

The contribution of EUREF to Inspire

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SUMMARY

▶ *About INSPIRE: principles, organization*

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- ▶ ***From Florence2009 to Gävle2010***

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 - ▶ *Implementing Rules: CRS*

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INSPIRE

*IN*frastructure for *SP*atial *Info*Rmation in *E*urope

- *Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing INSPIRE was published in the official Journal on the 25th April 2007*
- *The INSPIRE Directive entered into force on the 15th May 2007 (http://inspire.jrc.it/directive/l_10820070425en00010014.pdf)*

About INSPIRE: principles and organization

 **Community policy on the environment** must aim at a high level of protection taking into account the diversity of situations in the various regions of the Community.

Moreover, **information, including spatial information, is needed for the formulation and implementation of this policy and other Community policies**, which must integrate environmental protection requirements in accordance with Article 6 of the Treaty.

In order to bring about such integration, it is necessary to establish a measure of coordination between the users and providers of the information so that information and knowledge from different sectors can be combined.

 **The Infrastructure for Spatial Information in the European Community (Inspire) should assist policy-making in relation to policies and activities that may have a direct or indirect impact on the environment.**

About INSPIRE: principles and organization

- *the infrastructures for spatial information in the Member States should be designed to ensure that spatial data are stored, made available and maintained at the most appropriate level*
- *it is possible to combine spatial data from different sources across the Community in a consistent way and share them between several users and applications*
- *it is possible for spatial data collected at one level of public authority to be shared between all the different levels of public authorities*
- *spatial data are made available under conditions that do not restrict their extensive use*
- *it is easy to discover available spatial data, to evaluate their fitness for purpose and to know the conditions applicable to their use*

SPATIAL DATA THEMES

The INSPIRE Directive addresses 34 spatial data themes needed for environmental applications. These themes are subdivided in the three annexes of the directive.

<http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/7>

[D2.3 Definition of Annex Themes and scope v3.0.pdf](#)

