



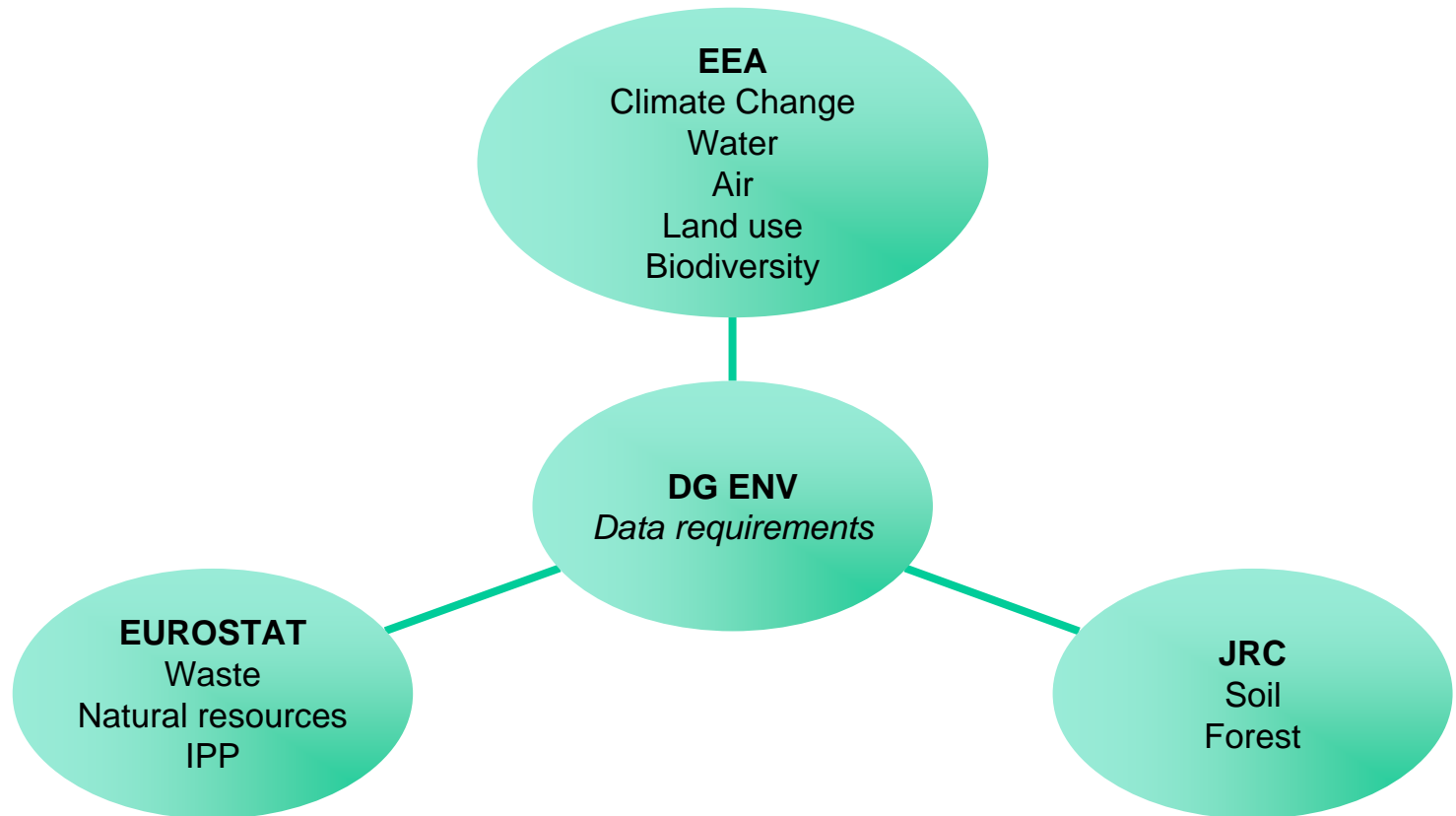
European Soil Data Centre (ESDAC)

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- 1. *What is ESDAC?***
- 2. *Requirements***
- 3. *Information providers; Inventory***
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What is ESDAC ?

One centre in the new system of European Data Centers for the environment, decided by “the group of four” (DG ENV, ESTAT, JRC, EEA)





What is ESDAC ?

