
MODEL GENERALISATION IN THE CONTEXT OF NATIONAL INFRASTRUCTURE FOR SPATIAL INFORMATION
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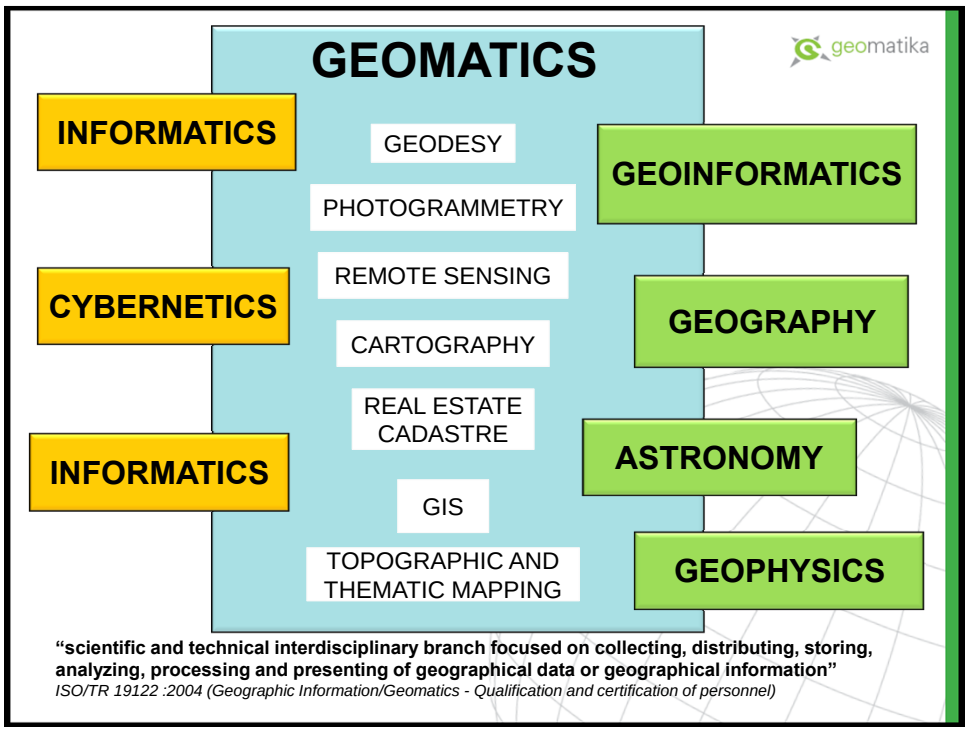
Plan 4 all
FIG Working Week, Marrakech, Marocco, 18 – 22 May 2011


GEOMATICS
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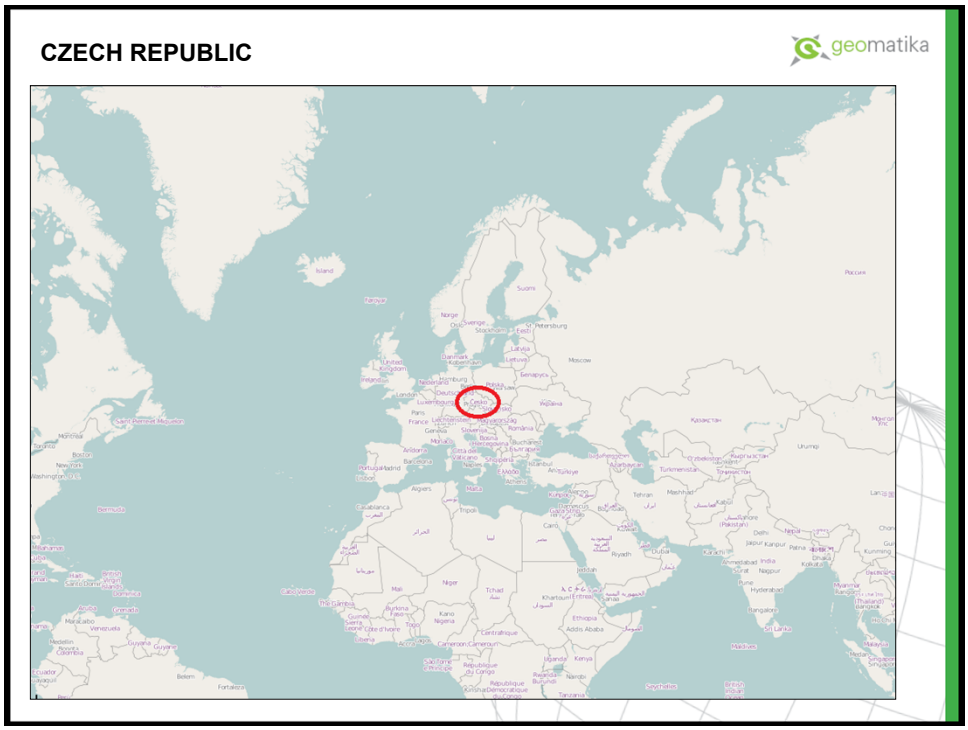
INFORMATICS
GEODESY
GEOINFORMATICS
PHOTOGRAMMETRY
REMOTE SENSING
CYBERNETICS
GEOGRAPHY
CARTOGRAPHY
REAL ESTATE CADASTRE
INFORMATICS
ASTRONOMY
GIS
TOPOGRAPHIC AND THEMATIC MAPPING
GEOPHYSICS
"scientific and technical interdisciplinary branch focused on collecting, distributing, storing, analyzing, processing and presenting of geographical data or geographical information"
ISO/TR 19122 :2004 (Geographic Information/Geomatics - Qualification and certification of personnel)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OBJECTIVE

