOfHonour rdaa:P50059	Relates a family to a word or phrase indicative of royalty, nobility, etc., associated with a family. A literal value containing the hereditary term of honour.	OM.9	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50059 http://rdaregistry.info/Elements/a/P50059
variantNameOfFamily rdaa:P50054	A non-preferred name of a family as used in common discourse. A literal value containing the variant name. Requires rdaa:50061 or rdaa:50065.	OM.9	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50054 http://rdaregistry.info/Elements/a/P50054
preferredNameOfFamily rdaa:P50065	A preferred name of a family as used in common discourse. A literal value containing the preferred name. Requires rdaa:50061 or rdaa:50054.	OM.9	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50065 http://rdaregistry.info/Elements/a/P50065

Property Name	Description	Req.	Vocabulary Source
descendantFamilyOfFamily rdaa:P50053	Relates this family to another family of which that family is a descendant. The URI of descendant Family. Prefer using the inverse relationship through rdaa:P50372.	ZM.10	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50053 http://rdaregistry.info/Elements/a/P50053
descendantFamilyOfFamilyOf rdaa:P50372	Relates this family to another family of which this family is a descendant. The URI of the ancestor Family.	ZM.10	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50372 http://rdaregistry.info/Elements/a/P50372
predecessorOfFamily rdaa:P50422	Relates this family to another family which precedes this family. The URI of the preceding Family.	ZM.10	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50422 http://rdaregistry.info/Elements/a/P50422
successorOfFamily rdaa:P50424	Relates this family to anther family which succeeds this family. The URI of the succeeding Family.	ZM.10	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50424 http://rdaregistry.info/Elements/a/P50424
familyMemberOfCollectiveAgentOf rdaa:50441	Relates a family to a collective agent of which it is a member. The URI of the Collective Agent.	ZM.11	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50441 http://rdaregistry.info/Elements/a/P50441
familyMemberOfCorporateBodyOf rdaa:P50422	Relates a family to a corporate body of which it is a member. The URI of the Corporate Body.	ZM.11	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50422 http://rdaregistry.info/Elements/a/P50422

Property Name	Description	Req.	Vocabulary Source
dct:relation	Indicates another resource which is related to this Family. The URI of the related resource. This should be used as a last resort when another qualified relationship is not appropriate.	ZM.11	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
placeAssociatedWithFamily rdaa:P50057	Indicates the Place associated with the Family. The URI of the Place.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50057 http://rdaregistry.info/Elements/a/P50057
noteOnFamily rdaa:P50394	Unstructured description of a Family. A literal value containing the description.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50394 http://rdaregistry.info/Elements/a/P50394
prov:actedOnBehalfOf	Delegates the authority and responsibility to a different agent. The URI of the resource which delegated the authority.	N	PROV https://www.w3.org/TR/prov-o/#actedOnBehalfOf http://www.w3.org/ns/prov#actedOnBehalfOf
prov:specializationOf	The Agent Concept that this Agent Description describes. The URI of the Agent Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf
prov:wasRevisionOf	The Agent Description of which this is a revision. The URI of the “previous version” of the Agent Description. Required for every version of an Agent Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf

Property Name	Description	Req.	Vocabulary Source
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

8.2.10 Corporate Body Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Corporate Body. A literal value as defined in Identifiers for the Concept of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type	Indicates that this is the enduring concept of the agent. Fixed URI of cat:agent-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

Property Name	Description	Req.	Vocabulary Source
ver:currentVersion	The latest agent description Agent for this corporate body concept. The URI of the person description Agent.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.11 Corporate Body Description Properties

- OM.12 - Requires one-or-more of the properties in Group 12. The property *nameOfCorporateBody* is preferred.
- ZM.13 - Zero or more of the properties in Group 13. Ideally at least *hasDateOfEstablishment* should be provided.
- ZM.14 - Zero or more of the properties in Group 14.

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Corporate Body. A literal value as defined in Identifiers for the Description of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type (1)	Indicates that this is the transient description of the agent. Fixed URI of cat:agent-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
dct:type (2)	Indicates whether this is a TNA Authority File. Fixed URI of cat:authority-file.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
nameOfCorporateBody rdaa:P50032	The name of a Corporate Body A literal value containing the name.	OM.12	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50032 http://rdaregistry.info/Elements/a/P50032

Property Name	Description	Req.	Vocabulary Source
variantNameOfCorporateBody rdaa:P50025	A non-preferred name of a Corporate Body as used in common discourse. A literal value containing the variant name. Requires rdaa:50032 or rdaa:50041.	OM.12	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50025 http://rdaregistry.info/Elements/a/P50025
preferredNameOfCorporateBody rdaa:P50041	A preferred name of a person as used in common discourse. A literal value containing the preferred name. Requires rdaa:50032 or rdaa:50025.	OM.12	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50041 http://rdaregistry.info/Elements/a/P50041
hasFieldOfActivityOfCorporateBody rdaa:P50022	Relates a corporate body to a field of endeavor, area of competence, responsibility, jurisdiction, etc., in which a corporate body is engaged.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50022 http://rdaregistry.info/Elements/a/P50022
hasJurisdictionGoverned rdaa:P50425	Relates a corporate body to a place that is a jurisdiction governed by a law, regulation, etc., that was enacted by another government.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50425 http://rdaregistry.info/Elements/a/P50425
hasSourceConsulted rdau:P61101	Relates a resource to a resource in which there is evidence for a metadata resource.	N	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P61101 http://rdaregistry.info/Elements/u/P61101
hasStatusOfIdentification rdau:P61160	Relates a nomen to an indication of a level of authentication of the nomen of an entity.	Y	RDA Unconstrained Properties http://www.rdaregistry.info/Elements/u/#P61160 http://rdaregistry.info/Elements/u/P61160
hasDateOfEstablishment rdaa:P50037	Relates a corporate body to a timespan during which a corporate body is established or founded.	ZM.13	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50037 http://rdaregistry.info/Elements/a/P50037