The technical arrangement in the Go4 specifies that :

“a data centre will act as the **primary data contact point for DG ENV in order to fulfill DG ENV’s information needs.**

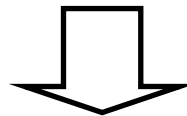
It will have the task of ensuring that the collected data **fit DG ENV’s requirements**, that **data collection** is organized in an efficient way, that the necessary quality assurance is performed and that all relevant existing **data are accessible to other parties.**

It will thus have the primary responsibility for **organizing the availability and quality** of the data required for policy.

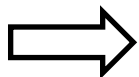
Data collection and quality control activities in relation to such data need to be **fully co-ordinated with the data centre**, which should also take steps to ensure that user needs are taken fully into account”

DG ENV, being the first customer of ESDAC has expressed its **overall requirements** as following :

- **scientific and technical support for issues in relation to the proposed Soil Framework Directive**
 - **Guidelines on the identification of risk areas**
 - **Guidelines on data issues (quality, methods, access, data-exchange formats)**
- **scientific and technical support for the development of European datasets (e.g. maps of risk for the different soil threats in the EU)**
- **access to soil related data, maps, information at EU level**



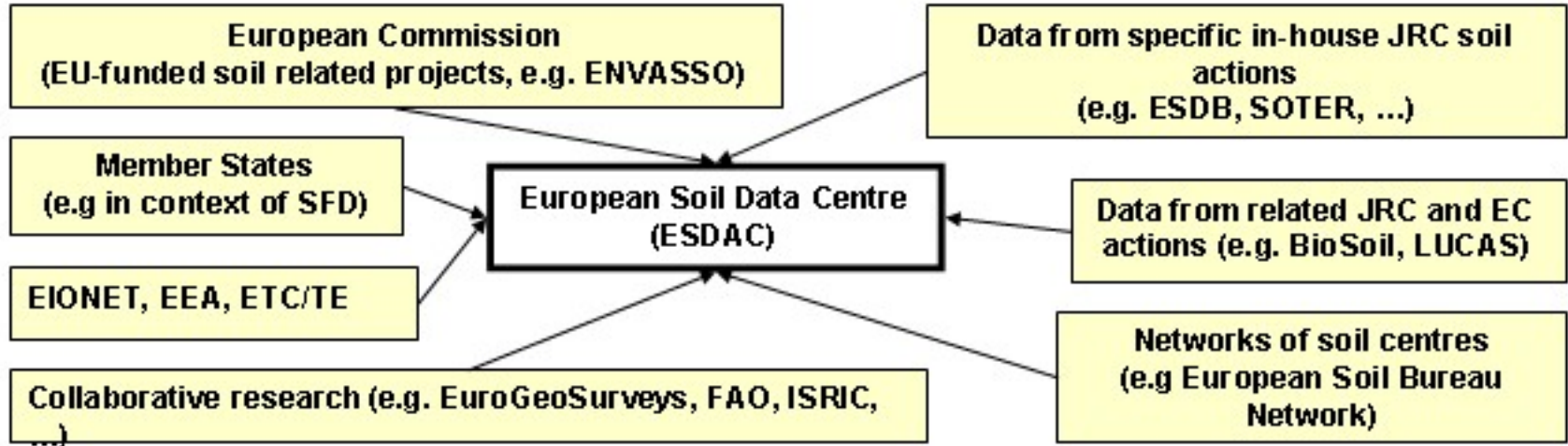
All existing and new data and information generated during the course of providing support to DG ENV plus any other relevant soil related data and information will become part of ESDAC.



