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Summary report

2nd CEN/TC 287 workshop on data interoperability in GMES, INSPIRE and GEOSS

8th and 9th November 2010
DG- JRC
Ispra, ITALY
Paul Smits (Editor)

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This report summarizes the discussions during the workshop and reflects the opinions of the experts that participated in the workshop. The conclusions and recommendations do not necessarily represent a formal position of CEN/TC 287, CEN, or the organizations to which the experts belong.

Foreword

The European Committee for Standardization, CEN, is multi-sectorial and develops European Standards for most areas (www.cenorm.be). CEN contributes to the objectives of the European Union and European Economic Area with voluntary technical standards, which promote free trade, the safety of workers and consumers, interoperability of networks, environmental protection, exploitation of research and development programmes, and public procurement.

European Standards are voluntary agreements between 28 European countries, adopted by CEN, CENELEC or ETSI and carrying with them an obligation of implementation as an identical national standard and withdrawal of conflicting national standards. CEN's mission is to foster the European economy in global trade, to uphold the welfare of European citizens and to protect the environment.

The standards programme is coordinated by the Technical Board of CEN. CEN has various types of deliverables: European Standard (EN), Technical Specification (CEN/TS), Technical Report (CEN/TR), CEN Guide, and CEN Workshop Agreement (CWA). Most standards and reports are drawn up in technical committees and their working groups. CEN Workshop Agreements are drawn up in Workshops. Of all the deliverables, only ENs are normative.

The main objective for CEN/TC 287 Geographic Information taken from the current business plan for the period 2010 to 2013¹, which is to facilitate the development and usage of geographical information in Europe. This will be achieved by:

- adopting the ISO/TC 211 standards series as CEN standards;
- developing and maintaining standards, specifications and profiles of standards;
- developing technical guidance and best practice documentation;
- collaborating with other standards related initiatives; and
- educating the user community and promoting the use of standards for geographic information.

¹ <http://www.gistandardss.eu/sme>

1 Introduction

INSPIRE², GMES³ and GEOSS⁴ have all activities on-going or planned that will lead to, or rely, on specifications for data harmonization and interoperability. The situation is complex, and clear recommendations are needed soon: GMES services and the GMES in-situ component should take into account the INSPIRE specifications, and the INSPIRE process must take into account the GMES requirements. In addition, both INSPIRE and GMES are formal EU contributions to GEOSS.

The timing is also a problem for people that need to make decisions very soon, for instance related to the procurement of technical components. GMES Initial Operations will start before the INSPIRE Implementing Rules legal acts on the interoperability of spatial data are finalized or implemented by the Member States.

In October 2010 the INSPIRE Thematic Working Groups have delivered the first draft of the specifications of the 25 Annex II and III INSPIRE data themes⁵. A number of these are of direct relevance for the GMES services and the in-situ component. Obvious examples of relevant INSPIRE themes are Natural Risk Zones, Land Cover, Ortho-imagery, Elevation, and Environmental Monitoring Facilities, but there are many more relations that need to be understood.

Naturally we do not start from scratch. The work on INSPIRE data specifications relies on the European and international standards for geographic information (the so-called ISO 19100 series of standards). The EU funded projects like GIGAS (GEOSS, INSPIRE and GMES, an Action in Support), have made recommendations⁶ that now need to be followed up. CEN/TC 287 Geographic Information has agreed to establish a formal EU-level repository of reference material on interoperability, where future projects can find state-of-the-art information on interoperability. By the same token, these projects could then add new reference material as they progress in their work programmes.

Equally important, and also underlined by the GIGAS recommendations, is to bring together on a regular basis experts from INSPIRE, GMES, and GEOSS to look at the aspects of interoperability. The CEN/TC 287 workshop on data interoperability in GMES, INSPIRE and GEOSS held on 8 and 9 November 2010 at the premises of the European Commission's Joint Research Centre at Ispra, Italy, is to be seen in the broader context of the GIGAS long term strategy and roadmap.

The aim of this report is to provide a summary of the workshop. The intended readership is coordinators and programme managers of INSPIRE, GMES, and GEOSS activities.

