

The European Soil Data Centre and the Process of INSPIRE Data Specification for the Annex-III theme SOIL



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- **Introduction**
- **The European Soil Data Centre and the Soil Thematic Strategy**
- **INSPIRE (Soil Data, ESDAC)**
- **The INSPIRE process for soil data specifications**
- **State-of-play of the TWG work**
- **Conclusions**

- **European Soil Data Centre (ESDAC):**
collection, management and distribution of data fully accomplishing INSPIRE Directive
- **Evaluation and Modelling of Soil Threats**
as identified in the Thematic Strategy for Soil Protection
- **Soil Monitoring and Inventories**
(e.g. Lucas soil, Biosoil, etc)
- **Research and development**
(Digital Soil Mapping, advanced modeling and assessment, FP7 Projects)
- **Working Groups**
(ESBN, EIONET, Soil Biodiversity, WRB, etc)

- **European Soil Data Center (ESDAC)** is one of ten environmental data centres in Europe
- **INSPIRE** data specifications for the Annex-III theme SOIL
- **Member States** need to come to a common position
- ESDAC is keen on its participation in the **INSPIRE Thematic Working Group (TWG)** for the theme SOIL
- Since mid-2010, the TWG has been working on a **general data model** for soil (based on INSPIRE Reference Material and User Requirements Survey)

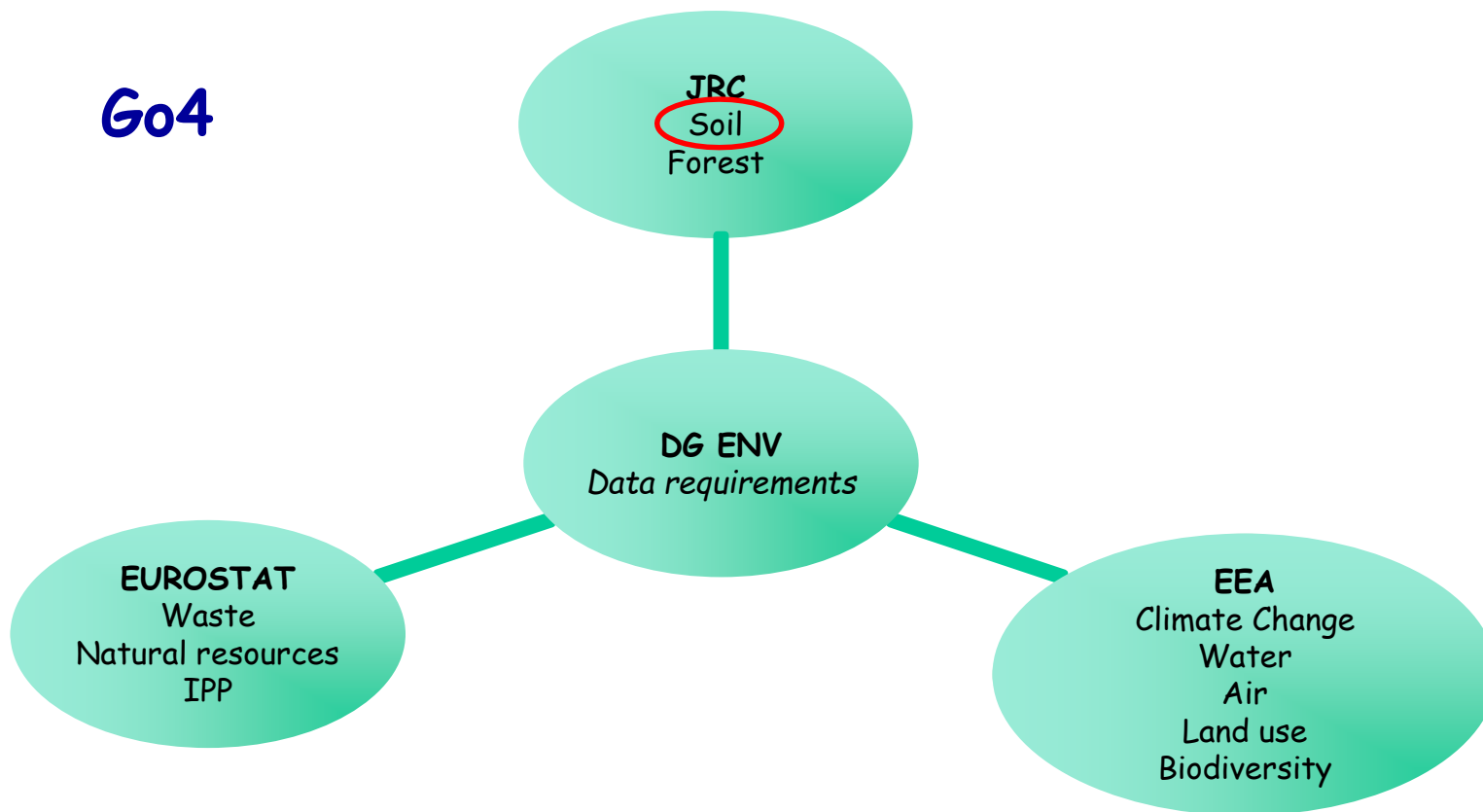
COMMUNICATION COM(2006) 231 on the
Thematic Strategy for Soil Protection