**Information sources and Information providers
ESDAC Repository for information**



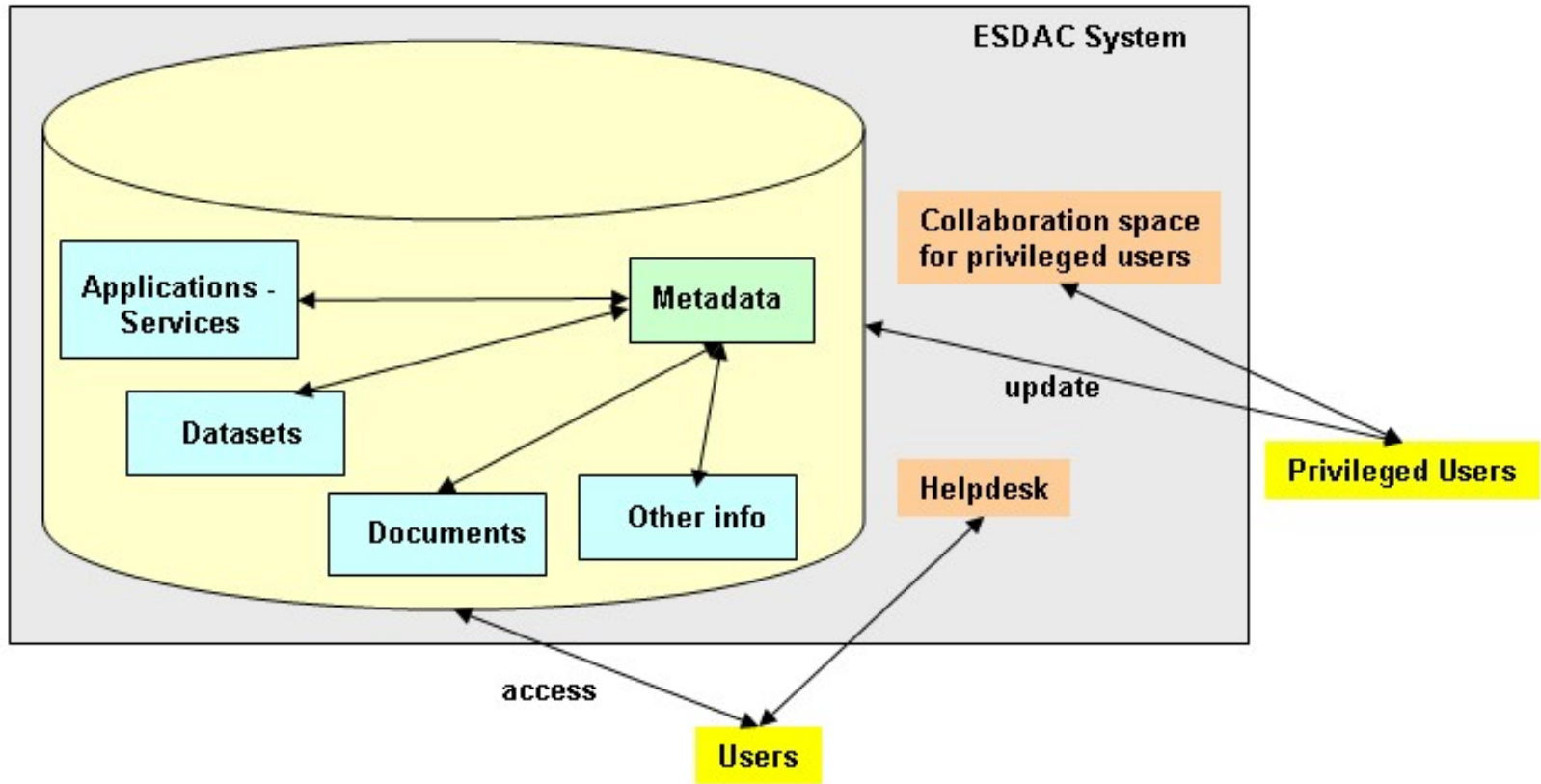
Potential Information providers





JRC	European Soil Regions	Soil regions of Europe (scale 1:5,000,000)
	European Soil Database (ESDB) and derived products	Soil geometry and attribute data for Eurasia obtained through harmonization of national soil data (scale 1:1,000,000)
	PESERA	Soil erosion map for Europe (1k cells)
	OCTOP	Organic Carbon map for Europe (1k cells)
	Various datasets at 1:250,000	Italy, Albania, Odra basin, Meuse basin
	Various soil profile datasets (point data)	Soil Profile Analytical Databases for Europe (SPADE), Danube basin
	European Digital Archive of Soil Maps (EuDASM)	Archive of >5000 scanned soil related maps for all continents.
	Forest Focus, BioSoil	Forest soil (point)data
	SINFO	ESDB data expanded for the Crop Growth Monitoring System (CGMS)
ESTAT	Soil data from LUCAS project	
EEA, EIONET, ETC/TE	Data on progress in management of contaminated sites for EU	
	Compiled data related to the following indicators : Soil sealing, Diffuse contamination (“Heavy metal accumulation” and “Sewage sludge application”), Soil erosion	
EC	Data from various EC funded soil related projects (e.g. ENVASSO (Environmental Assessment of soil for monitoring))	
Member States	Currently : existing soil data documented in EUR Reports "Soil Resources in Europe"	
	Future : possibly “risk area” data for major soil threats identified in context of Soil Thematic Strategy and Soil Framework Directive	

