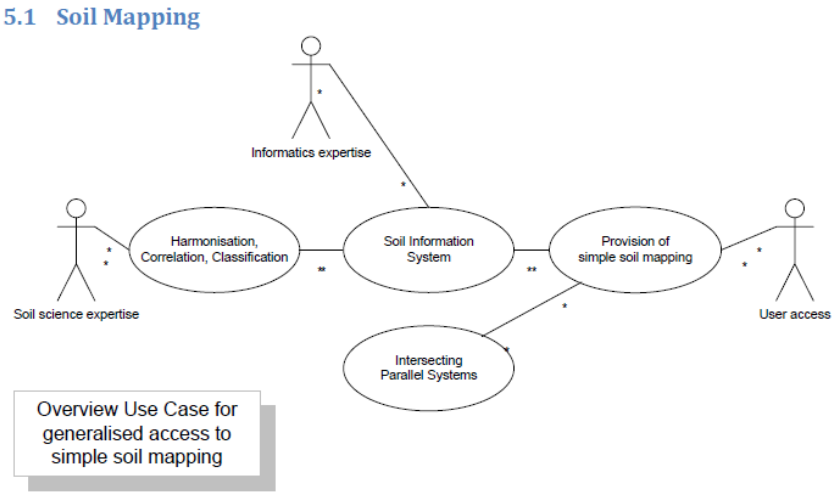
Use cases

Task B in the INSPIRE tender

by
Endre Dobos
Stephen Hallett



Cranfield UNIVERSITY

WAGENINGEN UNIVERSITY WAGENINGEN UR

umweltbundesamt

INRA

ESDaC Consortium project 'SSFC/09/01 – INSPIRE'

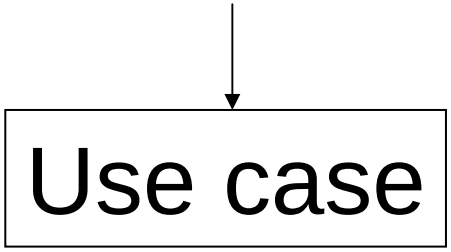
Task 'B' - Report

Dr Stephen Hallett, Caroline Keay

Document v1.3

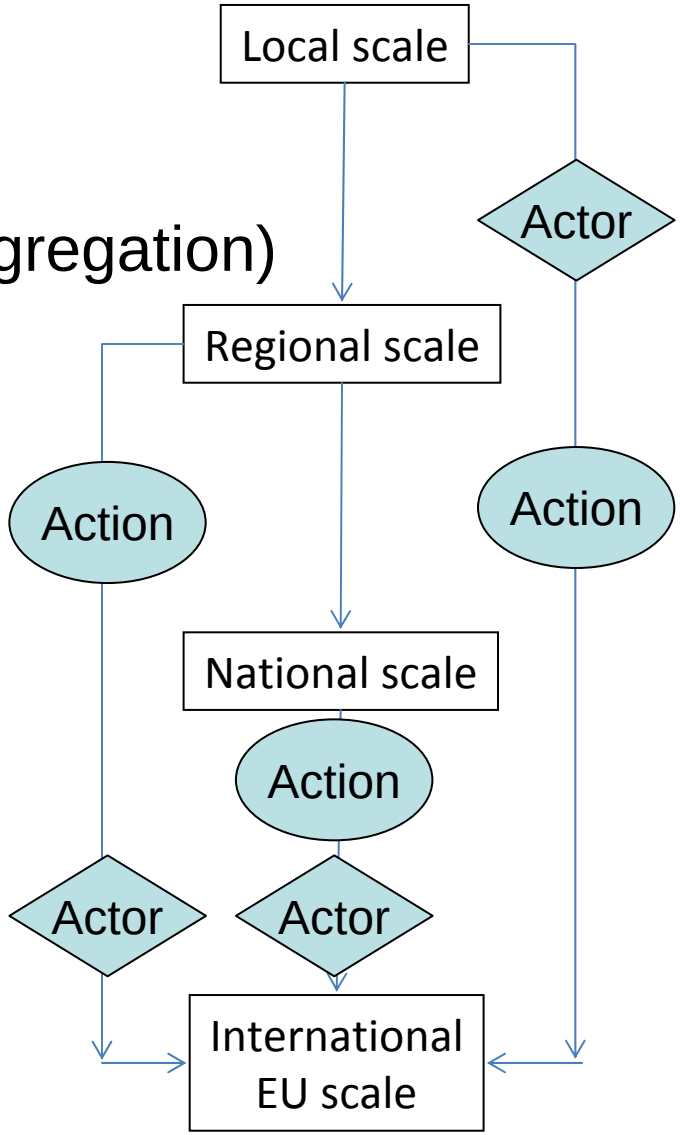
„Conceptual soil data model”

