

# DATA FORMATS FOR MACHU



## Legislation

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# DATA FORMATS FOR MACHU

This document contains a brief explanation of why data formats are used in MACHU GIS and a detailed description of the MACHU formats for legislation.

See also the MACHU reports on the MACHU website for more background information.

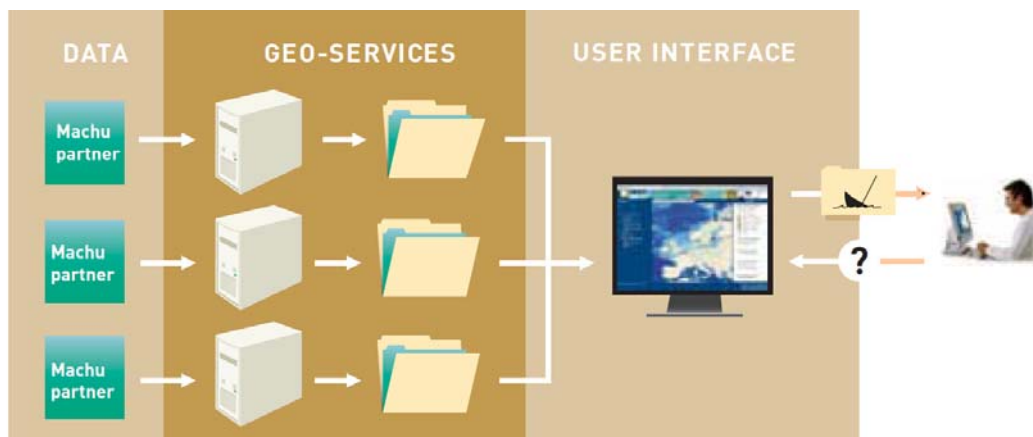
## 1. WHY USE MACHU DATA FORMATS?

Data formats are used for regulating the flow of information. Data formats make it possible to harmonize the content of exchanged information and implement the technical requirements necessary to process the data in a Geographical Information System (GIS) such as MACHU GIS.

The use of the MACHU data formats makes it possible to register information that is commonly felt to be of importance to the management of the cultural heritage underwater. In 2004, the Culture 2000 MoSS project<sup>1</sup>, set up with the aim of monitoring, safeguarding and visualizing shipwrecks, provided a template for storing relevant management information. This template has served as an important source of information for defining the content of the MACHU data formats.

The data formats of MACHU are, different from those in the MoSS-project, set up with the intention to use them in a GIS-environment. This means that the formats provide information by which the data can share common spatial representation and by which the content of the data is comparable within a GIS. Using these data formats makes it possible to handle data on the same subject but from different sources in MACHU GIS as if they were originated from a single source. For instance, it becomes possible to search and display data selections in a single search operation through many data sources at once.

Before the data can be used in MACHU GIS, it has to be served as a web service, according to OGC standards<sup>2</sup>. For a description of the process of creating a web services, see the corresponding documentation on the MACHU website.



*MACHU GIS principle model: using different sources as a single source.*

<sup>1</sup> Monitoring, safeguarding and visualizing North-European shipwreck sites (MoSS); <http://www.mossproject.com/>.

<sup>2</sup> Open Geospatial Consortium (OGC); <http://www.opengeospatial.org/>

## 2. FORMAT CHARACTERISTICS

The data format descriptions are based on the ESRI<sup>3</sup> shape file format (for vectorized data) and GeoTiff (for images). Note that this not necessarily means that data should also be stored as ESRI shapefile or GeoTiff. Important is that the data contains the described spatial representation, attributes and is available as web service.

MACHU data formats are available for the layers:

- Archaeology (or Underwater Cultural Heritage)
- Research areas (including related images)
- Legislation

Examples of formatted empty shape files are available at the MACHU website.

### **Explanation of the components used to describe each attribute table:**

#### *Field*

Contains the name of the attribute field, which is mostly an abbreviation of the content. ESRI-shape file attribute field names come with a maximum of 10 characters. In MACHU GIS an alias will be used to create readable attribute field names.

#### *Description*

Description of the content. The bold text is used as alias for the attribute field names. If more values have to be added in one field, they should be separated by commas.

#### *Type*

Description of notion (like number of characters or digits).

#### *Optional/required*

When marked 'r', adding information is required, when marked 'o' adding information is optional.