ANNEX I

SPATIAL DATA THEMES ON CRS AND CGS

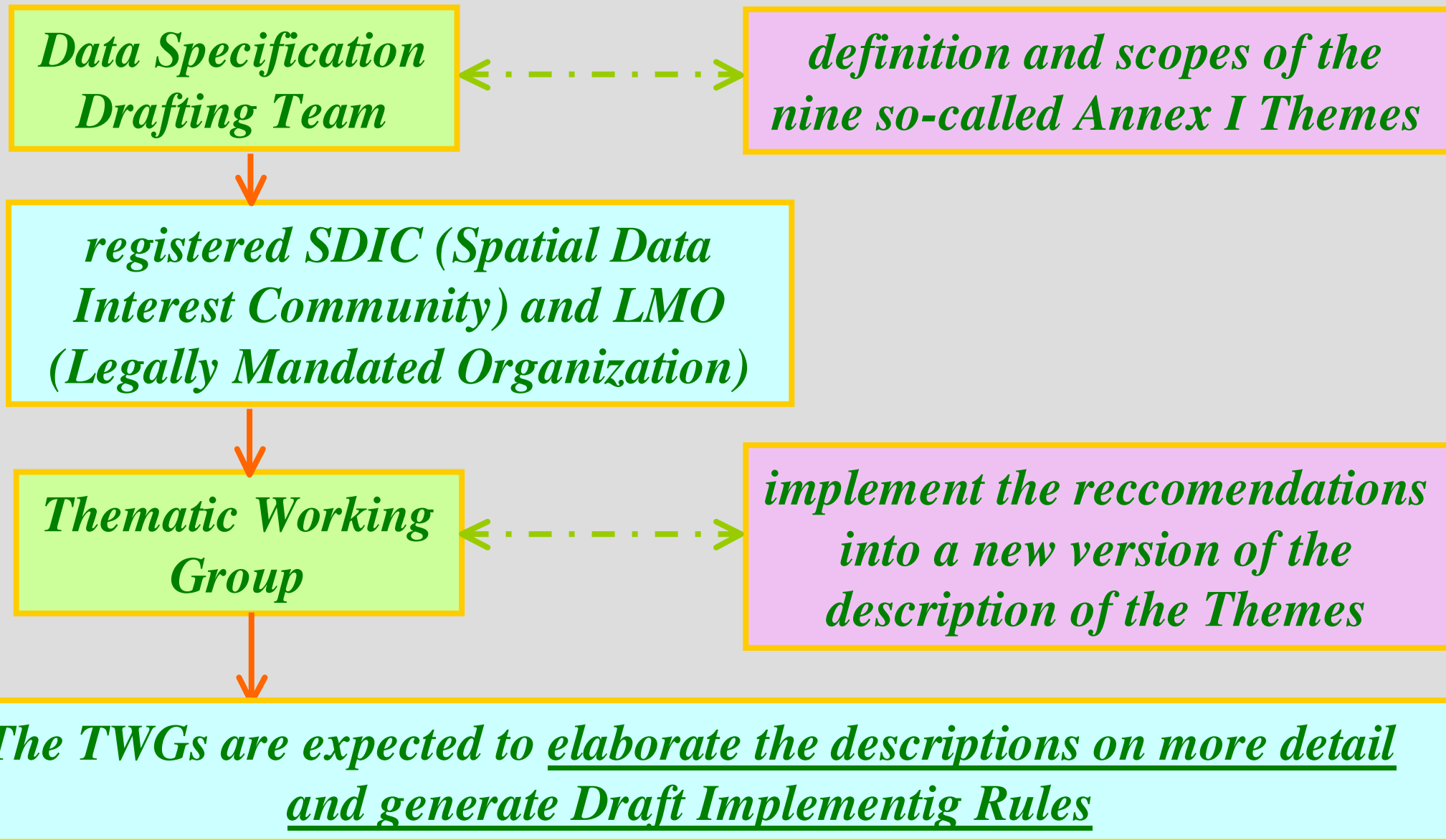
1. Coordinate reference systems

Systems for uniquely referencing spatial information in space as a set of coordinates (x, y, z) and/or latitude and longitude and height, based on a geodetic horizontal and vertical datum.

2. Geographical grid systems

Harmonised multi-resolution grid with a common point of origin and standardised location and size of grid cells.

About INSPIRE: principles and organization



TYPES OF ORGANIZATIONS

SDIC: Spatial Data Interest Community
LMO: Legally Mandated Organisation

<http://inspire.jrc.ec.europa.eu/index.cfm/pageid/42/list/1>

From Florence 2009 to Gävle 2010

Document	Description	When	Who
<i>TWG-XX-nn</i>	<i>Evaluation of user requirements (for each Annex I theme)</i>	<i>2008-06</i>	<i>TWG, CT, EIONET</i>
<i>TWG-XX-nn</i>	<i>Development of use-cases / documentation for the development of specifications</i>	<i>2008-06</i>	<i>TWG</i>
<i>TWG-XX-nn</i>	<i>Analysis of possible “holes” in the documents</i>	<i>2008-08</i>	<i>TWG</i>
<i>DS-D2.8.I.n</i>	<i>Working document “Data Specifications” (technical annex for the IR – one for each Annex I theme)</i>	<i>2008-11</i>	<i>TWG</i>
<i>DS-D2.8.I.n b</i>	<i>Launch of the specifications for testing (based on use-cases that require data from different themes)</i>	<i>2008-11 2008-12</i>	<i>SDIC, LMO</i>
<i>DS-D2.8.I.n c</i>	<i>Launch of the consultation on “Data Specifications” to SDIC/LMO</i>	<i>2008-11 2008-12</i>	<i>SDIC, LMO</i>
<i>DS-D2.8.I.n d</i>	<i>Revised Draft Data specifications</i>	<i>2009-03 2009-06</i>	<i>TWG</i>
<i>DS-D2.8.I.n e</i>	<i>IR governing the interoperability of spatial datasets and services of Annex I themes submitted for opinion to the INSPIRE Committee</i>	<i>2009-05 2009-11</i>	<i>Comitology</i>

From Florence2009 to Gävle2010

14 December 2009

Approval of IR by INSPIRE Committee

<http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2>

Draft COMMISSION REGULATION implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services

[D00747402-en.doc](#)

(pp 18-20)

Datum for three-dimensional and two-dimensional coordinate reference systems

For the three-dimensional and two-dimensional coordinate reference systems and the horizontal component of compound coordinate reference systems used for making spatial data sets available, the datum shall be the datum of the European Terrestrial Reference System 1989 (ETRS89) in areas within its geographical scope, or the datum of the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS in areas that are outside the geographical scope of ETRS89. Compliant with the ITRS means that the system definition is based on the definition of the ITRS and there is a well documented relationship between both systems, according to EN ISO 19111.

Compound Coordinate Reference Systems

For the horizontal component of the compound coordinate reference system, one of the coordinate reference systems specified in section 1.3.2 shall be used.

For the vertical component, one of the following coordinate reference systems shall be used:

For the vertical component on land, the European Vertical Reference System (EVRS) shall be used to express gravity-related heights within its geographical scope. Other vertical reference systems related to the Earth gravity field shall be used to express gravity-related heights in areas that are outside the geographical scope of EVRS.

For the vertical component in the free atmosphere, barometric pressure, converted to height using ISO 2533:1975 International Standard Atmosphere shall be used.