Nested system of soil databases representing soil information on different scales and describing the data flow through the major actors



Interlinkage, database development

Alternative ways to reach the EU level (generalization, aggregation)



Rule based projection, exact description of the rules are needed!

Questions to answer by the „Conceptual soil data model”

- The number and definition of operational levels (based on the user requirements/applications)
- Characterisation of the target scale units (both the spatial and the attribute level) has to be given
- Transformation rules between the spatial objects of the input and the target levels has to be described
- Transformation rules of the attributes of the input and the target levels has to be described

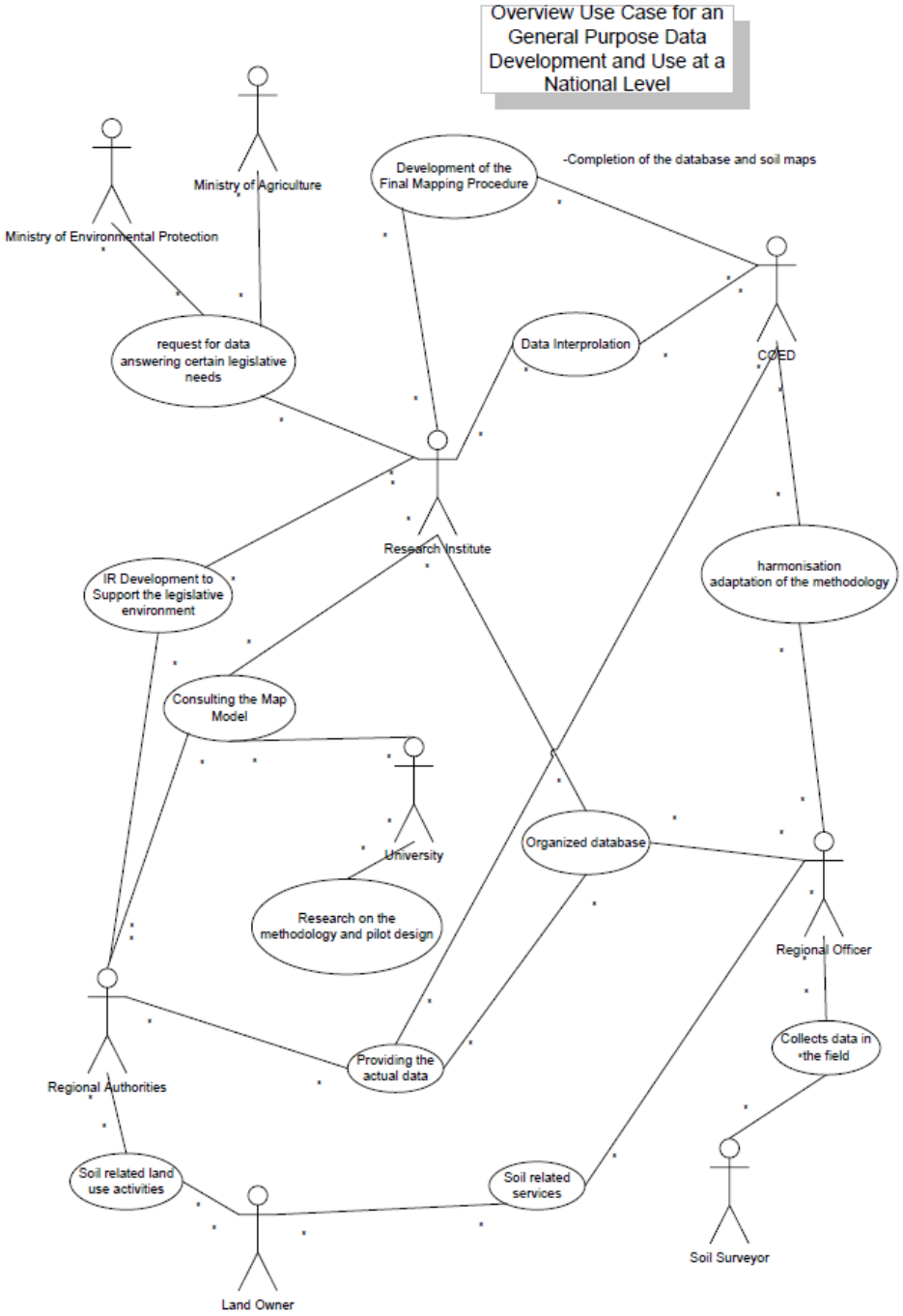
Questions to answer by the „Conceptual soil data model”

