Floods Directive GIS Guidance

Guidance on the reporting of spatial data
to the Water Information System for Europe

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Contents

Quick Start

1. The following reference spatial data sets are included in the Floods Directive reporting:

   - Units of Management (UoM). If the units of management are the River Basin Districts reported under the Water Framework Directive, the dataset must not be reported. [1]
   - Sub-Units (SubUnits). If the sub-units do not exist, or if the units of management are the sub-units reported under the Water Framework Directive, the dataset must not be reported.
   - Areas of Potential Significant Flood Risk (APSFR).
   - Preliminary Flood Risk Assessments for Past Events (PFRA_PastEvents).
     Preliminary Flood Risk Assessments for Future Events (PFRA_FutureEvents).

2. The geometry of the APSFR, PFRA_PastEvents and PFRA_FutureEvents must be reported using polygons, polylines or points.

3. The spatial data files must be submitted as valid GML files, conformant with the schemas available in the Reportnet Data Dictionary schemas [2].

4. The spatial data files may be prepared as *shapefiles*. The *shapefile* templates must be used. The templates are available in the Floods help page [3]. The *shapefiles* must be converted to GML using the conversion tools available in the same page. The GML files must then be uploaded to the appropriate envelope in Reportnet Central data Repository (CDR).

5. The spatial data files must follow the naming convention in the File naming convention section.

6. The quality of the data sets must be evaluated by the Data Providers before the submission. Attention must be paid to the spatial alignment across national and international borders for the purpose of producing a harmonised European level dataset. Reference data sets are available to support this alignment.

7. The coordinate reference system for spatial data must be ETRS89-GRS80 or ETRS89-LAEA.
   For areas outside the scope of ETRS89, WGS 84 must be used.

8. Metadata must be provided for each spatial data file, according to the INSPIRE metadata profile. Metadata for spatial data sets must include specific tags from the INSPIRE code list for the priority data sets for eReporting.

9. The Floods Hazard and Risk Maps (FHRM) shall be provided at national INSPIRE Geoportals.

10. The links to the national FHRM maps must be reported in XML files structured according to the FHRMLinkToMS schema.

11. The data for FHRMLinkToMS file may be prepared as an Access database. The Access database template for the descriptive reporting must be used. The template is available in the Floods help page. The Access database must be converted to XML using the conversion tool available in the same page. The XML files must then be uploaded to the appropriate envelope in CDR.

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[1] The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119.

[2] http://dd.eionet.europa.eu/schemaset/Floods/view
[3] http://cdr.eionet.europa.eu/help/Floods/Floods_2018

Floods Directive reporting obligations

For Data Providers reporting under the Floods Directive, this document provides guidance in the preparation and reporting of spatial data. The GML schemas, *shapefile* templates and supporting documents required for the Floods reporting are available in the help page.

The Floods Directive reporting obligations are:

- Floods Directive - Units of Management and Competent Authorities - 2019 [Article 3]
- Floods Directive - Preliminary Flood Risk Assessment and Areas of Potential Significant Flood Risk - 2019 [Article 4 & 5]
- Floods Directive - Flood Hazard Maps and Flood Risk Maps - 2020 [Article 6]
- Floods Directive - Flood Risk Management Plans - 2022 [Article 7, 8 & 10]

If you need assistance on issues not addressed in this document please contact the Floods Directive helpdesk at floods.helpdesk@eionet.europa.eu.

In accordance with the WISE reporting arrangements, Member States may update the data submitted to WISE at any time, but without the data being released. Member States should ensure that the latest, correct information is available in WISE since that will be used for compliance checking and publication.

The quality, accuracy and validation of the information and data in WISE is the responsibility of the Member States. Quality assurance and control processes will be carried out by the WISE partners. The Commission, the EEA or its contracted partners may contact the Member State in case there is an indication that any of the data may be erroneous or misleading. This may lead to a resubmission request to the Member State.

Data content

This section provides an overview of the content of the different Floods spatial data sets and of the constraints and requirements applicable to the spatial objects and their relationships

Units of Management (UoM)

Definitions

Table 1. Definitions relevant for the Units of Management and Sub-units of Management data set.

Concept	Definition	Related data sets
Units of Management	The Floods Directive (Article 3.2) allows Member States to identify units of management different from the river basin districts used for the Water Framework Directive. Units of management may be individual river basins and/or certain coastal areas, and may be entirely within national borders or may be part of an international unit of management or international river basin district.	- SubUnits (Sub-units of management). - APSFR (Area of Potential Significant Flood Risk) - PFRA_PastEvents (Preliminary Flood Risk Assessment Past Events) - PFRA_FutureEvents (Preliminary Flood Risk Assessment Future Events)
Sub-units of management	Spatial unit created for management, monitoring or reporting purposes, within a unit of management larger than 50000 square kilometre. River Basin District sub-unit: Spatial unit created for management, monitoring or reporting purposes, in a river basin district (RBD) larger than 50000 square kilometre. Large RBDs should be divided into comparable sub-units with an area between 5000 and 50000 square kilometre. The sub-units can be created using river basins (if more than one river basin exists in the RBD) or sub-basins, for example. If the RBD area is less than 50000 square kilometre, the RBD itself can be used as a sub-unit. Sub-basin: The area of land from which all surface run-off flows through a series of streams, rivers and, possibly, lakes to a particular point in a water course (normally a lake or a river confluence).	- UoM (Units of management). - APSFR (Area of Potential Significant Flood Risk) - PFRA_PastEvents (Preliminary Flood Risk Assessment Past Events) - PFRA_FutureEvents (Preliminary Flood Risk Assessment Future Events)

Reporting units of management and sub-units

- Units of management and Sub-units are reported in different datasets.
- Units of management are reported in the UoM data set.
- If the units of management are the River Basin Districts reported under the Water Framework Directive, the dataset must not be reported.
- Sub-units of management are reported in the SubUnit data set.
- If the sub-units do not exist, or if the units of management are the sub-units reported under the Water Framework Directive, the dataset must not be reported.

Constraints and quality control

1. The Units of Management (UoM) must form a complete tessellation of the national territory. In a tessellation, the polygons must fill the plane with no gaps, overlaps or self-intersecting boundaries.

2. Each UoM must have a unique identifier. Each UoM must have a name and a prime competent authority.

3. Each sub-unit must be linked to one and only one UoM. The sub-unit must be completely within its UoM.

4. Sub-units must not overlap each other.

5. Detailed information on how the quality rules are implemented and which fields will be used for validation are available in the help page.

Areas of Potential Significant Flood Risk (APSFR)

Definitions

Table 2. Definitions relevant for the Areas of Potential Significant Flood Risk data set.

Concept	Definition	Related data sets
Areas of Potential Significant Flood Risk	Areas where there is a significant risk of flooding from local sources, such as surface water, ground water and ordinary watercourses. Areas of potential significant flood risk exist or might be considered likely to occur in the future for each river basin district, unit of management or the portion of an international river basin district or unit of management lying within a Member State's territory. APSFR could relate geographically to more than one UoM.	• UoM • PFRA_PastEvents (Preliminary Flood Risk Assessment Past Events) • PFRA_FutureEvents (Preliminary Flood Risk Assessment Future Events)

Reporting Areas of Potential Significant Flood Risk using the APSFR data set

The geometry of an Area of Potential Significant Flood Risk can be reported using polygons and/or polylines and/or points. A single record must be provided for each APSFR (use a multipart geometry if necessary). The different geometry types must be reported in different datasets (Shapefiles or GMLs), namely:

- APSFR_Polygon
- APSFR_Line
- APSFR_Point

Constraints and quality control

1. Each Area of Potential Significant Flood Risk (APSFR) must be assigned to one or more than one Unit of Management (UoM).

2. The geometry of each APSFR must be contained within its assigned UoM, or overlap its assigned UoMs (if there is more than one).

3. If the APSFR is assigned to more than one UoM, its geometry should not be split. When creating the Shapefiles, a comma-separated list of the identifiers of the each of the assigned UoM must be reported.

4. The geometry of an APSFR may have one or more parts but the geometries of the parts must not overlap each other within the same APSFR. However, geometries in different APSFR may overlap each other. (See Annex X of this document.)

5. Each APSFR must have a unique identifier.

6. The APSFR identifier must be unique at national level. This identifier is the combination of the following attributes:

Shapefile	XML schema
localId (reported)	localId
namespace (reported)	namespace

Detailed information on how the quality rules are implemented and which fields will be used for validation are available in the help page.

Preliminary Flood Risk Assessment

Definitions

Table 3. Definitions relevant for the Preliminary Flood Risk Assessment data sets, for Past Events and for Future Events

Concept	Definition	Related data sets
Preliminary Flood Risk Assessment for Past Events	The Preliminary Flood Risk Assessment for Past Events data set contains spatial objects (points, lines or surfaces) that define the location of a past flooding event for which the type of hazard, the time period and either its magnitude or intensity are known. Each object may relate geographically to more than one UoM.	• UoM (Units of management) • SubUnits (Sub-units of management). • APSFR (Areas of Potential Significant Flood Risk)
Preliminary Flood Risk Assessment for Future Events	The Preliminary Flood Risk Assessment for Future Events data set contains spatial objects (points, lines or surfaces) that define the location of a possible flooding event in the future. The data set must include information on what type of hazard is likely to occur, as well as its likelihood and either its magnitude or intensity. The method that has been used to determine this must also be provided. Each object may relate geographically to more than one UoM.	• UoM (Units of management) • SubUnits (Sub-units of management). • APSFR (Areas of Potential Significant Flood Risk)

Reporting Past Events using the PFRAPastEvents data set

The geometry of Past Events can be reported using polygons, polylines or points. For objects with multiple geometry parts, a single record must be provided for each APSFR and include the geometries as multipart geometries. The different geometry types must be reported in different datasets (Shapefiles or GMLs), namely:

- PFRAPastEvents_Polygon
- PFRAPastEvents_Line
- PFRAPastEvents_Point

Reporting Future Events using the PFRAFutureEvents data set

The geometry of Future Events can be reported using polygons, polylines or points. For objects with multiple geometry parts, a single record must be provided for each APSFR and include the geometries as multipart geometries. The different geometry types must be reported in different datasets (Shapefiles or GMLs), namely:

- PFRAFutureEvents_Polygon
- PFRAFutureEvents_Line
- PFRAFutureEvents_Point

Constraints and quality control

1. Each Event must be assigned to one or more than one Unit of management (UoM).

2. If the Event is assigned to more than one UoM, its geometry should not be split. When creating the Shapefiles, a comma-separated list of the identifiers of the each of the assigned UoM must be reported.

3. The parts of the geometry of a flood Event may overlap each other. It is not necessary to add nodes in the intersection between geometries. (See Annex XI of this document.)

4. Each Event must have a unique identifier.

5. The PFRA identifier (both for Future and Past Events) must be unique at national level. This identifier is the combination of the following attributes:

Shapefile	XML schema
localId (reported)	localId
namespace (reported)	namespace

Detailed information on how the quality rules are implemented and which fields will be used for validation are available in the help page.

