



The CARARE metadata schema, v.1.1

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Contents

| | |
|---|----|
| 1. Introduction..... | 2 |
| 2. Outline of the CARARE schema | 4 |
| 2.1 Outline of a CARARE record | 4 |
| 3. Global wrappers | 5 |
| 3.1 Heritage Asset Identification Set | 5 |
| 3.2 Digital Resource | 7 |
| 3.3 Activity | 9 |
| 3.4 Collection information..... | 10 |
| 4. Global types | 11 |
| Relations | 11 |
| 4.2 Record information..... | 12 |
| 4.3 Rights..... | 12 |
| 4.4 Appellation | 13 |
| 4.4 Dimensions | 13 |
| 4.5 Temporal..... | 13 |
| 4.6 Spatial | 14 |
| 4.7 Address | 15 |
| 4.8 Actors..... | 15 |
| 4.9 Contacts | 15 |
| 4.10Description..... | 15 |
| 4.11 Publication statement..... | 16 |
| 5. Elements Cardinality..... | 17 |
| 6. References..... | 28 |

1. Introduction

One of CARARE's main objectives is to ensure interoperability between the native metadata held by heritage organisations and the metadata used by Europeana. The project has established this metadata schema which will be used to mediate between the original data and the standards and schemas defined by Europeana.

The CARARE metadata schema builds on existing standards and best practice from a number of different countries in Europe and the rest of the world including:

CIDOC Archaeological Sites Core Data Index

The Archaeological Sites Core Data Index was established by an international working group with the aim of facilitating communications between the national and international bodies responsible for the archaeological heritage, to assist the development of record systems and to facilitate research using archaeological site data.

Core Data Index to Historic Buildings and Monuments of the Architectural Heritage

Core Data Index as the "Recommendation on the co-ordination of documentation methods and systems related to historic buildings and monuments of the architectural heritage" was adopted by the Committee of Ministers of the Council of Europe on 11 January 1995. The basic aim of the Core Data Index is to make it possible to classify individual buildings and sites by name, location, functional type, date, architect or patron, building materials and techniques, physical condition, and protection status. It is not an end in itself, but a starting point to further information held in databases, documentation centres, and elsewhere that is necessary for the detailed understanding and care of individual monuments.

CIDOC CRM

The CIDOC Conceptual Reference Model (CIDOC CRM) is the result of over 10 years work by the CIDOC Documentation Standards Working Group and CIDOC CRM Special Interest Group, and is an ISO standard (ISO 21127 (2005)).

The CIDOC CRM is a formal standard that defines documentation concepts for the cultural heritage and the relationships between those concepts. It provides a flexible standard framework that cultural heritage data can be mapped to and provides a framework for semantic interoperability.

MIDAS Heritage

MIDAS Heritage is a data standard for information about the historic environment which was developed by English Heritage in collaboration with the UK Forum for Information Standards in Heritage and a number of heritage organisations in the UK building on the CIDOC Archaeological Sites Core Data Index and the CIDOC CRM. MIDAS Heritage covers the three main themes:

- **Heritage assets** – buildings, archaeological monuments, landscape areas, shipwreck sites, find-spots, artefacts and ecofacts.
- **Activities** – Field investigation, Research and Analysis, Management Activity, Casework and Consultation, Designation and Protection and also Historical events.
- **Information sources** – bibliographic sources, archive materials, management documentation, and narratives and syntheses (e.g. text plus images for educational purposes).

and the following supporting information:

- **Spatial information** – Location and map information

- **Temporal information** – Date and period
- **Actor information** – people, organisations and their roles

POLIS DTD

The POLIS DTD was produced as part of an EU funded Greek national research project to develop an interoperability framework for the cultural heritage. A series of DTDs were produced for different applications (including monument inventories, museums, archives, bibliographies etc) each derived from the CIDOC CRM. The Monument Inventory DTD was closely related to the core data index for archaeological sites.

LIDO

LIDO – Lightweight Information Describing Objects is a metadata harvesting schema developed by the ATHENA Project for harvesting museum data into the service environment of Europeana. LIDO is based on CDWA Lite, MuseumDat, the CIDOC CRM and SPECTRUM. LIDO is made up of a nested set of ‘wrapper’ and ‘set’ elements which structure records and contain ‘data elements’ which hold the information that is being harvested and delivered to the user of the service environment. There are 7 areas in a LIDO record for an object:

- Object identification
- Object classification
- Relations of the object
- Events – in which the object has taken part
- Rights work – information about the rights associated with the object, metadata and digital surrogate
- Record – basic information about the record
- Resource – information about the resource being supplied to the service environment (Europeana)

GIS (Geographic Information System) metadata

MIDAS Heritage complies with the UK GEMINI Discovery Metadata Standard, which specifies a set of metadata elements for describing geographic datasets (which is used by the UK’s GIGateway™ metadata service run by the Association for Geographic Information). English Heritage has work underway to implement the INSPIRE directive for GIS metadata before the end of 2010.

ISO 8601

All dates in the CARARE schema conform with ISO 8601, i.e. they are specified largest temporal term first and according to the Gregorian calendar; e.g. 1981-04-05.

