

# Data Sharing in Europe

Mikael Lilje,

Manager, Geodetic infrastructure at Lantmäteriet (The National  
Mapping, Cadastre and Land registration authority of Sweden)  
vice President, International Federation of Surveyors (FIG)



## Agenda

- Introduction to the Swedish National Strategy on Spatial Information
- Present on spatial information sharing in Europe, focusing on INSPIRE
- Discussing on geodetic data sharing. (Global – European – Nordic - National level.)



The biggest forest fire in Sweden in modern time happened in 2014 – easy access to spatial information could have decreased the impact.



All emergency services  
are not using uniform,  
up-to-date maps

**Biggest forest fire in Sweden - 2014**



# The Swedish National Strategy on Spatial Information

2016 2020

## Some facts about Lantmäteriet



- National Mapping, Cadaster and Land Registration
- Top ranked in terms of public confidence (#2 in 2016)
- User financed by almost 70 %
- National coordination role in the spatial information area
- Supported by a Public Sector Spatial Information Council

Regional Challenges, Benefits and Opportunities of Exchanging Geodetic Data  
Kumamoto, Japan 16 October 2017



Lantmäteriet prepared in 2016 on behalf of the Government a new national spatial information strategy in cooperation with the 13 public sector organizations represented in the Spatial Information Council

## Five Societal Challenges where Spatial Information can contribute



## Goals for 2016-2020

---

**1**

Spatial  
information is  
open

**2**

Spatial  
information is  
usable

**3**

Spatial  
information  
is available

**4**

Collaboration is  
well-developed

# Open “national maps” in Europe

Based on the Open Knowledge Foundations  
“Open data Index”

## **Tracking the state of open government data**

The Global Open Data Index provides the most comprehensive snapshot available of the state of open government data publication

## The meaning of National maps in this index

- Scale of 1:250,000 (1 cm = 2.5km)
- Markings of national traffic routes
- Markings of relief/heights
- Markings of water stretches
- National borders

## Open national map data

- = Free of charge and open license
- = Free of charge, no open license
- = Neither

**Source**



Open Knowledge, Global Open Data Index  
National map data in 1:250 000 or larger scales



## Open national map data

● = Free of charge and open license

● = Free of charge, no open license

● = Neither

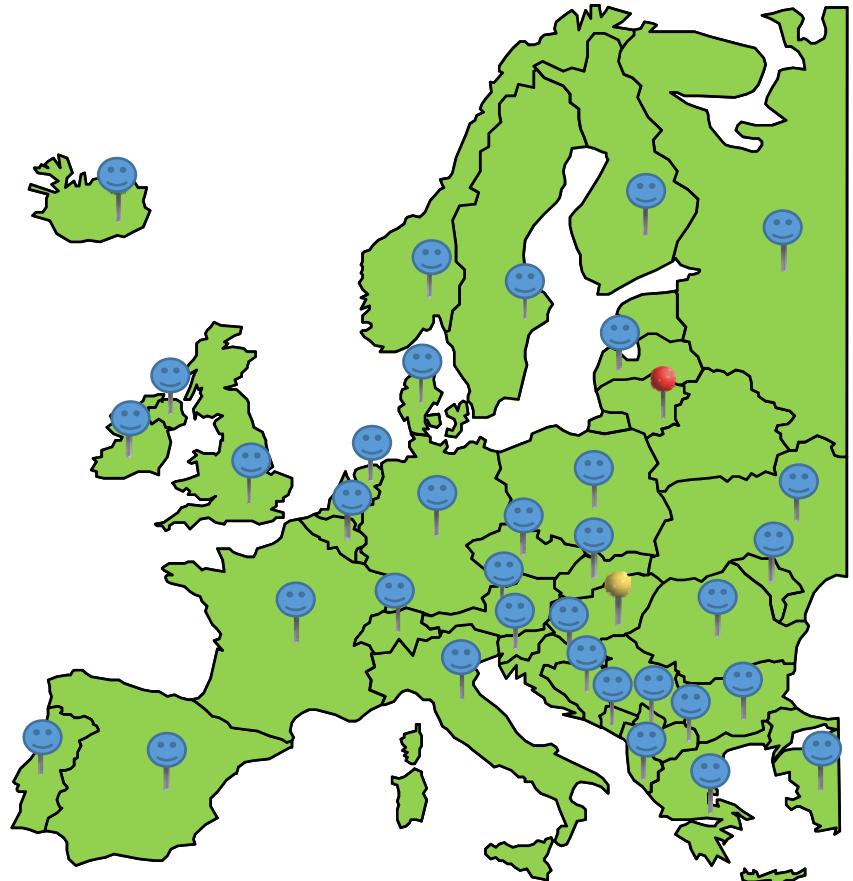
● = Updated from the last survey 2016/17

