INSPIRE for eReporting
- building communities to support INSPIRE implementation

Robert Tomas,
INSPIRE Thematic clusters coordinator
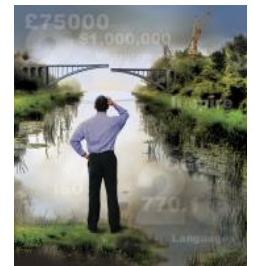*EC&EEA INSPIRE CT Team*

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Content

- INSPIRE for eReporting
- INSPIRE x WFD harmonisation pilot
- INSPIRE Thematic clusters – State of Play
- Interactive Data Specifications

INSPIRE for eReporting

What's explicit in the directive ? (2)

INTEROPERABILITY OF SPATIAL DATA SETS AND SERVICES *Article 7(1)*

- Relevant <u>user requirements</u>, existing initiatives and international standards for the harmonisation of spatial data sets, as well as feasibility and cost-benefit considerations shall be taken into account.

Were they taken into account?
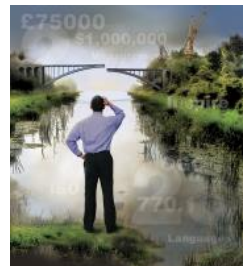
INSPIRE for eReporting

Reporting has always been an important Use case for INSPIRE

**Two major MS Workshops** dedicated to the use of INSPIRE for eReporting were organized by JRC.

- 1st after the Version 2 of Data specifications for Annex II and III were published (26-27 of March 2012)

- 2nd 26-27 of January 2015

INSPIRE for eReporting 1ˢᵗ WS (March 2012) conclusions:

- Workshop appreciated by MSs – clarification of relations between Inspire and thematic eReporting.
- The version 2.9 showed significant improvements compared to the version 2.0
- Further alignments of the thematic reporting with INSPIRE are necessary and beneficial for avoiding duplication of work and reduction of costs.
- The E.C. should consider a transition period for the full alignment

INSPIRE extensions & maintenance
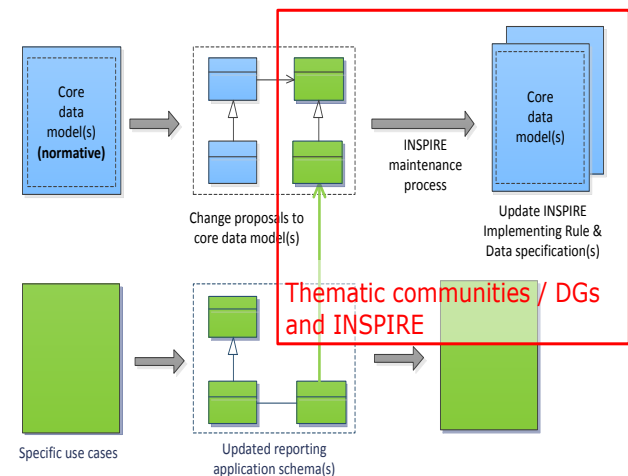
Data specification thematic extensions
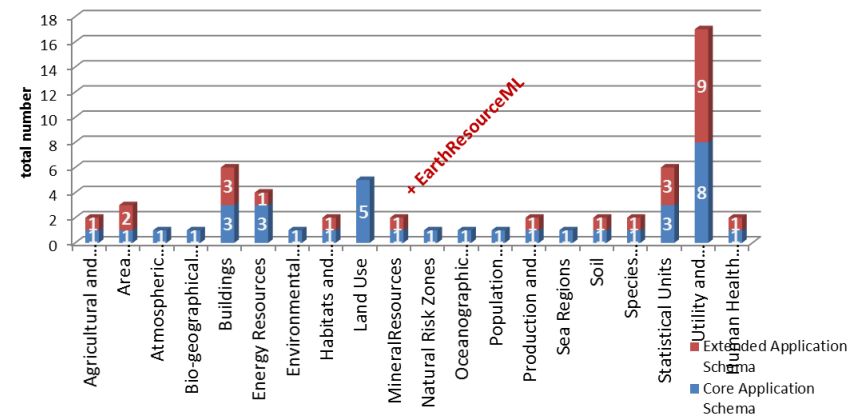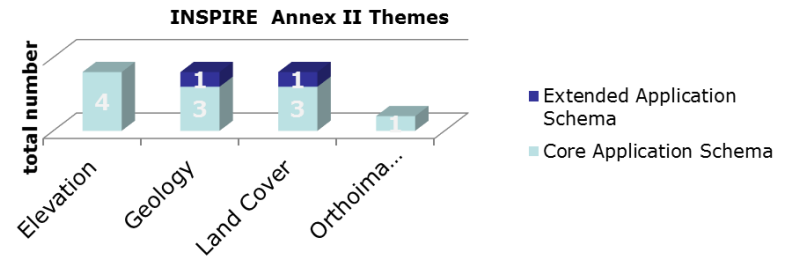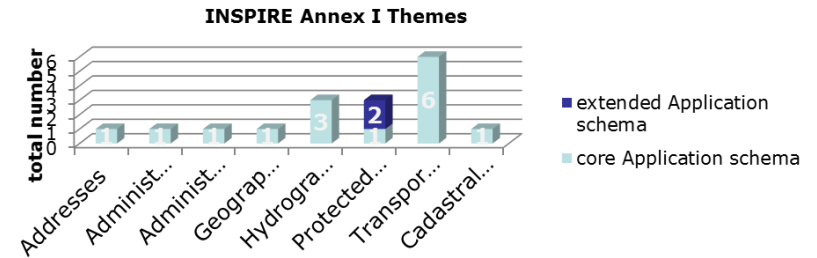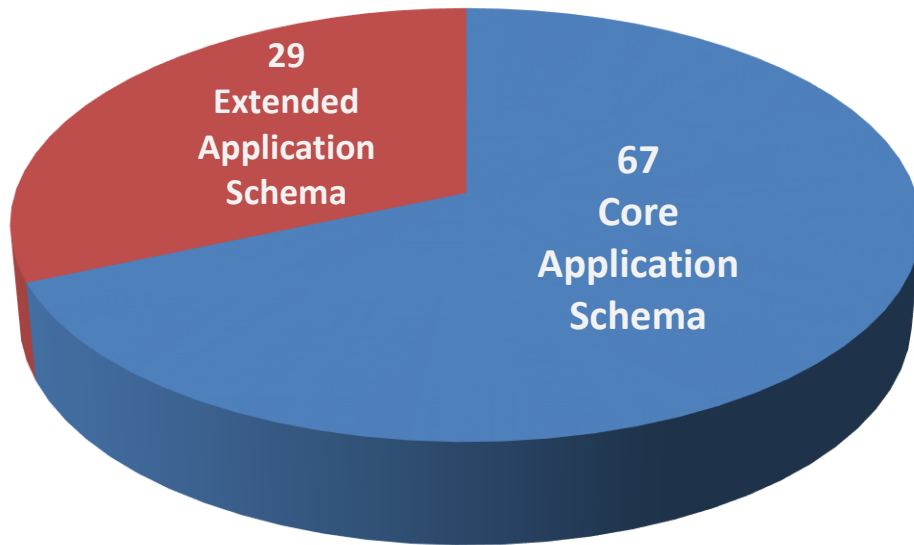
Data specification Use cases statistics