² Infrastructure for Spatial Information in the European Community (INSPIRE), <http://inspire.jrc.ec.europa.eu>

³ Global Monitoring for Environment and Sustainability, <http://www.gmes.info>

⁴ Global Earth Observation System of Systems, <http://earthobservations.org/>

⁵ <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2/list/7>

⁶ See the GIGAS Final Report, in particular chapter 6, available from <http://www.thegigasforum.eu/project/material/dissemination.html>

2 Workshop overview

2.1 Aim

The focus of the workshop was on harmonization and interoperability of spatial data in the context of INSPIRE, GMES, and GEOSS. The aim was to reach a common understanding of INSPIRE, GMES, and GEOSS activities in the area of data interoperability; to agree on a roadmap for synchronizing activities relevant for data interoperability; and to formulate or refine recommendations on technical approaches.

2.2 Participants

28 representatives of GMES projects (pre-cursor and GIO), INSPIRE (EC INSPIRE team, Thematic Working Groups, Data Specifications Drafting Team), GEOSS (the GEO Secretariat, and GEO Tasks related to data harmonization and interoperability), standardization (CEN/TC 287 and OGC) and EU-funded projects were present (of which two by web conference facilities).

A list of participants is provided in Annex I.

2.3 Agenda

The workshop agenda was as follows:

Session 1: Setting the scene

- Welcome from CEN/TC 287, *Martin Ford, CEN/TC 287 Secretariat*
- Introduction and objectives of the workshop, *Paul Smits, JRC*
- GMES – Global Monitoring for Environment and Security
GISC – GMES In situ Coordination
GIOLand example, *Stefan Jensen, EEA*
- INSPIRE data specifications process, *Vanda Nunes de Lima, JRC*
- Principles of data harmonization and interoperability - The INSPIRE approach and GIGAS conclusions, *Clemens Portele, Interactive Instruments*
- GEOSS Architecture Implementation Pilot (AIP), *Hervé Caumont, co-lead GEOSS Data Harmonization Working Group, Architecture IP*
- Education and training – the VESTA GIS project, *Giorgio Saio, GISIG*
- Scope and activities of CEN/TC 287, *Rob Walker, chair, CEN/TC 287*
- Outcome from the CEN/TC 287 interoperability workshop in Malta, *Martin Ford – CEN/TC 287 Secretariat*
- Preparation of Session 2, *Paul Smits*

In the preparation of session 2, the workshop agreed to try and answer the following questions in the break-out sessions:

- What is scheduled in GMES, INSPIRE, and GEOSS?
 - Distinguish between dates when specifications are ready, and when data needs to be made available
 - INSPIRE timeline as a framework, 2011
 - Potential conflicts with other, thematic, legislation
- Content
 - Scope and use cases
 - “Depth” of data specifications
- Consultation and testing

- Commitments for testing, what to test
- Common understanding and use of standards
 - Logic behind standards
 - INSPIRE as client of standardization processes
 - Dependencies with and timeline of standards development

Three break-out sessions were held:

Session 2a: GMES Land, INSPIRE Land cover, Land Use, Orthoimagery, Elevation, Geoland2, GIS4EU.

Session 2b: GMES Emergency Response, INSPIRE Natural Risk Zones, SAFER, Outcome of JRC Task Force on Natural Disasters

Session 2c: GMES in-situ, INSPIRE Environmental Monitoring Facilities, Standards organizations, GEOSS

Session 3: Closing session

- Recommendations and actions from the parallel sessions (rapporteurs)
- Standards and Interoperability Forum, *Stefano Nativi, GEO SIF European Team*
- Wrap-up, conclusions and next steps
- Adjourn

3 Outcome

3.1 Dependencies between INSPIRE, GMES and GEOSS

Both in session 1 and in the breakout sessions the need for urgent coordination between INSPIRE, GMES, and GEOSS was underlined. This coordination needs to take place at two different levels: at a programmatic level, and at a technical level.

At programmatic level a coordination mechanism needs to be put in place that brings together representatives of the three initiatives and potentially the standardization bodies. This is overlapping with the GIGAS recommendation that the coordination shall be institutionalized⁷.

It is recommended that one of the first activities would be to make explicit the dependencies between on the one hand the INSPIRE data specification process, the Implementing Rule Legal Act adoption, and INSPIRE data availability, and on the other hand the GMES services requirements and data availability. Figure 1 shows these dependencies over time for the INSPIRE data specifications and the GMES in-situ activities. For other GMES activities these dependencies may differ.

The identification of dependencies, together with the establishment of a detailed common calendar, will help to identify adjustments to existing or planned activities that will provide substantial benefits.