The CARARE schema builds on these standards and also the work of the members of the CARARE metadata working group, the DCU metadata team and the English Heritage Data Standards Unit including: Maria Emilia Masci, Oliver Mamo, Börje Justrell, Sven Ole Clemens, Vassilis Tzouvaras, Dimitris Gavrilis, Stavros Angelis, Constantia Kakali, Giannis Tsakonas, Panos Constantopoulos, Costis Dallas, Sólborg Una Pálsdóttir, Effie Patsatzi, Lena Inger Larsen, Daniel Pletinckx, Nasos Drosopoulos, Vykintas Vaitkevičius, Rimvydas Laužikas, Phil Carlisle, Gillian Grayson and Stephen Stead.

2. Outline of the CARARE schema

It is important to note that this is a harvesting schema intended for delivering metadata to the CARARE service environment of an organisation's online collections, monument inventory database and digital objects. It does not support activities such as monument management and protection. The strength of the schema lies with its ability to support the full range of descriptive information about monuments, building, landscape areas and their representations.

The schema is an application profile based on MIDAS Heritage and the POLIS DTD for monument inventories. MIDAS Heritage is a detailed standard intended for the full documentation of all aspects of heritage management not all of which are relevant to the CARARE service environment. The CARARE schema's focus is on the detailed description of monuments, events in which the monument has been involved and resources which represent and provide sources of information about the monument following the structure of the core data index for archaeological sites and the POLIS DTD enhanced by the expressiveness of LIDO.

The CARARE schema includes the Digital Resource set which covers the information needed for the digital resources being made accessible to the CARARE and Europeana service environment, this set is based on the Europeana Semantic Elements and LIDO.

2.1 Outline of a CARARE record

Conceptually the CARARE record is focussed on a heritage asset and its relations to digital resources, activities and to collection information. The top level elements in a CARARE record are:

CARARE Wrap – The CARARE schema wrap, it wraps one or many CARARE records.

CARARE – The CARARE start element. It wraps the Heritage Asset with the other information resources (Collection information, Digital Resource and Activity):

Heritage asset – holds the metadata for a monument, including descriptive and administrative metadata. Zero or one.

Digital resource – holds the metadata about a digital resource. One or more.

Collection information – holds the collection-level description. Zero or more.

Activity – holds the metadata about an event or activity. Zero or more.

Heritage assets are “first-class” citizens in the CARARE schema and it is strongly recommended that each CARARE record includes one heritage asset but this is not mandatory. But it is mandatory to include at least one digital resource in a CARARE record – in this way the schema accommodates historical images of monuments known to be from a region, but whose exact location is no longer certain.

We recommend the inclusion of collection information in CARARE records to provide the context for the collection. The schema also allows for the option of providing information about Activities.

3. Global wrappers

3.1 Heritage Asset Identification Set

The CARARE information set for heritage assets is based on the MIDAS Heritage standard, however the elements are compatible with the POLIS DTD and the CIDOC Core Data Index for Archaeological Sites.

The scope of this information set includes archaeological monuments, historic buildings, industrial monuments, archaeological landscape areas, shipwreck, artefacts and ecofacts. The ability to create relations between heritage asset records allows the relationships between individual monuments that form parts of a larger complex to be expressed, for example the Parthenon, Propylaea and the Erechtheum are part of the Acropolis of Athens.

Please note that global types are defined in section 11. The heritage asset information set includes:

Record information (source = MIDAS) (global) – The ID, the language of the metadata, creation information and other metadata describing the record. The ID element of this information block holds the ID assigned by the content provider and is mandatory, see section 8 below.

Appellation (global) – This is the name of the heritage asset and the identifier (ID) and may be repeated if, for example, a monument is known by more than one name or has more than one ID number, If the heritage asset has a name in an alternate language the XML:lang attribute should be used. The preferred/alternate attribute may be used to indicate which name is preferred. The element will be repeated to add a unique ID for the CARARE repository which will be generated by CARARE on ingest.

Description (source = MIDAS) (global) – of the features of the archaeological monuments, historic buildings, industrial monuments, archaeological landscape areas, shipwreck, artefact or ecofact. This element may be repeated, for example in cases where there is a both a short summary and a full description.

Actors (source = MIDAS) (global) – the actors involved with this monument, for example famous inhabitants, the architect etc. May be repeated.

Designations (source = MIDAS);

This is information about any designations for a monument or building which provide it with protection in law. There may be more than one designation.

- Protection type – the type of designation or protection.
- Grade – the grade or level of protection.
- Date from – the calendar date from which the protection came into force.
- Date to – the calendar date until which the monument is protected
- Display date – this is a text element to allow for a descriptive date, e.g. '1950s'.

Conditions (source = MIDAS);

This is information about the condition of a monument or building. The element is repeatable.

- Condition – the observed condition (e.g. good, fair, bad, poor, part destroyed, under restoration.)