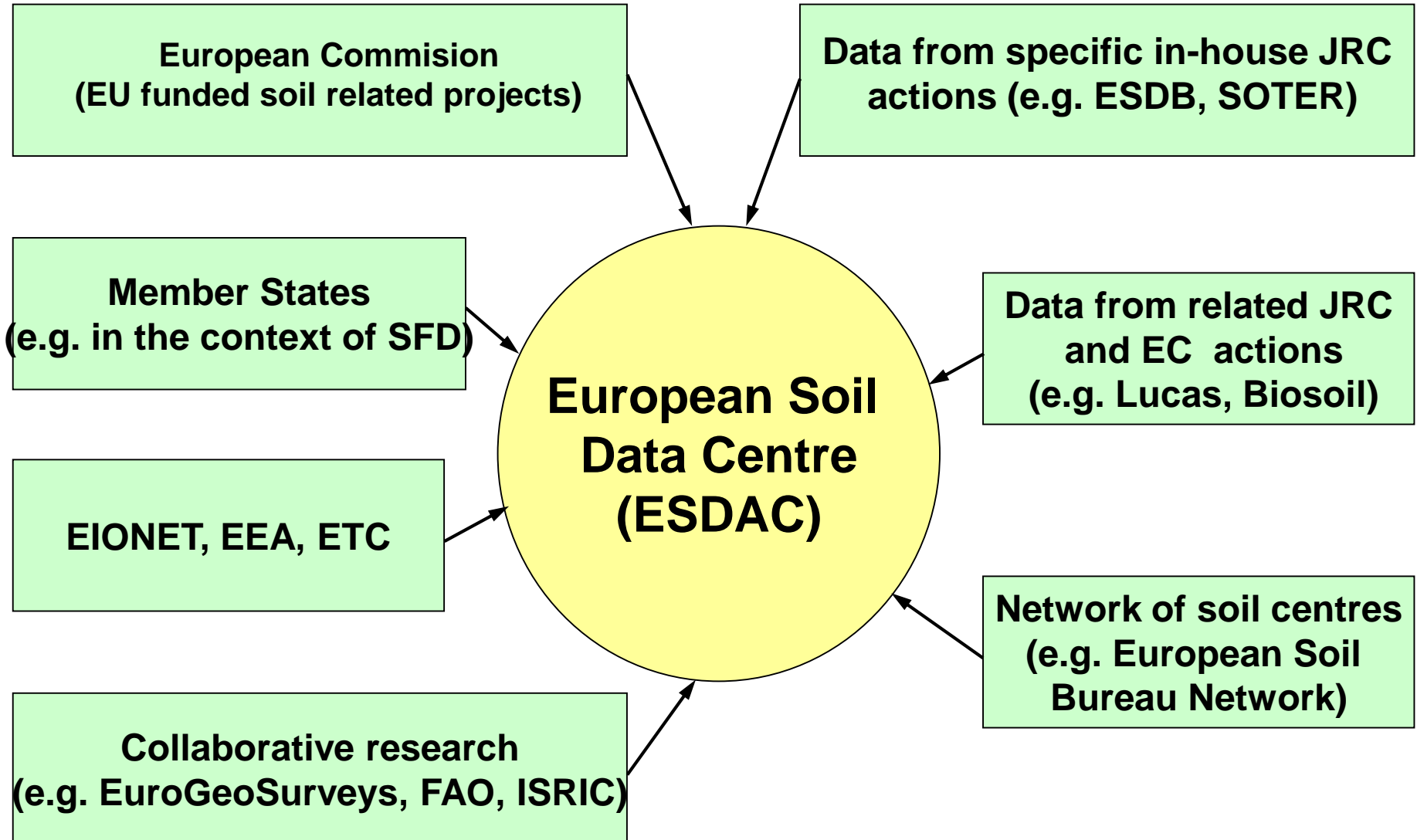
DIRECTIVE COM(2006) 232 establishing a
framework for the protection of soil and amending
Directive 2004/35/EC