One example is that GMES projects should be asked to participate in both the testing and the consultation of INSPIRE data specifications in the period April – September 2011 for version 2, and until February 2012 for version 3 of the INSPIRE data specifications. This would allow adjustments to be made to the data specifications before they become Legal Acts. Another example would be that it becomes easier to include in GMES-related procurement more detailed INSPIRE-specific requirements related to data (and services) – right now the rather broad requirement to be “INSPIRE compliant” may put GMES projects in a difficult position. In particular, in order to be a usable requirement for a GMES FP7 consortium, requirements regarding INSPIRE compliancy shall be specified in relation with both the Implementing Rules Legal Acts and the guidelines for

- INSPIRE Network Services;
- INSPIRE Metadata; and
- INSPIRE Data Specifications - with detail about the relevant themes.

In addition, where not already done GMES projects should be asked to make their requirements regarding spatial data available to the relevant INSPIRE Thematic Working Groups as early as possible. At the same time all GMES projects should be made aware and follow closely the relevant Data Specifications drafted regarding their output products.

Also at the technical level urgent coordination is required. Projects and activities need a common platform to discuss on a continuous basis. For example, it is of paramount importance that the scope of the INSPIRE data themes and the GMES services and GMES in-situ are discussed in a number of iterations between now and April 2011. This requires face-to-face meetings with the relevant experts.

There are also important GEOSS activities that should be considered by INSPIRE and GMES. The user requirements registry, the work on the analysis of the user requirements, as well as the AIP process should be synchronized so that GEOSS requirements can be taken into account in the INSPIRE data specification process. For example, the GEOSS SIF should be asked to

⁷ <http://www.thegigasforum.eu/cgi-bin/download.pl?f=530.pdf>

comment on INSPIRE data specifications during the consultation period and GEOSS should be encouraged to include activities regarding the review and testing of draft INSPIRE data specifications version 2 for data themes relevant for GEOSS SBAs during the phase April – September 2011 in the call for AIP-4, and possibly in subsequent calls for version 3.

Dedicated activities are required to create profiles of standards in order to optimize their use in INSPIRE Thematic Working Groups and GMES projects (e.g. the tailoring of Observations and Measurements for Environmental Monitoring Facilities vs. Observations and Measurements). In this process ongoing developments of relevant global community standards (e.g. WaterML 2.0, GeoSciML, netCDF, CF, CSML) need to be considered to avoid obstacles for potential adoption of such emerging specifications in INSPIRE as well as by GMES services. Dependencies arising from SEIS, such as the CAFE air quality reporting schema being developed in accordance with INSPIRE by DG-ENV and the EEA, need also be taken into account.

Recommendation one: Dependencies between INSPIRE, GMES, and GEOSS require urgent coordination at programmatic and technical levels.