Property Name	Description	Req.	Vocabulary Source
hasNoteOnTimespan rdat:P70045	Relates a timespan to a broad unstructured description of one or more attributes of a timespan.	N	RDA Timespan Properties http://www.rdaregistry.info/Elements/6/#P70045 http://rdaregistry.info/Elements/t/P70045
hasDateOfTermination rdaa:P50038	Relates a corporate body to a timespan during which a corporate body is terminated or dissolved.	ZM.13	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50038 http://rdaregistry.info/Elements/a/P50038
corporateBodyMemberOfCorporateBody rdaa:P50230	Indicates another Corporate Body of which this Corporate Body is a member. The URI of the other Corporate Body.	ZM.14	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50230 http://rdaregistry.info/Elements/a/P50230
absorbingCorporateBody rdaa:P50302	Indicates another Corporate Body which has absorbed this Corporate Body. The URI of the absorbing Corporate Body	ZM.14	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50302 http://rdaregistry.info/Elements/a/P50302
broaderAffiliatedBody rdaa:P50240	Indicates another Corporate Body with a wider scope, that this Corporate Body is affiliated with. The URI of the broader affiliated Corporate Body.	ZM.14	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50240 http://rdaregistry.info/Elements/a/P50240
foundingCorporateBodyOfCorporateBody rdaa:P50007	Indicates another Corporate Body which founded this Corporate Body. The URI of the founding Corporate Body.	ZM.14	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50007 http://rdaregistry.info/Elements/a/P50007
predecessorOfCorporateBody rdaa:P50012	Indicates another Corporate Body which is the predecessor of this Corporate Body. The URI of the preceding Corporate Body.	ZM.14	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50012 http://rdaregistry.info/Elements/a/P50012

Property Name	Description	Req.	Vocabulary Source
successorOfCorporateBody rdaa:P50016	Indicates another Corporate Body which is the successor of this Corporate Body. The URI of the succeeding Corporate Body.	ZM.14	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50016 http://rdaregistry.info/Elements/a/P50016
dct:relation	Indicates another resource which is related to this Corporate Body. The URI of the related resource. This should be used as a last resort when another qualified relationship is not appropriate.	ZM.14	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
placeAssociatedWithCorporateBody rdaa:P50031	Indicates the Place associated with the Corporate Body. The URI of the Place.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50031 http://rdaregistry.info/Elements/a/P50031
noteOnCorporateBody rdaa:P50393	Unstructured description of a Corporate Body. A literal value containing the description.	N	RDA Agent Properties http://www.rdaregistry.info/Elements/a/#P50393 http://rdaregistry.info/Elements/a/P50393
cat:archonCode	The Archon code of the Corporate Body if it is a National Place of Deposit.	N	TBC
todo:is-place-of-deposit	True/False if this Corporate Body is a Place of Deposit	Y	TBC - this will likely be removed once relationships between Records and Corporate Bodies are established.
prov:actedOnBehalfOf	Delegates the authority and responsibility to a different agent. The URI of the resource which delegated the authority.	N	PROV https://www.w3.org/TR/prov-o/#actedOnBehalfOf http://www.w3.org/ns/prov#actedOnBehalfOf

Property Name	Description	Req.	Vocabulary Source
prov:specializationOf	The Agent Concept that this Agent Description describes. The URI of the Agent Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf
prov:wasRevisionOf	The Agent Description of which this is a revision. The URI of the “previous version” of the Agent Description. Required for every version of an Agent Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

TBC - Resources for Location

8.2.12 Software Agent Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Software Agent. A literal value as defined in Identifiers for the Concept of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier

Property Name	Description	Req.	Vocabulary Source
dct:type	Indicates that this is the enduring concept of the agent. Fixed URI of cat:agent-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime
ver:currentVersion	The latest agent description Agent for this software agent concept. The URI of the person description Agent.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.13 Software Agent Description Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Software Agent. A literal value as defined in Identifiers for the Description of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type (1)	Indicates that this is the transient description of the agent. Fixed URI of cat:agent-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type

Property Name	Description	Req.	Vocabulary Source
dct:type (2)	Indicates whether this is a TNA Authority File. Fixed URI of cat:authority-file.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
foaf:name	The name of the software employed. A literal value containing the name of the software.	Y	FOAF http://xmlns.com/foaf/spec/#term_name http://xmlns.com/foaf/0.1/name
premis:documentation	Documentation for the software employed. A URI indicating the documentation for the software employed	N	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#p_documentation http://www.loc.gov/premis/rdf/v3/documentation
premis:version	The version of the software employed. A literal value containing the version of the software.	Y	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#p_version http://www.loc.gov/premis/rdf/v3/version
dct:relation	Indicates another resource which is related to this Software Agent. The URI of the related resource. This should be used as a last resort when another qualified relationship is not appropriate.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
prov:actedOnBehalfOf	Delegates the authority and responsibility to a different agent. The URI of the resource which delegated the authority.	N	PROV https://www.w3.org/TR/prov-o/#actedOnBehalfOf http://www.w3.org/ns/prov#actedOnBehalfOf
prov:specializationOf	The Agent Concept that this Agent Description describes. The URI of the Agent Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf

Property Name	Description	Req.	Vocabulary Source
prov:wasRevisionOf	The Agent Description of which this is a revision. The URI of the “previous version” of the Agent Description. Required for every version of an Agent Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

8.2.14 Hardware Agent Concept Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Concept of the Hardware Agent. A literal value as defined in Identifiers for the Concept of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type	Indicates that this is the enduring concept of the agent. Fixed URI of cat:agent-concept.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type

Property Name	Description	Req.	Vocabulary Source
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime
ver:currentVersion	The latest agent description Agent for this hardware agent concept. The URI of the person description Agent.	Y	Versioning Ontology http://purl.org/linked-data/version#currentVersion

8.2.15 Hardware Agent Description Properties

Property Name	Description	Req.	Vocabulary Source
dct:identifier	This is the OCI for the Description of the Hardware Agent. A literal value as defined in Identifiers for the Description of an Agent.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/identifier http://purl.org/dc/terms/identifier
dct:type (1)	Indicates that this is the transient description of the agent. Fixed URI of cat:agent-description.	Y	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type
dct:type (2)	Indicates whether this is a TNA Authority File. Fixed URI of cat:authority-file.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/type http://purl.org/dc/terms/type