- Condition Assessment - A detailed assessment of the condition of a Heritage Asset and any treatment required and an estimation of the percentage of the monument affected.
- Condition Date – the date when the assessment of condition was made. Free text.
- Display date – this is a text element to allow for a descriptive date, e.g. ‘1950s’.
- Relations – to an associated event/activity

Characters (source = MIDAS);

This is a set of index information to describe the character of the monument

- **Heritage asset type** (source = MIDAS) – classification of the monument, building, landscape feature, artefact or ecofact primarily with respect to its function or use, e.g. house. Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
 - Term
 - Namespace – this is the name/location of the controlled vocabulary from which the term is taken.
- **Temporal** (source = MIDAS) (Global) (see section 11)
- **Materials** (source = MIDAS) – the basic materials of which a monument is composed, e.g. brick, stone, tile. Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
- **Inscriptions** (source = MIDAS) – text inscribed on a monument or building, if any. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred. The type of inscription may be indicated using an attribute. Use of a controlled vocabulary to indicate the type of inscription is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
- **Dimensions** (source = MIDAS, LIDO)
 - **Extent** – this is to note the part of the heritage asset being measured, e.g. Base.
 - **Measurement type** – e.g. height, length, width, depth, shape (e.g. oval)
 - **Units** – e.g. metres, centimetres
 - **Scale**
 - **Value** - e.g. 150. The valuetype attribute allows the accuracy of the measurement to be indicated (exact, approximate)
- **Craft** (source = MIDAS) – this is a set of information to describe shipwrecks if any
 - Placeofregistration – the name of the place where the ship was registered
 - Nationality – of the ship
 - Constructionmethod – the method by which the ship was constructed, e.g. clinker,
 - Propulsion – the means of propulsion of the ship, e.g. steam, sail etc.
 - Lastjourneydetails – Details about the last journey of the ship
 - Departure – Port of departure
 - Destination – Port of destination
 - Cargo – the cargo the ship was carrying, may be repeated.

- **Mannerofloss** – a description of how the ship was lost, e.g. ‘ran aground’.
- **Dateofloss** – the date when the ship was lost. Free text.

Repository location (source = LIDO) – identification of the institution with custody of the artefact and possibly the current location.

Spatial (source = MIDAS) (Global) (see section 11)

This is information about the place at which the heritage asset is located, included named places, postal address, the map coordinates and geometry of the heritage asset.

References – these are sources of information about the heritage asset in publications and archival sources (for example, photographs, drawings, plans, bibliographic references etc.). Do not include the digital objects (image, text, video, audio, 3D model, etc.) which your organisation is making accessible to Europeana – these should be described as Digital Resources, not References. Source = MIDAS + DCMI Terms. The information includes:

- **Record information** (source = MIDAS) (Global)
- **Appellation** – the ID and name given to the information source.
- **Actors** (source = MIDAS) (Global) – (creator, author, contributor, editor, etc.)
- **Type** (archive, file, record, book, chapter, article etc.) Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
- **Medium** (source = DCMI Terms) – the medium or physical carrier of the resource.
- **Extent** (source = DCMI Terms) – the size or extent of the resource
- **Subject** (source = DCMI Terms) – the topic of the resource. Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
- **Rights** (source = MIDAS)
- **Publication statement** (Global) (see section 11)
- **Note** (source = MIDAS) (Global)
- **Relations** – relations of the reference

Relations – of the heritage asset to other heritage assets, resources, events etc.

3.2 Digital Resource

These are digital resources (image, text, video, audio, 3D model) that are being made accessible to the service environment (e.g. CARARE, Europeana). Use this to describe those digital objects which your organisation is making accessible to Europeana to represent a heritage asset (use Reference under Heritage Asset to describe other sources of information about the asset, e.g. bibliographic references or analogue representations of the object). Source = Europeana Data Model + LIDO + MIDAS + DCMI Terms.

The information set includes:

Record information (source = MIDAS) (Global) - The ID, language, creation information and other metadata describing the record. The ID element of this information block holds the ID assigned by the content provider, cf. section 8.

Appellation – the ID and the name given to the information source (see section 11).

Actors – The actors involved in the creation of a digital resource

Format (source = DCMI Terms) – the file format of the resource. Recommended best practice is to use a controlled vocabulary such as the list of Internet Media Types (MIME).

Format Details (source = DCMI Terms) – Additional information about the file or its production that could be of use in selecting an appropriate viewer for the resource, such as specific codecs used.

Medium (source = DCMI Terms) – the medium or physical carrier of the resource.

Extent (source = DCMI Terms) – the size or extent of the resource, including the unit of measurement.

Spatial (source = DCMI Terms) – the spatial characteristics of the digital resource (as opposed to the heritage asset it might represent).

Subject (source = DCMI Terms) – the topic of the resource. Use of a controlled vocabulary such as Getty Arts and Architecture thesaurus is recommended, and the vocabulary used may be indicated using an attribute.

Temporal (source = MIDAS) (Global) – use for dates associated with the topic of the resource, e.g. for digitised copies of historic photographs use for the date when the original photograph was taken (the date of the view of the monument) (see section 11).

Publication statement (see section 11)

Type (source = DCMI Terms) – The nature or genre of the resource. Use of the DCMI controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute.

Description (source = MIDAS) (Global) – The description of the resource, e.g. describe the view of the monument.

Note (source = MIDAS) (Global)

Created (source = DCMI Terms) – this is the date when the resource was created

Provenance (source = DCMI Terms) – A statement of any changes in ownership and custody of the resource since its creation that are significant for its authenticity, integrity, and interpretation.