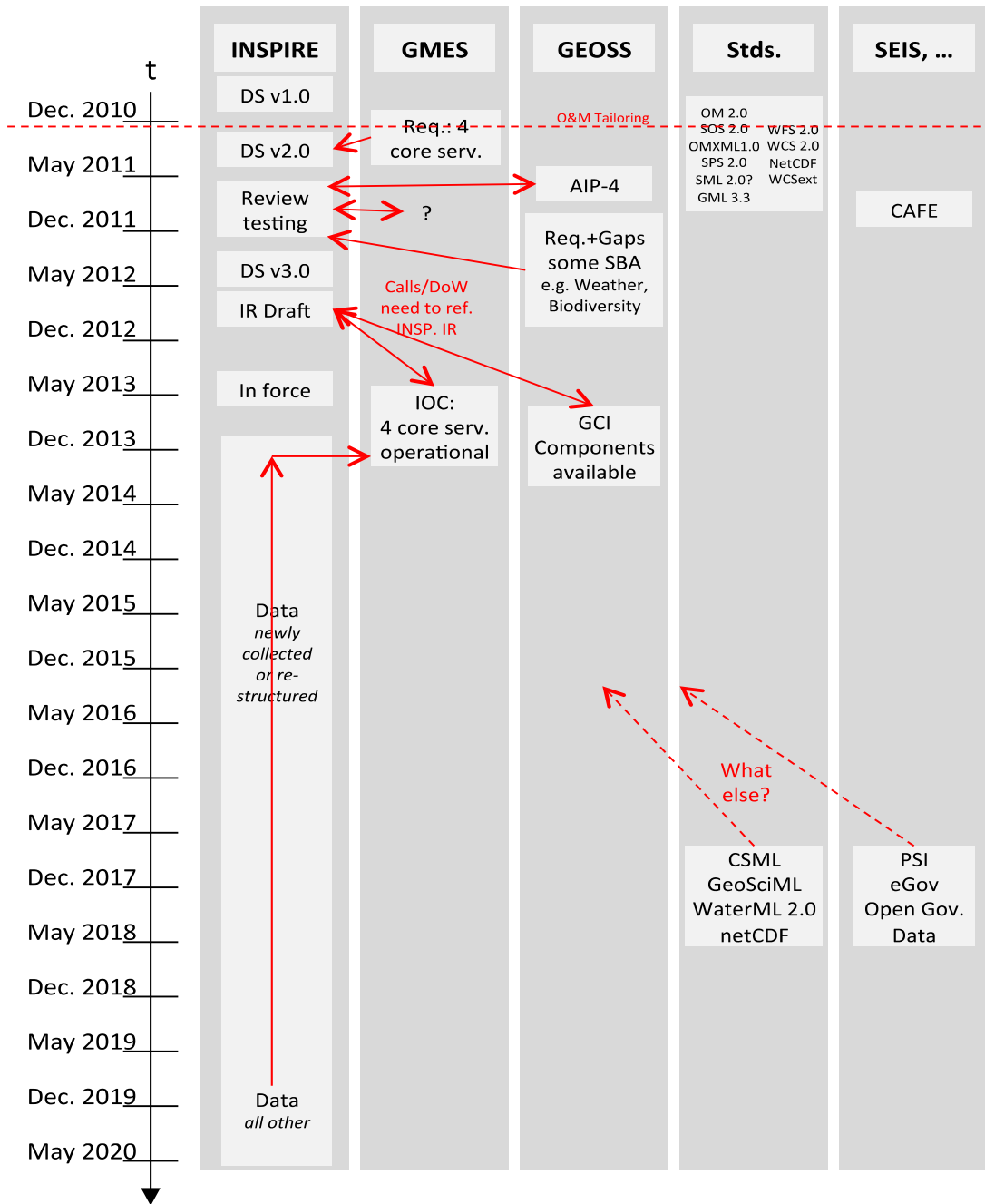


Fig. 1. Dependencies over time for the INSPIRE data specifications, the GMES in-situ activities, and standards revision and development.

3.2 Timelines of projects and activities

The aforementioned dependencies call for the establishment – and maintenance - of a detailed common calendar. This calendar should contain also milestones related to procurement activities (e.g., when technical specifications need to be ready) so that specific and up-to-date information can be passed on to the relevant people.

It is important to note that this calendar should not be limited to the activities of INSPIRE, GMES and GEOSS, but include other relevant milestones, e.g., from the Standards organisations, SEIS, the implementation of the PSI Directive and the development of community standards.

Recommendation two: The timelines of the projects and activities should be harmonized where possible.

3.3 Interaction between INSPIRE, GMES, GEOSS and standardization activities

Practical suggestions to sustain this communication network consists of the organisation of regular open workshops on Interoperability where EC-JRC, EEA, ESA, GEO, OGC, and CEN/TC 287 can play a leading role and continue liaison activities between GEOSS, INSPIRE and GMES.

A European branch of the GEOSS Standards and Interoperability Forum (SIF) has been established, to allow a forum for consolidating European proposals to the GEO SIF. Activities to be sustained in this framework include convening the GEO SIF European Team. For this activity, support already comes from GEOSS SIF Europe chair and OGC, but more EC project officers, project leaders.

In this context the offer from the VESTA-GIS project to use its e-learning training platform for INSPIRE, GMES, GEOSS, SEIS and standardization is important. By linking the platform with training material to the CEN/TC 287 activities, the visibility of the training material will increase and the learning curve for new stakeholders and consortia will be shortened. The CEN/TC 287 secretariat and the representatives of the VESTA-GIS project will undertake the necessary steps for this to happen.

Recommendation three: Continuous interaction between INSPIRE, GMES, GEOSS and standardization activities is fundamental for the sharing and re-use of information and knowledge.