IMPACT ASSESSMENT SEC(2006) 620 of the
Thematic Strategy for Soil Protection

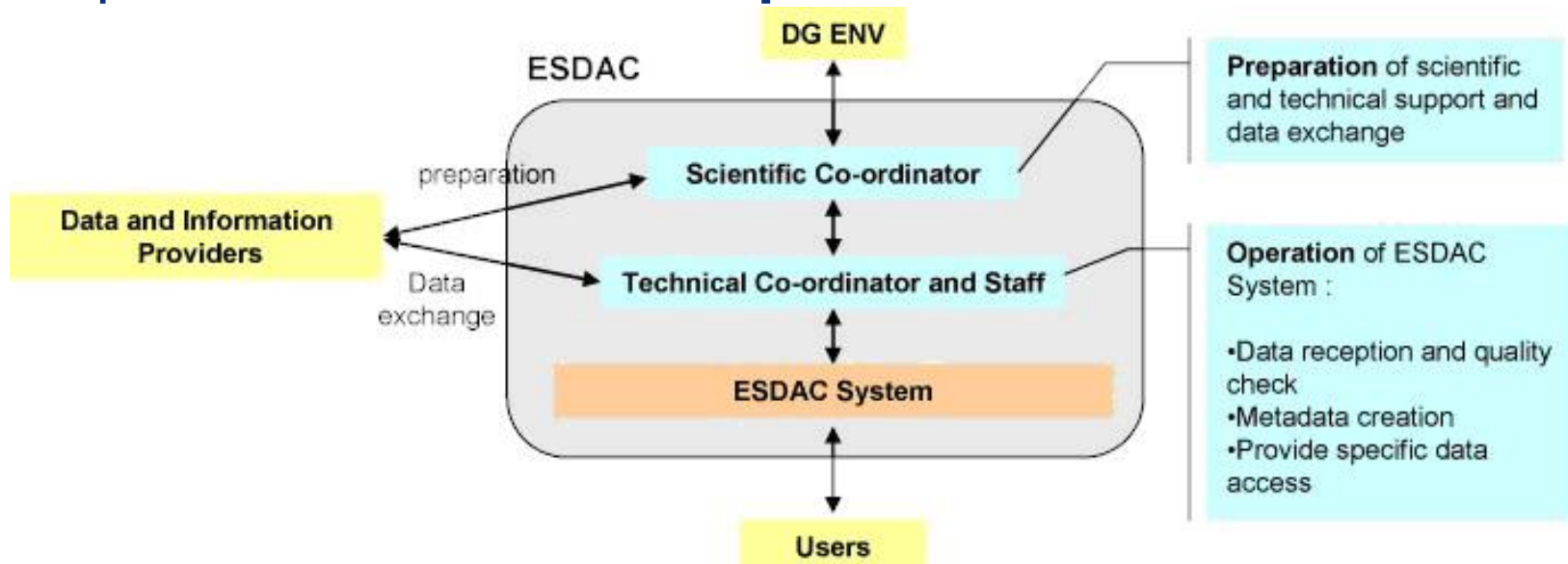
Need to collect and assess soil data and information → Establishment of ESDAC as one centre in the new system of European Data Centers for the environment, decided by “the group of four (Go4)” (DG ENV, ESTAT, JRC, EEA)