Annex	Theme	Application Schema	IR	TG Extensions	Number of Use cases
I	Addresses	Addresses	1		10
I	Administrative Units	AdministrativeUnits	1		5
I	Administrative Units	MaritimeUnits	1		0
I	Geographical Names	Geographical Names	1		1
I	Hydrography	Hydro - base	3		3
I	Protected Sites	Protected Sites Simple	1	2	5
I	Transport Networks	Air Transport Network	6		0
I	Cadastral Parcels	CadastralParcels	1		1
II	Elevation		4		4
II	Geology	Geology	3	1	10
II	Land Cover	LandCoverNomenclature	3	1	3
II	Orthoimagery				5
III	Agricultural and Aqu…			1	3
III	Area Management F… Regulation Zones an…			2	5
III	Atmospheric Condit…				6
III	Bio-geographical Re…				4
III	Buildings			3	6
III	Energy Resources			1	3
III	Environmental Mon…				7
III	Habitats and Biotop…			1	5
III	Land Use				7
III	MineralResources			1	4
III	Natural Risk Zones	NaturalRiskZones	1		6
III	Oceanographic Geographical Features	Oceanographic Geographical Features	1		4
III	Population Distribution - Demography	Population distribution - demography	1		0
III	Production and Industrial Facilities	ProductionAndIndustrialFacilities	1	1	2
III	Sea Regions	Sea Regions	1		3
III	Soil	Soil	1	1	9
III	Species Distribution	SpeciesDistribution	1	1	5
III	Statistical Units	Statistical Units Base	3	3	7
III	Utility and Governmental Services	AdministrativeAndSocialGovernmentalServices	8	9	2
III	Human Health and Safety	HumanHealth	1	1	3
Total			63	29	138

INSPIRE Data specification-
Technical Guidelines –
contain:
138 Use Cases descriptions

INSPIRE for eReporting 2ⁿᵈ WS (Jan 2015) conclusions:

1) **Combine together roadmaps** of domain specific legislation and INSPIRE
2) **Improve the coordination** at National level regarding the implementation of INSPIRE and the implementation of the related thematic legislation
3) Identify and **reuse** existing **good practices**
4) Write **ToR for MIWP-21**
5) Organize regular **workshops** on topics, relevant to the national status of implementation of INSPIRE

INSPIRE x WFD harmonisation pilot
May – October 2014

Original scope:

- **Phase 1 (May – December 2014)** - data content harmonisation between the Water Framework Directive reporting obligations for the year 2016 and the relevant INSPIRE Implementing Rule data requirements.