Title	The ESDBv2 Raster Library - 1km x 1km
Subject	Prepared raster images for 73 soil attributes of the European Soil Database v2.0 (ESDBv2)
Keywords	Soil, Raster, Grid, SGDBE, Soil Geographical Database, PTRDB, Pedotransfer Rules Database, LAEA, INSPIRE
Publisher	European Commission – DG JRC and European Soil Bureau Network
Status	Final
Description	<p>The library contains raster (or grid) data files (in native ESRI GRID format) for most attributes (73 in total) of the SGDBE and PTRDB databases of the ESDB v2.0; cell sizes are 1km x 1km and the grid is aligned with the reference grid recommended during the 1st Workshop on European Reference Grids in the context of the INSPIRE (Infrastructure for Spatial Information in Europe) initiative.</p> <p>....</p>
Datasource	European Soil Databasev2.0
Type	Rasters (grids)
Format	ESRI GRID
Coverage	The grid origin is defined 4.321.000,0 m west of the projection centre point (52N, 10 E), and 3.210.000,0 m south of projection centre point (52N 10 E). The grid extent is such that it covers all EU25 countries. Width : 7.500.000,0 m ; Height : 5.500.00,0 m ; 7500 columns, 5500 rows.
Scale/Resolution	Cell sizes of 1km x 1km
Frequence of Updates	One time effort
Last update	April 2006
Contact	Marc Van Liedekerke (marc.van-liedekerke@jrc.it), JRC
Rights / Accessibility	Free for download after registration
URL	http://eusoils.jrc.it/ESDB_Archive/ESDB_data_1k_raster_intro/ESDB_1k_raster_data_intro.html





European Soil Portal (<http://eusoils.jrc.it>) is pre-cursor of the ESDAC Repository

It operates already a **soil data and information service**

It makes available:

- **data** (mainly products derived from the European Soil Database) ;
- **documents** (written in the context of JRC institutional work, many in collaboration with ESNB partners) ;
- **applications** (web mapping applications that use available soil data);
- **scanned maps** (archive of soil-related maps);

Help Desk operated for data distribution and problem solving

Download of data:

- anonymous for some data;
- other data are protected and access is subject to registration ;

User base : 600+ users have been registered for 5 large datasets.

Communication with User Base:

- Mailing list, free subscription
- Regular mails for communication of updates



ESDAC Repository – example

Danube river basin. (for building a soil database that can support the application of the LISFLOOD model in the Danube area).	Odra basin
<ul style="list-style-type: none"> ECALP: Ecopedological Map of the Alps Soil data for pilot areas in the Alpine region. 	<i>keywords:</i> Soil, Pilot Areas in the Alps, ECALP, Environment and Conservation, Alps, alpine convention, soil, protection, pedology, ecology, INSPIRE grid
<ul style="list-style-type: none"> EGYPT: Egypt soil data Georeferenced soil data for Egypt, to be integrated into ESDB v3 	<i>keywords:</i> Soil, soils, Egypt
<ul style="list-style-type: none"> MEUSIS (Multiscale European Soil Information System) - Alpine Grid Soil data delivered as grids for some pilot areas in Europe (e.g. Slovakia) 	<i>keywords:</i> Alpine Reference Grid, INSPIRE grid, Environment and Conservation, Multiscale Soil Information system, participatory approach
<ul style="list-style-type: none"> OCTOP soil organic carbon content data Soil organic carbon data for Europe 	<i>keywords:</i> Soil organic carbon content, carbon, OCTOP, Topsoil, Geological, Geophysical
<ul style="list-style-type: none"> PESERA: Pan-European Soil Erosion Risk Assessment Soil erosion risk data for Europe 	<i>keywords:</i> Soil erosion, erosion, Environment and Conservation, Risk Assessment, Pesera, Soil
<ul style="list-style-type: none"> ESDBv2 Raster Library - 1km x 1km Prepared 1km raster images for 73 soil attributes of the European Soil Database v2.0 (ESDBv2) 	<i>keywords:</i> Soil, Raster, Grid, SGDBE, PTRDB, LAEA, Inspire
<ul style="list-style-type: none"> ESDBv2 Raster Library - 10km x 10km Prepared 10km raster images for 73 soil attributes of the European Soil Database v2.0 (ESDBv2) 	<i>keywords:</i> Soil, Raster, Grid, SGDBE, PTRDB, GISCO, LAEA, Inspire