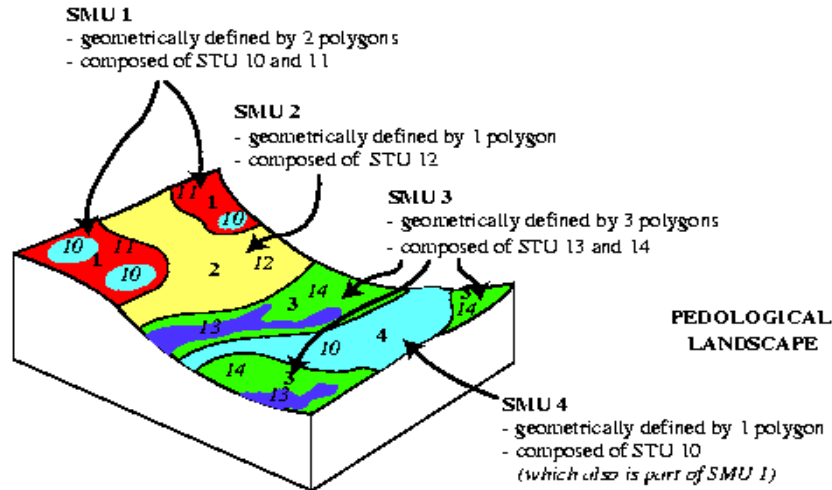
Go4





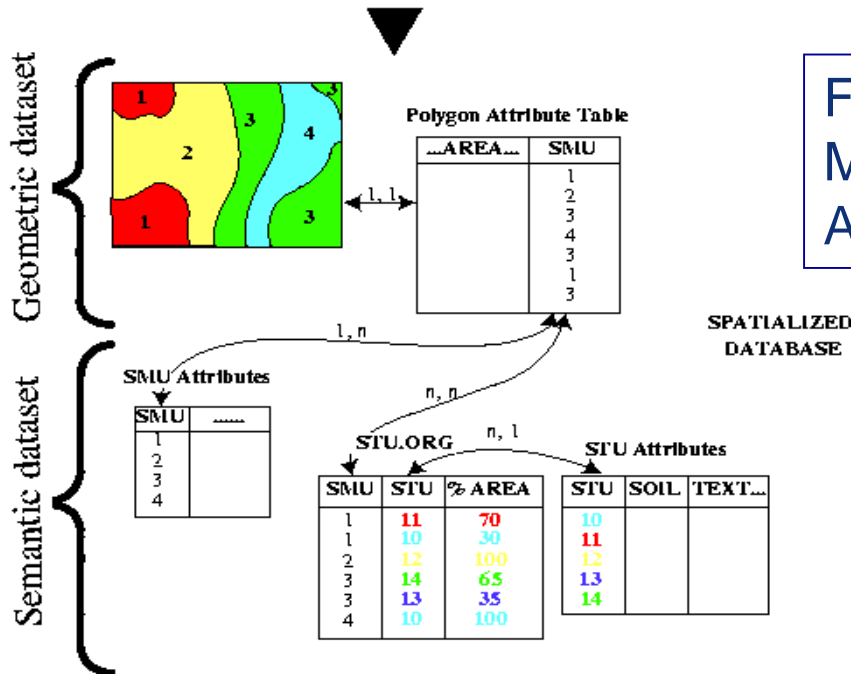
- In the SFD context, Member States would need to **communicate** to the European Commission soil data
- Importance of “**Risk areas**” which are areas at risk to major soil threats (soil erosion, lack of organic matter, etc.)
- The need to collect and assess soil data and information, the European Commission → **Implementation of ESDAC**