Flood Hazard Maps and Flood Risk Maps

Definitions

Table 4. Definitions relevant for the Flood Hazard Maps and Flood Risk Maps

Concept	Definition	Related data sets
Flood Hazard Map	The flood hazard map should cover the geographical area which could be flooded according to different probabilities, along with some hazard related information associated to those areas.	• UoM (Units of management) • APSFR (Areas of Potential Flood Risk)
Flood Risk Map	The flood risk maps shall show the potential adverse consequences associated with floods under the probabilities identified in the Flood Hazard Map, relating to human health, economic activity, the environment and cultural heritage.	• UoM (Units of management) • APSFR (Areas of Potential Flood Risk)

The flood hazard maps must show the geographical area which could be flooded under different probabilities. The flood maps must be prepared for the following flooding scenarios:

1. floods with low probability, or extreme event scenarios;

2. floods with a medium probability (likely return period ≥ 100 years);

3. floods with a high probability, where appropriate.

Member States have flexibility to assign specific flood probabilities to these scenarios.

For each scenario, the flood hazard maps must include information about the flood extent and water depth or levels. Where appropriate, the floods hazard maps may also include information on flow velocities or the relevant water flow.

The flood risk maps must show the potential adverse consequences of the flood scenarios selected for the flood hazard maps. For each flooding scenario, the flood risk maps must show:

1. the indicative number of inhabitants potentially affected;

2. type of economic activity of the area potentially affected;

3. installations as referred to in Annex I to Council Directive 2008/1/EC (codified version of Directive 96/61/EC of 24 September 1996) concerning integrated pollution prevention and control which might cause accidental pollution in case of flooding and potentially affected WFD protected areas.

The maps may show other information which the Member State considers useful, such as the indication of areas where floods with a high content of transported sediments and debris floods can occur and information on other significant sources of pollution.

For coastal flooding where there is an adequate level of protection in place, and for groundwater flooding, Member States can provide justification for limiting the preparation of flood hazard maps to the low probability or extreme event scenario.

Reporting of Flood Hazard and Risk Maps

The Flood Hazard and Risk Maps <u>spatial</u> data sets <u>must</u> be provided in the national INSPIRE Geoportals.

The Flood Hazard and Risk Maps <u>spatial</u> data sets must <u>not</u> be reported to Reportnet's CDR.

In the 2nd reporting exercise for the Flood Hazard Maps & Flood Risk Maps (due in 2020-03-22), the links to the online national FHRM maps for the Medium Probability Scenario must be reported to Reportnet's CDR.

The data is reported using an XML file structured according to the FHRM_LinkToMS schema.

The data for FHRM_LinkToMS schema may be prepared as an Access database. The Access database template for the descriptive reporting must be used. The template is available in the Floods help page. The Access database must be converted to XML using the conversion tool available in the same page. The XML files must then be uploaded to the appropriate envelope in CDR.

For each Flood Hazard and Risk Map, the reported link to the online map must be a resolvable persistent URL to a publicly available WFD or WMS web service, or to a specific page in a national portal (e.g. the metadata fiche in the national INSPIRE geoportal) or to a digital map in PDF format.

The Flood Hazard and Risk Maps should be published at APSFR level: when reporting the link to the online services, the applicable APSRH must be identified.

Alternatively, the Flood Hazard and Risk Maps may be made published at UoM level: when reporting the link to the online services, the applicable UoM be identified.

If Member States publish the Flood Hazard and Risk Maps using a different extent (i.e. neither for an entire APSRH nor for an entire UoM), then the geographical 'bounding box' which the extent of each online map must be provided.

Figure 1. Reporting schema for the reporting of links to the national Flood Hazard and Risk Maps.
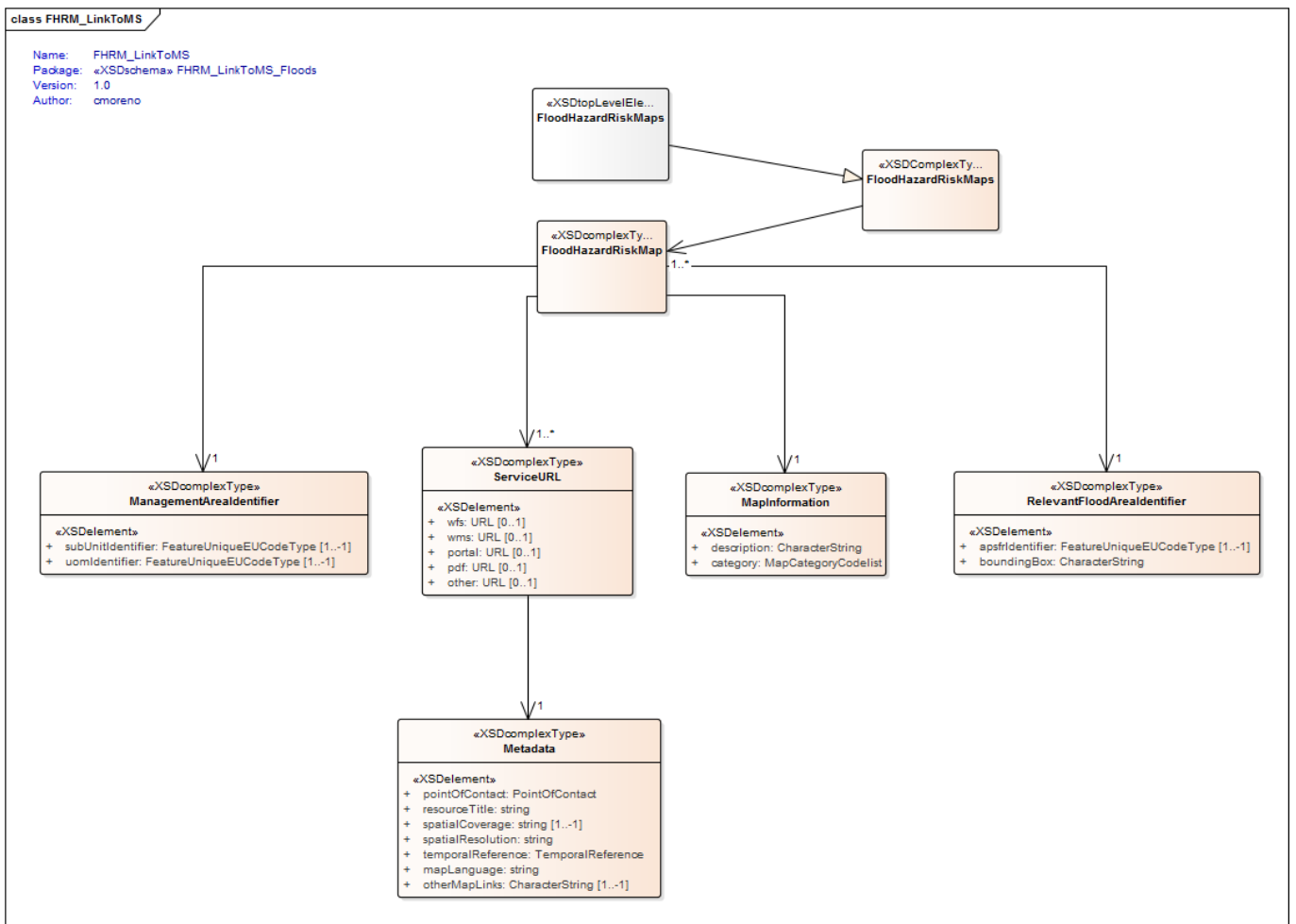
Data quality

Geodetic coordinates must be expressed in decimal degrees, with a minimum recommended precision of 5 decimal places. Projected coordinates must be expressed in metres, with a minimum recommended precision of one decimal place. See the section on "Coordinate reference systems" for further information.

Data providers are recommended to <u>not</u> simplify or generalise the spatial data reported to WISE. Considering both WISE needs and the practical constraints of data availability, it is recommended to report data with positional accuracy acceptable for cartographic representation at the 1:100.000 scale or larger. The positional accuracy should always be kept as high as possible and ideally be similar to the national operational data sets.

The quality of the geographic data sets must be evaluated by the Data Providers before the submission and should be sufficiently clean to support automated topological processes.

The accuracy of the data should be documented in the metadata so that any further processing done in the production of the European reference data sets can respect the accuracy of the original data source.

Attention must be paid to the spatial alignment across national and international borders for the purpose of producing a harmonised European level data set. Because member states may have different accuracy some "sliver polygons" are accepted between the national borders. Those are unwanted small polygons resulting from spatial overlays of different GIS layers. Then a tolerance should be taken into account for the automated topological process. This tolerance can be obtained taking into account the limit for visual perception and the reporting scale.

Reference data sets are made available to support this alignment and are provided in the public or restricted access area accessible by the authorised reporters, and subject to use conditions. The following European wide reference data sets are provided:

- EEA coastline, source EEA
- Country boundaries, source EuroBoundaryMap – Eurogeographics.

The EEA coastline for analysis is available at http://www.eea.europa.eu/data-and-maps/data/eea-coastline-for-analysis-2 and may be used, subject to the constraints expressed in its metadata (http://www.eea.europa.eu/data-and-maps/data/eea-coastline-for-analysis-2#tab-metadata).

Coordinate reference systems

The spatial data sets must be provided in one of the following coordinate reference systems (CRS):

- ETRS89-GRS80 (urn:ogc:def:crs:EPSG::4258)
- ETRS89-LAEA (urn:ogc:def:crs:EPSG::3035)
- WGS 84 (urn:ogc:def:crs:EPSG::4326)

The geometry of spatial objects should be reported in the ETRS89-GRS80 geodetic coordinate system (urn:ogc:def:crs:EPSG::4258). For areas outside the scope of ETRS89, such as overseas territories, WGS 84 (urn:ogc:def:crs:EPSG::4326) must be used.

The geometry of spatial objects may also be reported in the ETRS89-LAEA projected coordinate system (urn:ogc:def:crs:EPSG::3035). Again, an exception applies for areas outside the scope of ETRS89, where the geodetic coordinate system WGS 84 (urn:ogc:def:crs:EPSG::4326) must be used.

Note that for the quality control procedures applied to the spatial data, the ETRS89-LAEA projected coordinate system will be used.

Projection metadata files (.prj)

Valid projection metadata files (.prj) for the *shapefile* format are provided below:

- For ETRS89-GRS80 (urn:ogc:def:crs:EPSG::4258)

    GEOGCS["ETRS89",DATUM["D_ETRS_1989",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]]

- For ETRS89-LAEA (urn:ogc:def:crs:EPSG::3035)

    PROJCS["ETRS_1989_LAEA",GEOGCS["GCS_ETRS_1989",DATUM["D_ETRS_1989",SPHEROID["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Lambert_Azimuthal_Equal_Area"],PARAMETER["False_Easting",4321000.0],PARAMETER["False_Northing",3210000.0],PARAMETER["Central_Meridian",10.0],PARAMETER["Latitude_Of_Origin",52.0],UNIT["Meter",1.0]]

- For WGS 84 (urn:ogc:def:crs:EPSG::4326)

    GEOGCS["GCS_WGS_1984",DATUM["D_WGS_1984",SPHEROID["WGS_1984",6378137.0,298.257223563]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]]

Metadata

A metadata file must be provided for each spatial data file. As defined in the "CIS Guidance Document No. 22":

> *Since the majority of WISE datasets and services will fall under the scope of INSPIRE, this guidance recommends the adoption of a profile which extends the INSPIRE metadata to include all those additional elements already agreed by the WISE community. This guidance recommends the use of INSPIRE terminology for element names wherever possible, thus ensuring compatibility with metadata created in other environmental policy areas.*

The content and structure of the metadata file must be in conformance to the "Technical Guidance for the implementation of INSPIRE dataset and service metadata based on ISO/TS 19139:2007"[4].