Cadastral data should play a crucial role within infrastructure for spatial information as **reference data** for various purposes including spatial planning, environmental protection, facility management, ...

... a step towards sustainable development involves **model generalisation of cadastral data**.

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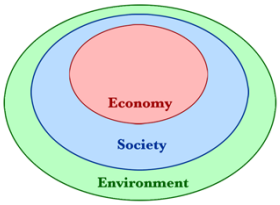
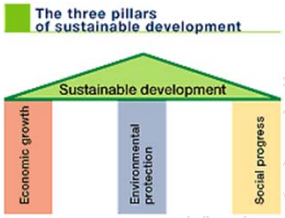
Sustainable development

Defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

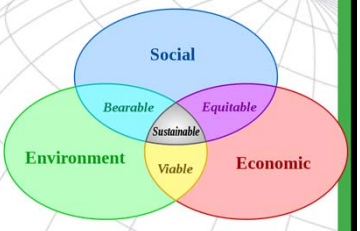
(source: Brundtland, Gro Harlem (ed.): Our Common Future, Oxford University Press, Oxford – New York 1987)



Source: ICUN, the world conservation union, 2006



Source: ICUN, the world conservation union, 2006



Source: ICUN, the world conservation union, 2006

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Sustainable development

- Human activity ➡ changes of our living environment.
- Many of the activities are based on **decisions** made on various governmental levels.
- The decisions are made on the basis of *meaningful interpretation of data and relations between them*
  ➡ **information**
- **Infrastructure for Spatial Information**
  ➡ support for (driver of) sustainable development

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Infrastructure for Spatial Information in the European Community (INSPIRE)

INSPIRE · Infrastructure for Spatial Information in Europe

http://inspire.jrc.it

DIRECTIVE 2007/2/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 14 March 2007
establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

INSPIRE PRINCIPLES

1. Data should be collected once and maintained at the level where this can be done most effectively.
2. Combine seamlessly spatial data from different sources across the EU and share it between many users and applications.
3. Spatial data should be collected at one level of government and shared between all levels of government
4. Spatial data needed for good governance should be available on conditions that are not restricting its extensive use.
5. It should be easy to discover which spatial data is available, to evaluate its fitness for purpose and to know which conditions apply for its use.

Overview Schema of INSPIRE

USERS - Seamless access to data and information

INSPIRE DIRECTIVE

METADATA | DATA SPECIFICATION | NETWORKING SERVICES

DATA AND SERVICE SHARING | MONITORING AND REPORTING

Mechanisms for sharing and exchange

Member States Data

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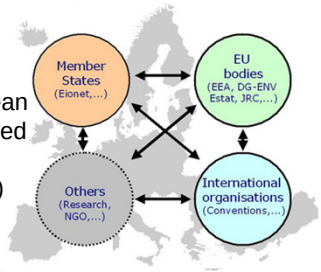
Related activities

GMES
Observing our planet for a safer world

SEIS
Shared environmental information system

GEOSS

NESIS (Network to Enhance an European Environmental Shared and Interoperable Information System)



The aim of all these activities is to serve users spatial or non-spatial information with required quality, thematic content and level of detail.