- Who are the major actors/players have to be addressed by the system description
  - user and data provider specification
- What level/detail/content of soil information is needed for different applications
  - soil data specification
- Who does communicate the information to whome and in what detail using what kind of soil data sources
  - data flow

Conceptual soil data model is created by the classification/grouping of the

- actors
- actions
- data sources
- and typical uses

Part 1 UML Use Case diagram



Part 2 Narrative Explanation of the Use Cases(s)

The Use Case is initiated by a general need for soils information. It has several legislative elements, including: nitrate, sewage-sludge, plantation development, plant nutritioning, land use reclassification, soil use optimisation (for agriculture, forestry and other environmental issues), scientific motivation and educational purposes. Soil mapping is an operational campaign, with much human and financial resources being involved. A nationally-responsible institution therefore has to run and supervise the mapping projects. Mapping is based on existing data sources, including soil maps and georeferenced soil measurements. The major related data archives of Hungary are the Soil Conservation Service (SCS) and the Research Institute for Soil Science and Agrochemistry (RISSAC). The SCS has been responsible for collecting all the soil maps and soil profile data connected to Agricultural activities and cooperative and state farm activities, which took place under the legislative system of the Ministry of Agriculture. SCS represented the soil-related operational body supporting the Ministry's legislative programmes.

As an operational organisation, SCS have no scientific staff responsible for the development of its procedures. Thus the development of mapping procedures have been "outsourced" to Academy Institutions and Universities. That is to say that soil mapping and database development on the planning level has always been dominated by the academic level, whilst operational work was undertaken by the SCS.

Due to the Authority status of SCS in Hungary, numerous programs pass through its systems, and thereby data connected with the reporting of agricultural activities, some being regular such as monitoring and activity supervision, and some *ad hoc* like provision of reports for orchard plantations, and land use changes etc. This data is collected and may then be stored in a digital database and GIS. However, this latter step does not always occur, due to the lack of clear legislative authorisation, as well as a lack of human resources.

Part 3: Detailed structured description of the Use Case

Use Case Description	
Name	National spatial soil data development (digital soil mapping) and use, Hungary
Priority	High
Description	Soil information is needed for several purposes. Many countries are lacking up-to-date soil information, which in turn limits optimal environmental related decision-making. Several countries discuss the need for updating and revisiting existing soil maps by integrating and combining the other existing data sources. This approach restricts the necessity for expensive field work and provides the most cost-effective way for database development. The new data consists of property-based layers or interpreted soil functions needed for general soil uses. The database development procedure involves the revision and calibration of the existing data sources, some new data collection for calibration and validation, digital soil mapping procedure development and running, and the content definition based on the soil info need. The major players are academic institutions, data holders, like Soil Conservation Service, and the data users.
Pre-condition	n/a
Flow of Events - Basic Path	
Step 1	Need for a new soil database is recognised.
Step 2	Centre Office of the data holders defines potential set of data input
Step 3	Research Institutes define the target content, scale, properties to map in support of the user requirements. Based on the comparison of the requirements and the available data sources gaps and additional data needs for calibration and gap filling are defined.