For additional information, refer to the INSPIRE technical guidance.

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[4] https://inspire.ec.europa.eu/id/document/tg/metadata-iso19139

INSPIRE metadata requirements for specific themes

The INSPIRE Data Specification on Area Management/Restriction/Regulation Zones and Reporting Units defines specific requirements and recommendations for the metadata **abstract**, **lineage** and **keywords**. See section 8 (Dataset-level metadata) of the technical guidelines for the full specification (https://inspire.ec.europa.eu/id/document/tg/am).

The requirements must be followed for the UoM and SubUnit data sets.

Note 1: Currently no such requirements exist for the remaining data sets, under the INSPIRE Data Specification on Natural Risk Zones (https://inspire.ec.europa.eu/id/document/tg/nz).
However Data Providers are recommended to adhere to the same requirements and recommendations applicable for the remaining datasets.

Table 5. INSPIRE Data Specification on Area Management requirement for specific metadata elements.

#	Metadata element	Reporting guidance
1.2	Resource abstract	***Recommendation 21*** *To enable effective discovery of specific types of ManagementRestrictionOrRegulationZone data sets, providers should include the following information in the resource abstract:* *- Type of zone or name of the spatial object that forms the reporting unit* *- Official full name of legislation that requires the establishment of the zone or reporting requirements*
3.1	Keyword value	***IR Requirement*** *Annex IV, Section 11.4.1* ***Theme-specific Requirements – Management Restriction Or Regulation Zones*** *(3) Data providers shall include the following keywords in addition to the mandatory keywords defined in Regulation (EC) 1205/2008:* *(a) One or several keywords describing the high-level classification of the **zone type(s)** included in the data set, as defined in ZoneTypeCode code list.* *(b) One or several keywords describing the **official document number(s) of the legal instrument(s)** under which the zone(s) included in the data set is (are) established. For Union legislation, the CELEX number shall be used.* *[…]* *EXAMPLE 1 For River Basin Districts, the following keywords shall/should be provided:* *– River Basin District (zone type, required)* *– 32000L0060 (official document number (CELEX), required)* *– Water Framework Directive (legislation short name, recommended)* *– WFD (legislation acronym, recommended)* *– water (environmental domain, recommended)*
6.1	Lineage	***IR Requirement*** *Annex IV, Section 11.4.1* ***Theme-specific Requirements – Management Restriction Or Regulation Zones*** *(2) If the geometries of the spatial objects in a ManagementRestrictionOrRegulationZone data set are derived from the geometries of spatial objects in another data set, then this source data set (including its version) shall be described as part of the lineage metadata element.*

WISE reporting guidance for specific metadata elements

Table 6. WISE reporting guidance for specific metadata elements.

#	Metadata element	Reporting guidance
2.1	Topic category	Select at least option 012 (inlandWaters). This element is required.
3.1	Keyword value	Select the appropriate keywords from the WISE metadata keywords list (http://converters.eionet.europa.eu/xmlfile/WISE_metadata_keywords_1.xml) and identify the corresponding vocabulary. This element is required.
5.1	Temporal extent	Provide the period covered by the spatial data reported. The period should be defined by the planning period for which the real-world entities are expected to be valid. This element is required.
5.2	Date of publication	Provide the date of the reporting deadline of the period specified with Metadata element 5.1. This element is required.
5.3	Date of last revision	Provide the date of the last submitted update to the data set. This element is required.
8.1	Conditions for access and use	In accordance to the INSPIRE Technical Guidelines for the implementation of INSPIRE dataset and service metadata based on ISO/TS 19139:2007: *For detailed information about the licensing of the resource it is recommended to provide a link to a license type (e.g. http://creativecommons.org/licenses/by/3.0), a website or to a document containing the necessary information.* See also the WFD guidance about reporting the data set licence.
8.2	Limitations on public access	Limitations on public access, if any, must be clearly stated in the metadata. If no restrictions are stated, Category 3 will be applied (see the Data policy section, below) and a default no limitations to public access value will be assumed. Note that, for safety or security reasons, Data Providers may flag that the location of some monitoring sites (e.g. drinking water abstractions) must not be published. These restrictions are set at record-level and are always applied, regardless of the classification of the data set.
10.1	Metadata point of contact	**Warning:** The metadata point of contact information will be made publicly available when the European data sets are published. Use stable institutional emails and avoid providing information that might be construed as personal data.

INSPIRE metadata keywords for the INSPIRE priority data sets

Metadata for spatial data sets that are related to the INSPIRE priority data set list should include descriptive keywords from the INSPIRE priority data set code list, according to the implementation guidelines.

The European Commission Actions to Streamline Environmental Reporting[5] aim to put environmental reporting on a path towards more transparency, more focused reporting and more effective regulatory monitoring. Action no. 6 promotes the full implementation of the INSPIRE Directive with priority for data sets that are most relevant for the implementation and reporting of EU environmental legislation.

The priority data set list for eReporting is developed under the INSPIRE Maintenance and Implementation (MIG) mandate in cooperation with thematic experts. It is setup as a live list of spatial data sets that are significant for the reporting under the environmental legislation.

The spatial data sets from the priority data set list are discoverable through the INSPIRE Geoportal. The INSPIRE Thematic Viewer applies thematic and spatial filtering and provides information based on metadata of spatial data sets, and view and download services. To allow this, the data providers must ensure the complete information as follows:
- *the spatial data sets have a match in the priority data set list*
- *the spatial data sets have the corresponding metadata that includes specific tags from the INSPIRE priority data set code list*
- *INSPIRE view and download services are provided with corresponding metadata*
- *the metadata for INSPIRE download service includes a proper link to the resource / spatial data set*
- *the metadata for spatial data sets and related INSPIRE view and download services are discoverable in the INSPIRE Geoportal.*

The following two tables show the spatial data sets in Floods Directive reporting that are mapped to the priority data set list. The tables include the proposed metadata keywords (tags) from the INSPIRE priority data set code list.

The INSPIRE priority data set code list is a hierarchical code list, progressively indicating more detailed thematic information. It is recommended to apply the keywords that provide the most detailed information about the content of the spatial data sets, i.e. the keywords at the lowest level in the hierarchical chain. This lowest level is marked green in the table below.
It is enough to provide one keyword only. It is also possible to apply several keywords from different thematic areas for the spatial data sets that include mixed content, or are used in diverse reporting obligations.

Table 7. Spatial data sets and INSPIRE priority data set list metadata tagging.

Floods Directive	Priority data set list		Metadata keywords from the INSPIRE priority data set code list			
Spatial data sets	No.	Spatial data sets	INSPIRE hierarchical code list		INSPIRE code list URL (lower level)	
			Level 1	Level 2	Level 3	
Areas of Potential Significant Flood Risk	13.01	FD areas of potential significant flood risk	Directive 2007/60/EC	Areas of Potential significant flood risk (Floods Directive)		http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/AreasOfPotentialSignificantFloodRisk-dir-2007-60	
Preliminary Flood Risk Assessment - past events	14.01	FD PFRA observed events	Directive 2007/60/EC	Preliminary flood risk assessment (Floods Directive)	Preliminary flood risk assessment - observed events (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/PreliminaryFloodRiskAssessment-ObservedEvents-dir-2007-60	
Preliminary Flood Risk Assessment - future events	14.02	FD PFRA potential future events	Directive 2007/60/EC	Preliminary flood risk assessment (Floods Directive)	Preliminary flood risk assessment - potential future events (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/PreliminaryFloodRiskAssessment-PotentialFutureEvents-dir-2007-60	
Units of Management	17.01	FD units of management	Directive 2007/60/EC	Management units (Floods Directive)		http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/ManagementUnits-dir-2007-60	
Sub-units of management	17.01	FD units of management	Directive 2007/60/EC	Management units (Floods Directive)		http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/ManagementUnits-dir-2007-60	
Flood hazard maps - floods with low probability, or extreme event scenarios	15.01	FD hazard areas low probability scenario	Directive 2007/60/EC	Flooded areas (Floods Directive)	Flood hazard areas low probability scenario (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/FloodHazardAreasLowProbabilityScenario-dir-2007-60	(1)
Flood hazard maps - flood with a medium probability (likely return period ≥ 100 years)	15.02	FD hazard areas medium probability scenario	Directive 2007/60/EC	Flooded areas (Floods Directive)	Flood hazard areas medium probability scenario (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/FloodHazardAreasMediumProbabilityScenario-dir-2007-60	(1)
Flood hazard maps - floods with a high probability, where appropriate	15.03	FD hazard area high probability scenario	Directive 2007/60/EC	Flooded areas (Floods Directive)	Flood hazard areas high probability scenario (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/FloodHazardAreasHighProbabilityScenario-dir-2007-60	(1)
Flood risk maps - low probability scenario	16.01	FD flood risk zones low probability scenario	Directive 2007/60/EC	Flood risk zones (Floods Directive)	Flood risk zones low probability scenario (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/FloodRiskZonesLowProbabilityScenario-dir-2007-60	(1)
Flood risk maps - medium probability scenario	16.02	FD flood risk zones medium probability scenario	Directive 2007/60/EC	Flood risk zones (Floods Directive)	Flood risk zones medium probability scenario (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/FloodRiskZonesMediumProbabilityScenario-dir-2007-60	(1)
Flood risk maps - high probability scenario	16.03	FD flood risk zones high probability scenario	Directive 2007/60/EC	Flood risk zones (Floods Directive)	Flood risk zones high probability scenario (Floods Directive)	http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset/FloodRiskZonesHighProbabilityScenario-dir-2007-60	(1)

Notes:
(1) Applicable to the metadata of flood hazard maps and flood risk maps and corresponding spatial data sets, where such information can be directly accessed from the national sources.

Data exchange

INSPIRE identifiers

The INSPIRE Directive requires the adoption of a common framework for the unique identification of spatial objects to support interoperability of spatial data across Europe.

The use of URIs (Uniform Resource Identifier) for spatial objects and other resources such as code list values and coordinate reference systems is considered prudent. On the web, URIs are typically URLs in the HTTP or HTTPS scheme (i.e. URLs starting with "http:" or "https:").

The inspireId is the property that uniquely identifies an INSPIRE object. It must be stable and clearly identify the object in its specific domain. The inspireId is a complex element consisting of localId, namespace and version. Use the namespace and localId to build a unique identifier:

For example, in
`https://registry.gdi-de.org/id/de.by.APSF/AreasOfPotentialFloodRisk_DERP1234000002Fy`

- namespace: `https://registry.gdi-de.org/id/de.by.APSF`
- localId: `AreasOfPotentialFloodRisk_DERP1234000002Fy`
- version: `2018-03-09T13:58:00+01:00`

The version uses the format (`YYYY-MM-DDT00:00:00+01:00`).