Property Name	Description	Req.	Vocabulary Source
foaf:name	The name of the hardware employed. A literal value containing the name of the software.	Y	FOAF http://xmlns.com/foaf/spec/#term_name http://xmlns.com/foaf/0.1/name
premis:documentation	Documentation for the hardware employed. A URI indicating the documentation for the hardware employed	N	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#p_documentation http://www.loc.gov/premis/rdf/v3/documentation
premis:version	The version of the hardware employed. A literal value containing the version of the hardware.	Y	PREMIS 3 http://id.loc.gov/ontologies/premis-3-0-0.html#p_version http://www.loc.gov/premis/rdf/v3/version
dct:relation	Indicates another resource which is related to this Hardware Agent. The URI of the related resource. This should be used as a last resort when another qualified relationship is not appropriate.	N	Dublin Core Terms https://www.dublincore.org/specifications/dublin-core/dcmi-terms/#http://purl.org/dc/terms/relation http://purl.org/dc/terms/relation
prov:actedOnBehalfOf	Delegates the authority and responsibility to a different agent. The URI of the resource which delegated the authority.	N	PROV https://www.w3.org/TR/prov-o/#actedOnBehalfOf http://www.w3.org/ns/prov#actedOnBehalfOf
prov:specializationOf	The Agent Concept that this Agent Description describes. The URI of the Agent Concept.	Y	PROV https://www.w3.org/TR/prov-o/#specializationOf http://www.w3.org/ns/prov#specializationOf

Property Name	Description	Req.	Vocabulary Source
prov:wasRevisionOf	The Agent Description of which this is a revision. The URI of the “previous version” of the Agent Description. Required for every version of an Agent Description, apart from the first version where it should not be used.	N	PROV https://www.w3.org/TR/prov-o/#wasRevisionOf http://www.w3.org/ns/prov#wasRevisionOf
prov:wasAttributedTo	The agent that caused the creation of this agent. The URI of the attributed Agent.	Y	PROV https://www.w3.org/TR/prov-o/#wasAttributedTo http://www.w3.org/ns/prov#wasAttributedTo
prov:generatedAtTime	The date and time that this Agent was generated/created. A literal xsd:dateTime value.	Y	PROV https://www.w3.org/TR/prov-o/#generatedAtTime http://www.w3.org/ns/prov#generatedAtTime

GLOSSARY

Glossary Table

Term	Description
COPAC	Consortium of Online Public Access Catalogues
CCR	Classic Catalogue Reference; as defined by and used with TNA-CS13
DRI	Digital Records Infrastructure; TNA's Digital Archive
FOAF	Friend of a Friend. RDF Vocabulary for linking people and information
GCR	Generated Catalogue Reference; the catalogue reference scheme employed for Digital Records in DRI
ICA	International Council on Archives; standards body for archival standards
ILDB	Inventory Lists Database; holds the catalogue records managed by PROCat
LOCAH	Linked Open COPAC and Archives Hub
LoC	Library of Congress (USA)
OCI	Omega Catalogue Identifier; the URI and/or identifier scheme used for identifying resources in the Omega Catalogue.
ODRL	Open Digital Rights Language; W3C standard for expressing digital rights policies
OWL	Web Ontology Language; W3C standard for authoring ontologies, used with RDF
PoC	Proof-of-Concept
Project Omega	The proof-of-concept project to replace PROCat and potentially other TNA catalogues.
PREMIS	Preservation Metadata: Implementation Strategies; LoC standard for preservation
PROCat	PRO Catalogue; TNA's current paper records catalogue management applications
RiC	Records in Context; ICA standard positioned to supercede ISAD(G), ISAAR (CPF), and ISDF
ISAAR	International Standard Archival Authority Record; ICA standard
ISAD(G)	General International Standard Archival Description; ICA standard
ISDF	International Standard for Describing Functions; ICA standard
PROV	Provenance; W3C family of standards for provenance information
RiC-CM	RiC Conceptual Model
RiC-O	RiC Ontology; ICA's RDF implementation schema and vocabulary for RiC-CM
RDA	Resource Description and Access; standard for descriptive cataloguing
RDF	Resource Description Framework; W3C standard for describing resources on the web
SHACL	Shapes Constraints Language; W3C standard for describing and validating RDF graphs

EVOLVED BINARY

Term	Description
TNA	The National Archives; successor of PRO
TNA-CG07	The National Archives, Cataloguing Guidelines - May 2007
TNA-CS13	The National Archives, Cataloguing Standards - June 2013
UI	User interface
W3C	World Wide Web Consortium; an international standards organisation

APPENDIX 1. THE OCIB25 ALPHABET

Project Omega uses a Base25 alphabet to encode/decode certain number components within its identifiers. This alphabet is **not** the same as that used in GCRs.

The alphabet was established by taking the following steps:

1. Start with the Base32 alphabet from RFC 4648.
2. Eliminate the English vowels - `A`, `E`, `I`, `O`, and `U`. We don't want to incidentally create meaningful words!
3. Remove the characters `P`, `D`, and `M`, as they are reserved to signify Physical, Digital, and Realisation.
4. Remove the digit `0` (zero) as it could be misconstrued as numeric padding.
5. Remove the character `B` as could be confused with the digit `8` (eight) when read or written by humans.
6. Add the characters `W`, `X`, and `Y`. We opted not to add `Z` so as to avoid any confusion with GCRs.

OCIb25 Alphabet

Numeric Value	Encoded Symbol
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	C
10	F

Numeric Value	Encoded Symbol
11	G
12	H
13	J
14	K
15	L
16	N
17	Q
18	R
19	S
20	T
21	V
22	W
23	X
24	Y

A1.1 Encoding Into OClb25

The algorithm for encoding from a Base10 integer into an OClb25 string is relatively trivial using a recursive approach.

The following function expressed in the Scala programming language, takes any Base10 integer as the value of the named “value” argument. The function computes the resultant encoded string.

```
def encode(value: Int): String = {

    private lazy val len = b25Alphabet.length

    @tailrec
    def encode(v: Int, accum: List[Char]): String = {
      if(v == 0 && accum.nonEmpty) {
```

```
        accum.mkString
      } else if(v <= 1) {
        (b25Alphabet(v) :: accum).mkString
      } else {
        val div = v / len
        val mod = v % len
        encode(div, b25Alphabet(mod) :: accum)
      }
    }

    encode(value, List.empty[Char])
}
```

A1.2 Decoding from OCIb25

The algorithm for decoding from a OCIb25 encoded string to a Base 10 integer is much simpler than the encoding algorithm, and a simple table lookup approach suffices.

The following function expressed in the Scala programming language, takes any OCIb25 encoded string as the value of the named “str” argument. The function computes the resultant decoded Base10 integer.

```
def decode(str: String): Int = {
    private lazy val len = b25Alphabet.length
    val indicies = str.map(b25Alphabet.indexOf(_))
    val vs = for(i <- 0 to indicies.length - 1) yield {
      val exp = (indicies.length - i) - 1
      indicies(i) * Math.pow(len, exp).toInt
    }
    vs.reduceLeft(_ + _)
}
```

A1.3 OCIb25 Encoder/Decoder Implementations

We provide two complete Open Source implementations for encoding and decoded OCIb25 (as well as GCR):

1. A Scala implementation - https://github.com/nationalarchives/oci-tools-scala
2. A TypeScript implementation - https://github.com/nationalarchives/oci-tools-ts

APPENDIX 2. HASH ALGORITHMS FOR DIGITAL FILES

This table sets out a numeric identifier for Hash Algorithms used in the identifiers for Digital Files.