MAIN FEATURE

- vector geometry
- > 50 000 polygons
- 9 ha minimum area
- > 2 000 000 vertices (x,y)
- 73 Parameters



Full Database documentation includes:
Metadata, Database Dictionaries,
Attributes coding

- **INSPIRE Directive** aims at the establishment of an Infrastructure for Spatial Information in the European Community
- General situation: **fragmentation** of datasets and sources, **gaps** in availability, **lack of harmonization** between datasets at different geographical scales and **duplication** of information
- A common **European data specification** for soil is in the process of being set up in order to make data interoperability between soil data services possible
- It is **not an easy task**: experience within the European scientific soil data community, outputs of ENVASSO
- **GSSOIL**: Project targeted at improving the access to spatial soil data for public sector, private sector and citizens

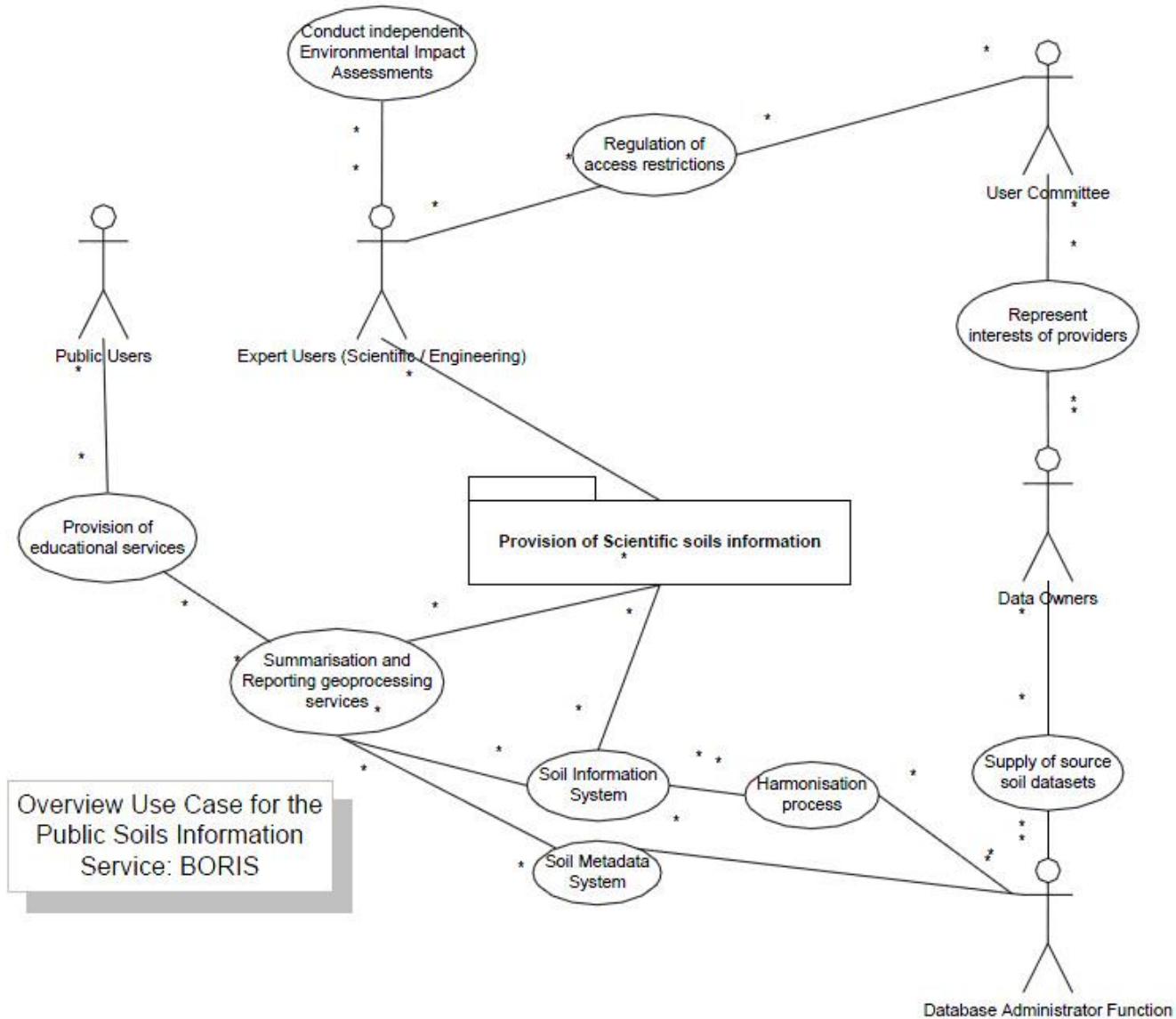
- ESDAC wants to consolidate its role as a **compiler/provider** of European datasets ; it **interacts** with soil data players from Member States and can **influence** soil metadata specifications
- ESDAC proposed itself and was accepted as a **member** of the INSPIRE Thematic Working Group for Soil
- The TWG consisting of a **balanced mixture** of soil-, and Information Technology/Geographical Information-experts
- TWG has the task to draft the **Data Specifications** for Soil, from which the Implementing Rules (legal texts) will be derived