Coordinate Reference Systems Concept

GEO-SPATIAL DATA SETS

COORDINATES	3D/2D CRS	1D CRS	ATTRIBUTES / PARAMETERS
<div>ELLIPSOID</div> <div>X,Y,Z</div> <div>φ,λ,h</div> <div>3D</div>	<div>ITRS</div> <div>WGS84</div>	<div>Global</div> <div>None</div>	<div>pressure</div> <div>depth</div>
<div>CARTOGRAPHIC PROJECTION</div> <div>φ,λ</div> <div>H</div> <div>x,y</div> <div>H</div> <div>2D + 1D</div>	<div>ETRS89</div> <div>National</div>	<div>EVRS</div> <div>National</div>	<div>time</div> <div>...</div>

INSPIRE Specification on Coordinate Reference Systems

Requirement 1 For the three-dimensional and two-dimensional (horizontal component) coordinate reference systems, the European Terrestrial Reference System 1989 (ETRS89) shall be used for the areas within the geographical scope of ETRS89.

INSPIRE	Reference: INSPIRE_Specification_CRS_v3.1.pdf		
TWG-RS	INSPIRE Specification on <i>Coordinate reference systems</i>	2010-04-26	Page 7

Requirement 2 The International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS shall be used in areas that are outside the geographical scope of ETRS89.

Requirement 3 For the computation of latitude, longitude and ellipsoidal height, and for the computation of plane coordinates using a suitable mapping projection, the parameters of the GRS80 ellipsoid shall be used.

INSPIRE Specification on Coordinate Reference Systems

5.3 One-dimensional coordinate reference systems

The European Vertical Reference System (EVRS) [EUREF] is the vertical reference system recommended for Europe on land to express gravity-related heights. The most recent realisation of the EVRS is labelled European Vertical Reference Frame 2007 (EVRF2007). The definition of EVRS is described in the EVRS Conventions 2007.

The vertical reference systems for land existing in the MS can be expressed in the EVRS in their continental territories through their own realisations that are linked to the EVRF2007 solution. Future solutions of the EVRF will constitute an improvement and are considered realisations of the EVRS. The European continental territories of the MS constitute the geographical scope of the EVRS.

Since not all the vertical datums in use can be connected to the European vertical datum, it is necessary that the rules concerning the vertical datum also take into account areas that are not in the European continental territories. In this case, a locally or globally defined vertical reference system related to the Earth gravity field will be used to express gravity-related heights.

Requirement 8 For the vertical component on land, the European Vertical Reference System (EVRS) shall be used to express gravity-related heights for the areas within the geographical scope of EVRS.

Requirement 9 Other vertical reference systems related to the Earth gravity field shall be used to express gravity-related heights in areas that are outside the geographical scope of EVRS.

INSPIRE Specification on Coordinate Reference Systems

Identifier	Type of coordinates
ETRS89-XYZ	Cartesian coordinates in ETRS89 in space (X,Y,Z)
ETRS89-GRS80h	Geodetic (geographic) coordinates and ellipsoidal height in ETRS89 on the GRS80 ellipsoid (Latitude, Longitude, Ellipsoidal height)
ETRS89-GRS80	Geodetic (geographic) coordinates in ETRS89 on the GRS80 (Latitude, Longitude)
EVRS	Height in EVRS (H)
LAT	Depth of the sea floor, where there is an appreciable tidal range (D)
MSL	Depth of the sea floor, in marine areas without an appreciable tidal range, in open oceans and effectively in waters that are deeper than 200m (D)
ISA	Pressure coordinate in the free atmosphere (P)
PFO	Pressure coordinate in the free ocean (P)
ETRS89-LAEA	ETRS89 coordinates projected into plane coordinates by the Lambert Azimuthal Equal Area projection (Y,X)
ETRS89-LCC	ETRS89 coordinates projected into plane coordinates by the Lambert Conformal Conic projection (N,E)
ETRS89-TMzn ¹⁸	ETRS89 coordinates projected into plane coordinates by the Transverse Mercator projection (N,E)

¹⁸ »zn« denotes the projection zone

Coordinate Reference System Identifiers

Coordinate system parameters and identifiers shall be managed in one or several common registers for coordinate reference systems.

Only identifiers contained in a common register shall be used for referring to the coordinate reference systems listed in this Section.

Accept what comes from INSPIRE?

Accept the ESPG data base?

Is it possible for EUREF + EuroGeographics + ? to contribute for the register development and maintenance?

Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites

Annex II

1. Elevation
2. Land cover
3. Orthoimagery
4. Geology

Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and Government services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
10. Population distribution – demography
11. Area management / restriction / regulation zones & reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy resources
21. Mineral resources

Further contribution of EUREF

Is there a need to include Geodetic Data as a theme?

Does INSPIRE accepts it?

Has that inclusion an added-value for EUREF + NMA + EuroGeographics ?