#### *Domain*

When marked 'y', attribute values should be taken from the domain list. (See appendix). The domain lists only contain domain values that apply to values that represent common subjects. Values that represent definitions that refer to subjects on a (sub) national level are not added. It is recommended however that the suppliers of data register values that refer to subjects on (sub) national level, locally as domain values. This should prevent the use of different descriptions for a single subject, which could cause problems when performing searches through MACHU GIS. An exception is made regarding the archaeological period definitions (see archaeology data format). These values based on national periods can be used by different data suppliers. National period definitions should therefore be shared with other MACHU users.

ESRI shape files consist out of a number of data files with different extension like .shp, .dbf, .prj, .shx. When ESRI-shape files are created, attributes FID (Internally generated identification number for each feature (e.g. polygon)) and Shape (Internally generated text, indicating feature-type (e.g. polygon)) are automatically created in the database file (.dbf) of the ESRI-shape file. These files are not visible when opening the dbf-file in Excel.

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<sup>3</sup> ESRI; <http://www.esri.com/>

### 3. DATA FORMAT DESCRIPTION OF THE LEGISLATION LAYER

#### Shape

Polygon feature

#### Dataset exchange name

- a. LEGIS\_ [country code] e.g. LEGIS\_NL (Applies to combined dataset of various legislation).
- b. LEGIS\_ [country code] \_ [level of enforcement (abbreviation)] \_ [name (abbreviation)] e.g. LEGIS\_NL\_E\_EUCONV (Applies to dataset on single rule or law).

#### Description Legislation Layer

The legislation layer contains information on laws and rules that involve cultural heritage underwater. Legislative areas are recorded as polygons, where each rule or law is presented by a separate polygon (or more polygons in case a rule or law applies to a dispersed area). Legislative areas can cover legislation on international, European, national and sub-national level and an area may very well be overlapped by different legislative areas. The legislative dataset(s) of each country (partner) are limited to the areas of its maritime and national boundaries. The format exists out of 10 attributes, containing indicative information on each specific rule or law, its status, competent authority and a brief description.

#### Domain table legislation

See appendix A.

#### Attribute table Legislation

Field	Description	Type	Optional (o) Required (r)	Domain (if yes (y)), consult domain table)
LEG_IDENT	<b>Identifier</b> Unique identification number. Might be used to uniquely identify the feature (polygon) and make it possible to link new information to the object. Proposal: This id could be a 2 letter country code (ISO3166-1 ?) combined with unique number. (e.g. NL_12)	Text (25)	r	
LEG_NAME	<b>Legislation name (English)</b> Translation of rule or law name into English.	Text (100)	r	y (Applies to international and European legislation. Please inform us on missing legislative information so we can add it to the domain table)
LEG_NAT	<b>Legislation name (original)</b> Rule or law name in original language (applies to national and sub-national legislation,	Text (100)	r	

	else as LEG_NAME)			
LEG_TYPE	<b>Legislation type</b> (e.g. directive, law)	Text (25)	r	y (See LEG_NAME)
LEG_ENF	<b>Level of enforcement</b> (e.g. national)	Text (100)	r	y (See LEG_NAME)
LEG_LEV	<b>Level of agreement</b> (ex. European)	Text (100)	r	Y (See LEG_NAME)
COUNTRY	<b>Country</b> Country to which legislation applies. Use official short names in English as given in ISO 316-1	Text (25)	o	Use ISO 316-1
COM_AUTH	<b>Competent authority</b> Full original (national) name. Who is approved authority? Who can decide about archaeology matters? (e.g. Rijksdienst voor het Cultureel Erfgoed) If more than one, separate by comma.	Text (100)	r	Use local domain values
LEG_DESC	<b>Description</b> Brief explanation of rule or law, like Does the rule or law applies purely to cultural heritage or is cultural heritage just touched by it?	Text (255)	r	y (see LEG_NAME)
LEG_REMARK	<b>Remarks on legislation</b> Free text space for any additional comments	Text 255	o	
LEG_REF	<b>References</b> Link to a reference	URL	o	

**Alterations to version august 2009 (end of project):**

**LEG\_REF**

Attribute field LEG\_REF is added to the format to create a possibility to link through to information on a specific rule or law. This is done because the attribute field LEG\_DESC contains only a limited space for descriptive text.

## 4 METADATA FORMATS

Data in MACHU GIS is accompanied by metadata. Metadata contains source information like content description, information about data quality, restrictions on data use and contact information to owner or custodian of the data.