**Source**



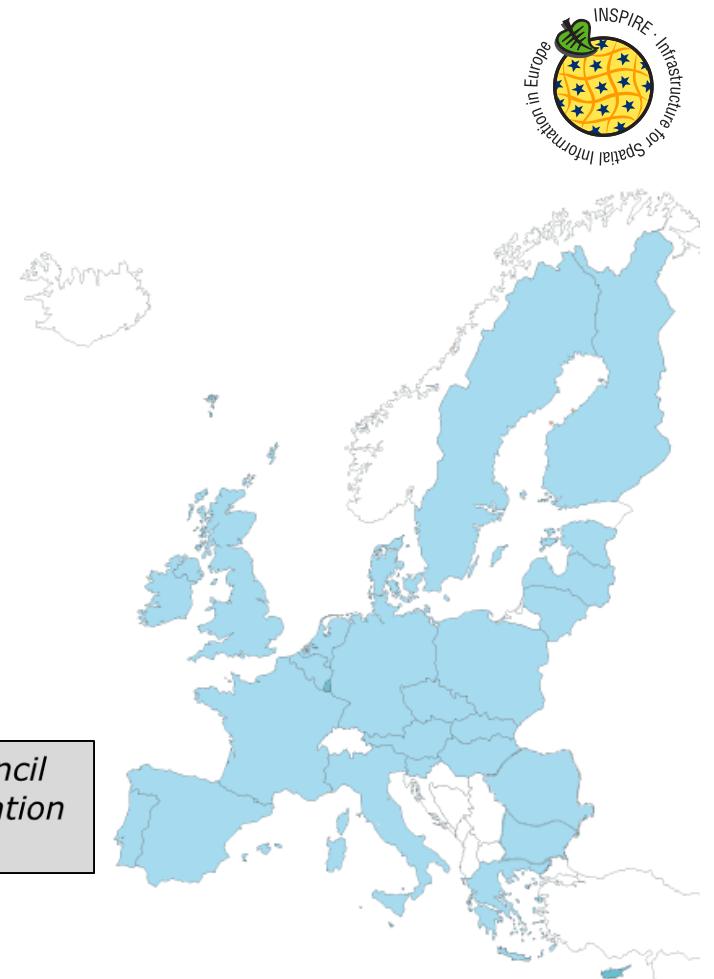
Open Knowledge, Global Open Data Index

National map data in 1:250 000 or larger scales



# Inspire as the driving force

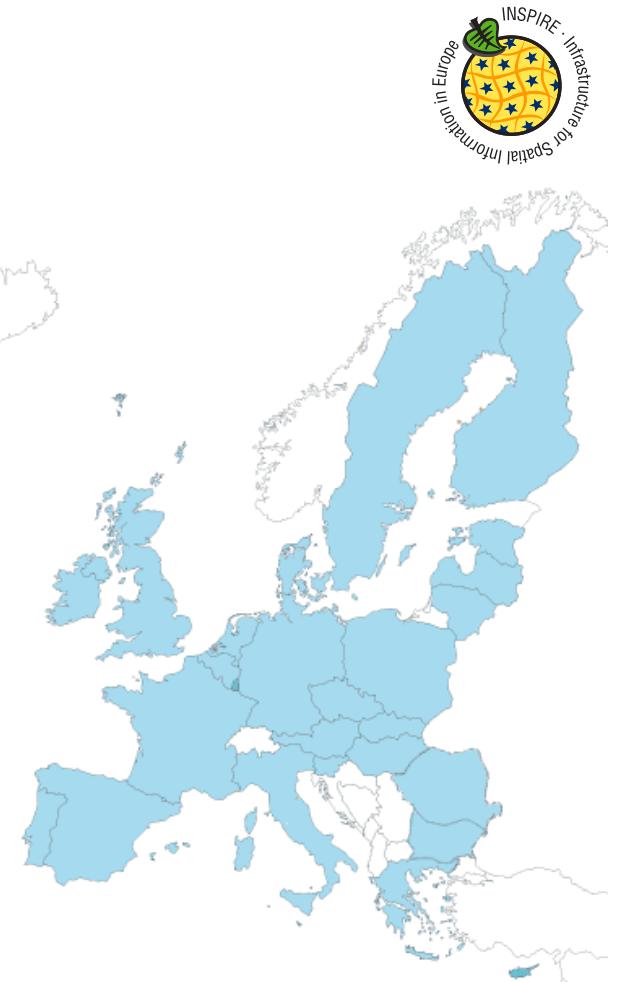
- INSPIRE is a directive that sets binding rules for the establishment of an infrastructure for spatial data in EU
- The infrastructure will make it possible to more easily find and use spatial information by:
  - more efficient data management, and make it easier to find and access information
  - making it possible to exchange and combine spatial data from different sources
  - provide better access to public spatial data by eliminating barriers for effective information exchange