- **Phase 2 (January – April 2015) –** Member States testing of the updated reporting schemas and INSPIRE conformance testing of the resulting Member States' data sets

- **Phase 3 (May – December 2015)** – Demonstration pilot including the remaining INSPIRE /WFD Spatial Data Infrastructure Components (Metadata, Network services)
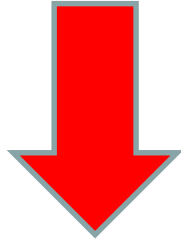
INSPIRE x WFD harmonisation pilot
May – October 2014

- **Boundary conditions:**
  - WFD Reporting guidance document has been endorsed by the Water Directors
  - Potential changes to WFD Reporting shall fit into the roadmap of WFD Reporting 2016
  - Priority in 2015 is on adaptation of tools used for reporting and testing
  - Foreseen reporting – delivery period: October 2015 – March 2016

- **Work on alignment at conceptual level (mapping) in 2014:**
  - Lead: DG ENV + consultants (Atkins, con terra)
  - Support by EEA, JRC

INSPIRE x WFD harmonisation pilot Conceptual mapping
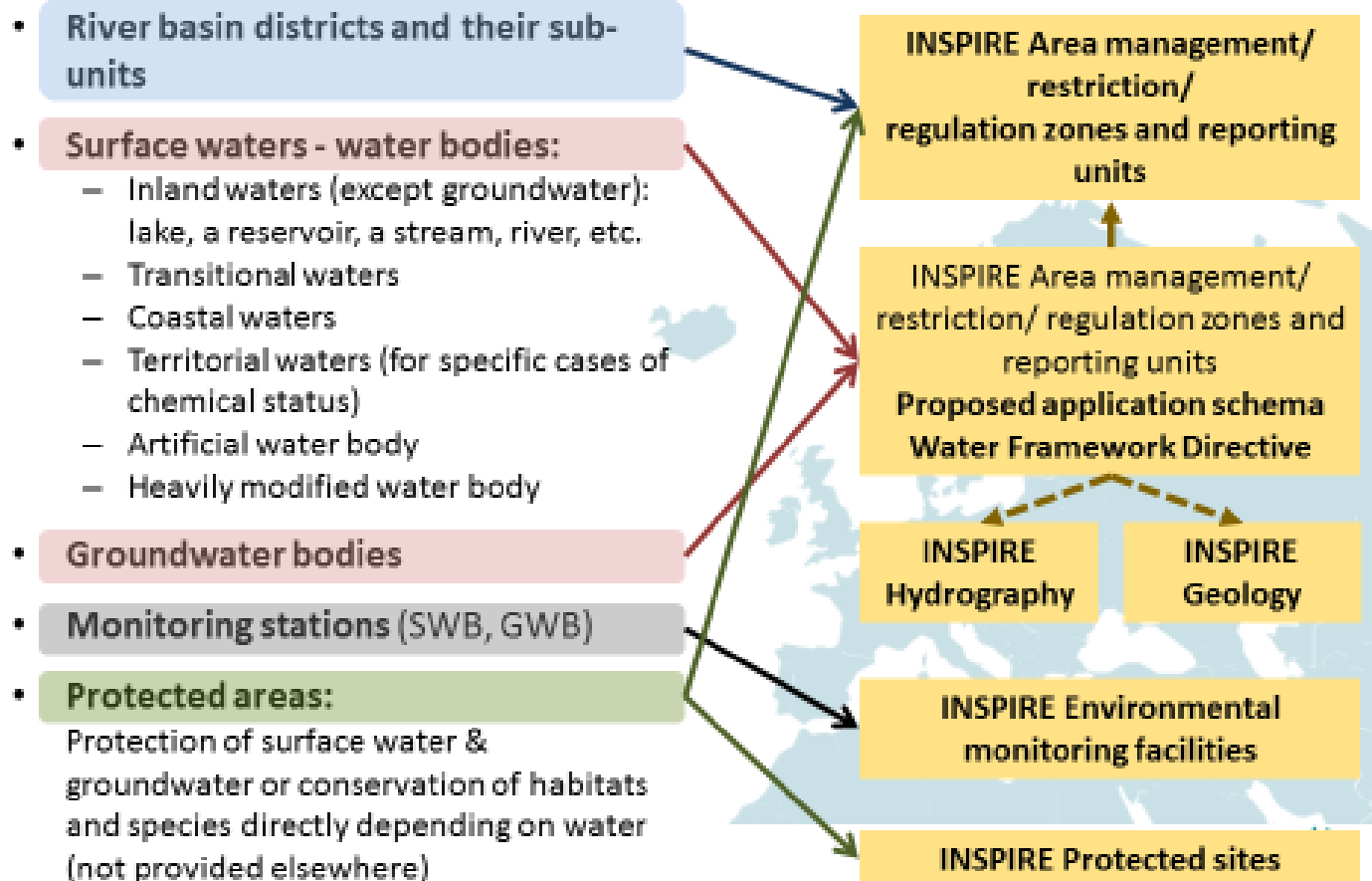
- Identification of spatial objects in WFD and relationships with INSPIRE applications schemas / specifications **– only done for AM and partly EF Inspire themes**