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Reference data

An important part of the infrastructure for spatial information.
Reference data are defined by INSPIRE Thematic Working Group Cadastral Parcels as

"data that constitute the spatial frame for linking and pointing at other information that belong to specific thematic field; e.g. land use, land cover, agriculture and demography"

Reference data

Reference data must fulfil **three functional requirements**:

1. provide a unique location for user's information;
2. enable the merging of data from various sources;
3. provide a context to allow others to better understand the information that is being presented.

Generalisation

- The aim Infrastructure for spatial information is to serve users spatial information with required **quality, thematic content and level of detail**.
- **Generalisation** of data plays an important role.
- The International Cartographic Association defined in 1973 generalisation as *"the selection and simplified representation of detail appropriate to scale and/or the purpose of a map".*

Generalisation

More recent definition:

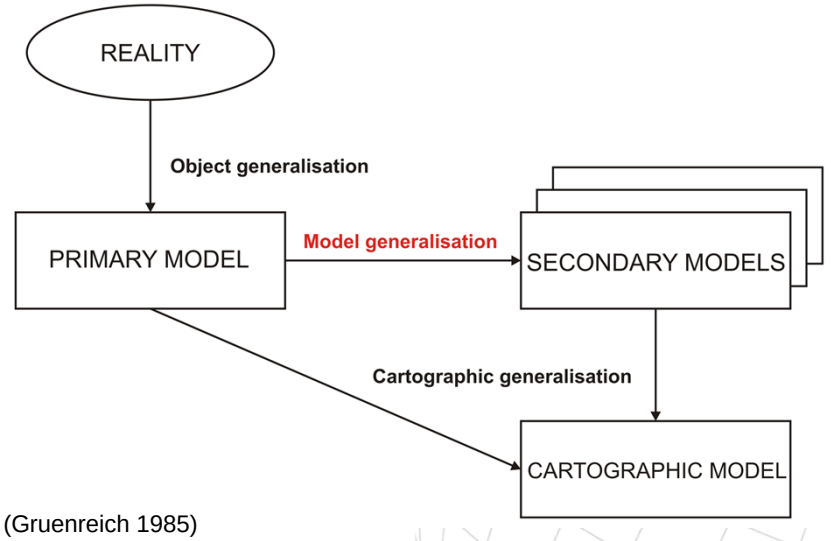
"Generalisation in terms of spatial information can be described as a process responsible for generating visualisations or geographic databases at a coarser level of detail than the original source database, while retaining essential characteristics of the underlying geographic information" (Sester et al. 2009)

Generalisation

- There are three main generalisation approaches
- **object generalisation**
- **cartographic generalisation**
- **model (database) generalisations**

- "***Model generalisation*** *as a process of geospatial abstraction aims at modelling real world at different levels of semantic and geometric complexity*" (Basaraner 2002).