Numeric Value	Hash Algorithm
0	BLAKE2b 256-bit
1	BLAKE2b 512-bit
2	SHA-256
3	SHA-512

APPENDIX 3. THE OCIB68 ALPHABET

Project Omega uses a Base68 alphabet to encode/decode the numeric result of the hash digest of a Digital File for use within its identifier.

The alphabet was established by taking the following steps:

1. Start with all possible path characters for use in a URI from RFC 2396.
2. Eliminate the English vowels - `A`, `E`, `I`, `O`, and `U`, and `a`, `e`, `i`, `o`, and `u`. We don't want to incidentally create meaningful words!
3. Eliminate escaped characters by removing the `%` character.
4. Sort them in byte-wise order by their UTF-8 numeric value.

OCIb68 Alphabet

Numeric Value	Encoded Symbol
0	!
1	$
2	&
3	'

Numeric Value	Encoded Symbol
4	(
5	)
6	*
7	+
8	,
9	-
10	.
11	0
12	1
13	2
14	3
15	4
16	5
17	6
18	7
19	8
20	9
21	:
22	=
23	@
24	B
25	C
26	D
27	F
28	G
29	H

Numeric Value	Encoded Symbol
30	J
31	K
32	L
33	M
34	N
35	P
36	Q
37	R
38	S
39	T
40	V
41	W
42	X
43	Y
44	Z
45	_
46	b
47	c
48	d
49	f
50	g
51	h
52	j
53	k
54	l
55	m

Numeric Value	Encoded Symbol
56	n
57	p
58	q
59	r
60	s
61	t
62	v
63	w
64	x
65	y
66	z
67	~

A3.1 Encoding Into OCIb68

The algorithm for encoding from a Base10 integer into an OCIb68 string is relatively trivial using a recursive approach.

The following function expressed in the Scala programming language, takes any Base10 integer as the value of the named “value” argument. The function computes the resultant encoded string.

```
def encode(value: Int): String = {

    private lazy val len = b68Alphabet.length

    @tailrec
    def encode(v: Int, accum: List[Char]): String = {
      if(v == 0 && accum.nonEmpty) {
        accum.mkString
      } else if(v <= 1) {
        (b68Alphabet(v) :: accum).mkString
```

```
      } else {
        val div = v / len
        val mod = v % len
        encode(div, b68Alphabet(mod) :: accum)
      }
    }

    encode(value, List.empty[Char])
}
```

A3.2 Decoding from OCIb68

The algorithm for decoding from a OCIb68 encoded string to a Base 10 integer is much simpler than the encoding algorithm, and a simple table lookup approach suffices.

The following function expressed in the Scala programming language, takes any OCIb68 encoded string as the value of the named “str” argument. The function computes the resultant decoded Base10 integer.

```
def decode(str: String): Int = {
    private lazy val len = b68Alphabet.length
    val indicies = str.map(b68Alphabet.indexOf(_))
    val vs = for(i <- 0 to indicies.length - 1) yield {
      val exp = (indicies.length - i) - 1
      indicies(i) * Math.pow(len, exp).toInt
    }
    vs.reduceLeft(_ + _)
}
```

A3.3 OCIb68 Encoder/Decoder Implementations

We provide two complete Open Source implementations for encoding and decoded OCIb68:

1. A Scala implementation - https://github.com/nationalarchives/oci-tools-scala
2. A TypeScript implementation - https://github.com/nationalarchives/oci-tools-ts

APPENDIX 4. NOTES ON VOCABULARY REUSE

The underlying axiom of taking a Matterhorn RDF Model approach is that we reuse existing standardised and popular vocabularies wherever possible.

Where a suitable existing vocabulary Class or Property is not available, then the choice is to either use an existing Class or Property which is an awkward fit, or to create our own bespoke Class or Property. Bespoke Classes or Properties are only ever created as an absolute last resort, and the creation of such must be closely considered, and permission for doing so limited.

When creating our own Class or Property, we always attempt in the first instance to derive our definition from an existing Class or Property, thus to a lesser extent still following the spirit of reuse. Finally, if there is no suitable base to derive from, only must we create a new standalone Class or Property.

When creating a bespoke Class or Property, of utmost importance is the consideration of naming. One of the main benefits of reusing existing vocabularies is that users can easily recognise and infer the purpose of variously named classes and properties without having to immediately resort to their official vocabularies or documentation. To ensure the same ease of use, we favour concise, straight-forward, and descriptive names for any bespoke classes or properties.

Herein we list our bespoke classes and properties, and a brief justification of why each was created. All such classes and properties are formally defined in Appendix 7: TNA Vocabulary.

A4.1 Property *tna:created*

A property was required for holding what in TNA-CS13 terminology is called the "*Covering Dates*" of a Unit of Description. Holding the Covering Dates requires storing at least 3 distinct fields of data: *Date Text, First Date*, and *Last Date*.

Under consideration for this purpose were dct:temporal, dct:created, and time:hasTime.

It was felt that dct:temporal was not a good fit, as it indicated the time period the resource was discussing rather than the time(s) during which the resource was created.

The use of dct:created was disbarred due to the fact that it is a Data Type Property, and therefore requires a single literal value; whilst it may have been possible to encode our 3 fields into a single field with an appropriate encoding scheme (e.g. DCMI Period), it was felt that this would hugely complicated querying of this data.

The naming of time:hasTime was felt to be too generic, and lacked indication of the purpose of the time (dates), i.e. that they were concerned with the creation of the Unit of Description.

Other standard and popular vocabularies were also considered, but again a suitably descriptive object property could not be identified.

Therefore the property tna:created was created because no suitable existing property could be found. This property is derived from time:hasTime. Its name was chosen from the fact that its purpose is similar to that of dct:created, the difference being that it allows us the benefits of an object property as opposed to a data property.

See also: https://blog.adamretter.org.uk/vocabulary-reuse-part1/

A4.2 Properties *tna:classicCatalogueReference, tna:formerReferenceFromDepartment, and…*

A property was required for holding secondary identifiers. In TNA-CS13 terminology these include data elements such as "*Catalogue Reference*", "*Former Reference - Department*", and "*Former Reference - PRO*". Alongside those, we also have the need for adding some system identifiers that allow us to link the record back to various internal databases and systems, these include the ILDB Table and Primary Key, and the Discovery IAID.