Each dataset should contain metadata, distributed in xml-format (Extensible Markup Language) according to the INSPIRE Metadata Implementing Rules. INSPIRE<sup>4</sup> stands for 'Infrastructure for Spatial Information in Europe'. It is a European Commission initiative to build a European spatial data infrastructure (ESDI) that allows a variety of users to identify and access spatial data from a wide range of sources across Europe. INSPIRE prescribes the use of ISO 19115, metadata profile for geography (and ISO 19119 metadata standard for services). See INSPIRE website <http://inspire.jrc.ec.europa.eu> for more information.

To create metadata one can use any available metadata editor that meets the INSPIRE implementing rules. An editor is also available at the INSPIRE GeoPortal, see <http://inspire-geoportal.ec.europa.eu>.

To connect metadata to data in MACHU GIS, metadata files should be renamed after the source dataset e.g. ARCH\_NL.shp.xml for ARCH\_NL.shp.

For data recovery purposes (through a search engine or metadata catalogue) it is recommended to add 'MACHU' as keyword in the metadata.

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<sup>4</sup> INSPIRE; Infrastructure for Spatial Information in Europe; <http://inspire.jrc.ec.europa.eu>.

# APPENDIX

## A. DOMAIN TABLE LEGISLATION

### LEG\_NAME – Legislation name (English)

See list of attribute combinations at the end of this section.

### LEG\_TYPE – legislation type

convention
directive
law
policy

### LEG\_ENF – Level of Enforcement

international
european
national
sub-national

### LEG\_LEV – Level of agreement

national
sub-national
national
territorial sea
contiguous zone
exclusive economic zone
high seas
not yet into force

### LEG\_DESC - Description

See list of attribute combinations at the end of this section.

### LEG\_REF - References

See list of attribute combinations at the end of this section.



**LIST OF ATTRIBUT COMBINATIONS (examples as added end of project 2009)**

<b>English name</b>	<b>European Convention on the protection of Archaeological Heritage (revised), 1992</b>
Level of enforcement	national, territorial sea
Level of agreement	european
Legislation type	Convention
Description	Convention on the preservation of the archaeological Heritage, as a source of knowledge for the common European History. Preservation in situ is to be considered as first option. Parties to the convention are obliged to take (legal) measures for the protection of the archaeological heritage and to warrant the scientific quality of the archaeological research. Within the spatial planning process the weighing of different interests should include the archaeological interest.
Competent authority	does not apply
References	<a href="http://conventions.coe.int/">http://conventions.coe.int/</a>

<b>English name</b>	<b>EU Directive 85/337/EEC (EIA)</b>
Level of enforcement	National/territorial Sea, Contiguous zone, EEZ
Level of agreement	european
Legislation type	Directive
Description	The EIA directive ensures that environmental consequences (including those for the cultural heritage) of projects are identified and assess.
Competent authority	does not apply
References	<a href="http://ec.europa.eu/environment/eia/">http://ec.europa.eu/environment/eia/</a>

<b>English name</b>	<b>EU Directive 2001/42/EU (SEA)</b>
Level of enforcement	National/territorial Sea, Contiguous zone, EEZ
Level of agreement	european
Legislation type	Directive
Description	The purpose of the SEA directive is to ensure that environmental consequences, including those for the cultural heritage, of certain plans and programmes are identified and assessed during their preparation and before adoption.
Competent authority	does not apply
References	<a href="http://ec.europa.eu/environment/eia/">http://ec.europa.eu/environment/eia/</a>

<b>English name</b>	<b>United Nations Convention on the Law of the Sea (UNCLOS), 1982</b>
Level of enforcement	National/territorial Sea, Contiguous zone, EEZ
Level of agreement	international
Legislation type	Convention
Description	UN convention to regulate the use of the sea and its natural resources. It states the duty of States to protect objects of an archaeological and historical nature and to cooperate for this purpose.
Competent authority	does not apply
References	<a href="http://www.un.org/depts/los">http://www.un.org/depts/los</a>

<b>English name</b>	<b>Unesco Convention on the Protection of Underwater Cultural Heritage, 2001</b>
Level of enforcement	National/territorial Sea, Contiguous zone, EEZ
Level of agreement	international
Legislation type	Convention
Description	International Convention on the Protection of Underwater cultural heritage, the main issues are the protection in situ of underwater cultural heritage and to prevent salvage with commercial objectives (sale of archaeological material).
Competent authority	does not apply
References	<a href="http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/">http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/</a>