Language (source = DC) – use for the language of the resource, e.g. the language sub-titles or a voice-over in a movie or a Virtual Reality model of a monument. Specified (like the xml:lang attribute) using ISO 639-1:2002, i.e. standard two letter language codes (en, fr, etc.).

Link (source = LIDO) – the URL of the resource. A reference to the digital object on the content provider's web site in the best available resolution/quality (i.e. a link to the resource as a text, image, sound, or video file, **not** to the webpage that contains it).

Object (source = Europeana) – A URL to a thumbnail. The data given here will allow the automatic generation of a thumbnail by Europeana for its functionality.

IsShownAt (source = ESE v3.3) – A URL to the digital object on the content provider's website in its full information context (i.e. a link to the webpage that contains the digital object and contextual information).

Resource metadata location (source = LIDO) – pointer to other information about the resource making the resource available

Relations – to heritage assets, other resources or to references.

Rights (source = MIDAS) – the rights associated with the digital object itself (copyright, access rights, reproduction rights).

3.3 Activity

This is information about the events or activities that the monument has taken part in, for example: Field investigation; Research and analysis; Creation; Change in use; Historical events, etc. Source = MIDAS + POLIS DTD.

The information includes:

Record information (source = MIDAS) – The ID, language, creation information and other metadata describing the record. The ID element of this information block holds the ID assigned by the content provider, cf. section 8.

Appellation (source = MIDAS) (global) – This is the name of the event.

Description (source = MIDAS) (global) – of the event or activity which took place.

Actors (source = MIDAS) (global) – the people or organisations involved in this event, may be repeated.

Event type (source = MIDAS – classification of the type of event or activity which took place, e.g. survey, archaeological excavation, rebuilding. Use of a controlled vocabulary is recommended.

- Term
- Namespace – this is the name/location of the controlled vocabulary from which the term is taken.

Temporal (source = MIDAS) (Global) – the date or time span of the event.

Spatial (source = MIDAS) (Global) – the location or area covered by the event.

Assessments (source = MIDAS) – assessments made of the monument during the event, e.g. of the condition of the monument. Use of a controlled vocabulary is recommended.

- Term
- Namespace – this is the name/location of the controlled vocabulary from which the term is taken.

Event method (source = LIDO) – the method by which the event is carried out

Materials and techniques used (source = LIDO) – the materials and/or techniques used during the event. Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.

Relations – of the event to other events, references, resources etc.

3.4 Collection information

The following elements provide a collection level description of the resources being harvested

- Title – the title of the collection. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.
- Keywords – for the collection. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. Use of a controlled vocabulary such as Getty Arts and Architecture Thesaurus is recommended, and the vocabulary used may be indicated using an attribute.
- Contacts – for the collection
- Rights – associated with the collection as a whole
- Source – organisation that is the source of the collection
- Language – of the metadata. Specifies the default language of the records in the collection; deviations in particular records are specified in the record metadata, and deviations in particular elements are specified using the xml:lang attribute where allowed. Specified (like the xml:lang attribute) using ISO 639-1:2002, i.e. standard two letter language codes (en, fr, etc.).
- Statement – free text. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.
- Creation – information about how the resources being harvested were collected includes:
 - Created on – when the collection was created
 - Query - The query used to extract the data.
- Coverage – of the collection
 - Temporal – general temporal coverage of the collection
 - Spatial – general spatial coverage of the collection, e.g. the country covered.

4. Global types

The following types are used globally across the CARARE schema to define its elements.

4.1 Relations

This is information about the relations between heritage assets, events or resources and other entities

- The source of the relation (the ID of the heritage asset, event or digital resource etc.)
- The type of relation, for example 'is successor of', 'is next in sequence', 'has part' (inverse relations are inferred for example if the source of the relation has part, the target of the relation is part of the source).
- The target of the relation (the ID of the related heritage asset, event or resource)

The relations which are included are as follows:

- Is Derivative Of – a version of another resource
- Has Derivative
- Is Next In Sequence – the ordered parts of a resource, e.g. the pages in a book or an ordered sequence of 3D models showing the change of a monument over time.
- Is Previous in Sequence
- Is Related To – a general relationship between objects
- Is Representation Of – associates an information resource to the object that it represents, e.g. a digital image is a representation of the monument which is the target of the relation. We use it in the CARARE schema to associate a heritage asset and a Digital Resource
- Has Representation
- Is Successor Of – the relation between the continuation of a resource and that resource, e.g. a church is successor of an earlier church on the same site.
- Occurred At – associates an event to the smallest known time span that overlaps with the occurrence of that event.
- Happened At – relates a place to the events which happened at that place.
- Was Present At – this relation associates the people, things or information sources with the Event that they were present at.
- Has Part – used for objects that incorporate other objects, e.g. a monument made up of smaller monuments or a site with a number of monuments.
- Is Part of

Additional CARARE properties:

- hasEvent – associates a heritage asset with an Activity.
- Is Replica of – used for heritage assets that replicate other heritage assets, including scale models.
- Is In Front Of – a spatial relationship signifying the relative position of one monument to another.
- Is Behind – a spatial relationship signifying the relative position of one monument to another.
- Is Above – a spatial relationship signifying the relative position of one monument to another.
- Is Below – a spatial relationship signifying the relative position of one monument to another.