Under consideration for this purpose were dct:identifier, and schema:identifier.

It was felt that dct:identifier was not a good fit, as it was already in use as the Primary Identifier for resources, and reusing it would make it difficult to distinguish between the primary and secondary identifiers.

The use of schema:identifier was disbarred due to the fact that when using a schema:propertyID to refer to the scheme of the secondary identifier, it became difficult for a user to understand its meaning and purpose without consulting ontologies and/or documentation.

Other standard and popular vocabularies were also considered, but again a suitably descriptive object property could not be identified.

As no suitable existing property or properties could be found, distinct properties were created for each type of secondary identifier. The naming of each property is expected to easily communicate its purpose (scheme) to the user, and to disambiguate it from other identifiers. Each of these secondary identifiers are derived from dct:identifier as their purpose is just that - to act as an identifier.

See also: https://blog.adamretter.org.uk/vocabulary-reuse-part2/

APPENDIX 4. TNA-CS13 DATA ELEMENTS TO OCDM PROPERTIES MAPPING

The ODCM Entity column in the table below uses the following abbreviations.

- IE-RC - Intellectual Entity - Record Concept
- IE-RD - Intellectual Entity - Record Description
- RE - Representation - Record Realisation

Note, that it is perfectly valid for there to be a mapping from a TNA-CS13 Data Element to an OCDM Property for more than one OCDM Entity. One such example of this might be *Title* which could be mapped to *dct:title* on either/both:

- IE-RD which is the current interpretation of the title for the record, but not specific to any realisation.
- RE where the title is specific to the realisation, for example, the original paper realisation may have the Title "Record about X", but a later realisation which serves as a translation into the French language could have the title "Enregistrer sur X".

TNA-CS13 Data Elements Mapping

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Summary Data Elements				
Level	IE-RD	dct:type		Value should be a URI of either: *cat:description* *cat:division* *cat:series* *cat:subseries* *cat:subsubseries* *cat:piece* *cat:item*

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Legal Status	IE-RD	premis:rightsStatus		Value should be a bNode or URI of a *premis:RightsStatus* whose *premis:basis* is typically a URI of either: *cat:public-record* *cat:non-public-record* *cat:public-record-unless-otherwise-stated (TBC - redundant after denormalisation?)* *cat:welsh-public-record* *cat:non-record-material.*
Language	RE	dct:language		Value should be URI pointing to an ISO 639-2 code.
Reference	IE-RD	tna:classicCatalogueReference		Value should be the Classic Catalogue Reference used by TNA.
Former Reference (Department)	IE-RD	tna:formerReferenceFromDepartment		Value should be the former reference used by the creating department.
Former Reference (PRO)	IE-RD	schema:identifier	schema:propertyID schema:value	Value should be a bNode of a *schema:PropertyValue* Use *schema:propertyID* = http://www.nationalarchives.gov.uk/ont.former-reference-pro
Title	IE-RD RE	dct:title		
Map Designation	IE-RD	designationOfEdition rdau:P60365		
Creator Name(s)	IE-RC IE-RD RE	dct:creator		Value should be a URI to the Agent

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Covering Dates	IE-RD	tna:created		If the Covering Dates are a single date, then the value should be a bNode of a time:Instant. If the Covering Dates are a date range(s), then the value should be a bNode of a time:ProperInterval. Either time:Instant or time:ProperInterval *should* incorporate a dct:description which holds the textual date description.
Physical Description, Extent	RE	dct:extent		
Physical Description, Form	RE	dct:medium		
Dimensions	RE	schema:height schema:width schema:depth		Value should be a bNode (or a URI if the dimensions are common to multiple records) of a *schema:Distance*
Map Scale Number	RE	hasScale rdau:P60565		
Physical Condition	RE	dct:description		
Place of Deposit	RE	dct:mediator		The value is the URI of an Agent (likely a Corporate Body).
Note	IE-RD RE	premis:note		
Access Data Elements				
Access Conditions	IE-RD	dct:accessRights	dct:abstract	Value of dct:accessRights should be a URI or bNode of a dct:RightsStatement. Value of Access Conditions should be set in a dct:abstract of the dct:RightsStatement.
Closure Type			odrl:policy	Value of ordl:policy should be a URI or bNode of an

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Closure Code				be a URI or bNode of an odrl:Policy within the dct:RightsStatement which models the Closure of the Record.
Record Opening Date				
Closure Status				
Restrictions on Use			dct:description	Value of Restrictions on Use should be set in a dct:descripton of the dct:RightsStatement.
Immediate Source of Acquisition	IE-RD	dct:provenance	rdf:type dct:subject dct:description dct:type	Value of dct:provenance should be either: a bNode with rdf:type dct:ProvenanceStatement, or URI if the Immediate Source of Acquisition is common to multiple records. Any link to an Agent from Immediate Source of Acquisition should be set as the URI in a dct:subject property of the dct:ProvenanceStatement. Any accompanying textual description should be set as the value of a dct:description property of the dct:ProvenanceStatement. The value of dct:type within the dct:ProvenanceStatemnent should be set to cat:immediate-source-of-acquisition.

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Custodial History	IE-RD RE	dct:provenance	rdf:type dct:description dct:type	Value of dct:provenance should be either: a bNode with rdf:type dct:ProvenanceStatement, or URI if the Custodial History is common to multiple records of a dct:ProvenanceStatement. The textual description of the custodial history should be set as the value of a dct:description property of the dct:ProvenanceStatement. The value of dct:type within the dct:ProvenanceStatemnent should be set to cat:custodial-history.
Accumulation Dates	IE-RD	dct:dateSubmitted		
Appraisal/Destruction Information	IE-RD	locah:appraisal		
Accruals	IE-RD	dct:accrualPolicy	dct:description	Value should be either: 1. a URI to a common dct:Policy 2. A bNode of dct:Policy with a dct:description property holding the text describing the accrual approach NOTE: In future accrual data should be cleaned up and decomposed to: dct:accrualMethod dct:accrualPeriodicity dct:accrualPolicy