Thematic identifiers

Thematic identifiers are identifiers of real-world phenomena. The concept was introduced in the INSPIRE Annex II/III data models, recognising that a given spatial object may be known under different "codes" depending on the thematic context or the reporting obligation:

> "Multiple thematic object identifiers may be assigned to a zone where different data exchange requirements (e.g. national vs European reporting) have defined different lexical rules for thematic object identifiers. Where multiple thematic object identifiers exist all should be provided. This shall allow external datasets that use these thematic object identifiers for referencing to link to the INSPIRE spatial object."

To fulfil this requirement, the INSPIRE Annex II/III data models introduced a new base type named **ThematicIdentifier**, which is composed of two elements: **identifier** and **identifierScheme**.

*Figure 2. INSPIRE **ThematicIdentifier** data type (informative only).*
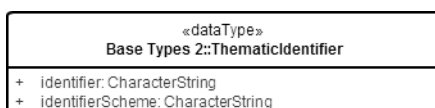
Identifiers must be unique within each identifier scheme.
Most INSPIRE Annex II/III data models include a **thematicID** element, with multiplicity 0..*, and **ThematicIdentifier** data type.

Furthermore, according to the INSPIRE Generic Conceptual Model (D2.5_v3.4rc3):

> INSPIRE data models should aim at not duplicating information that is already covered by existing reporting data flows in order not to create an additional burden on Member States. Since reporting

obligations and the maturity of data flows and reporting sheets differ in the different INSPIRE themes, the following specific principles should be applied:

- *Where there are existing and well-established data flows for reporting data from Member States to the Commission / EEA, INSPIRE data models should be limited to providing spatial objects and attributes that allow "joining" the reporting data to the spatial objects (e.g. external object identifiers or thematic identifiers).*

In the WISE spatial data models, thematic identifiers are adopted to "join" the non-spatial data (in the different reporting obligations) to the spatial objects.

Given that complex XML data types are avoided in the current WISE spatial data models, two elements are always used to encode the thematic identifier:

- **thematicIdIdentifier** and
- **thematicIdIdentifierScheme**.

Using thematic identifiers to identify units of management, sub-units, APSFRs and PFRA events

The identifier scheme (i.e. the scope within which an identifier is valid) varies according to the object type and according to the data flow that establishes the reporting obligation. The thematic identifiers are unique within a given identifier scheme. The full list of the WISE thematic identifiers can be accessed in the WISE vocabularies (Table 8). Some objects may have identifiers in two different lists: only one should be valid.

The WISE identifiers must:

- Start with the ISO 3166-1 alpha-2 country code, **except for Greece ('EL') and the United Kingdom ('UK')**;
- Be followed by the national code, with a maximum of **40 characters**;
- Use only **upper case letters** [A to Z] and **digits** [0 to 9].
  The **underscore** character ('_') or the **hyphen** character ('-') may be used as separators within the code (but not to separate the country code from the national code, and not in the end of the code).

Note: If the national identifiers have a syntax that is not compatible with the requirements of the WISE thematic identifiers, they can still be reported in the INSPIRE **localId** element. That should allow Data Providers to keep a clear mapping between the national identifiers and the European identifiers.

Table 8. Floods identifier schemes for the different spatial object types.

WISE vocabulary	Spatial Object	Floods Identifier Scheme
< none defined >	Preliminary Flood Risk Assessment for Past Events	*euPFRACode*
< none defined >	Preliminary Flood Risk Assessment for Future Events	*euPFRACode*
< none defined >	Areas of Potential Flood Risk	*euAPSFRCode*
< none defined >	Sub-units of management	*euSubUOMCode*
< none defined >	Units of Management	*euUOMCode*

Character encoding

The character encoding for all data and metadata files must be UTF-8.

File formats

The spatial data sets must be reported using **GML** files.

Data Providers may prepare the data using the *shapefile* format. *Shapefile* templates are available, and a *shapefile* to GML conversion tool is also provided (see below).
The GML files resulting from this conversion must be uploaded to the delivery envelope in CDR.
The *shapefiles* must <u>not</u> be uploaded to the delivery envelope.

Some restrictions were adopted in the schemas to allow a similar description of the data sets regardless of the file format (GML or *shapefile*). For example, each type of geometry is reported in a separate data file (due to the limitations of the *shapefile* format).
See the CDR help page for further information: http://cdr.eionet.europa.eu/help/Floods

GML format

The schemas are available in the Data Dictionary for download at
http://dd.eionet.europa.eu/schemaset/Floods/view and further information is provided at
http://cdr.eionet.europa.eu/help/Floods/Floods_2018/index.html

Shapefile format

Shapefile templates are provided in the CDR help page. The templates must be used when preparing the data and using the conversion tools to from *shapefile* to GML.

Shapefiles must have the three structural files (*.shp, *.shx and *.dbf) and the *.prj and *.cpg files. *Shapefiles* without the *.prj projection file (or with an incorrect definition of the coordinate system) will not be processed by the conversion tools. The *.cpg file is also mandatory as it is explicitly identifies the character encoding used in the *.dbf file. Remember that the mandatory encoding is UTF-8.
Shapefiles with different fields in the attribute table will not be processed. This includes: additional fields, different field names or different field types. Note that the field names in a *shapefile* must have a maximum of 10 characters, so a "short" version of the GML names was defined for the *shapefile* templates (see the " *INSPIRE Quick Reference* Card").

The DBF format used in the *shapefile* attribute table does not support NULL values (i.e. there is no difference between a NULL string and an empty string, or between a NULL value and a zero value). Also the structure of the table is fixed for all records (i.e. even if an optional attribute is not provided or is not applicable to a given record). To circumvent these limitations, Data Providers are requested to explicitly provide the conventional null values depending on the field type:

- Use '**NotApplicable**' for string fields;
- Use **-9999** for numeric fields;
- Use **9999-12-31** for date fields.

The DBF format has a maximum length of 254 characters for string fields. Be aware of this limitation.

File naming convention

The filenames of the spatial data sets must follow the following naming convention:

 (DataSetType)_CountryCode_YYYY-MM-DD.xml/gml

File naming convention.

Code	Description
(DataSetType)	Identification of the content of the data set. • UnitsOfManagement • SubUnits • **APSFR_Polygon** for Areas of Potential Significant Flood Risk polygonal geometries • **APSFR_Line** for Areas of Potential Significant Flood Risk linear geometries • **APSFR_Point** for Areas of Potential Significant Flood Risk point geometries • **PFRAPE_Polygon** for Preliminary Flood Risk Assessment Past Events polygonal geometries • **PFRAPE_Line** for Preliminary Flood Risk Assessment Past Events linear geometries • **PFRAPE_Point** for Preliminary Flood Risk Assessment Past Events point geometries • **PFRAFE_Polygon** for Preliminary Flood Risk Assessment Future Events polygonal geometries • **PFRAFE_Line**, for Preliminary Flood Risk Assessment Future Events linear geometries • **PFRAFE_Point**, for Preliminary Flood Risk Assessment Future Events point geometries
(CountryCode)	ISO country code (2 characters)
(Date)	Submission date in the format YYYY-MM-DD
(File extension)	Depends on the file format: gml or xml

An example for the APSFR dataset is shown below. The same structure can be followed for the other datasets.

Areas of Potential Significant Flood Risk datasets:

• APSFR_Line_AT_2019-02-01.gml

See the "ReportingWorkflowGuide" for more information:
http://cdr.eionet.europa.eu/help/Floods/Floods_2018/documents/ReportingWorkflowGuide

Data submission

Data must be uploaded in the Reportnet Central Data Repository (CDR).

Data Providers reporting under Floods are referred to the instructions provided in section **WISE Reporting obligations** of the Floods Reporting Guidance 2018. Collections have already been created in CDR for the reporting of spatial data:

- APSFR & PFRA: http://cdr.eionet.europa.eu/{country_code}/eu/floods2019/pfra_2019/spatial/
- UoM & CA: http://cdr.eionet.europa.eu/{country_code}/eu/floods2019/uomca_2019/spatial/
- FHRM: http://cdr.eionet.europa.eu/{country_code}/eu/floods2019/fhrm_2020/spatial/

Resubmissions and updates

If data is resubmitted or updated, then complete data sets have to be uploaded.
Incomplete spatial data sets will not pass the referential integrity quality control and thus cannot be further processed.

Data policy

Under the "WISE Reporting Arrangements", Member States have agreed on the conditions applicable to spatial data (see Annex 1 of the WISE Reporting Arrangements). For ease of reference, an extract of the current agreement (dated 2007-03-01) is transcribed below. The agreement may be subject to future changes.

Data storage

The European Commission (EC) and the European Environmental Agency (EEA) will store the geographic datasets on servers managed and accessible by the staff of the EC and the EEA. DG Environment will distribute parts or the entire datasets within the Commission, the EEA and to contractors, these last for the sole purpose of activities executed for the Commission and/or the EEA and limited to the duration of those activities.

Data usage

The Commission and the EEA are authorised to use the geographic data in the context of environmental policy definition, implementation, assessment and analysis:

- As geographic reference, i.e. creating a geographical context for other data;
- For the production of maps, publications, posters, presentations, web sites and any other electronic publication on the Internet. Electronic publication will be in the form of image maps;
- For spatial and statistical analysis;
- For deriving new geographic datasets by applying data manipulation procedures, e.g. combining different geographic datasets, generalisation procedures including smoothing and dropping of spatial features, adding new attribute information;
- For inclusion of the geographic data in other applications provided that it will not be possible to extract the original geographic data.

Data distribution

The Commission and the EEA are authorized to distribute geographic data, if

- The source is acknowledged and,
- The data is not used for commercial purpose – unless approved by the provider - and,
- The data provider has not explicitly restricted their dissemination beyond what specified at "Category 2" (see definition below).

[…]Distribution media of geographic data are paper publications, electronic publications, offline distribution on physical supports (e.g. CD-ROMs) and online distribution via the Internet services. Geographic data may be distributed as feature services on the Internet or vector data on physical support, only if data distribution conditions are met as specified in the metadata.

The metadata related to the geographic data and the derived geographic data will be distributed via a data catalogue service within the Commission, the EEA and to the public without any restrictions.
An acknowledgement of source including statement on legal constraints on access and use of geographic data, where appropriate, will be supplied with geographic data and derived products as part of the metadata information or as an accompanying document. […]

Categories for distribution of geographic data and derived products as part [of the] metadata element on data constraints:

- Category 1: Internal use within Commission and EEA, publication as maps on paper or in electronic format as image maps.
- Category 2: Distribution of derived data and products under predefined conditions with the aim of decreasing the spatial accuracy or resolution of the geographic data.
- Category 3: Distribution of original data electronically as feature service or on physical support.

Floods Directive spatial datasets and INSPIRE themes

INSPIRE Area Management / Restriction / Regulation Zones and Reporting Units Theme

Introduction

This section provides information about the relationship between the Floods Directive spatial data set units of management and the INSPIRE Area Management / Restriction / Regulation Zones and Reporting Units Theme (Annex III).

Units of Management

The table below shows the data model for the Units of Management.
Mandatory and conditional elements for reporting are presented in the first table.
Elements for reporting, but filled in automatically with a default value are presented in the second table.
Voidable elements for reporting can be found in the extensive tables (see QuickReferenceCard.xlsx support file).
Certain elements of the spatial reporting may be reported instead in the descriptive, especially when reporting in the spatial is not possible due to limitations (e.g. element is not present in Shapefile templates). Such elements are listed in the third table below.