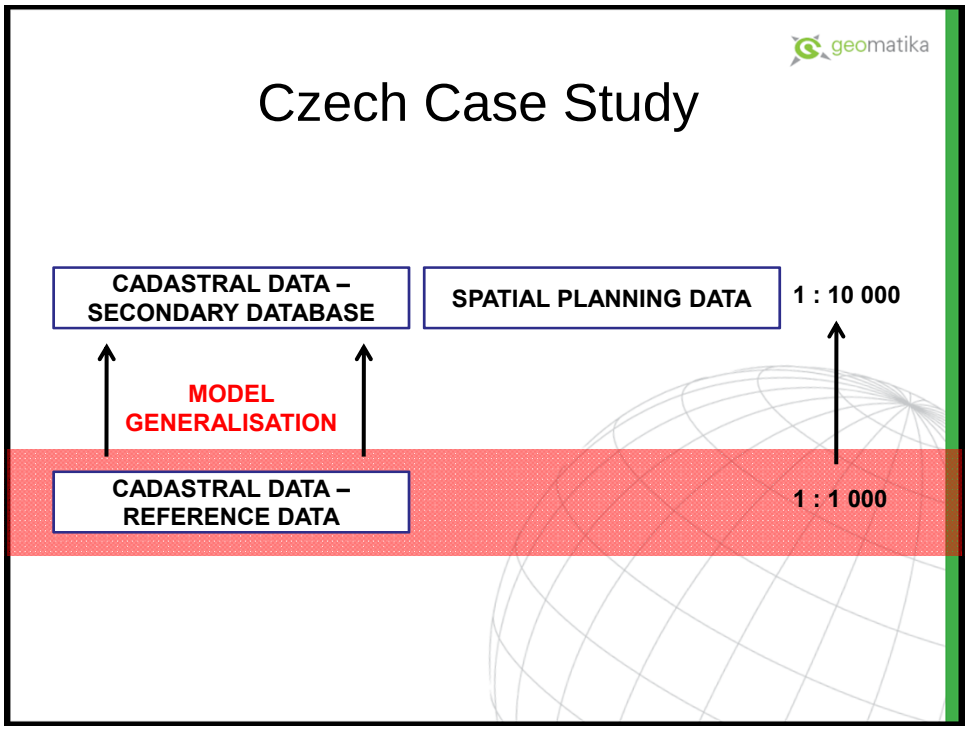
Generalisation



(Gruenreich 1985)

Cadastral data – Czech case study

- INSPIRE considers cadastral data as reference data;
- captured and maintained at the highest level of detail;
- covering the entire territory of the Czech Republic;
- it is the only data set containing cadastral parcels together with legal rights;
- unique data set in terms of completeness, logical consistency and positional, temporal and thematic accuracy.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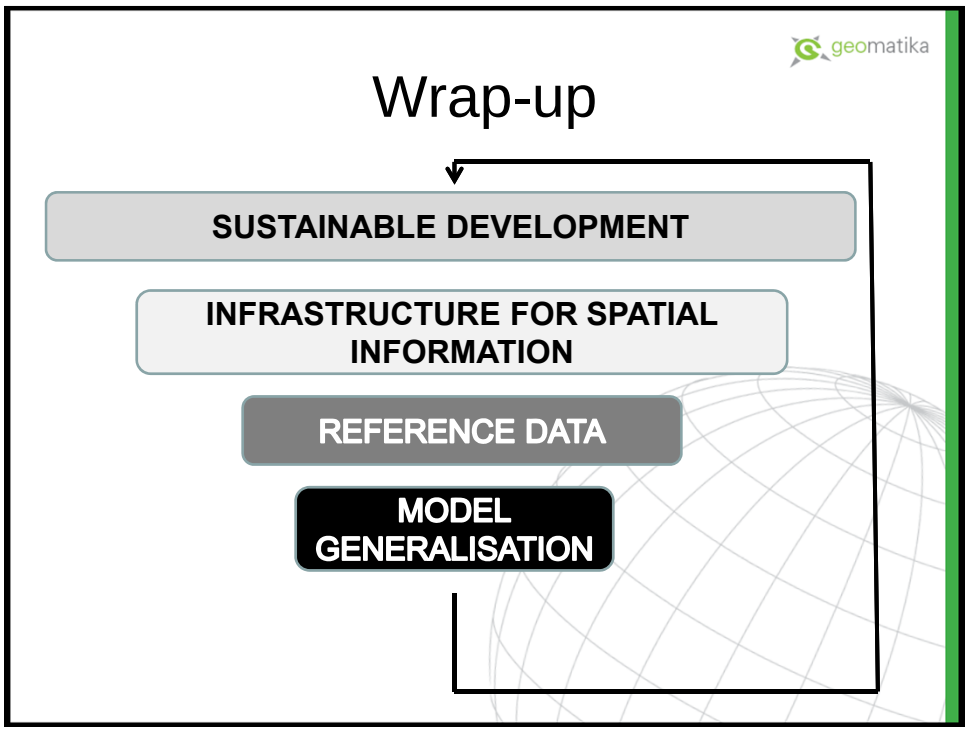
Czech Case Study
CADASTRAL DATA – SECONDARY DATABASE
SPATIAL PLANNING DATA
1 : 10 000
MODEL GENERALISATION
CADASTRAL DATA – REFERENCE DATA
1 : 1 000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Wrap-up
SUSTAINABLE DEVELOPMENT
INFRASTRUCTURE FOR SPATIAL INFORMATION
REFERENCE DATA
MODEL GENERALISATION


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THANK YOU
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