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Location of Originals	RE	premis:storedAt	dct:mediator dct:description dct:type	Value of premis:storedAt should be a URI or bNode of a premis:StorageLocation. Any link to an Agent from Location of Originals should be set as the URI in a dct:mediator property of the premis:StorageLocation. Any textual description should be set as the value of a dct:description property of the premis:StorageLocation. The value of dct:type within the premis:StorageLocation should be set to cat:original.
Copies Information	RE	premis:storedAt	dct:mediator dct:description dct:type	Value of premis:storedAt should be a URI or bNode of a premis:StorageLocation. Any link to an Agent from Copies Information should be set as the URI in a dct:mediator property of the premis:StorageLocation. Any textual description should be set as the value of a dct:description property of the premis:StorageLocation. The value of dct:type within the premis:StorageLocation should be set to cat:copy
Content Data Elements				
Scope and Content	IE-RD RE	dct:abstract		
Arrangement	IE-RD RE	detailsOfLayout rdau:P60784		

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Publication Note	IE-RD RE	noteOnPublicationStatement rdau:P60128		
Unpublished Finding Aids	IE-RD	dct:isReferencedBy	dct:subject dct:title dct:description	Value of dct:isReferenceBy should be a bNode (or URI if the referencing resource is common to multiple records). The link to another Intellectual Entity (e.g. the record) or resource should be set as the URI in a dct:subject property of the dct:isReferencedBy. Any accompanying textual description should be set as the value of a dct:title and/or dct:description property of the dct:isReferencedBy.
Related Material	IE-RD	dct:relation	dct:subject dct:title dct:description dct:type	Value of dct:relation should be a bNode (or URI if the related material is common to multiple records). The link to another Intellectual Entity (e.g. the record) should be set as the URI in a dct:subject property of the dct:relation. Any accompanying textual description should be set as the value of a dct:title and/or dct:description property of the dct:relation. The value of dct:type should be set to cat:related-material

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Separated Material	IE-RD RE	dct:relation	dct:subject dct:title dct:description dct:type	Value of dct:relation should be a bNode (or URI if the separated material is common to multiple records). The link to another Intellectual Entity (e.g. the record) should be set as the URI in a dct:subject property of the dct:relation. Any accompanying textual description should be set as the value of a dct:title and/or dct:description property of the dct:relation. The value of dct:type should be set to cat:separated-material
Admin History Data Elements				
Administrative/ Biographical Background	IE-RD	dct:provenance	rdf:type dct:description dct:type	Value of dct:provenance should be either a bNode with rdf:type dct:ProvenanceStatement, or URI if the administrative/ biographical backrgound is common to multiple records of a dct:ProvenanceStatement. The textual description of the administrative/ biographical backrgound should be set as the value of a dct:description property of the dct:ProvenanceStatement. The value of dct:type within the dct:ProvenanceStatemnent should be set to cat:administrative-biographical-backrgound.
Index Terms Data Elements				
Index Terms: Corporate Names	IE-RD	dct:subject		Value should be a URI of a Corporate Body

TNA-CS13 Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Index Terms: Personal Names	IE-RD	dct:subject		Value should be a URI of a Person
Index Terms: Places	IE-RD	dct:subject		Value should be a URI of a Location
Index Terms: Subjects (*DEPRECATED*)	IE-RD	dct:subject		Value should be the URI of a term from a controlled taxonomy

A4.1 Mapping a TNA-CS13 Department Level Description to OCDM

Example TNA-CS13 Department Level Description

TNA-CS13 Data Element	Value

TBC - OCDM Graph Illustration of Department level description

A4.2. Mapping a TNA-CS13 Piece Level Description to OCDM

TBC

A4.3. Mapping a TNA-CS13 Item Level Description to OCDM

TBC

APPENDIX 5. DRI CATALOGUE PROPERTIES TO OCDM PROPERTIES MAPPING

TBC

APPENDIX 6. TNA-CG07 AUTHORITY TERMS TO OCDM PROPERTIES MAPPING

The ODCM Entity column in the table below uses the following abbreviations.

- IE-AC - Intellectual Entity - Authority Concept
- IE-AD - Intellectual Entity - Authority Description

Note, that it is perfectly valid for there to be a mapping from a TNA-CG07 Authority Term to an OCDM Property for more than one OCDM Entity.

A6.1 TNA-CG07 Corporate Bodies Data Elements

TNA-CG07 Corporate Bodies Data Elements Mapping

TNA-CG07 Corporate Bodies Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Name	IE-AD	rdaa:P50032		
Variant	IE-AD	rdaa:P50025		
Remit and Function	IE-AD	rdaa:P50022		
Start Date	IE-AD	rdaa:P50037	time:inXSDgYear	Value should be a bNode of a time:Instant and rdac:C10010 (RDA Timespan).
Uncertain Start Date Code			rdat:P70045	
End Date	IE-AD	rdaa:P50038	time:inXSDgYear	Value should be a bNode of a time:Instant and rdac:C10010 (RDA Timespan).
Uncertain End Date Code			rdat:P70045	
Validation	IE-AD	rdau:P61101		
Jurisdiction	IE-AD	rdaa:P50425		
Place of Deposit	IE-AD	todo:is-place-of-deposit		
National Place of Deposit	IE-AD	tna:archonCode		

TNA-CG07 Corporate Bodies Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Authority Status	IE-AD	rdau:P61160		Value should be a URI of either: *cat:soi-approved-completed* *cat:soi-approved-incomplete* *cat:soi-rejected* *cat:soi-candidate* *cat:soi-invisible*

A6.2 TNA-CG07 People Data Elements

TNA-CG07 People Data Elements Mapping

TNA-CG07 People Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Surname	IE-AD	rdaa:P50291		
Forename	IE-AD	rdaa:P50292		
Additional Elements of Name	IE-AD	rdaa:P50115		
Pre-Title	IE-AD	foaf:title		
Title	IE-AD	rdaa:P50110		
Gender Indicator	IE-AD	rdaa:P50116		
Birth Date	IE-AD	rdaa:P50121	time:inXSDgYear	Value should be a bNode of a time:Instant and rdac:C10010 (RDA Timespan).
UncertainBirth Date Code			rdat:P70045	
Death Date	IE-AD	rdaa:P50120	time:inXSDgYear	Value should be a bNode of a time:Instant and rdac:C10010 (RDA Timespan).
Uncertain End Date Code			rdat:P70045	
Biographical History	IE-AD	rdaa:P50113		
Validation	IE-AD	rdau:P61101		

TNA-CG07 People Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Authority Status	IE-AD	rdau:P61160		Value should be a URI of either: *cat:soi-approved-completed* *cat:soi-approved-incomplete* *cat:soi-rejected* *cat:soi-candidate* *cat:soi-invisible*