Mandatory elements				
Name	Datatype	Length	Source	Guidance
localId	Text	254	INSPIRE	It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. It is recommended that Data Providers reporting under Floods Directive use the value of the euUoMId as the localId. It shall be the same as the ID used for reporting obligations under the Water Framework Directive [2000/60/EC].
namespace	Text	254	INSPIRE	Data Providers must report the namespace of the data source of the spatial object, if an INSPIRE data set was used for reporting. The namespace shall not be changed during the life-cycle of a spatial object.
ThematicId	Text	254	INSPIRE	Data Providers reporting under Floods Directive must use the euUoMId as the thematicIdIdentifier. Note that the value of thematicIdIdentifier attribute will be the same as the value of the localId attribute, if the Data Provider followed the INSPIRE recommendation.
IdScheme	Text	254	INSPIRE	Identifier defining the scheme used to assign the identifier. Data Providers reporting under Floods Directive must use the default value 'euUoMCode' for the thematicIdIdentifierScheme attribute.
DocNumber	Text	254	INSPIRE	Official document number used to uniquely identify the legislative instrument.
DateEnterd	Date	N/A	INSPIRE	Date the legislative instrument entered into force.
DateRepld	Date	N/A	INSPIRE	Date the legislative instrument was repealed.
Level	Text	254	INSPIRE	The level at which the legislative instrument is adopted: {european , international, national, sub-national)
journalCit	Text	254	INSPIRE	Citation of the official journal in which the legislation is published.
JournalId	Text	254	INSPIRE	Reference to the location within the official journal within which the legislative instrument was published. This reference shall be comprised of three parts: - the title of the official journal - the volume and/or series number

Mandatory elements				
Name	Datatype	Length	Source	Guidance
ISSN	Text	254	INSPIRE	- page numbers(s) EXAMPLE: Official Journal of European Union (OJEU), L108, Volume 50, 1-14 The International Standard Serial Number (ISSN) is an eight-digit number that identifies the periodical publication in which the legislative instrument was published. EXAMPLE: OJ Series in which INSPIRE Directive is published has been assigned the ISSN: 1725-2555
ISBN	Text	254	INSPIRE	International Standard Book Number (ISBN) is a nine-digit number that uniquely identifies the book in which the legislative instrument was published.
linkJourna	Text	254	INSPIRE	Link to an online version of the official journal

Automated reporting		
Name	Source	Populated with value
ZonTypeCod	INSPIRE	floodUnitOfManagement
EnvDomain	INSPIRE	Water
IdentifNum	INSPIRE	2007/2/EC

Spatial reporting elements that can be reported in Descriptive instead	
Element in Spatial Reporting	Element in Descriptive Reporting
competentAuthority/individualName	CA_UOM/creator
competentAuthority/organisationName	CA_UOM/CompetentAuthority/competentAuthorityName
competentAuthority/contact	CA_UOM/email
competentAuthority/role	CA_UOM/CompetentAuthorityRole/roleCode
geographicalName/spelling/text	CA_UOM/UnitOfManagement/uomName

Sub-units of Management

The table below shows the reporting data structure (this reporting is optional) for the Sub-units of Management schema.
Mandatory and conditional elements for reporting are presented in the first table.
Elements for reporting, but filled in automatically with a default value are presented in the second table.
Voidable elements for reporting can be found in the extensive tables (see QuickReferenceCard.xlsx support file).
Certain elements of the spatial reporting may be reported instead in the descriptive, especially when reporting in the spatial is not possible due to limitations (e.g. element is not present in Shapefile templates). Such elements are listed in the third table below.

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
localId	Text	254	INSPIRE	It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. It is recommended that Data Providers reporting under Floods Directive use the value of the euUoMId as the localId.
namespace	Text	254	INSPIRE	It shall be the same as the ID used for reporting obligations under the Water Framework Directive [2000/60/EC]. Data Providers must report the namespace of the data source of the spatial object, if an INSPIRE data set was used for reporting.

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
ThematicId	Text	254	INSPIRE	The namespace shall not be changed during the life-cycle of a spatial object. Data Providers reporting under Floods Directive must use the euUoMId as the thematicIdIdentifier. Note that the value of thematicIdIdentifier attribute will be the same as the value of the localId attribute, if the Data Provider followed the INSPIRE recommendation.
IdScheme	Text	254	INSPIRE	Identifier defining the scheme used to assign the identifier. Data Providers reporting under Floods Directive must use the default value 'euUoMCode' for the thematicIdIdentifierScheme attribute.
DocNumber	Text	254	INSPIRE	Official document number used to uniquely identify the legislative instrument.
DateEnterd	Date	N/A	INSPIRE	Date the legislative instrument entered into force.
DateRepld	Date	N/A	INSPIRE	Date the legislative instrument was repealed.
Level	Text	254	INSPIRE	The level at which the legislative instrument is adopted: {european , international, national, sub-national)
journalCit	Text	254	INSPIRE	Citation of the official journal in which the legislation is published.
JournalId	Text	254	INSPIRE	Reference to the location within the official journal within which the legislative instrument was published. This reference shall be comprised of three parts: - the title of the official journal - the volume and/or series number - page numbers(s) EXAMPLE: Official Journal of European Union (OJEU), L108, Volume 50, 1-14
ISSN	Text	254	INSPIRE	The International Standard Serial Number (ISSN) is an eight-digit number that identifies the periodical publication in which the legislative instrument was published. EXAMPLE: OJ Series in which INSPIRE Directive is published has been assigned the ISSN: 1725-2555
ISBN	Text	254	INSPIRE	International Standard Book Number (ISBN) is a nine-digit number that uniquely identifies the book in which the legislative instrument was published.
linkJourna	Text	254	INSPIRE	Link to an online version of the official journal
relZoneId	Text	254	Extended	Reference to a related management, regulation or restriction zone. . Use the 'euUoM ID'.
relZonSche	Text	254	Extended	Identifier defining the scheme used to assign the identifier value in the relatedZoneIdentifier attribute. Use the 'euUoM Code'.

Automated reporting		
Attribute Name	INSPIRE/Extended element	Populated with value
ZonTypeCod	INSPIRE	floodUnitOfManagement
EnvDomain	INSPIRE	Water
IdentifNum	INSPIRE	2007/2/EC

INSPIRE Natural Risk Zones Theme

Introduction

This section provides information about the relationship between the Floods Directive spatial data sets for areas of potential significant flood risk and preliminary flood risk assessment and the INSPIRE Natural Risk Zone theme (Annex III).

In addition, this section provides information about the conceptual mapping between the elements in the Floods spatial data model and the elements in the INSPIRE data model.

Area of potential significant flood risk

The table below shows the reporting data structure for the Area of Potential Significant Flood Risk schema. If more than one UoM code is to be reported in the same feature, must have a comma between them.
Mandatory and conditional elements for reporting are presented in the first table.
Elements for reporting, but filled in automatically with a default value are presented in the second table.
Voidable elements for reporting can be found in the extensive tables (see QuickReferenceCard.xlsx support file).
Certain elements of the spatial reporting may be reported instead in the descriptive, especially when reporting in the spatial is not possible due to limitations (e.g. element is not present in Shapefile templates). Such elements are listed in the third table below.

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
localId	Text	254	INSPIRE	It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. Use the 'euAPSFR ID'. Verify whether the localId attributes of the external object identifier remain the same for different versions of a spatial object.
namespace	Text	254	INSPIRE	Data Providers must report the namespace of the data source of the spatial object, if an INSPIRE data set was used for reporting. The namespace shall not be changed during the life-cycle of a spatial object.
ThematicId	Text	254	INSPIRE	Verify whether the namespace and localId attributes of the external object identifier remain the same for different versions of a spatial object. Data Providers reporting under Floods Directive must use the euUoMId as the thematicIdIdentifier.
IdScheme	Text	254	INSPIRE	Note that the value of thematicIdIdentifier attribute will be the same as the value of the localId attribute, if the Data Provider followed the INSPIRE recommendation. Identifier defining the scheme used to assign the identifier.
beginLife	Date	N/A	INSPIRE	Data Providers reporting under Floods Directive must use the default value 'euUoMCode' for the thematicIdIdentifierScheme attribute. Date and time at which this version of the spatial object was inserted or changed in the spatial data set.
qualitVal	Text	254	INSPIRE	A qualitative assessment of the level or intensity. Conditional. Either the quantitative value or the qualitative value must be completed.
quantiVal	Double	N/A	INSPIRE	A quantitative assessment of the level or intensity. Conditional. Either the quantitative value or the qualitative value must be completed.
Uom	Text	254	INSPIRE	Unit of measure accompanying the numerical quantity declared or measured (quantitVal).

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
relZoneId	Text	254	Extended	Mandatory when quantitVal is filled in. For each APSFR, the identifier of the relatedZone must be provided 'euUoM ID' to establish the relation to a related management, regulation or restriction zone.
relZonSche	Text	254	Extended	Identifier defining the scheme used to assign the identifier value in the relZoneId attribute. Use the value 'euUoMCode''.

Automated reporting		
Attribute Name	INSPIRE/Extended element	Populated with value
hazardCate	INSPIRE	flood

Spatial reporting elements that can be reported in Descriptive instead	
Element in Spatial Reporting	Element in Descriptive Reporting
sourceOfRisk/specificHazardType	APSFR/APSFRData/TypeOfFloods/sourceOfFlooding

Preliminary Flood Risk Assessment Past Events

The table below shows the reporting data structure of the Preliminary Flood Risk Assessment Past Events schema.
If more than one UoM code is to be reported in the same feature, must have a comma between them.
Mandatory and conditional elements for reporting are presented in the first table.
Elements for reporting, but filled in automatically with a default value are presented in the second table.
Voidable elements for reporting can be found in the extensive tables (see QuickReferenceCard.xlsx support file).
Certain elements of the spatial reporting may be reported instead in the descriptive, especially when reporting in the spatial is not possible due to limitations (e.g. element is not present in Shapefile templates). Such elements are listed in the third table below.

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
localId	Text	254	INSPIRE	It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. Use the 'euPFRAPastEventsID'. Verify whether the localId attributes of the external object identifier remain the same for different versions of a spatial object.
namespace	Text	254	INSPIRE	Data Providers must report the namespace of the data source of the spatial object, if an INSPIRE data set was used for reporting. The namespace shall not be changed during the life-cycle of a spatial object.