4 Conclusions and next steps

The main conclusions from this report are the following:

- Dependencies between INSPIRE, GMES, and GEOSS require urgent coordination at programmatic and technical levels.
- The timelines of the projects and activities should be harmonized where possible.
- Continuous interaction between INSPIRE, GMES, GEOSS and standardization activities is fundamental for the sharing and re-use of information and knowledge.

The report will be offered to and discussed with representatives from INSPIRE, GMES, and GEOSS.

Based on information made available during the workshop, the GIGAS roadmap for sustainability⁸ has been updated and included in Annex II.

5 Acronyms

Acronym	Description
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CEN	Comité Européen de Normalisation
Café	Clean Air For Europe (2008/50/EC)
CT	Consolidation Team (INSPIRE)
DT	Drafting Team
EC	European Commission
EEA	European Environment Agency
FP	Framework Programme
GEOSS	Global Earth Observation System of Systems
GIGAS	GEOSS INSPIRE and GMES Action in Support
GMES	Global Monitoring for Environment and Security
INSPIRE	Infrastructure for Spatial Information in the European Community
ISO	International Organisation for Standardization
JRC	Joint Research Centre
PSI	Public Sector Information
SBA	Social Benefit Area
SDI	Spatial Data Infrastructure
SEIS	Shared Environmental Information System
TC	Technical Committee
TWG	Thematic Working Group (INSPIRE)

⁸ GIGAS Final Report, p. 27 (<http://www.thegigasforum.eu/cgi-bin/download.pl?f=530.pdf>)

Annex I. Participants

Name	Affiliation	Projects or activities represented
C. Attardo	Intergraph	GIS4EU, NatureSDI, SEIS/CAFE
E. Bartholome	European Commission (EC), Joint Research Centre (JRC)	GMES Land (global)
M. Broglia	EC-JRC	SAFER (validation), GMES Emergency Response
A. Cauchy	Infoterra	SAFER
H. Caumont	ERDAS / OGC	GEOSS Architecture Implementation Pilot
P. Cipriano	SINERGIS	Briseide
G. Conti	GraphiTech	Briseide
F. Daffner	EEA	INSPIRE TWG EMF, GISC
S. De Zorzi	CORILA, Venice	GIS4EU
M. Ford	CEN/TC 287 Secretariat	
A.E. Iatan	CEN	
S. Jensen	EEA	GISC
R. Koopman (partially, through webconference)	GEO Secretariat	GEO Secretariat
S.J. Khalsa (partially, through, webconference)	US National Snow and Ice Data Center	GEO SIF
M. Lutz	EC-JRC	INSPIRE Data Specifications
G. Martirano	EPSILON Italia	NatureSDI+
S. Nativi	CNR	GEO SIF & SIF European Team
V. Nunes de Lima	EC-JRC	INSPIRE data specifications coordinator and CT, INSPIRE Data Themes on Land Cover, and on Land Use
C. Portele	Interactive Instruments	INSPIRE DT
E. Pross	BKG Germany	Standardisation
D. Rickman		Editor CEN TR 15449
D. Romano	ESA	HMA
G. Saio	GISIG	VESTA-GIS
A. Sarretta	EC-GIS	INSPIRE Data Themes on Environmental monitoring facilities, on Atmospheric conditions+ Meteorological geographical features, and on Oceanographic geographical features+ Sea regions
S. Schade	EC-JRC	Various JRC-SDIU research activities on observation networks

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Name	Affiliation	Projects or activities represented
K. Schleidt	Austrian	GMES in-situ, SEIS/CAFE
M. Seifert	Bavarian Administration for Surveying and Geoinformation	INSPIRE TWG Orthoimagery, INSPIRE DS DT
S. Smolders	GIM	GENESIS project
P. Smits	EC-JRC	INSPIRE CT, Convener CEN/TC 287 WG "SDI"
P. Strobl	EC-JRC	JRC Task Force "Natural Disasters"
R. Tomas	EC-JRC	INSPIRE Data Themes on Natural Risk Zones, Soil, and Geology and Mineral Resources
K. Tóth	EC-JRC	INSPIRE Data Themes on Elevation, and on Orthoimagery
M. Tuchyna	EC-JRC	INSPIRE Data Themes on Bio-geographical Regions, Habitats and Biotopes, Species Distribution, and on Energy resources
R. Walker	CEN/TC 287 chair	

Annex II. Updated GIGAS roadmap to sustainability

The GIGAS final report contains a chapter on the roadmap to sustainability. In the light of the outcome of the CEN/TC 287 workshop on 2010-11-08 and 09, this roadmap is included below and updated with information made available during the workshop.