- Mapping between WFD schemas and INSPIRE applications schemas

- Filled matching tables, explanatory text

- Proposed changes to the WFD Guidance and reporting schemas

INSPIRE x WFD harmonisation pilot

WFD spatial objects & links to INSPIRE data specif.

- River basin districts and their sub-units

- Surface waters - water bodies:
  - Inland waters (except groundwater): lake, a reservoir, a stream, river, etc.
  - Transitional waters
  - Coastal waters
  - Territorial waters (for specific cases of chemical status)
  - Artificial water body
  - Heavily modified water body

- Groundwater bodies

- Monitoring stations (SWB, GWB)

- Protected areas:
  Protection of surface water & groundwater or conservation of habitats and species directly depending on water (not provided elsewhere)

INSPIRE Area management/ restriction/ regulation zones and reporting units

INSPIRE Area management/ restriction/ regulation zones and reporting units
**Proposed application schema
Water Framework Directive**

INSPIRE Hydrography

INSPIRE Geology

INSPIRE Environmental monitoring facilities
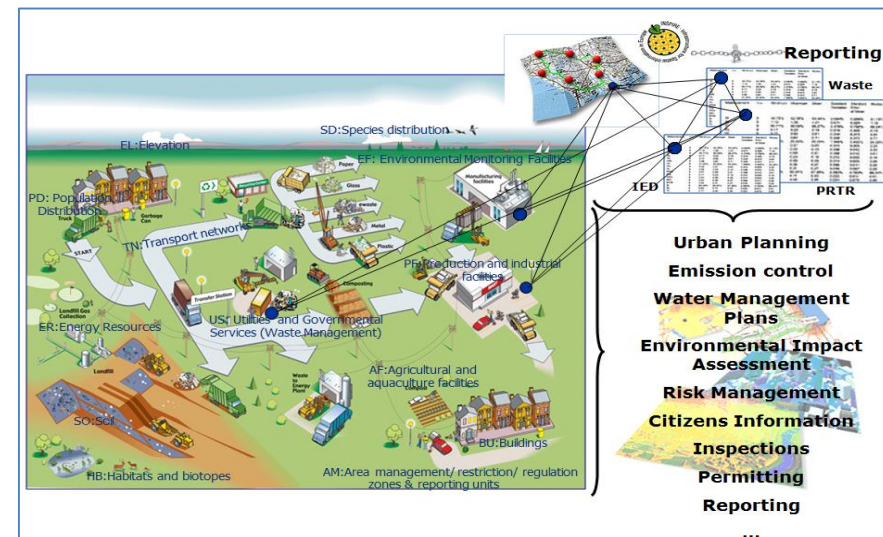
INSPIRE Protected sites

INSPIRE x WFD harmonisation pilot

Lessons learned

Two mapping approaches:

1. Making final (WFD) Reporting datasets Inspire compliant

2. Start from the 'INSPIRE side' and make a thematic reporting as one use case (EC requirement)

INSPIRE x WFD harmonisation pilot
Lessons learned

Approach 1: Making final WFD Reporting datasets Inspire compliant

- Map only (WFD) reporting data requirements to relevant INSPIRE spatial object types and their properties.

Benefits:

- Faster to implement
- Does not require tight collaboration between (Inspire and thematic communities)

Negatives:

- Does not function "create once – use many times"
- Does not utilize the cross domain interoperability "function' of INSPIRE (location, semantics..)
- More costly for Member States to implement and administrate.

INSPIRE x WFD harmonisation pilot
Lessons learned

Approach 2: to start from the "INSPIRE side".