Link to



ESDAC Repository – example

ies EUROPEAN COMMISSION DIRECTORATE-GENERAL Joint Research Centre

Land Management & Natural Hazards Unit

HOME : DATA : DOCUMENTS : APPLICATIONS : THEMES : PROJECTS : SOIL BUREAU : UTI

ESDAC - European Soil Data Center - Detailed Data Description

ESDAC Concept | **ESDAC Data Inventory**

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PESERA: Pan-European Soil Erosion Risk Assessment

Subject	Soil erosion risk data for Europe
Keywords	Soil erosion, erosion, Environment and Conservation, Risk Assessment, Pesera, Soil
Publisher	European Commission - DG JRC
Status	Final
Description Objectives	<p>Soil erosion is a natural process, occurring over geological time, and indeed it is a process that is essential for soil formation in the first place. With respect to soil degradation, most concerns about erosion are related to accelerated erosion, where the natural rate has been significantly increased mostly by human activity. Soil erosion by water is a widespread problem throughout Europe</p> <p>PESERA (Pan-European Soil Erosion Risk Assessment) has been created in order to design a model and to handle spatial and temporal data of variable quality and detail and to enable the impacts of agricultural policy, land use and climate changes to be assessed and monitored across Europe.</p> <p>The Pan-European Soil Erosion Risk Assessment - PESERA - uses a process-based and spatially distributed model to quantify soil erosion by water and assess its risk across Europe.</p>
Abstract	
Description Background	In more detail, the scientists can require to view in detail the Soil erosion estimates data. The Soil erosion estimates (t/ha/yr) have been calculated by applying the PESERA GRID model at 1km, using the European Soil Database, CORINE land cover, climate data from the MARS Project and a Digital Elevation Model. The resulting estimates of sediment loss are from erosion by water. The PESERA model produces results that depend crucially on land cover as identified by CORINE and the accuracy of the interpolated meteorological data.
Description Contents	Documentation is on : Nature and extent of Soil Erosion in Europe (CD_ROM) http://eusoils.jrc.it/ESDB_Archive/pesera/pesera_cd/index.htm

Internet

This page links then to a page for further download of the data



For the period 2007-2009, an **implementation plan** has been proposed by JRC; comments from DG ENV, EEA and ESTAT have been integrated

stating that :

- ESDAC will become the single focal point for policy relevant soil data and information at EU level by hosting relevant EU soil products and by providing web-based tools for the access to and the update of information located at the ESDAC
- ESDAC will be based on the extensive experience gained by the JRC in establishing a functional system of soil data and information in support of European policy requirements
- will allow for the incorporation of information from National and Regional soil data providers fully complying with the INSPIRE principle of delocalized data systems in a networked approach
- European views for various content aspects of soil (like functional maps for Europe) will be produced by JRC/EEA and quality-controlled and hosted in the ESDAC

According to a number of **principles (1)**:

- Report or submit data once (to a central place) and use many ; use of harmonised data reporting tools
- ESDAC will integrate with State-of-the-Environment (SoE) work for Europe and be compliant with future EU soil protection legislation (and where appropriate other) reporting data flows.
- ESDAC will be one node in a system consisting of distributed data nodes: as a soil data node, it will hold soil data at European level, while other soil data nodes at regional, national or global level will focus on data of different scales.
- Users can build own services and connect their data to ESDAC or access ESDAC data (interoperability)

More principles (2):

ESDAC will develop in close relationship to the **INSPIRE** Directive and will be integrated into the broader context of spatial information sharing

- Environmental Data should be stored at different nodes and information should be shared between all participating nodes.
- For the sake of information sharing and exchange all participating nodes have to be interoperable, data should be exchangeable and services should be able to access and process data from different nodes.
- Data should be maintained at the most appropriate level and shared between all other levels. (subsidiarity)
- It should be possible to discover easily data and services. Users should be able to determine data's fitness for use and the conditions of usage should be clearly described.