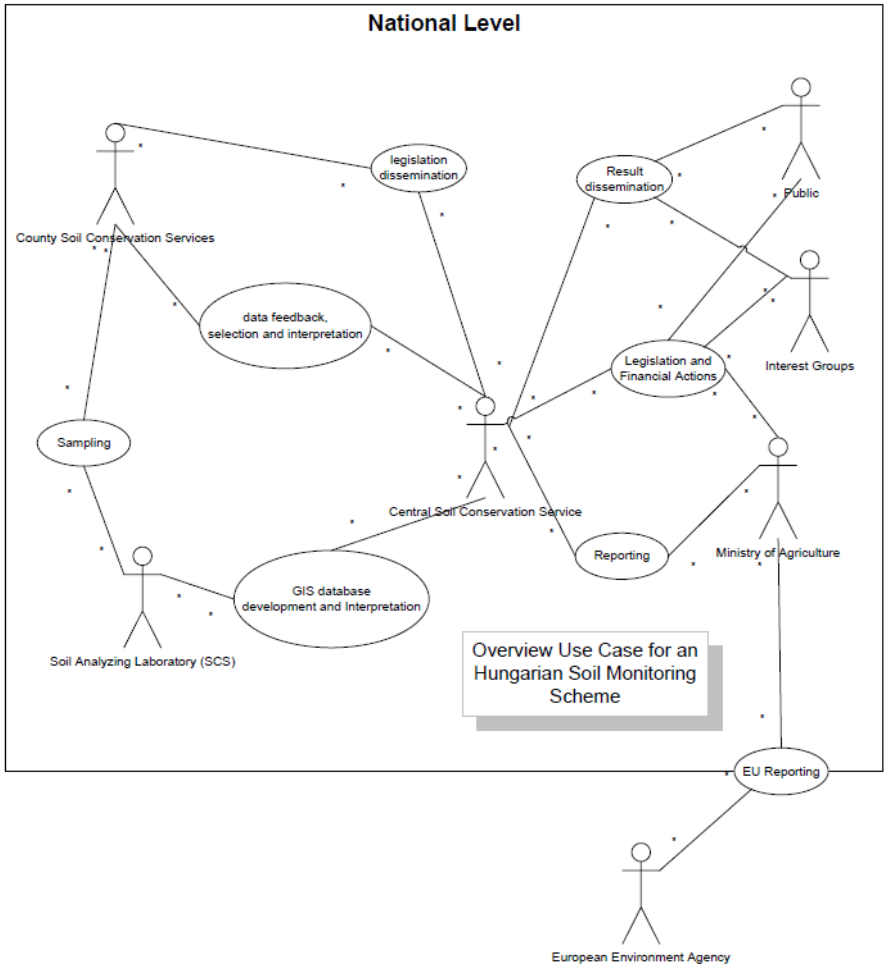
Part 3: Detailed structured description of the Use Case

Use Case Description	
Name	Verdachtsflächenkataster
Priority	Low
Description	A web-based 'Verdachtsflächenkataster' system is provided, by the Austrian Environment Agency (Umweltbundesamt-Austria) for public access by parties interested in establishing potential contamination of land.
Pre-condition	n/a
Flow of Events - Basic Path	
Step 1	Potentially contaminated sites are reported by the provincial government to the Ministry of the Environment.
Step 2	The Austrian Environment Agency collects all the site information from the Ministry.
Step 3	The site information is registered in a contamination database.
Step 4	The public can access this information via web services.
Post-condition	n/a
Data Source: Report data content	
Description	Generic site description (e.g. cadastral identifier); Description of disposed wastes; Description of former land activity /use Description of natural environment (e.g. soil, groundwater level, aquifer type) Description of 'receptors' at risk (e.g. groundwater, soil, air)
Data provider	Umweltbundesamt-Austria
Geographic scope	Austria
Thematic scope	Soil
Scale, resolution	Gauss-Krueger system, Lambert.
Delivery	GIS shapes with unique site ID plus an excel file with qualitative information
Documentation	Annual report: Verdachtsflächenkataster und Altlastenatlas, ALSAG