- Is North Of – a spatial relationship signifying the relative position of one monument to another.
- Is South Of – a spatial relationship signifying the relative position of one monument to another.
- Is East Of – a spatial relationship signifying the relative position of one monument to another.
- Is West Of – a spatial relationship signifying the relative position of one monument to another.
- Same As (source = OWL) – indicates that the two participants in the relation actually refer to the same thing.

4.2 *Record information*

Basic administrative information about the record:

- ID – i.e. the local ID number in the content providers' information system; it is mandatory to provide an ID which must be unique within the collection; but the id may follow any schema.
- Source – of the record (the name of the organisation that maintains the record)
- Country – in which the head office of the organisation which maintains the record is based.
- Creation – when created and who by;
 - Actor
 - Date
- Update – the date of the last update to the record and who by;
 - Actor
 - Date
- Language (of the metadata record). Specifies the default language of the record; deviations in particular elements are specified using the xml:lang attribute where allowed. Specified (like the xml:lang attribute) using ISO 639-1:2002, i.e. standard two letter language codes (en, fr, etc.).
- Rights – to the metadata
- Keywords – for the record. CARARE will add general subject keywords such as archaeology, architecture or archaeological sites to each record. The element will be repeated using the XML:lang attribute to indicate the languages in which the keyword is available.

4.3 *Rights*

Information about the rights associated with the object, metadata and the digital surrogate being harvested into the service environment based on MIDAS Heritage. The information includes:

- Copyright
 - Rights holder;
 - Rights dates;
 - Credit line (statement)
- Access rights
 - Granted to
 - Conditions
 - Date from
 - Date to
 - Statement
- Reproduction rights

- Statement
- Contacts
- Fees
- License – a URI indicating a license or conditions for the use of the object or data, e.g. a Creative Commons license¹ or the public domain mark². Use as an alternative or supplement to the information above. It is always recommended that the Copyright elements are given when known.

4.4 **Appellation** (source = MIDAS)

- Name – this is the name of the entity. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.
- ID – an identifier of an object. An attribute type should be accompany this sub-element denoting the type of the identifier (URI, ISBN, etc.) The element may be repeated.

4.4 **Dimensions** (source = MIDAS, LIDO)

- **Extent** – this is to note the part of the heritage asset being measured, e.g. Base.
- **Measurement type** – e.g. height, length, width, depth, shape (e.g. oval)
- **Units** – e.g. metres, centimetres
- **Scale**
- **Value** - e.g. 150. The valuetype attribute allows the accuracy of the measurement to be indicated (exact, approximate)

4.5 **Temporal** (source = MIDAS).

Information about the date and/or period of an entity.

- Time span
 - start date – the earliest date in the range (date format).
 - end date – the latest date in the range (date format).
 - Dimension
 - measurement unit – e.g. ‘years’
 - value – e.g. ‘474’
 - type – e.g. ‘AD’, ‘BCE’, ‘BPE’. Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
 - Date range qualifier – the nature of the time span given (e.g. throughout, at some time during, etc.) Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
- Period name – the name given to the period in history when something occurred. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.
- Display date – a free text field used to display the date or period for users (e.g. early 19th century, 1950s). The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.
- Scientific Date – date according to scientific dating methods, e.g. ‘1250 bp +/-30 PBN-1675’, recorded precisely as received from the specialist.

¹ <http://creativecommons.org/about/licenses/>

² <http://creativecommons.org/publicdomain/mark/1.0/>

- Scientific Date Method – e.g. ‘radiocarbon dating’. Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.

4.6 **Spatial** (source = MIDAS). Information about locations or positions in space.

- Location set
 - Named location – the name of a place or location which is relevant to the entity being described, for example ‘Lake Windermere’. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred. Use of a controlled vocabulary such as <http://www.geonames.org/> is recommended, and the vocabulary used may be indicated using an attribute.
 - Address – the postal address
 - Geopolitical area – the name of an administrative region which does not form part of the address, for example Scotland, England, Tuscany etc. May also be used for a historical geopolitical area, or an administrative unit (e.g. as defined in the INSPIRE directive).
 - Geopolitical area type. Use of a controlled vocabulary such as <http://www.geonames.org/> is recommended, and the vocabulary used may be indicated using an attribute.
 - Cadastral reference
 - Historical name. The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.
- Spatial reference system – Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute (e.g. WGS84). The OGC URN scheme for spatial reference systems is recommended for use.
- Cartographic reference
 - Spatial feature type (how a feature is depicted in a GIS, e.g. point, line, polygon, multi-point, multi-line, multi-polygon). Use of a controlled vocabulary is recommended, and the vocabulary used may be indicated using an attribute. No particular common vocabulary is recommended for use.
 - Coordinates
 - X (e.g. 51.641832)
 - Y (e.g. 1.854589)
 - Z (e.g. 500)
- Geometry
 - Bounding box
 - Min X
 - Min Y
 - Max X
 - Max Y
 - Quickpoint
 - X
 - Y
 - Entity: GML, Well-known text (WKT).
 - Stored precision, delivery precision (the precision of a coordinate as stored in the system, and as delivered to users).
 - Height: datum, units
 - Area: units
- Representations – how a feature is represented on a map

4.7 Address (source= MIDAS).

This is the postal address for a building, contact, etc.