Task 1	User requirements and use cases
Task 2	Analysis of the relevant reference material
Task 3	“As-is” analysis
Task 4	Gap analysis
Task 5	Drafting data specification
Task 6	Testing of draft specifications for the soil theme in the soil data community
Task 7	Preparation and adoption of Implementing Rules for legislation

- The Methodology for the Development of Data Specifications proposes so-called **Use Cases**

- Descriptions of “soil” applications will help to develop Use Cases, or to select representative ones

- Use Case defines a goal-oriented **set of interactions** between actors and the system under consideration (example an application that uses soil data)
- Use case descriptions: **Diagrams** and **Textual descriptions** are created to support the data specification development.
- Written in an easy-to-understand structured narrative text using the **vocabulary** of the domain
- The collection of all identified objects and their interrelation constitute a **data model**
- **Unified Modeling Language (UML)** is used to graphically represent the data model



- **June 2010:** Launch of TWG
- **November 2010:** first version of the specifications (DS1.0)
- One team: **Analysis** of the provided user applications and **reference material** to derive suitable Use Cases
- Second team: **Data modeling** based on expertise gained from international projects such as ENVASSO, GS SOIL, the European Soil Data Base and ISO data exchange (ISO/TC190)
- **June 2011:** second version of the specifications (DS2.0)

- INSPIRE requires that part of the **world of soil** is modeled.
- In the data model, the TWG includes real world phenomena:
 - ✓ soil profiles and soil observations
 - ✓ soil delineation (areas with certain soil characteristics)
 - ✓ soil characteristics that change over time (soil monitoring)
 - ✓ soil contaminated sites

- The first version of the Data Specifications is difficult to read because:
 - ✓ many concepts and terms are not or ill-defined;
 - ✓ the objects, attributes and links between objects are weakly defined
 - ✓ an explicit gap-analysis to see if the model covers the Use Cases is not made yet
 - ✓ there are not enough strong Use Cases rooted in legislation to justify the model.

- **Theory is different from practice:** The development of the work is well prepared, in practice it is difficult to follow all the guidelines
- Even if objects and attributes can be identified and modeled in UML, it is not straightforward to **export them to formats** that are truly useful to the user
- ‘Codelists’ for attributes is another difficult point in the absence of internationally agreed schemes
- Short Time to deliver – Communication is also a major issue
- Participation/feedback of other Projects requested: **ISO TC190** (Soil Quality) WG is elaborating a new standard for the recording and exchange of soil data. **GS-SOIL** and **GlobalSoilMap.net**



Thank you for your attention
Soil Portal: <http://eusoils.jrc.ec.europa.eu>