Monitoring use cases

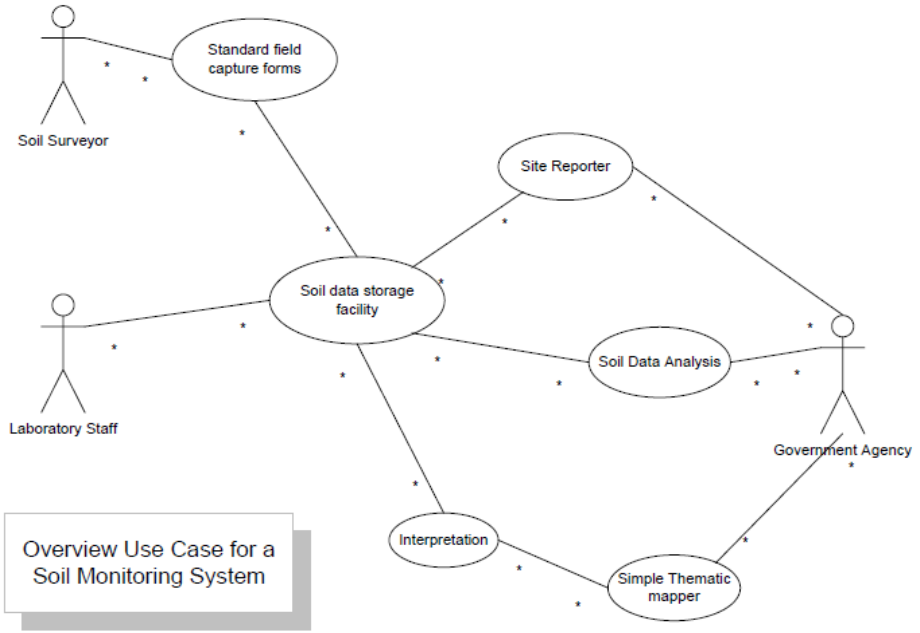
11.2 Use Case: Soil Monitoring – Hungarian Example

Part 1 UML Use Case diagram



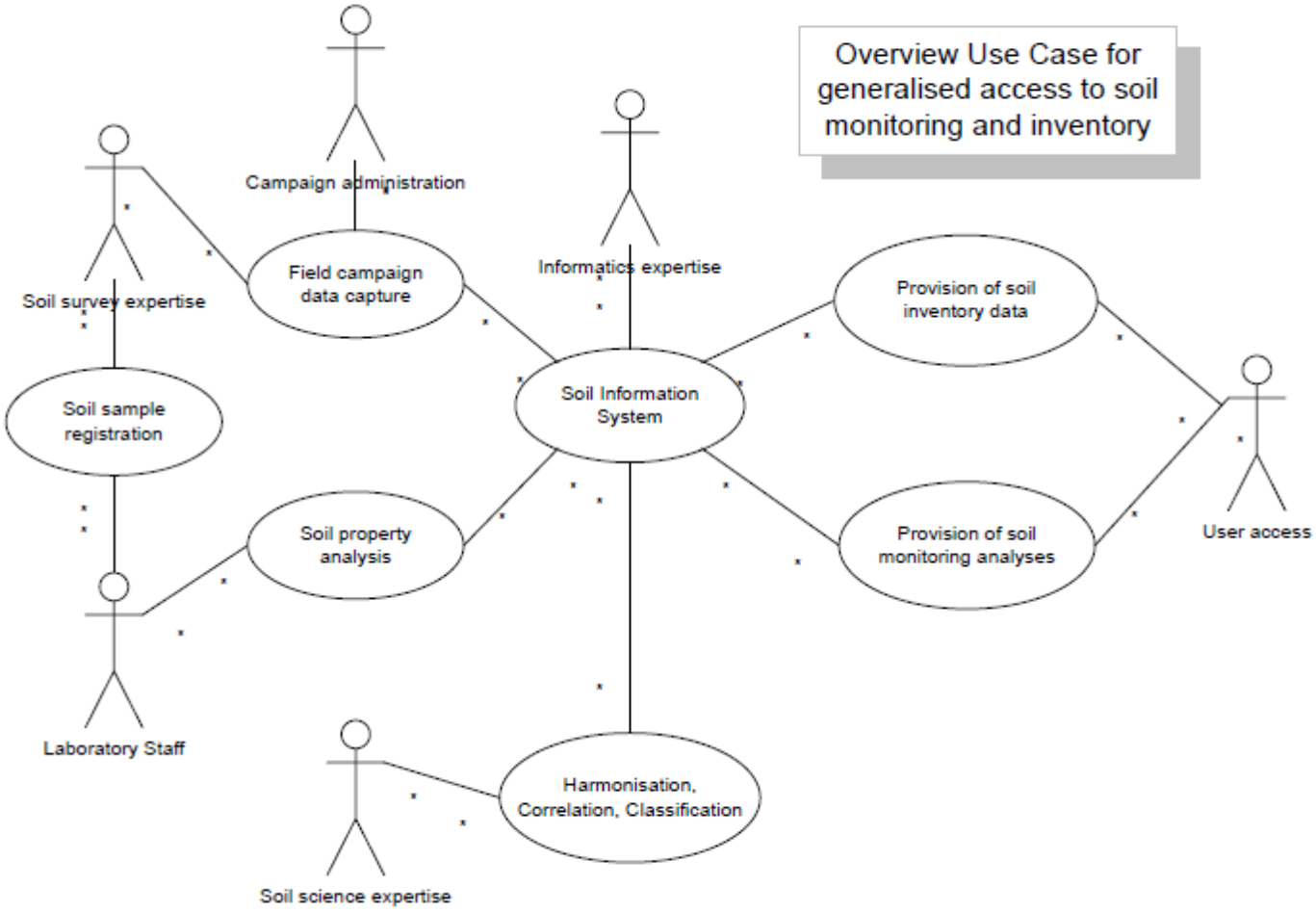
11.1 Use Case: Soil monitoring – UK example