A6.3 TNA-CG07 Places Data Elements

TNA-CG07 Places Data Elements Mapping

TNA-CG07 Places Data Element	OCDM Entity(s)	OCDM Property	OCDM Sub-Property	Notes
Name	IE-AD			
Parish	IE-AD			
Town	IE-AD			
County	IE-AD			
Country	IE-AD			
Grid OR Lat/Long	IE-AD			
Start Date	IE-AD		time:inXSDgYear	
End Date	IE-AD		time:inXSDgYear	
Place History	IE-AD			
Validation	IE-AD	rdau:P61101		
Authority Status	IE-AD	rdau:P61160		Value should be a URI of either: *cat:soi-approved-completed* *cat:soi-approved-incomplete* *cat:soi-rejected* *cat:soi-candidate* *cat:soi-invisible*

APPENDIX 7. ODRL EXAMPLES

The following examples in RDF Turtle format demonstrate how to model TNA's existing records access ("*Closure*") using W3C ODRL.

```
cat:read-description
        a odrl:Action ;
        odrl:includedIn odrl:read ;
        dct:description "The action of reading the description of a Document" ;
.

cat:read-document
        a odrl:Action ;
        odrl:includedIn odrl:read ;
        odrl:implies cat:read-description ;                                                    # NOTE:
Reading a document implies reading description
        dct:description "The action of reading a Document" ;
.

cat:base-records-policy
        a odrl:Set ;
        odrl:profile http://www.w3.org/ns/odrl/2/core ;
        odrl:assigner cat:TNA ;
        dct:creator cat:TNA ;
        dct:description "Base policy for records of The National Archives";
.

cat:read-document-policy
        a odrl:Offer ;
        dct:creator cat:TNA ;
        dct:description "Policy for reading the record";                                       # e.g. Open
Document, Open Description
        odrl:inheritFrom cat:base-records-policy ;
        odrl:action cat:read-document ;
.

cat:read-description-policy
        a odrl:Offer ;
        dct:creator cat:TNA ;
        dct:description "Policy for reading the description of a record";         # e.g. Closed Document,
Open Description
        odrl:inheritFrom cat:base-records-policy ;
        odrl:action cat:read-description ;
.


# Example for Record10 which is "Open Immediatedly", and therefore "Open Document, Open Description"
cat:record10-policy
        a odrl:Offer ;
        dct:description "Open Immediately" ;
        odrl:inheritFrom cat:read-document-policy ;
        odrl:permission [
                a odrl:Permission ;
                odrl:target cat:Record10 ;
```

```
        ] ;
.


# Example for Record20 which is "Open on Transfer", and therefore "Open Document, Open Description"
cat:record20-policy
        a odrl:Offer ;
        dct:description "Open on Transfer" ;
        odrl:inheritFrom cat:read-document-policy ;
        odrl:permission [
                a odrl:Permission ;
                odrl:target cat:Record20 ;
        ] ;
.

# Example for Record30 which is "Closed whilst access is reviewed" and therefore "Closed Document, Closed
Description"
cat:record30-policy
        a odrl:Offer ;
        dct:description "Closed whilst access is reviewed" ;
        odrl:inheritFrom cat:read-document-policy ;
        odrl:prohibit [
                a odrl:Prohibition ;
                odrl:target cat:Record30 ;
        ] ;
.

# Example for Record40 which is "Closed for review in" and therefore "Closed Document, Closed Description"
cat:record40-policy
        a odrl:Offer ;
        dct:description "Closed, for review in 2025" ;                          # TODO is there a better
way to hold the year?
        odrl:inheritFrom cat:read-document-policy ;
        odrl:prohibit [
                a odrl:Prohibition ;
                odrl:target cat:Record40 ;
        ] ;
.

# Example for Record50 which is "Closed until" and considered "Closed Document, Closed Description"
cat:record50-policy
        a odrl:Offer ;
        dct:description "Closed until 2035" ;                                                  # TODO is there a
better way to hold the year?
        odrl:inheritFrom cat:read-document-policy ;
        odrl:prohibit [
                a odrl:Prohibition ;
                odrl:target cat:Record50 ;
                odrl:constraint [
                        a odrl:Constraint ;
                        dct:description "Record Opening Date" ;
                        odrl:leftOperand odrl:dateTime ;
                odrl:operator odrl:le ;
                odrl:rightOperand "2035-01-01"^xsd:date ;
                ] ;
        ] ;
.

# Example for Record60 which is "Closed until" and considered "Closed Document, Open Description"
cat:record60-policy
        a odrl:Offer ;
```

```
        dct:description "Closed until 2099" ;                                                   # TODO is there a
better way to hold the year?
        odrl:inheritFrom cat:read-document-policy ;
        odrl:conflict perm ;
        odrl:prohibit [
                a odrl:Prohibition ;
                odrl:target cat:Record60 ;
                odrl:constraint [
                        a odrl:Constraint ;
                        dct:description "Record Opening Date" ;
                        odrl:leftOperand odrl:dateTime ;
                odrl:operator odrl:le ;
                odrl:rightOperand "2099-01-01"^xsd:date ;
                ] ;
        ] ;
        odrl:permission [
                a odrl:Permission ;
                dct:description "Open Description" ;
                odrl:action cat:read-description-policy ;                       # TODO does this override
the prohibition of  cat:read-description-policy which is inheited above, as we also used `odrl:conflict perm`
above?
                odrl:target cat:Record60 ;
        ] ;
.


cat:A
  dct:identifier
  .

cat:B
  edm:isNextInSequence cat:A
  .

# Example for Record70 which is "Closed for" and considered "Closed Document, Closed Description"
cat:record70-policy
        a odrl:Offer ;
        dct:description "Closed for 30 years" ;                                                 # TODO is there a
better way to hold the number of years?
        odrl:inheritFrom cat:read-document-policy ;
        odrl:prohibit [
                a odrl:Prohibition ;
                odrl:target cat:Record70 ;
                odrl:constraint [
                        a odrl:Constraint ;
                        odrl:leftOperand "25y"^xdt:yearMonthDuration ;                  # TODO This is
calculated from fn:year-from-date(fn:current-date()) - record.end-date
                        odrl:operator odrl:le ;
                        odrl:rightOperand "30y"^xdt:yearMonthDuration ;                 # TODO is this 30
years?
                ] ;
        ];
.




                odrl:constraint [
                        dct:description "Record Opening Date" ;
                        odrl:leftOperand odrl:dateTime ;
                odrl:operator odrl:le ;
                odrl:rightOperand "2099-01-01"^xsd:date ;
```

```
                ] ;
        ] ;
.
```