			Mandatory elements for reporting	
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
ThematicId	Text	254	INSPIRE	Verify whether the namespace and localId attributes of the external object identifier remain the same for different versions of a spatial object. Data Providers reporting under Floods Directive must use the euUoMId as the thematicIdIdentifier.
IdScheme	Text	254	INSPIRE	Note that the value of thematicIdIdentifier attribute will be the same as the value of the localId attribute, if the Data Provider followed the INSPIRE recommendation. Identifier defining the scheme used to assign the identifier.
beginLife	Date	N/A	INSPIRE	Data Providers reporting under Floods Directive must use the default value 'euUoMCode' for the thematicIdIdentifierScheme attribute. Date and time at which this version of the spatial object was inserted or changed in the spatial data set.
qualitVal	Text	254	INSPIRE	A qualitative assessment of the level or intensity. Conditional . Either the quantitative value or the qualitative value must be completed.
quantiVal	Double	N/A	INSPIRE	A quantitative assessment of the level or intensity. Conditional. Either the quantitative value or the qualitative value must be completed.
uom	Text	254	INSPIRE	Unit of measure accompanying the numerical quantity declared or measured (quantitVal). Mandatory when quantitVal is filled in. Identifier of the feature object being observed.
featIntId	Text	254	Extended	Use the 'euUoM ID' value of the element to which this feature object is assigned. Optional reporting. Identifier defining the scheme used to assign the identifier value in the featIntId attribute.
featIntSch	Text	254	Extended	Use the 'euUoM Code' value of the element. Optional reporting.

	Automated reporting	
Attribute Name	INSPIRE/Extended element	Populated with value
hazardCate	INSPIRE	flood

Spatial reporting elements that can be reported in Descriptive instead	
Element in Spatial Reporting	Element in Descriptive Reporting
sourceOfRisk/specificHazardType	PFRA/PFRAInformation/FloodData/TypeOfFlood/sourceOfFlooding
nameOfEvent	PFRA/PFRAInformation/FloodData/nameOfFloodEvent

Preliminary Flood Risk Assessment Future Events

The table below shows the reporting data structure for the Preliminary Flood Risk Assessment Future Events schema.
If more than one UoM code is to be reported in the same feature, must have a comma between them.

Mandatory and conditional elements for reporting are presented in the first table.
Elements for reporting, but filled in automatically with a default value are presented in the second table.
Voidable elements for reporting can be found in the extensive tables (see QuickReferenceCard.xlsx support file).
Certain elements of the spatial reporting may be reported instead in the descriptive, especially when reporting in the spatial is not possible due to limitations (e.g. element is not present in Shapefile templates). Such elements are listed in the third table below.

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
localId	Text	254	INSPIRE	It is the responsibility of the data provider to guarantee uniqueness of the local identifier within the namespace. Use the 'euPFRAFutureEventsID'. Verify whether the localId attributes of the external object identifier remain the same for different versions of a spatial object.
namespace	Text	254	INSPIRE	Data Providers must report the namespace of the data source of the spatial object, if an INSPIRE data set was used for reporting. The namespace shall not be changed during the life-cycle of a spatial object.
ThematicId	Text	254	INSPIRE	Verify whether the namespace and localId attributes of the external object identifier remain the same for different versions of a spatial object. Data Providers reporting under Floods Directive must use the euUoMId as the thematicIdIdentifier.
IdScheme	Text	254	INSPIRE	Note that the value of thematicIdIdentifier attribute will be the same as the value of the localId attribute, if the Data Provider followed the INSPIRE recommendation. Identifier defining the scheme used to assign the identifier.
beginLife	Date	N/A	INSPIRE	Data Providers reporting under Floods Directive must use the default value 'euUoMCode' for the thematicIdIdentifierScheme attribute. Date and time at which this version of the spatial object was inserted or changed in the spatial data set.
qualitLike	Text	254	INSPIRE	A qualitative assessment of the likelihood of occurrence of a hazard. Conditional. Either the qualitative likelihood or the quantitative likelihood must be completed.
quantiLike	Double	N/A	INSPIRE	A frequency of occurence or return period of a hazard phenomenon. The quantiLike (qualitativeLikelihood) element consists of 2 elements: probOcurr (probabilityOfOccurrence) and returnPer (returnPeriod).
DetMethod	Text	254	INSPIRE	Conditional. Either the qualitative likelihood or the quantitative likelihood must be completed. Specifies if the Preliminary Flood Risk Area result is delineated after modelling or determined after interpretation. Fill in with available enumeration values: "modelling" or "indirect determination".

Mandatory elements for reporting				
Attribute Name	Type of data	Length	INSPIRE/Extended element	Guidance
featIntId	Text	254	Extended	Identifier of the feature object being observed. Use the "euUoM ID" value of the element to which this feature object is assigned. Optional reporting.
featIntSch	Text	254	Extended	Identifier defining the scheme used to assign the identifier value in the featIntId attribute. Use the "euUoM Code". Optional reporting.

Automated reporting		
Attribute Name	INSPIRE/Extended element	Populated with value
hazardCate	INSPIRE	flood

Spatial reporting elements that can be reported in Descriptive instead	
Element in Spatial Reporting	Element in Descriptive Reporting
sourceOfRisk/specificHazardType	PFRA/PFRAInformation/FloodData/TypeOfFlood/sourceOfFlooding

Using thematic identifiers and association roles to relate two objects with different types

An association is a general relation between two or more objects, where at least one of the objects has knowledge of the other one (reporting is upwards) and can access that object's data and methods. The thematic identifiers are also used to link objects of different types.
In Floods reporting, the INSPIRE spatial data models have been extended to allow the spatial join between datasets.

Areas of Potential Significant Flood Risk are linked to the UoM through the relatedZone role, present in APSFR, by using the 'euUoMId'. APSFR´s are optionally linked too to SubUnits in the same way.

SubUnits are optionally linked to UoM´s through the relatedZone role, present in SubUnit, by using the 'euUoMId'.

The Preliminary Flood Risk Assessment areas for Past Events and for Future Events use the featureOfInterest role (optional reporting) to be optionally linked to the Units of Management, SubUnits and Areas of Potential Significant Flood Risk, , by using the 'euUoMId'.
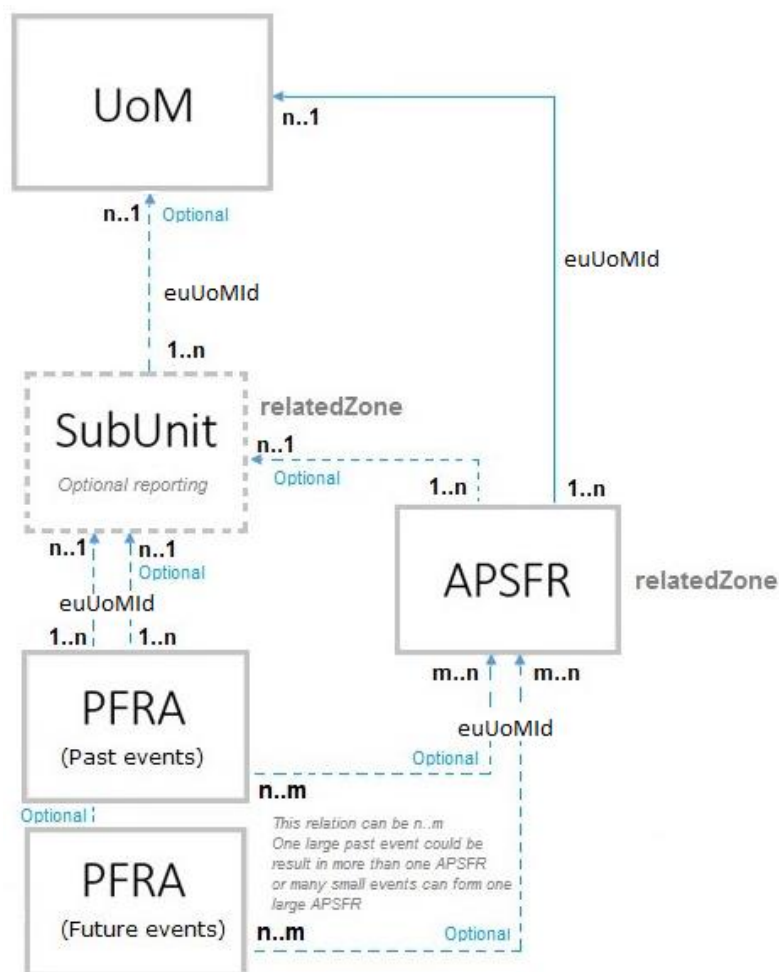

Figure 1. Overview of the relationships between different Floods Directive spatial object types.

INSPIRE Quick Reference Card

INSPIRE theme	INSPIRE element	FLOODS GML data element	UoM	SubUnit	APSFR	PFRAPastEvents	PFRAFutureEvents	UoM (Shapefile)	SubUnit (Shapefile)	APSFR (Shapefile)	PFRAPastEvents (Shapefile)	PFRAFutureEvents (Shapefile)
AM (Area of Management)	geometry	geometry	m	m	m	m	m	shape	shape	shape	shape	shape
	inspireId	localId	m	m	m	m	m	localId	localId	localId	localId	localId
	inspireId	namespace	m	m	m	m	m	namespace	namespace	namespace	namespace	namespace
	inspireId	vestionId	o	o	o	o	o					
	thematicId	identifier	c	c	c	c	c	ThematicId	ThematicId	thematicId	thematicId	thematicId
	thematicId	identifierScheme	c	c	c	c	c	IdScheme	IdScheme	idScheme	idScheme	idScheme
	zoneTypeCode	zoneTypeCode	m	m				ZonTypeCod	ZonTypeCod			
	specialisedZoneType	specialisedZoneTypeCode	o	o								
	environmentalDomain	EnvironmentalDomain	m	m				EnvDomain	EnvDomain			
	designationPeriod	beginPosition	m	m								
	designationPeriod	endPosition	o	o								
	competentAuthority	individualName	c	c								
	competentAuthority	organisationName	c	c								
	competentAuthority	positionName	c	c								
	competentAuthority	contact	o	o								
	competentAuthority	role	o	o								
	beginLifespanVersion	beginLifespanVersion	m	m	m	m	m			beginLife	beginLife	beginLife
	endLifespanVersion	endLifespanVersion	o	o	o	o	o					
	DocumentCitation	name	c	c								
	DocumentCitation	shortName	o	o								
	DocumentCitation	date	o	o								
	DocumentCitation	link	o	o								
	DocumentCitation	specificReference	o	o								
	LegislationCitation	identificationNumber	o	o				IdentifNum	IdentifNum			
	LegislationCitation	officialDocumentNumber	o	o				DocNumber	DocNumber			
	LegislationCitation	dateEnteredIntoForce	o	o				DateEnterd	DateEnterd			
	LegislationCitation	dateRepealed	o	o				DateRepld	DateRepld			
	LegislationCitation	level	o	o				Level	Level			
	LegislationCitation	journalCitation	o	o					journalCit			
	OfficialJournalInformation	officialJournalIdentification	c	c				journalId	journalId			
	OfficialJournalInformation	ISSN	o	o				ISSN	ISSN			
	OfficialJournalInformation	ISBN	o	o				ISBN	ISBN			
	OfficialJournalInformation	linkToJournal	o	o				linkJourna	linkJourna			
	geographicalName	spelling/text	c	c								
	geographicalName	spelling/script	c	c								
	geographicalName	spelling/transliterationScheme	o	o								
	geographicalName	language	o	o								
	geographicalName	nativeness	o	o								
	geographicalName	nameStatus	o	o								
	geographicalName	sourceOfName	o	o								
	geographicalName	pronunciation	o	o								
	geographicalName	grammaticalGender	o	o								
	geographicalName	grammaticalNumber	o	o								
NRZ (Natural Risk Zone)	LevelOfRisk	qualitativeValue			m					qualitVal		
	LevelOfRisk	quantitativeValue			m					quantiVal		
	LevelOfRisk	unitOfMeasure			m					uom		
	LevelOfRisk	assessmentMethod			m							
	sourceOfRisk	hazardCategory			m					hazardCate	hazardCate	hazardCate
	sourceOfRisk	specificHazardType			m							
	validityPeriod	beginPosition			c		c					
	validityPeriod	endPosition			o		o					
	typeOfHazard	hazardCategory				m	m					
	typeOfHazard	specificHazardType				m	m					
	likelihoodOfOccurrence	qualitativeLikelihood					m					qualitLike
	likelihoodOfOccurrence	quantitativeLikelihood					m					quantiLike
	likelihoodOfOccurrence	assessmentMethod					m					
	magnitudeOrIntensity	qualitativeLikelihood				m	m				qualitVal	
	magnitudeOrIntensity	quantitativeLikelihood				m	m				quantiVal	
	magnitudeOrIntensity	unitOfMeasure				m	m				uom	
	determinationMethod	DeterminationMethodValue					m					DetMethod
	validFrom	validFrom				m						
	validTo	validTo				o						
	nameOfEvent	nameOfEvent				m						
AR (Association role)	relatedZone	relatedZoneIdentifier	m	m	m					relZoneId	relZoneId	
	relatedZone	relatedZoneIdentifierScheme	m	m	m					relZonSche	relZonSche	
	featureOfInterest	featureOfInterestIdentifier	m			m	m				featIntId	featIntId
	featureOfInterest	featureOfInterestIdentifierScheme	m			m	m				featIntSch	featIntSch