The following list of consequent steps summarises this approach:

- **Check whether WFD-relevant INSPIRE services are already implemented** and accessible (using INSPIRE Geoportal and/or national geoportals).

- If relevant services are **not** yet implemented / accessible, **start implementing them.**

- **Analyse in depth which INSPIRE spatial data objects and their properties** (attributes) are relevant for the WFD reporting in a **wider sense** e.g. not only limited to the actual reporting obligation, but also to the **supporting data** (e.g. from monitoring stations).

- Fully **align** the WFD reporting data requirements with INSPIRE core (legally required) data scope and **add**, where necessary, **thematic information** as **extensions to the core data models.**

- Create the **extended (if applicable) services and publish them on INSPIRE Geoportal/national Geoportal as well as on EEA Reportnet.**
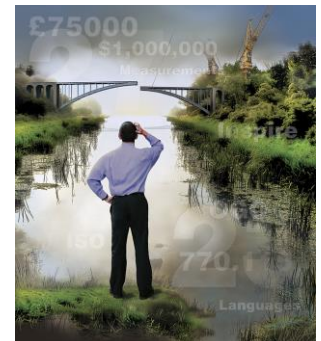
INSPIRE x WFD harmonisation pilot
Lessons learned

Approach 2: to start from the "INSPIRE side".

Benefits:
- Create once use many times (not only in terms of legal obligations)
- Lower administration burden (once set up)
- Making PSI data interoperable = new applications, innovation, jobs

Negatives:
- Coordination, cross domain collaboration dependent
- Bigger initial cost (people)
- Cultural change in public administration

INSPIRE x WFD harmonisation pilot

Recommendations

Organizational:

- Try **to fit the mapping exercise with the roadmaps** (Inspire implementation & eReporting cycles)

- **Coordinate with Inspire national implementation bodies** to find out what data/services are already available = reuse, + 'link' reporting with already defined Inspire spatial objects

- **Establish a team with domain experts, both on INSPIRE and the thematic regulatory monitoring under consideration.**

- **Share the results of mapping** (extended schemas) across Europe to reach interoperability. (e.g. utilizing EC collaboration platforms).

Technical:

- **Inspire core data models represents the minimal interoperability targets** (cross domain) – extend them when needed.

- Mapping eReporting data requirements to the Area management, restriction and regulation zones theme **is not enough** = does not bring much added value.

- **The Inspire voidable attribute(type) should not be seen as optional**

INSPIRE Thematic Clusters

Interoperability is better achieved

...sharing solutions in a collaborative way

INSPIRE Thematic Clusters Platform

- EC initiative, linked to the INSPIRE Maintenance and Implementation Framework, as MIWP 14, with the **objective** of **supporting INSPIRE implementation in the Member States.**

- **Officially launched on 11.12. 2014** as the INSPIRE Thematic user community **collaborative platform**

https://themes.jrc.ec.europa.eu/
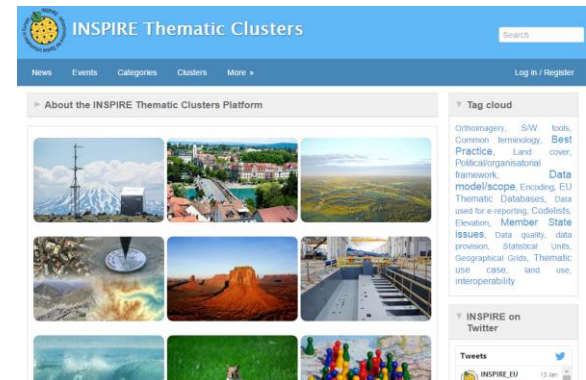
Why INSPIRE Thematic Clusters Platform

- Many INSPIRE implementation issues are **theme-specific - need for harmonised approach.**
- No agreed way for implementers in MS **to share their experience – continuation of the INSPIRE Thematic WGs.**

- No coherent **overview of the status** of the implementation for the different INSPIRE data themes – **best practices**.

- **Reflection** of the outcomes of the **INSPIRE MID-Term Evaluation Public Survey.**

Altitude

Occupation des terres

Ortho-imagerie

Géologie

New on-line collaboration platform INSPIRE Thematic Clusters

Background:

- **INSPIRE Forum**

  "Connecting people and sharing knowledge"

  http://inspire-forum.jrc.ec.europa.eu/

**New objectives and requirements:**

- **Re-launch activity** / participation

- **Help Member States and Stakeholders in the implementation of INSPIRE**

- **Establish a common point of contact to solve thematic issues**

INSPIRE Thematic clusters platform

9 Thematic clusters = Groups of INPSIRE data themes each is led by a facilitator (domain experts with INSPIRE knowledge + established network of contacts)