- Building name
- Number in road – the number in a road or street used to identify a property
- Road name
- Town or city
- Postcode or zipcode
- Locality – a named area within which a monument or building lies
- Admin area – the name by which an administrative area is known, e.g. Shropshire
- Country

4.8 Actors (source = MIDAS + elements from LIDO).

- ID
- Name (the name of the person or organisation)
- ActorType (source = LIDO – indicates whether the actor is an individual, a group of individuals or an organisation.
- Roles – the roles of the actor (creator, custody, repository, curator, architect, sculptor, photographer, compiler, etc.) Use of a controlled vocabulary such as Getty Arts and Architecture thesaurus is recommended, and the vocabulary used may be indicated using an attribute.
- Contacts – contact information if known
- Vital dates (source = LIDO):
 - date of birth, if known.
 - date of death if known.
 - Display date
- Place of birth – Use of a controlled vocabulary such as <http://www.geonames.org/> is recommended, and the vocabulary used may be indicated using an attribute.
- Place of death – Use of a controlled vocabulary such as <http://www.geonames.org/> is recommended, and the vocabulary used may be indicated using an attribute.
- Place of activity – Use of a controlled vocabulary such as <http://www.geonames.org/> is recommended, and the vocabulary used may be indicated using an attribute.
- Biographical note – The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.

4.9 Contacts (source = MIDAS).

Information about how a person or organisation can be contacted

- Name – title, first name, last name, other name
- Role – the particular role played by the person or organisation
- Organisation
- Address – the postal address of the person or organisation
- Phone
- Fax
- Email

4.10 Description (source = MIDAS). The element may be repeated using the XML:lang attribute if the element value is available in alternate languages. A preferred/alternate attribute may be used to indicate which value is preferred.

- Full – a free text description of the entity
- Summary – a brief description of the entity

4.11 *Publication statement*

- Publisher
- Place – of publication
- Date – of publication

5. Elements Cardinality

The following table outlines the proposed schema and presents the cardinality of each element defining if it is mandatory, recommended or repeating.

| Element | | | Type | Attribute | Mandatory/Repeatable | Recommended |
|------------------------|-----------|-----------|--------|-----------|----------------------|-------------|
| carareWrap | | | | | | |
| Carare | | | | | Y/N | |
| | | | string | Id | | |
| Collection Information | | | | | N/Y | Y |
| | Title | | string | | N/Y | Y |
| | | | | xml:lang | N/N | |
| | | | | preferred | N/N | |
| | Keywords | | String | | N/Y | |
| | | | | xml:lang | N/N | |
| | | | | Namespace | | |
| | Contacts | | | | N/Y | |
| | Rights | | | | N/Y | Y |
| | Source | | String | | N/N | Y |
| | Language | | string | | N/Y | Y |
| | | | | xml:lang | N/N | |
| | Statement | | string | | N/Y | |
| | | | | xml:lang | N/N | |
| | | | | preferred | N/N | |
| | Creation | | | | N/Y | |
| | | Createdon | string | | N/Y | |
| | | Query | string | | N/Y | |
| | Coverage | | | | | |
| | | Temporal | | | N/Y | |
| | | Spatial | | | N/Y | |

| | | | | | | | |
|-------------------------------|--------------------|----------------------|--|--------|-----------|-----|---|
| Heritage asset Identification | | | | | | Y/Y | |
| | Record Information | | | | | Y/N | |
| | Appellation | | | | | Y/Y | |
| | Description | | | | | Y/N | |
| | Actors | | | | | N/Y | |
| | Designations | | | | | N/Y | |
| | | Protection type | | String | | N/N | |
| | | Grade | | string | | N/N | |
| | | Date from | | Date | | N/N | |
| | | Date to | | Date | | N/N | |
| | | displayDate | | String | | | |
| | Conditions | | | | | N/Y | |
| | | Condition | | String | | N/N | |
| | | Condition Assessment | | String | | N/N | |
| | | Condition Date | | String | | N/N | |
| | | displayDate | | String | | | |
| | | Relations | | | | N/Y | |
| | Characters | | | | | N/N | Y |
| | | Heritage asset type | | String | | N/Y | Y |
| | | | | | namespace | N/N | |
| | | | | | | | |
| | | Temporal | | | | N/Y | Y |
| | | Materials | | String | | N/Y | |
| | | Inscriptions | | String | | N/Y | |
| | | | | | xml:lang | N/N | |
| | | | | | type | N/N | |
| | | | | | namespace | N/N | |