Legend:

m	Mandatory element, must be reported
c	Conditional element, must be reported under specific circumstances
o	Optional element, can be reported

References

INSPIRE Data Specification on Natural Risk Zones and other themes – Technical Guidelines

> http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/
> https://inspire.ec.europa.eu/id/document/tg/nz
> https://inspire.ec.europa.eu/id/document/tg/am
> https://inspire.ec.europa.eu/id/document/tg/gn

INSPIRE Generic Conceptual Model

> http://inspire.ec.europa.eu/documents/Data_Specifications/D2.5_v3.2.pdf
> https://inspire-helpdesk.eu/blog/true-usability-inspire-datasets-voidable-not-optional

INSPIRE Feature Catalogue 'INSPIRE application schemas'

> http://inspire.ec.europa.eu/data-model/approved/r4618/fc/#_C32749

INSPIRE Consolidated UML Model (Annex III: AM and NZ themes)

> http://inspire.ec.europa.eu/data-model/approved/r4618-ir/html/index.htm?goto=2:1:1:1:7062

INSPIRE Interactive Data Specifications

> http://inspire-regadmin.jrc.ec.europa.eu/dataspecification/

Implementation of Identifiers using URIs in INSPIRE

> https://inspire.ec.europa.eu/implementation-identifiers-using-uris-inspire-%E2%80%93-frequently-asked-questions/59309
> http://inspire.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4rc3.pdf

INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119.
http://inspire.ec.europa.eu/documents/Metadata/MD_IR_and_ISO_20131029.pdf

Marine Strategy Framework Directive reporting resources: Recommendations for the publication of datasets under MSFD Article 19(3)

> http://cdr.eionet.europa.eu/help/msfd

- INSPIRE priority data set list for eReporting and metadata keywords
  https://ies-svn.jrc.ec.europa.eu/projects/2016-5/wiki
  http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset

Annex I – Glossary

The INSPIRE Glossary contains general terms and definitions that specify the common terminology used in the INSPIRE Directive and in the INSPIRE Implementing Rules documents.

The Glossary is available here: http://inspire-regadmin.jrc.ec.europa.eu/glossary

Annex II: Recommendations on How to Publish Downloadable Datasets Compliant with INSPIRE Directive

In this section, more details on INSPIRE Implementing Rules are given, and specific recommendations with regard to their use for implementation.

INSPIRE Compliance Overview

INSPIRE provides a common European framework for interoperability, specifying how datasets can be assembled and published so that they are interoperable and can be used in cross-border scenario's such flooding (70% of all fresh water bodies in Europe are part of trans-boundary river basins). The choice of how this should be done is down to the community of users. INSPIRE makes data interoperable – it does not improve the information contained within a dataset.

Figure 2. Conceptual overview of Inspire Components.
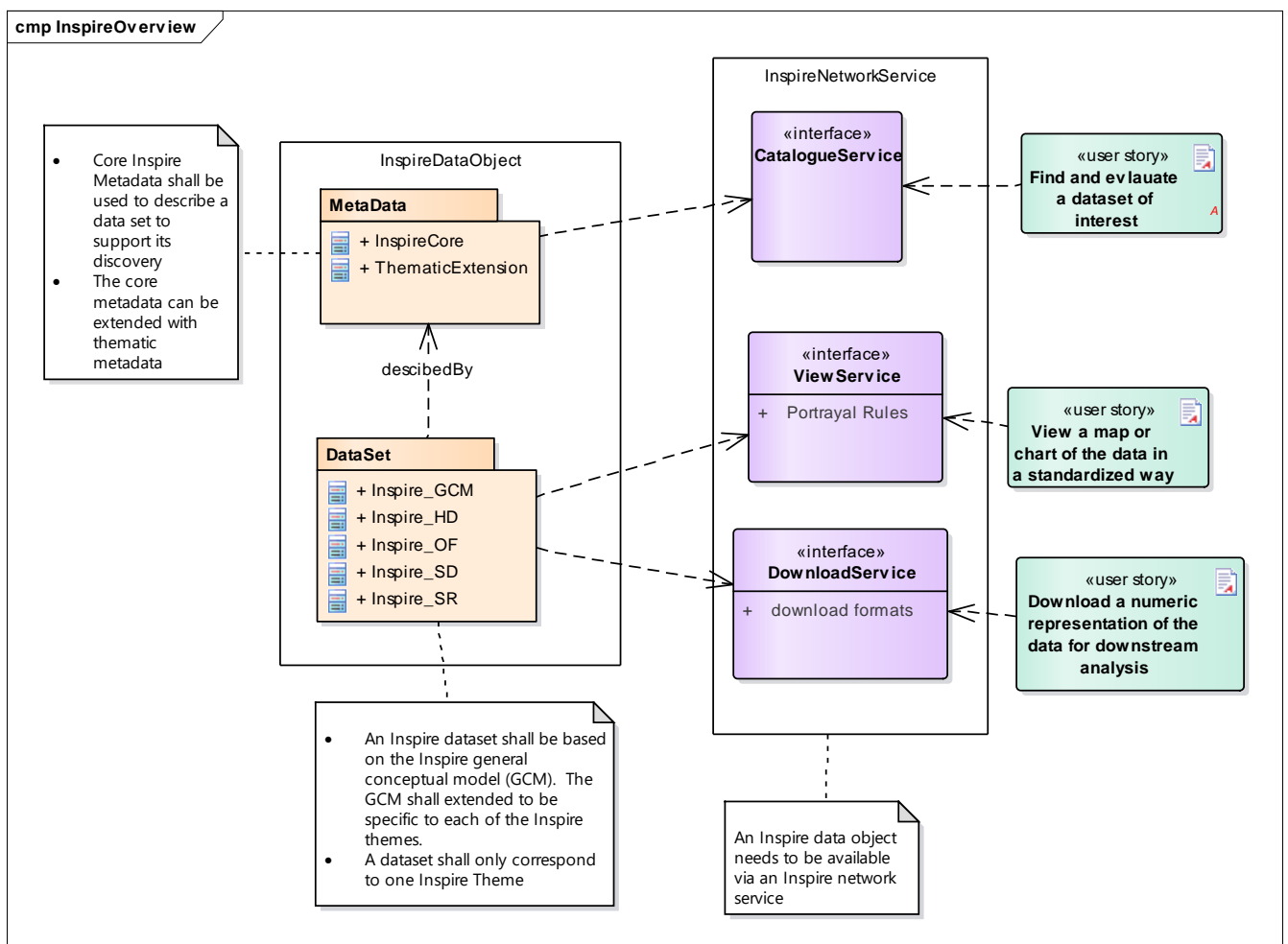
Download a numeric representation of the data for downstream analysis

A download service provides a standard way to access a data set. This can include the ability to query a data set in space and time, select features in that dataset and download the results in the form of a dataset. In order to do this, the download service requires:

- A dataset in a standard format
- A set of rules for supported download formats

As with the view service, the dataset needs to comply with the specifications of one of the Inspire annexes and the same constraints/requirements therefore apply. The data itself may be stored in database tables, or files or a hybrid of the two. INSPIRE doesn't mandate how the data is stored – this is largely a matter of deployment efficiency, e.g. available technology or structure of the data. There should, however, be a standard way to query the content of the dataset (especially time, feature and spatial extent) e.g. according to the OGC Web Feature Service or Web Coverage Service specification.

It should be noted that how the data is stored can be different to the download formats. In addition, the format delivered to the user is not fixed. INSPIRE makes recommendations in the technical guidance on download formats, but a community may request other formats to be included. Note: A format for data must specify both an encoding and content model.

It should also be noted that it is possible under INSPIRE to pre-package data downloads; this means the extent and content of the download is defined by the data publisher.

Metadata

Data sets and the Spatial Data Services providing them need to be able to be interrogated by the parties requiring the provided information to be made available. In INSPIRE two equally important requirements must be met to address this need:

- Data and service providers need to describe their resources (both datasets and services) using the metadata elements according to the corresponding INSPIRE Regulations;
- Discovery Services need to be set up in order to provide online access to query the provided metadata mentioned above.

The following documentation should be used for the implementation of the first of the abovementioned requirements:

- Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata and subsequent amendments[6]
- INSPIRE Metadata Implementing Rules Technical Guidelines based on EN ISO 19115 and EN ISO 19119 (version 1.3)[7]
- Technical Guidance for the implementation of INSPIRE dataset and service metadata based on ISO/TS 19139:2007 (version 2.0.1)[8]

The metadata elements defined as "metadata required for interoperability" are actually defined in Article 13 of the Implementing Rules on the Interoperability of Spatial Datasets and Services[9].

INSPIRE metadata tools

A metadata tool is available in the INSPIRE geoportal[10] as a RESTful Web service that can be invoked by HTTP request to validate INSPIRE Metadata is also available[11].

The validator is not intended to be an operational tool, and at the time of writing only supports validation against version 1.3 of the metadata technical guidelines. All the files of the Validator including documentation are available under EU Public License from the JoinUp Platform[12].

Currently, the design and implementation of a new more comprehensive INSPIRE validator containing validation functionality for data sets, services and metadata is in progress under the work of the MIG sub

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[6] https://inspire.ec.europa.eu/Legislation/Metadata/6541
[7] https://inspire.ec.europa.eu/documents/inspire-metadata-implementing-rules-technical-guidelines-based-en-iso-19115-and-en-iso-1
[8] https://inspire.ec.europa.eu/id/document/tg/metadata-iso19139
[9] https://inspire.ec.europa.eu/Legislation/Data-Specifications/2892
[10] http://inspire-geoportal.ec.europa.eu/editor
[11] http://inspire-geoportal.ec.europa.eu/validator2
[12] https://joinup.ec.europa.eu/software/validator/home

project MIWP 2016.3: Validation and conformity testing, with the support of the ISA Action ARE3NA (A Reusable INSPIRE Reference Platform)[13] and its follow-up ISA[2] Action ELISE (Enabling Digital Government through Geospatial and Location Intelligence)[14] The current validator already includes, among others, the tests for the Metadata TG version 1.3; the component providing the Abstract and Executable Test Suites for the TG version 2.0 are yet to be developed.