More **principles (3)**:

ESDAC major **tasks** will be the collection and interpretation of data and information needs, the subsequent collection and compilation of data, checking and improving of data quality and making data available to the users. Additionally, when required, it will also perform assessments of the stored data and information.

ESDAC will be in principle **decentralized**, meaning that aggregated data and information will reside physically on ESDAC servers located at the JRC, while the original data will stay with the data owner.

Provisions will be made so that soil data products, which may be accessed elsewhere, will be visible in the ESDAC through its metadata.

Quality control of the original data is under responsibility of the data provider; if ESDAC intends to aggregate such data in value-added products, it will conduct an additional quality check in line with its QA/QC policies.

The **user access policy** will be aligned with Go4 developments related to the “DC common architecture”, the SEIS and INSPIRE.

More principles (4):

In order to be **interoperable** with other emerging services, **metadata** will be created according to a metadata model in line with agreed international standards and possible applications will be developed as interoperable as possible.

The ESDAC will be as **“open” as legally possible**, meaning that if data and information resident in the ESDAC can legally be published, the system will do. Even when a product is protected for access by only privileged users, efforts will be made in order to present its metadata to the user.

In the future, **ESDAC could become one soil data centre in a group of co-operating soil data centres** including the World Soil Data Centre (ISRIC), National Soil Data Centres (at Member State level) and Regional Soil Data providers , providing policy relevant soil information for different scales. The ESDAC will adapt in order to be interoperable with these centres.



Preparation phase (2006)

JRC defined the ESDAC to the largest possible extent and compiled an inventory of its soil data holdings and other European and national level soil data held at JRC, other DG's of the European Commission and EEA.

The technical component of ESDAC was defined in relation to the current soil data and information service that the JRC LMNH Unit is operating through the European Soil Portal (eusoils.jrc.it);

Collaboration for soil issues at European level:

- Collaboration Agreement with the **World Data Centre for Soil** (at ISRIC)
- MoU with FAO prepared
- MoU between JRC and EuroGeoSurveys has been signed

A framework contract for soil data provision is under preparation to allow the JRC to acquire in a flexible manner soil data from a consortium of soil data providers.

Construction phase (2007-2009)

- implementation of the ESDAC **technical platform**
- **population** of ESDAC with currently available data and information
- integration in ESDAC of **BioSoil** and other future data elaborated by JRC
- integration of **LUCAS** data (developed by Eurostat)
- collection of **requirements** for new data and information from **DG ENV**;
organization of data collection and integration in ESDAC
- definition of a mechanism for the transfer of results (data and information) from soil related **EU projects** to ESDAC (with DG ENV and DG RTD)
- definition of the working link between EEA and ESDAC in relation to “contaminated land/sites”(collection of requirements for new data and information from EEA; SoE Report requirements, paneuropean requirements)
- implementation of the collaboration with ISRIC, FAO and EuroGeoSurveys
- development of a system to host data reported by Member States, in relation to the soil FWD
- if specifically required by DG ENV: European reporting to international conventions

ESDAC technical platform:

Before the end of 2007:

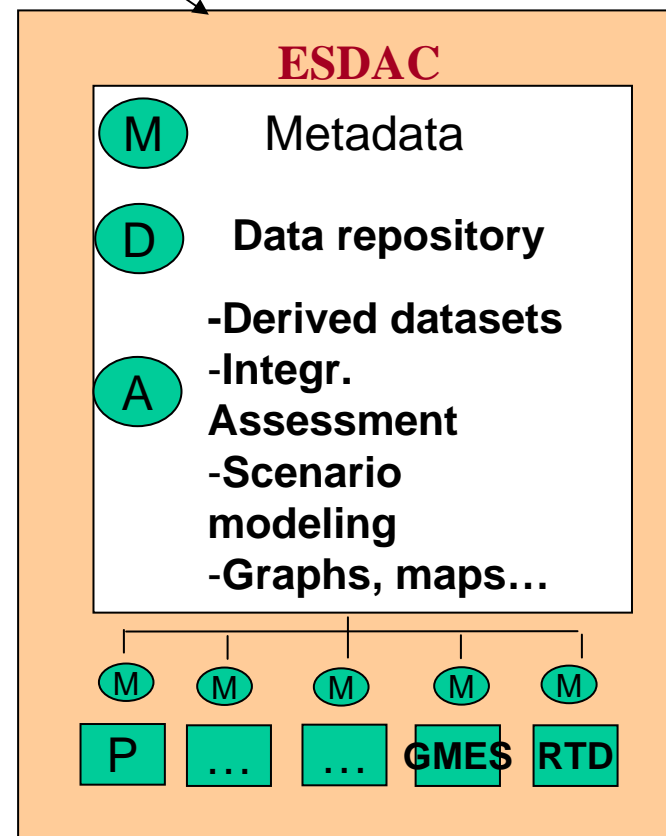
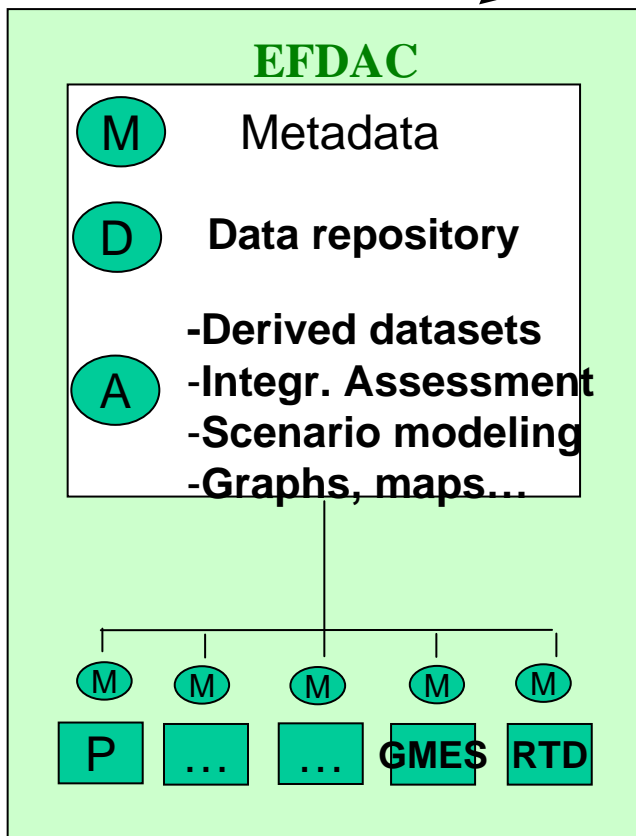
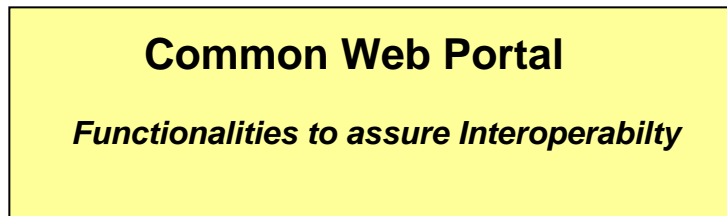
- Improved version of the current repository at eussoils.jrc.it
- Based on ISO 19115 metadata standard for spatial data (supported by INSPIRE)
- Using existing spatial data metadata catalogue software (KonTerra)
- Search 1 catalogue

During 2008:

- Extension of the 2007 version in order to inter-operate with other catalogues, based on software which is already under development at LMNH unit
- Search multiple catalogues



No.	Data origin	Responsible Go4 partner	Timetable for inclusion
1	JRC in-house data/info	JRC	Already available
2	BioSoil data	JRC	End 2008
3	LUCAS	JRC/ESTAT	From 2007, as data become available
4	Data and information elaborated for DG ENV	JRC	Elaboration during 2007; integration during 2008 and 2009
5	Data and information from EU projects	JRC	From 2007, as results become available.
6	Data from EEA	JRC/EEA	From 2007, as data become available.
7	Data stemming from collaboration with Word Data Centre for Soil	JRC	2008
8	Data stemming from collaboration with FAO	JRC	2008
9	Data stemming from collaboration with EuroGeoSurveys	JRC	2008