| | | | | | | | |
|------------------|---------------------|-----------------------|--|--------|-----------|-----|---|
| | | | | | preferred | N/N | |
| | | Dimensions | | | | N/Y | |
| | | Craft | | | | N/Y | |
| | Repository location | | | String | | N/Y | |
| | Spatial | | | | | N/Y | Y |
| | References | | | | | N/Y | |
| | | Record information | | | | N/N | |
| | | Appellation | | | | N/Y | |
| | | Actors | | | | N/Y | |
| | | Type | | String | Lang | N/N | |
| | | Medium | | String | Lang | N/N | |
| | | Extent | | String | | N/N | |
| | | Subject | | String | | N/Y | |
| | | Rights | | | | N/Y | |
| | | Publication statement | | String | | N/Y | |
| | | Note | | String | | N/N | |
| | | Relations | | | | N/Y | |
| | Relations | | | | | N/Y | |
| Digital resource | | | | | | Y/Y | |
| | Record information | | | | | Y/N | |
| | Appellation | | | | | Y/Y | |
| | Actors | | | | | N/Y | |
| | Format | | | String | | N/Y | Y |
| | Format Details | | | String | | N/Y | |
| | Medium | | | String | | N/Y | |
| | Extent | | | String | | N/Y | |
| | Spatial | | | | | N/Y | Y |
| | Subject | | | String | Lang | N/Y | Y |
| | | | | | namespa | | |

| | | | | | | | |
|----------|----------------------------|--|--|--------|-----------|-----|---|
| | | | | | ce | | |
| | Temporal | | | | | N/Y | Y |
| | Publication statement | | | | | N/Y | |
| | Type | | | String | Lang | N/N | Y |
| | | | | | namespace | | |
| | Description | | | | | Y/N | |
| | Note | | | String | | N/Y | |
| | Created | | | String | | N/N | |
| | Provenance | | | String | | N/N | |
| | Language | | | String | Lang | N/Y | |
| | Link | | | String | | Y/N | |
| | Object | | | String | | | |
| | IsShownAt | | | String | | N/N | |
| | Resource metadata location | | | String | | N/N | |
| | Relations | | | | | N/Y | Y |
| | Rights | | | | | N/Y | Y |
| | | | | | xml:lang | N/N | |
| Activity | | | | | | N/Y | |
| | Record information | | | | | N/N | Y |
| | Appellation | | | | | N/N | Y |
| | Description | | | | | N/N | |
| | Actors | | | | | N/Y | |
| | Event type | | | string | lang | N/N | Y |
| | | | | | namespace | | |
| | Temporal | | | | | N/Y | N |
| | Spatial | | | | | N/N | N |
| | Assessments | | | string | | N/Y | |
| | | | | | term | N/N | |

| | | | | | | | |
|-----------------------|-----------------------------|---------------|--|--------|---------------|-----|---|
| | | | | | namespa ce | N/N | |
| | Event method | | | string | lang | N/Y | |
| | Materials and techniques | | | string | | N/Y | |
| | Relations | | | | | N/Y | |
| Record information | | | | | | | |
| | ID | | | | | Y/N | |
| | Source | | | string | | N/N | Y |
| | Country | | | string | | N/N | Y |
| | Creation | | | | | N/N | |
| | | Date | | date | | N/N | Y |
| | | Actor | | | | N/Y | |
| | Update | | | | | N/Y | |
| | | Date | | date | | N/N | |
| | | Actor | | | | N/Y | |
| | Language | | | string | | N/Y | Y |
| | | | | | xml:lang | N/N | |
| | Rights | | | | | N/Y | Y |
| | Keywords | | | string | | N/Y | |
| | | | | | xml:lang | N/N | |
| | | | | | namespa ce | | |
| Rights | | | | | | N/Y | |
| | Copyright | | | | | N/Y | |
| | | Rights holder | | string | lang | N/Y | |
| | | Rights dates | | date | | N/Y | |
| | | Credit line | | string | | N/Y | Y |
| | Access rights | | | | | N/Y | |
| | | Granted to | | string | | N/Y | |
| | | Conditions | | string | | N/Y | |
| | | Date from | | date | | N/N | |
| | | Date to | | date | | N/N | |

| | | | | | | | |
|-------------|---------------------|--------------|--|---------|--------------------|-------|--|
| | | Statement | | string | | N/Y | |
| | Reproduction rights | | | | | N/Y | |
| | | Statement | | string | | N/Y | |
| | | Contacts | | string | | N/Y | |
| | | Fees | | string | | N/Y | |
| | License | | | string | | N/Y | |
| Appellation | | | | | | | |
| | Name | | | string | | Y/Y | |
| | | | | | xml:lang preferred | Y/N | |
| | ID | | | string | | Y/N | |
| Dimensions | | | | | | N/Y | |
| | extent | | | string | | | |
| | Measurement type | | | string | | N/N | |
| | Units | | | string | | N/Y | |
| | Scale | | | string | | N/Y ? | |
| | Value | | | decimal | | N/Y | |
| | | | | | valuetype | | |
| Craft | | | | | | N/Y | |
| | Placeofregistration | | | string | | N/Y | |
| | Nationality | | | string | | N/N | |
| | Constructionmethod | | | string | | N/Y | |
| | Propulsion | | | string | | N/N | |
| | Lastjourneydetails | | | | | N/N | |
| | | Departure | | string | | N/N | |
| | | Destination | | string | | N/Y | |
| | | Cargo | | string | | N/Y | |
| | | Mannerofloss | | string | | N/N | |