More links to validate data sets, services and metadata are:

- Interoperability Test Bed: https://joinup.ec.europa.eu/asset/itb/home
- A reusable open source reference tool for testing INSPIRE data, metadata and services: https://github.com/interactive-instruments/etf-webapp https://hub.docker.com/r/iide/etf-webapp/
- An online tutorial entitled "*Developing Abstract and Executable Test Suites for the INSPIRE validator:https://joinup.ec.europa.eu/elibrary/presentation/developing-abstract-and-executable-test-suites-inspire-validator*

Network services

Network Services[15] are services provided for in Article 11(1) of INSPIRE Directive for the discovery, viewing, download and transformation of spatial data sets and services and services allowing spatial data services to be invoked. The service shall be conformant regarding the specific requirements in Regulation 976/2009[16]. Member States shall establish and operate a network of the following services for the spatial data sets and services for which metadata have been created in accordance with this Directive:

- Discovery Services
- View Services
- Download Services
- Transformation Services
- Services allowing spatial data services to be invoked

Member States should make available, as a minimum and free of charge the following[17]:

- Discovery Services
- View Services

According to COMMISSION REGULATION (EC) No 976/2009 of 19 October 2009**[18]**, the INSPIRE Directive obliges MS to provide:

Not later than 2011	Member States shall provide the **Discovery** and **View Services** in conformity with this Regulation.
Not later than 2012	Member States shall provide the **Download Services** in conformity with this Regulation.
	Member States shall provide the **Transformation Services** in conformity with this Regulation.

For the purpose of publishing data for exchanging purposes, view and download services will be required to be accessible and discoverable through a Member States SDI. Please follow the Technical Guidelines[19].

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[13] https://joinup.ec.europa.eu/community/are3na/description
[14] https://ec.europa.eu/isa2/actions/elise_en
[15] https://inspire.ec.europa.eu/network-services/41
[16] https://inspire.ec.europa.eu/Legislation/Network-Services/41
[17] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007L0002&rid=1
[18] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02009R0976-20101228&from=EN
[19] https://inspire.ec.europa.eu/Technical-Guidelines2/Network-Services/41

Annex III: The INSPIRE participation and coordination

The development and implementation of the INSPIRE Directive involves the bodies at the European level and Member States. The INSPIRE Directive also requires Member States to designate structures and mechanisms for coordinating, across the different levels of government, the contributions of all those with an interest in their infrastructures for spatial information.

More information can be found here:

- https://inspire.ec.europa.eu/whos-who-inspire/57734
- https://inspire.ec.europa.eu/inspire-coordination/23

Annex IX: The voidable elements

In the INSPIRE data specification (Requirement 18 from INSPIRE Generic Conceptual Model) it is indicated that
if a characteristic of a spatial object may not be present in the spatial data set independent of its presence or applicability in the real world, the property shall receive the stereotype <<voidable>>.

It is used to state that no corresponding value is contained in the source spatial data set maintained by the data provider or that no corresponding value can be derived from existing values at reasonable costs.

All properties of spatial object types except those without which a spatial object is not meaningful should be voidable.

If and only if a property receives the stereotype <<voidable>>, the value of void may be used as a value of the property which shall imply that the characteristic is not present in the spatial data set, but may be present or applicable in the real world. It shall be possible to qualify a value of void in the data with a reason using the VoidReasonValue type.

Both mandatory and optional elements of a spatial object may be <voidable>. Two different cases are considered:

- Element is mandatory and voidable:

At least one value for this characteristic of the spatial object exists in the real world (i.e. minimum multiplicity =1), therefore a value has to be provided – either the corresponding value (if available in the data set maintained by the data provider) or the value of void.

- Element is optional and voidable:

This characteristic of the spatial object may or may not exist in the real world (minOccurs="0"). An empty value implies that the characteristic is not present in the real world, while a value of void could be used to state that the characteristic may exist but that no corresponding value is contained in the source spatial data.

The reason for a 'void' value should be provided in the nilReason attribute choosing a value from the VoidReasonValue code list (Unpopulated, Unknown or Withheld):
(http://inspire.ec.europa.eu/codelist/VoidReasonValue)

Example:

nilReason=http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated

or

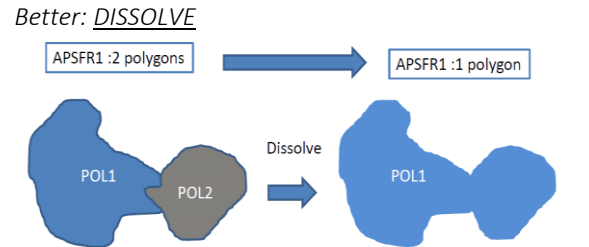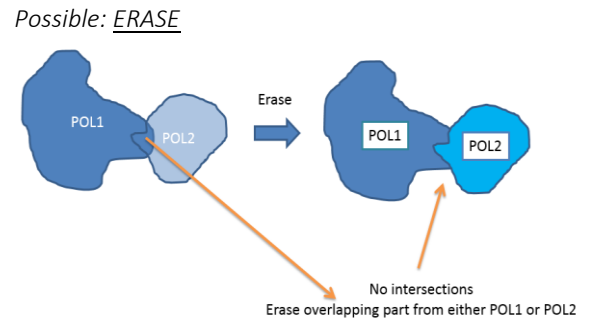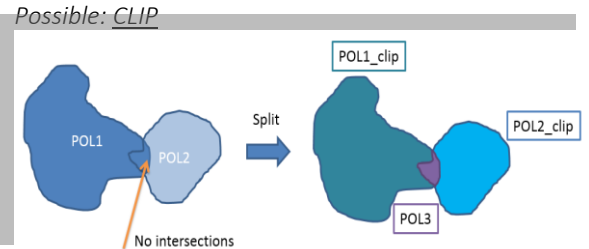*nilReason=http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unknown*

or

nilReason= http://inspire.ec.europa.eu/codelist/VoidReasonValue/Withheld

Annex X: Topology table for APSFR

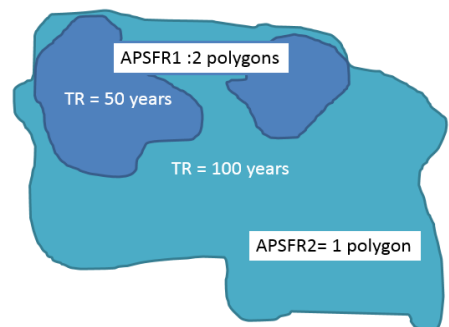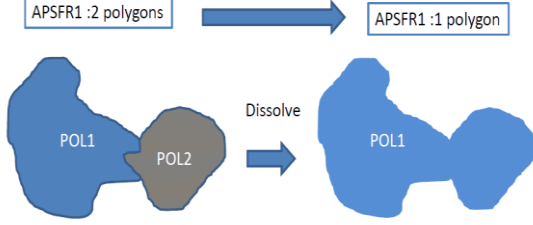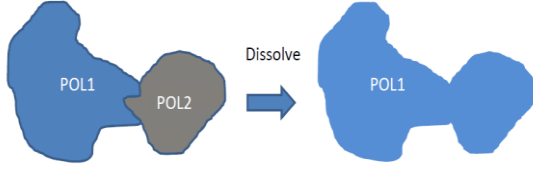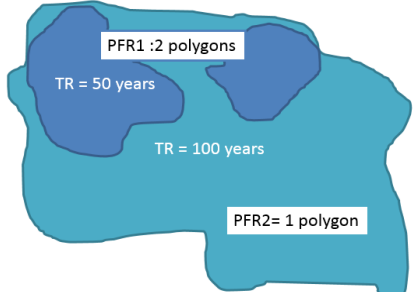| Geometry	Overlap	Intersect	Node at intersection	Proposed solution
Point	Same APSFR: ✔ Different APSFR : ✔	Same APSFR : ✔ Different APSFR : ✔	X	
Polyline	Same APSFR: ✔ Different APSFR : ✔	Same APSFR : ✔ Different APSFR : ✔	X	
Polygon	Same APSFR: X	Same APSFR: X	X	*Possible: CLIP* *Possible: ERASE* *Better: DISSOLVE*
	Different APSFR: ü	Different APSFR: ü		
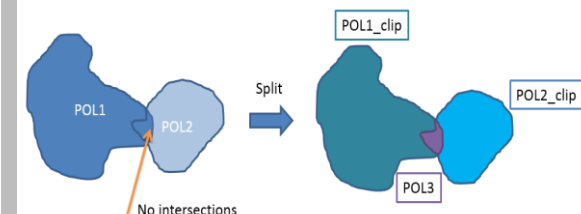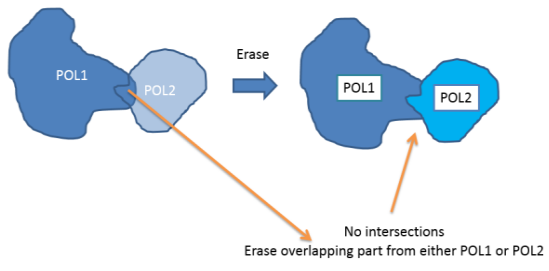
Annex XI: Topology table for PFRA past events and for future events

Geometry	Overlap	Intersect	Node at intersection	Proposed solution
Polyline	Same PRFA: ü Different PRFA: ü Same PRFA: X	Same PRFA : ü Different PRFA : ü Same PRFA: X	X	
Polygon			X	*Possible: CLIP* *Possible: ERASE* *Better: DISSOLVE*
	Different PRFA: ü	Different PRFA: ü		

Possible: CLIP

POL1 POL2 Split → POL1_clip POL2_clip POL3
No intersections

Possible: ERASE

POL1 POL2 Erase → POL1 POL2
No intersections
Erase overlapping part from either POL1 or POL2

Better: DISSOLVE

APSFR1 :2 polygons → APSFR1 :1 polygon
POL1 POL2 Dissolve → POL1

PFR1 :2 polygons
TR = 50 years
TR = 100 years
PFR2= 1 polygon

Annex XII: Cross checks between IDs from Spatial reporting to Descriptive reporting

Spatial Scheme	Spatial reporting ID´s	Descriptive Scheme	Descriptive reporting ID´s
UoM	euUoM ID	CA_UOM	euUOMCode
SubUnit	euSubUnit ID	PFRA (Sub-UOM)	Sub-UOMCode
APSFR	euAPSFR ID	APSFR	apsfrCode
	euUoM ID		euUOMCode
PFRAPastEvents	euPFRAPastEventsID		floodLocationCode
	euUoM ID	PFRA	euUOMCode
PFRAFutureEvents	euPFRAFutureEventsID		floodLocationCode
	euUoM ID		euUOMCode
FHRM_LinkToMS	euUoM ID euSubUnit ID euAPSFR ID	FHRM	euUOMCode N/A apsfrCode