APPENDIX 8. TNA VOCABULARY

TODO

A8.1. Legal Status Concepts

Legal Status - Vocabulary Concepts

OCDM Concept	Definition	Type(s)	Relationships
asset-legal-status	The legal status of an asset in the catalogue	skos:Concept premis:Statute	Related - http://www.legislation.gov.uk/ukpga/1967/44/contents
public-record	A Public Record as defined by the Public Records Act 1967	skos:Concept premis:InstitutionalPolicy	Broader - asset-legal-status
non-public-record	A Record which is outside the jurisdiction of the Public Records Act 1967	skos:Concept premis:InstitutionalPolicy	Broader - asset-legal-status
public-record-unless-otherwise-stated	A Record Set that contains Public Records, unless individual Records within that set are marked otherwise	skos:Concept premis:InstitutionalPolicy	Broader - asset-legal-status
welsh-public-record	A Welsh Public Record as defined by the Public Records Act 1967	skos:Concept premis:InstitutionalPolicy	Related - https://www.legislation.gov.uk/ukpga/2006/32/contents Broader - asset-legal-status

OCDM Concept	Definition	Type(s)	Relationships
non-record-material	Material for which no official designation as either (definitely) Public Records, (definitely) Not Public Records or (definitely) Welsh Public Records has been made or is deemed necessary.	skos:Concept premis:InstitutionalPolicy	Broad Match - non-public-record Broader - asset-legal-status

A8.1.1 Legal Status SKOS Vocabulary

```
cat:asset-legal-status rdf:type skos:Concept premis:Statute ;

  skos:prefLabel "Asset Legal Status" ;

  skos:definition "The legal status of an asset in the catalogue" ;

  skos:scopeNote "This is typically related to how an asset is classified in relation to the Public Records Act 1967" ;

  dct:relation <http://www.legislation.gov.uk/ukpga/1967/44/contents> ;

  dct:created "2023-03-28+02:00"^^xsd:date ;

  skos:inScheme cat:omegaVocabulary

  .


cat:public-record rdf:type skos:Concept, premis:InstitutionalPolicy ;

  skos:prefLabel "Public Record" ;

  skos:definition "A Public Record as defined by the Public Records Act 1967" ;

  skos:scopeNote "The legal status for an asset which is a Public Record (as defined by the Public Records Act 1967)" ;

  dct:relation <https://www.legislation.gov.uk/ukpga/Eliz2/6-7/51/section/10> , <https://www.legislation.gov.uk/ukpga/Eliz2/6-7/51/schedule/FIRST/paragraph/2> , <https://www.legislation.gov.uk/ukpga/Eliz2/6-7/51/schedule/FIRST/paragraph/4> ;

  skos:broader cat:asset-legal-status ;
```

```
  dct:created "2023-03-28+02:00"^^xsd:date ;

  skos:inScheme cat:omegaVocabulary

  .


cat:non-public-record rdf:type skos:Concept, premis:InstitutionalPolicy ;

  skos:prefLabel "Non-Public Record" ;

  skos:definition "A Record which is outside the jurisdiction of the Public Records Act
1967" ;

  skos:scopeNote "The legal status for an asset whish is neither a, public record, or a
welsh public record" ;

  skos:broader cat:asset-legal-status ;

  dct:created "2023-03-28+02:00"^^xsd:date ;

  skos:inScheme cat:omegaVocabulary

  .


cat:public-record-unless-otherwise-stated rdf:type skos:Concept,
premis:InstitutionalPolicy;

  skos:prefLabel "Public Record (unless otherwise stated)" ;

  skos:definition "A Record Set that contains Public Records, unless individual Records
within that set are marked otherwise" ;

  skos:scopeNote "Used with regards to TNA-CS13 at higher than 'Record level', to
indicate that records at lower-levels are 'Public Records' unless they explicitly state
otherwise by overriding the Legal Status property" ;

  skos:broadMatch cat:public-record ;

  skos:broader cat:asset-legal-status ;

  dct:created "2023-03-28+02:00"^^xsd:date ;

  skos:inScheme cat:omegaVocabulary ;

  skos:editorialNote [
```

```
    rdf:value "This is a legacy concept inheirted from how ILDB/PROCat functioned in practice; it is defined in TNA-CS13. This concept may no longer be needed if we de-normalise the legal status down the TNA-CS13 hierarchy" ;

    dct:creator cat:AdamRetter ;

    dct:date "2023-03-28"^^xsd:date

  ]

  .


cat:welsh-public-record rdf:type skos:Concept, premis:InstitutionalPolicy ;

  skos:prefLabel "Welsh Public Record" ;

  skos:definition "A Welsh Public Record as defined by the Public Records Act 1967" ;

  skos:scopeNote "The legal status for an asset which is a Welsh Public Record (as defined by the Public Records Act 1967)" ;

  dct:relation <https://www.legislation.gov.uk/ukpga/Eliz2/6-7/51/schedule/FIRST/paragraph/5> , <https://www.legislation.gov.uk/ukpga/2006/32/contents> ;

  skos:broader cat:asset-legal-status ;

  dct:created "2023-03-28+02:00"^^xsd:date ;

  skos:inScheme cat:omegaVocabulary

  .


cat:non-record-material rdf:type skos:Concept, premis:InstitutionalPolicy ;

  skos:prefLabel "Non-Record Material" ;

  skos:definition "Material for which no official designation as either (definitely) Public Records, (definitely) Not Public Records or (definitely) Welsh Public Records has been made or is deemed necessary." ;

  skos:scopeNote "At the discresion of the archivist." ;

  skos:broadMatch cat:non-public-record ;

  skos:broader cat:asset-legal-status ;

  dct:created "2023-03-28+02:00"^^xsd:date ;
```

```
  skos:inScheme cat:omegaVocabulary ;

  skos:editorialNote [

    rdf:value "This is a legacy and uncomfortable concept (as it is not a Legal Status) inheirted from how ILDB and possibly use to describe 'unnumbered records'. Further clarification on this concept will be supplied by Jenny Bun, and discussions with Andrew Janes." ;

    dct:creator cat:AdamRetter ;

    dct:date "2023-03-28"^^xsd:date

  ] ;

  skos:editorialNote [

    rdf:value "An Updated skos:definition has been provided by Jenny Bun, and Andrew Janes." ;

    dct:creator cat:AdamRetter ;

    dct:date "2023-03-31"^^xsd:date

  ]

  .
```