| | | | | | | | |
|----------|---------------------------|-------------------------|---------------------|---------|-----------------------|-----|---|
| | | Dateofloss | | string | | N/N | |
| | | displayDate | | string | | | |
| Temporal | | | | | | | |
| | Time span | | | | | N/Y | |
| | | start date | | date | | N/Y | Y |
| | | end date | | date | | N/Y | Y |
| | | Dimension | | | | N/Y | |
| | | | measure mentUnit | string | | | |
| | | | value | integer | | | |
| | | | type | string | | | |
| | | Date range qualifier | | string | | N/Y | |
| | | | | | namespa ce | N/N | |
| | Period name | | | string | | N/Y | Y |
| | | | | | xml:lang preferred | N/N | |
| | | | | | preferred | N/N | |
| | Display date | | | string | | N/Y | |
| | | | | | xml:lang preferred | N/N | |
| | | | | | preferred | N/N | |
| | Scientific Date | | | string | | N/Y | |
| | Scientific Date Method | | | string | | N/Y | |
| Spatial | | | | | | | |
| | Location set | | | | | N/N | |
| | | Named location | | string | | N/Y | Y |
| | | | | | xml:lang preferred | N/N | |
| | | | | | preferred | N/N | |
| | | | | | namespa ce | N/N | |
| | | Address | | | | N/N | |
| | | Geopolitical | | string | | N/N | |

| | | | | | | | |
|--|--------------------------|------------------------|------|---------|-----------|-----|---|
| | | area | | | | | |
| | | Geopolitical area type | | string | lang | N/N | |
| | | | | | namespace | N/N | |
| | | Cadastral reference | | string | | N/N | |
| | | | | | ref | | |
| | | Historical name | | string | | N/Y | |
| | | | | | xml:lang | N/N | |
| | | | | | preferred | N/N | |
| | Spatial reference system | | | string | | N/N | Y |
| | Cartographic reference | | | | | N/N | |
| | | Spatial feature type | | string | | N/N | |
| | | Coordinates | | | | N/N | Y |
| | | | x | decimal | | | |
| | | | y | decimal | | | |
| | | | z | decimal | | | |
| | Geometry | | | | | N/N | |
| | | Bounding box | | | | N/N | |
| | | | minx | Decimal | | | |
| | | | maxX | Decimal | | | |
| | | | minY | Decimal | | | |
| | | | maxY | decimal | | | |
| | | Quickpoint | | | | N/N | |
| | | | X | Decimal | | | |
| | | | y | Decimal | | | |
| | | Entity | | string | | N/N | |

| | | | | | | | |
|---------|---------------------|------------------|--------|---------|-----------|-----|--|
| | | Stored precision | | string | | N/N | |
| | | Height | | Decimal | | N/N | |
| | | Area | | string | | N/N | |
| | Representations | | | string | | N/N | |
| Address | | | | | | N/Y | |
| | Building name | | | string | lang | N/N | |
| | | | | | authority | | |
| | Number in road | | | string | | N/N | |
| | | | | | authority | | |
| | Road name | | | string | | N/N | |
| | Town or city | | | string | | N/N | |
| | | | | | Authority | | |
| | Postcode or zipcode | | | string | | N/N | |
| | Locality | | | string | | N/N | |
| | | | | | authority | | |
| | Admin area | | | string | | N/N | |
| | | | | | authority | | |
| | Country | | | string | | N/N | |
| | | | | | authority | | |
| Actors | | | | | | | |
| | ID | | | string | | N/N | |
| | Name | | | string | | N/Y | |
| | ActorType | | | string | | N/Y | |
| | Roles | | | string | lang | N/Y | |
| | | | | | namespace | N/N | |
| | Contacts | | | | | N/Y | |
| | Vital dates | | | | | N/Y | |
| | | birthDate | string | | | N/N | |
| | | deathDate | string | | | N/N | |
| | | displayDate | string | | | N/Y | |

| | | | | | | | |
|-----------------------|------------------------|--|--------|--|----------------------|-----|--|
| | Place of birth | | string | | | N/Y | |
| | | | | | namespace | N/N | |
| | Place of death | | string | | | N/Y | |
| | | | | | namespace | N/N | |
| | Place of activity | | string | | | N/Y | |
| | | | | | namespace | N/N | |
| | Biographical note | | string | | | N/Y | |
| | | | | | xml:lang | N/N | |
| | | | | | preferred | N/N | |
| Contacts | | | | | | N/Y | |
| | Name | | string | | | N/Y | |
| | Role | | string | | | N/Y | |
| | Organisation | | string | | | N/Y | |
| | Address | | | | | N/Y | |
| | Phone | | string | | | N/Y | |
| | Fax | | string | | | N/Y | |
| | Email | | string | | | N/Y | |
| Description | | | string | | | N/Y | |
| | | | | | xml:lang | Y/N | |
| | | | | | preferred | N/N | |
| | | | | | type (full, summary) | N/N | |
| Publication statement | | | | | | | |
| | Publisher | | string | | | N/Y | |
| | Place – of publication | | string | | | N/Y | |
| | Date | | date | | | N/Y | |
| Relations | | | | | | N/Y | |

| | | | | | | | |
|--|-------------------------|--|--|--|--|-----|---|
| | Source of the relation? | | | | | N/N | Y |
| | Type of relation | | | | | N/N | Y |
| | Target of relation | | | | | N/N | Y |

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