- Statistical & Human Health Cluster – *Miroslaw Migacz*
- Marine & Atmosphere Cluster – *Keiran Millard*
- Earth Science Cluster – *Amelia Baptie*
- Land Cover & Land Use Cluster – *Lena Hallin-Pihlatie*
- Elevation, Orthoimagery, Reference System & Geographical Grid – *Jordi Escriu*
- Environmental Monitoring & Observations Cluster – *Alessandro Sarretta*
- Biodiversity & Management Areas Cluster – *Brian Mac Sharry*
- Facilities, Utilities & Public Services Cluster – *Angel Lopez Alos*
- Topographic & Cadastral Data Cluster – *Anja Hopfstock*

https://themes.jrc.ec.europa.eu
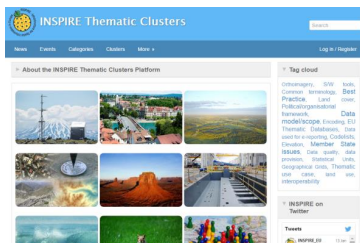
Thematic clusters platform statistics
20.11.2015

- 578 registered members
-   50 groups (groups + sub-groups)
- 321 discussion topics
- 759 responses
- 133 files uploaded
- 123 dedicated pages

Environmental Monitoring and Observations Cluster	Statistical and Human Health Cluster	Biodiversity and Management Areas Cluster	Topographic and Cadastral Reference Data	Land Cover and Land Use Cluster
77 members	**49**	**72**	**134**	**98**

Elevation, Orthoimagery, Reference Systems, Geographical Grids	Earth Science Cluster	Facilities, Utilities and Public Services Cluster	Marine and Atmosphere Cluster
97	**132**	**59**	**61**

INSPIRE Thematic clusters platform

Common categories

- Thematic use case 86
- Data model/scope 211
- Common terminology 44
- Encoding 124
- Data quality 23
- Evolution - Thematic extensions 59
- Portrayal 21
- EU Thematic databases 61
- S/W tools 115
- Member State issues 126
- Platform utilisation 46
- Political/organisational framework 53
- Codelists 88
- Best Practice 149
- Interoperability 119
- Data provision 124
- Data used for e-reporting 31
- Recommended Implementation Examples 24

The platform is open to all☺

- For active participation (discussions, adding new topics, best practice etc.) - **ECAS registration** needed + joining relevant groups / sub-groups.

Thematic clusters platform
Selected on-going discussion topics

Environmental Monitoring and Observations Cluster
[OM] [EF]

Statistical and Human Health Cluster
[PD] [SU] [HH]

Biodiversity and Management Areas Cluster
[HB] [AM] [SD] [BR] [PS]

Topographic and Cadastral Reference Data
[HY] [BU] [AU] [TN] [GN] [AD] [CP]

- SOS V2.0 Offerings
  https://themes.jrc.ec.europa.eu/discussion/view/29928/sos-v20-offerings

- Harmonizing population grid data into the INSPIRE data model
  (https://themes.jrc.ec.europa.eu/discussion/view/2166/harmonizing-population-grid-data-into-the-inspire-data-model)

- PS data model regarding designations
  https://themes.jrc.ec.europa.eu/discussion/view/11598/ps-data-model-regarding-designations

- Update of the INSPIRE Network Model
  - Linear referencing (using length for network referencing)
  - Road link positions on road sequences
    (https://themes.jrc.ec.europa.eu/discussion/view/13413/update-of-the-inspire-network-model)

Thematic clusters platform

Selected on-going discussion topics

Land Cover and Land Use Cluster

Elevation, Orthoimagery, Reference Systems, Geographical Grids

Earth Science Cluster

Facilities, Utilities and Public Services Cluster

Marine and Atmosphere Cluster

- Is the Land Cover Class code list to be used or not? (https://themes.jrc.ec.europa.eu/discussion/view/27660/is-the-land-cover-class-code-list-to-be-used-or-not)

- How to encode EL & OI coverages? (https://themes.jrc.ec.europa.eu/discussion/view/2843/encoding-of-elevation-and-orthoimagery-coverages)

- Layer naming https://themes.jrc.ec.europa.eu/discussion/view/13952/layer-naming

- INSPIRE in the context of PRTR/IED (Industrial Emissions Directive) (https://themes.jrc.ec.europa.eu/discussion/view/22502/inspire-in-the-context-of-prtried-industrial-emissions-directive)

- OF Data specification – Use of Codelists https://themes.jrc.ec.europa.eu/discussion/view/24996/of-data-specification-use-of-codelists
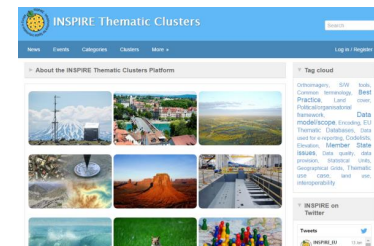
Thematic clusters facilitators - tasks