Date and place	Event or milestone	Anticipated outcome	Actors
2010-06-22, Krakow	Workshop on Interoperability between INSPIRE, GEOSS, GMES, SEIS, SISE: opportunities for convergence and innovation	Assess what has been done with the GIGAS recommendations in projects including GENESIS; To identify opportunities for convergence and innovation, and recommendations for future research and standardization.	EC, EU-funded projects
2010-09-14, St. Julien's, Malta	CEN/TC 287 workshop on European projects and good practice in interoperability	To have a common understanding of the mechanics of the role that CEN/TC 287 wants to play in maintaining a repository of key findings by GIGAS and other EU-funded projects; To establish an initial list of deliverables (or parts thereof) of EU-funded projects that could become part of the CEN/TC 287 activities; To identify projects that are interested in actively contributing to the maintenance of the repository.	CEN/TC 287, EC, EU-funded projects, GEO Secretariat
2010-08-31, Ankara	SIF workshop	GEO SIF ET updated on European activities	GEO SIF ET chair
2010-09-20 to 24, Toulouse, France	OCG Europe Forum	Coordination and exchange of information	OGC, EU-funded projects
2010-09-20 to 24, Toulouse, France	GEO Euro-SIF meeting	Coordination of European input to SIF and GEO	Euro-SIF, EU-funded projects, JRC, GEO Secretariat, CEN/TC 287
2010-09 to 12	Discuss with EC project officers best way to make reference to CEN/TC 287 infrastructure in future calls	Reference to use of CEN/TC 287 in context of interoperability between GMES, GEOSS and INSPIRE	EC, JRC, CEN/TC 287 representatives
2010-10	GEO User Requirements reports available	User requirements registry and reports should be considered in INSPIRE and GMES work on data (http://www.scgcorp.com/urr)	
2010-11	Various calls for proposals	Secure funding for workshops and meetings.	
2010-11	Reports from GEO AIP-3	Relevant reports (both requirements and engineering reports) should be	"GIGAS" liaison group,

Date and place	Event or milestone	Anticipated outcome	Actors
	available	identified and made available to INSPIRE and GMES processes. In particular efforts from for instance the GEOSS Energy working group should be valuable for INSPIRE TWGs where currently additional expertise is welcomed.	INSPIRE Team, GEO Energy WG/GENESIS project, etc.
2010-11-08 and 09	CEN/TC 287 workshop on data interoperability in INSPIRE, GMES, and GEOSS	The aim is to reach a common understanding of INSPIRE, GMES, and GEOSS activities in the area of data interoperability; to agree on a roadmap for synchronizing activities relevant for data interoperability; and to formulate or refine recommendations on technical approaches.	CEN/TC 287, EC, EU-funded projects, GEO Secretariat
2011-04 to 09	Consultation on and testing of INSPIRE data specifications for Annex II and III, version 2	Comments and test reports from GMES projects and GEOSS activities on the use of the draft INSPIRE data specifications. GMES projects and GEOSS actors are requested to register as INSPIRE stakeholders.	GMES projects and GEOSS activities, registered as INSPIRE Legally Mandated Organizations and Spatial Data Interest Communities
2011-04-11 and 12	CEN/TC 287 workshop on data interoperability in INSPIRE, GMES, and GEOSS	The aim is to follow-on on actions identified in 2010-11, to review the roadmap for synchronizing activities relevant for data interoperability; and to formulate or refine recommendations on technical approaches.	CEN/TC 287, EC, EU-funded projects, GEO Secretariat
2011-04	GEO AIP-4	Synchronization of INSPIRE testing, GEO AIP-4, and activation of GMES services for testing INSPIRE data specifications for Annex II and III	GEO, EC, GMES projects
2011-06, Scotland	INSPIRE pre- Conference workshop on interoperability	Update on interoperability gaps	GEO SIF, JRC, EU-funded projects
2011-10-05 to 07	EnviroInfo 2011, Ispra, Italy	EnviroInfo invites CEN/TC 287 to consider organizing a side meeting at the JRC in Ispra during the conference with a focus on EU-(co)funded projects.	EnviroInfo 2011 organizing committee, CEN/TC 287, European projects.