Part 1 UML Use Case diagram



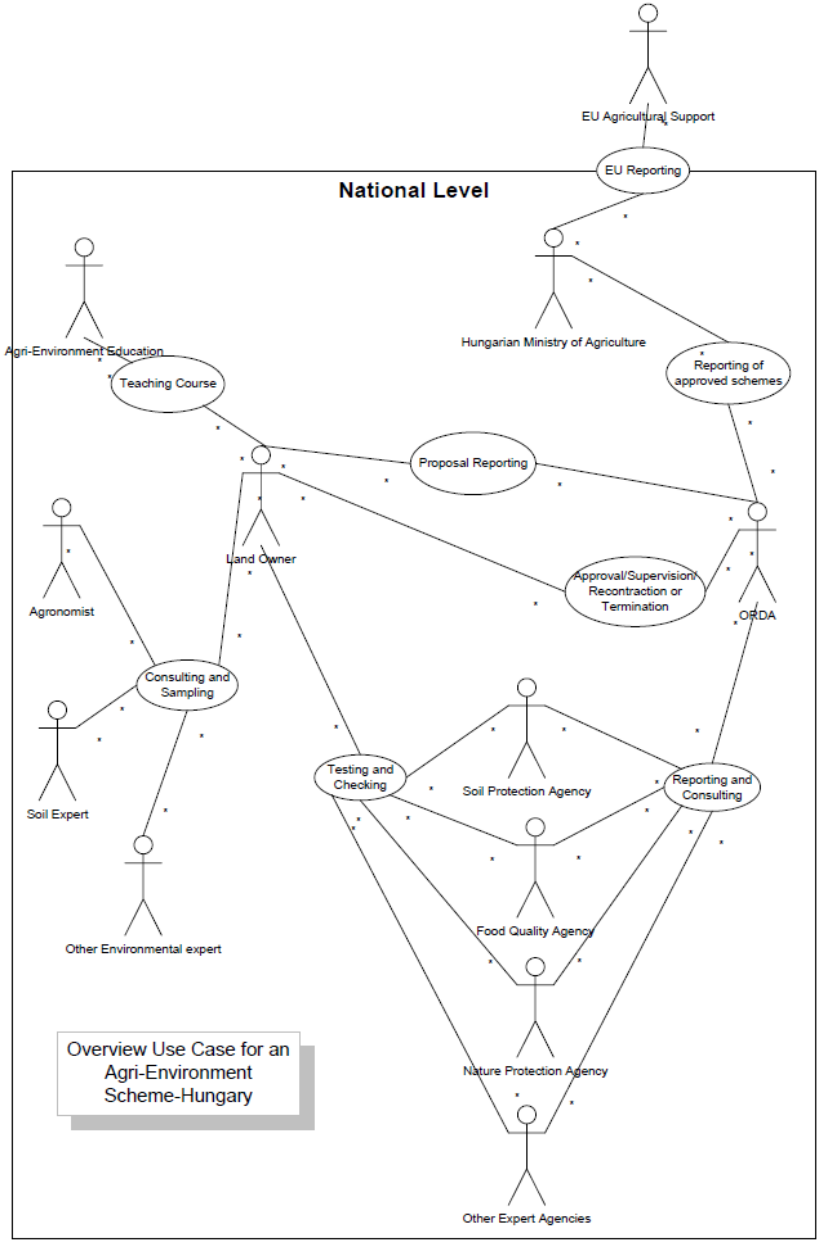
Generalized monitoring scheme

5.2 Soil Inventories and Monitoring



8.2 Use Case: Agri-Environment Scheme – Hungarian example

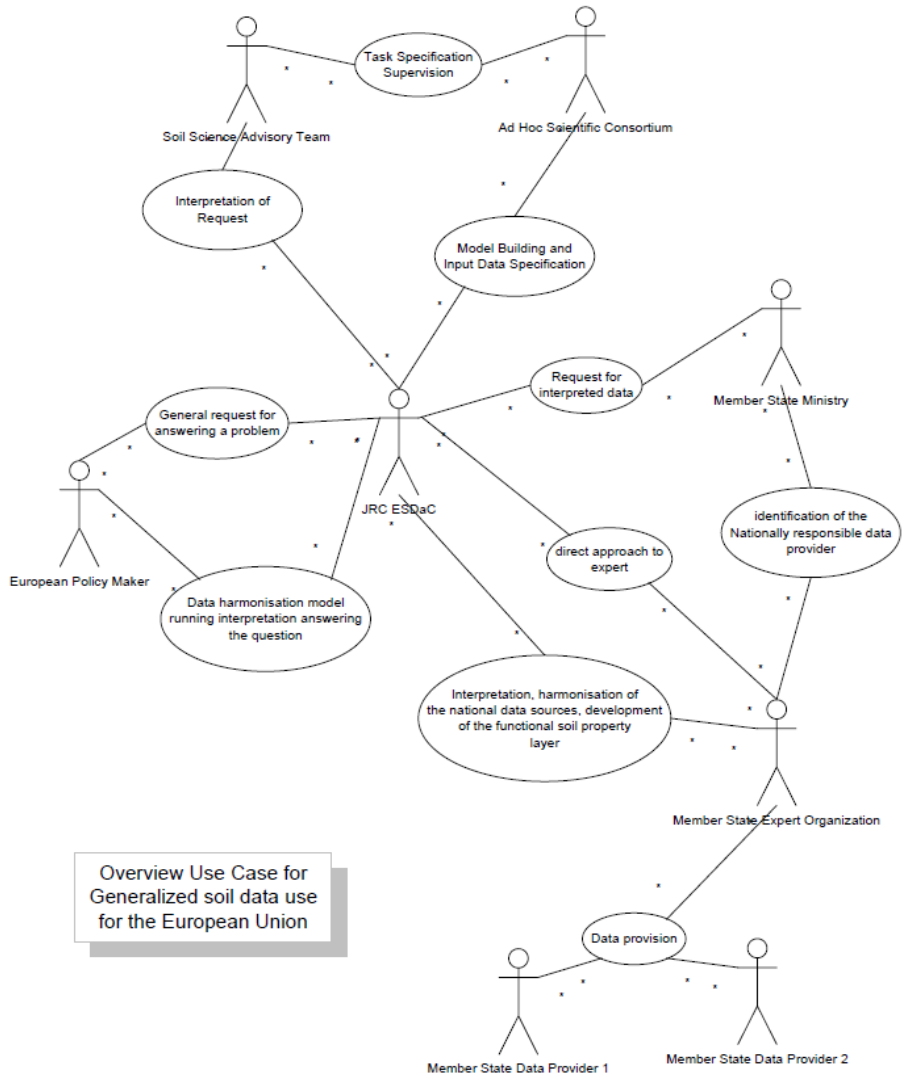
Part 1 UML Use Case diagram



Conclusion use case

15.1 Use Case: Possible scenario for generalised soil data use in the European Union

Part 1 UML Use Case diagram



Overview Use Case for Generalized soil data use for the European Union