Initial phase (12.2014 – 06.2015)

Task 1: Aggregation and publishing of information about the state of the implementation in a thematic domain / cluster

Task 2: Facilitate communication / exchange of implementation progress, issues, priorities and roadmaps

Task 3: Platform content maintenance and administration

Task 4: Active promotion of the on-line collaboration platform
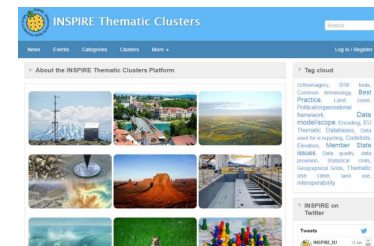
Second phase (07.2015 – 12.2015)

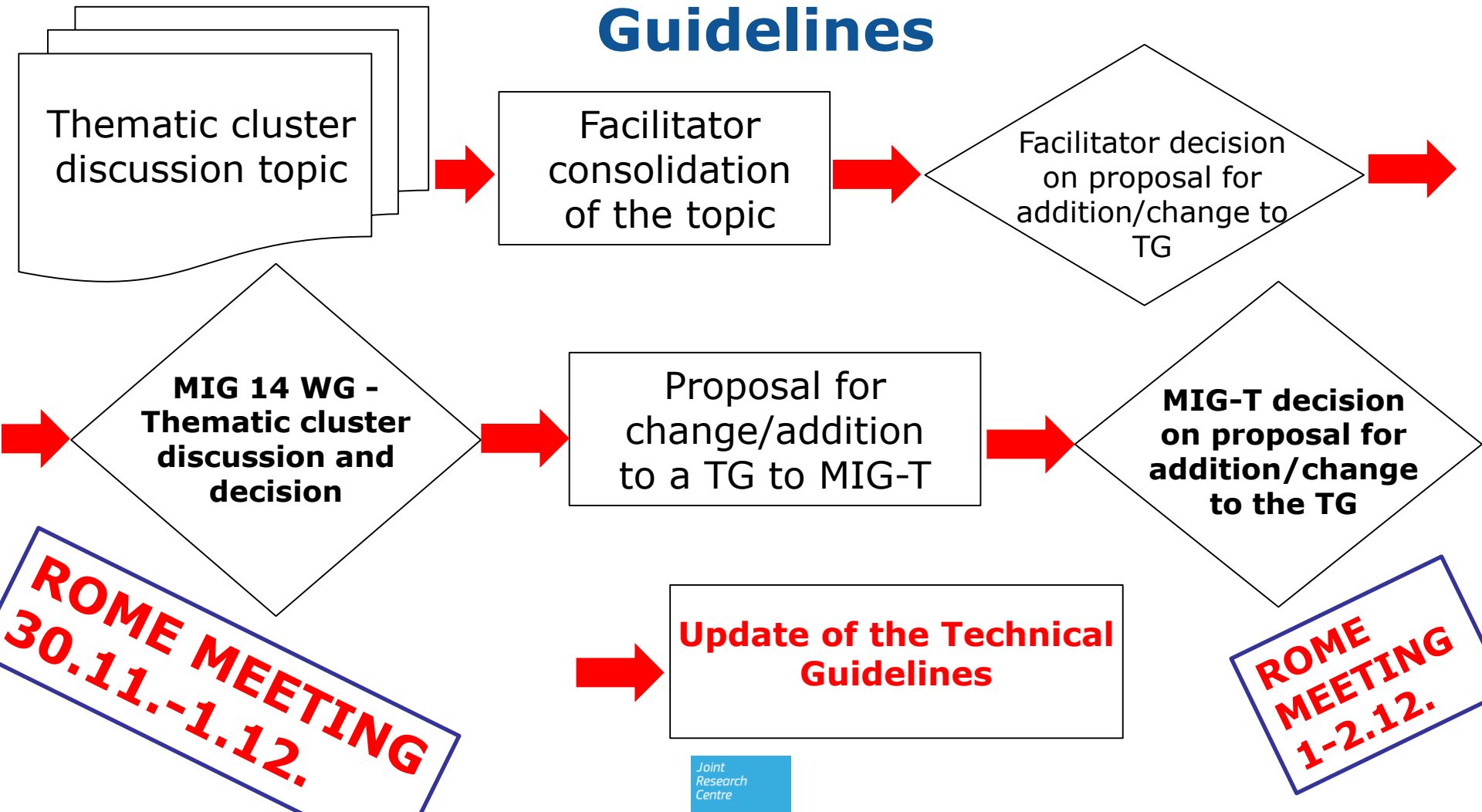**Task 5:** Collect, evaluate, register change proposals to the INSPIRE Technical documentation