Common web portal

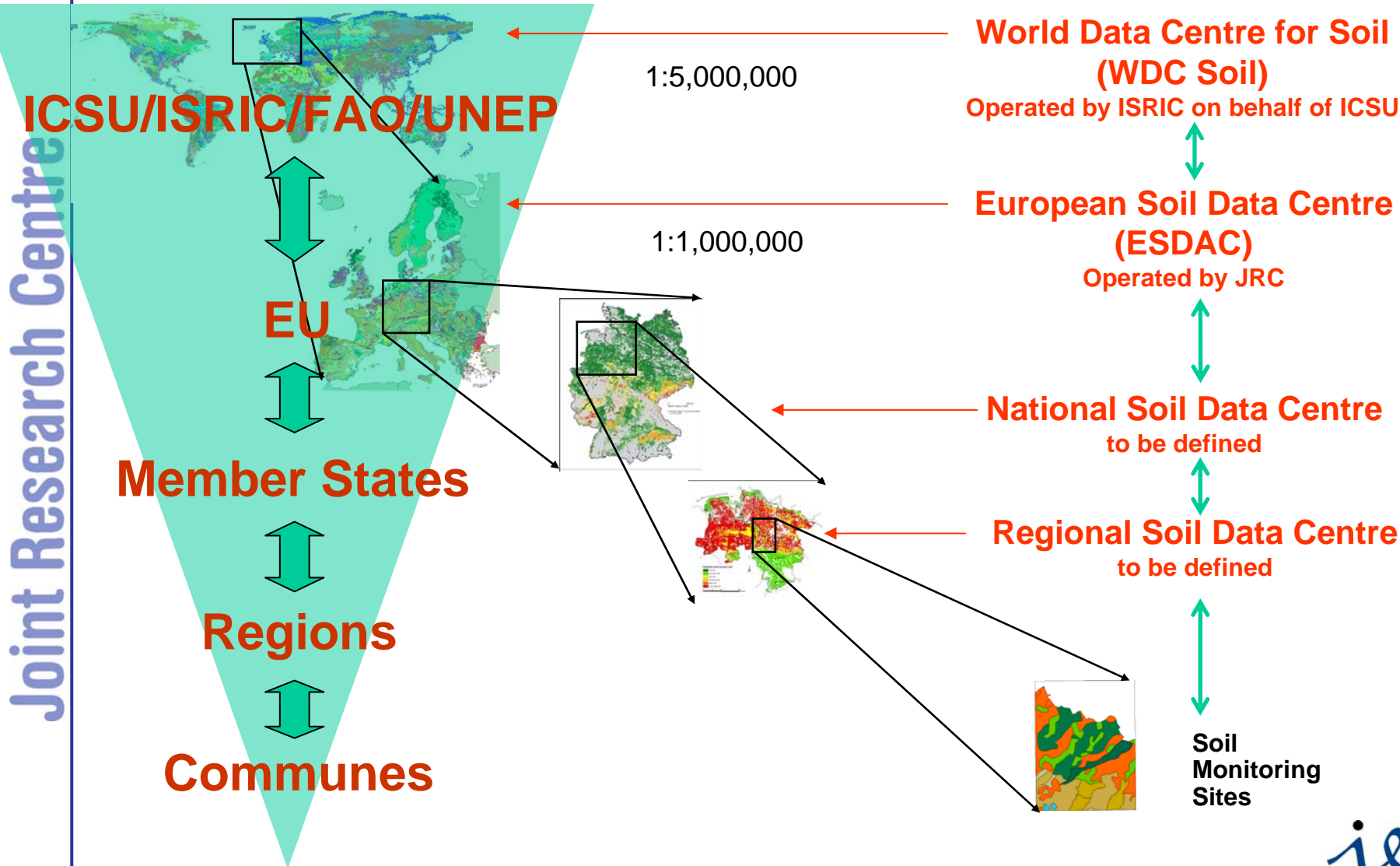
Common access point for users searching and viewing information distributed in different DCs

What will be included?

- **Integrated Catalog of Metadata**
 - Harvested metadata collected and maintained by various DC
 - Direct hosting of metadata (if a DC is not managing its own catalog)
- **Discovery services (search data using keywords, themes, geographical extent, geo-location)**
- **View services (view data stored in different DC and partners)**

ESDAC and other soil data centres

Data centers providing policy relevant soil information for different scales



Joint Research Centre