Thematic clusters facilitators
- proposal for changes/additions

- **72 changes/additions proposed (deadline 6.11.)**
- **All registered and documented in the INSPIRE MIG collaborative platform –**
  https://ies-svn.jrc.ec.europa.eu/projects/thematic-clusters/issues?query_id=30
- Consist of: adding extended schemas, clarifying text, better definitions, code list values, typos etc. – mainly corrigenda to INSPIRE Technical Guidelines

Workflow for proposals for thematic additions/changes to the Technical Guidelines

Thematic cluster discussion topic

Facilitator consolidation of the topic

Facilitator decision on proposal for addition/change to TG

MIG 14 WG – Thematic cluster discussion and decision

Proposal for change/addition to a TG to MIG-T

MIG-T decision on proposal for addition/change to the TG

Update of the Technical Guidelines

ROME MEETING 30.11.-1.12.

ROME MEETING 1-2.12.

Looking for your participation…

INSPIRE Thematic Clusters

https://themes.jrc.ec.europa.eu/

Open platform where implementers can **build communities**, **share experiences**, **best practices**, **raise questions** and **resolve issues**…

- 578 registered members
- 321 discussion topics
- 759 responses
- 133 files uploaded
- 123 dedicated pages

JOIN & PARTICIPATE IN THE THEMATIC CLUSTERS

INSPIRE

Interactive Data Specifications

Direct Search

allows you to iteratively search for an INSPIRE object(s) using a text string. The search engine looks in the labels, definitions and descriptions of all existing/defined INSPIRE spatial objects, application schemas and data themes. The collection of selected object can also be than saved/printed in a PDF/DOCX structured document.

InteractiveWorkflow

starts with an intuitive selection of INSPIRE data theme(s) followed by the selection of relevant application schema(s). The next step is about selecting concrete spatial objects based on their definitions. This object pre-selection is confirmed in the following step. The final list of all selected objects including their properties (attributes) as well as all associated objects can be than saved/printed in a PDF/DOCX structured document.

Find you scope

helps you to find those INSPIRE spatial object types and their properties that are relevant to your dataset(s).

Benefits

Understanding which of your data properties need to be transformed&Comparing your data with wider community standards to identify potentials gaps and/or thematic extensions

Why?

Complex and extensive INSPIRE DS Technical documentation- difficulties with discovering correct up-to-date documents- need for downloading whole documentsLimited possibilities for comparing more documents/sectionsNeed for IT/modeling skills (e.g. UML) to be able to read/understand- understanding of relationships/dependencies between spatial objectsLimited possibilities for extracting the INSPRE data content related to your dataset

What?

The INSPIRE Interactive Data Specification Toolkit offers INSPIRE data providers two applications to support them in implementation of the INSPIRE data specifications.

Statistics

No themes: 34
No application schema: 76
No objects: 1195
No attributes: 4965
No generalizations: 532
No association objects: 292
No codelist: 292
No pages Data Specification documents: 4928

Direct Search

using the definition and description of the INSPIRE Data Themes.

Read/Compare Technical Guidelines

The application Read/Compare Technical Guidelines facilitates the reading of INSPIRE Data Specification – Technical Guidelines documents by enabling to study only selected parts of the INSPIRE technical documentation. Furthermore the selected parts can be compared with the same parts (e.g. Use case descriptions) from up to 2 data themes.

Direct Selection of Themes

using a common list of INSPIRE Data Themes.

Future plans

1. Automatic generation of XSDs from the selection of spatial object types
2. Alignment with others control vocabularies e.g. GEMET - Search for synonyms
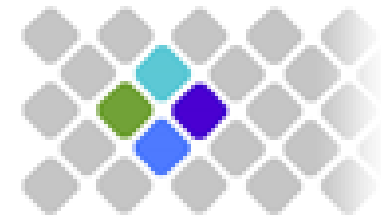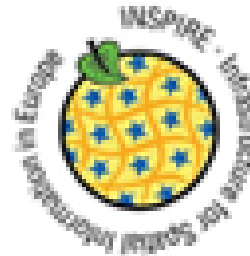3. Searching in the whole DataSpec documents - using SOLR

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

Thank you for your attention.
robert.tomas@jrc.ec.europa.eu

Questions?

"INSPIRing a sustainable environment"

https://themes.jrc.ec.europa.eu/

INSPIRE Conference 2016

Barcelona, 26th - 30th September

http://inspire.ec.europa.eu/events/conferences/inspire_2016/