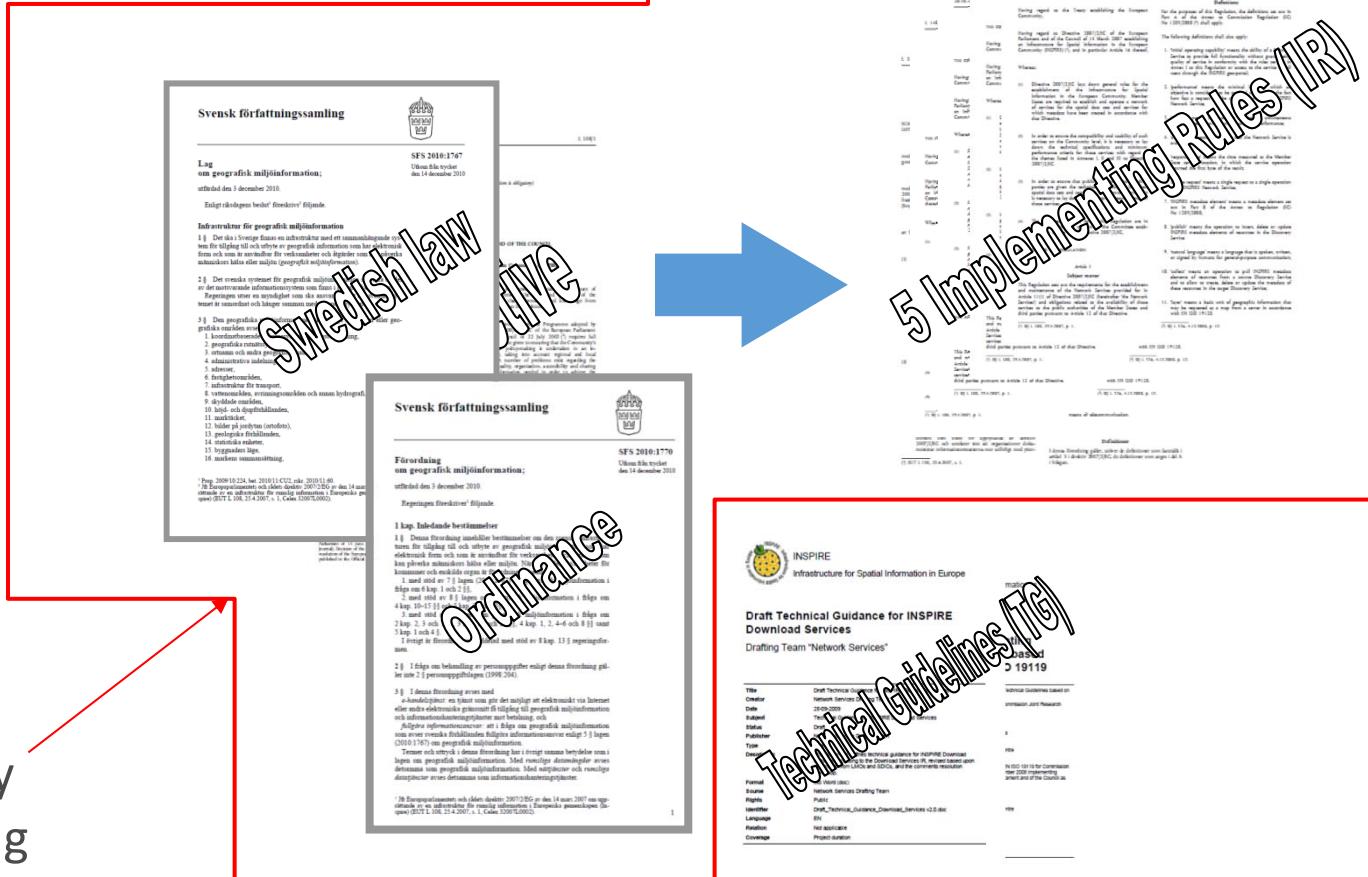
**Directive 2007/2/EC** of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

## Background to the INSPIRE directive

- Description (documentation) of available spatial data is often incomplete
- Spatial data sets can often not be combined with other spatial data sets
- Systems to find, access and use spatial data often function in isolation only and are not compatible with each other
- Cultural, institutional, financial and legal barriers prevent or delay the sharing and reuse of existing spatial data



# Inspire documentation



# Legally binding

# Swedish law and ordinance

Who has an obligation to  
implement INSPIRE?

What is included in the  
responsibility?

Which datasets are included?

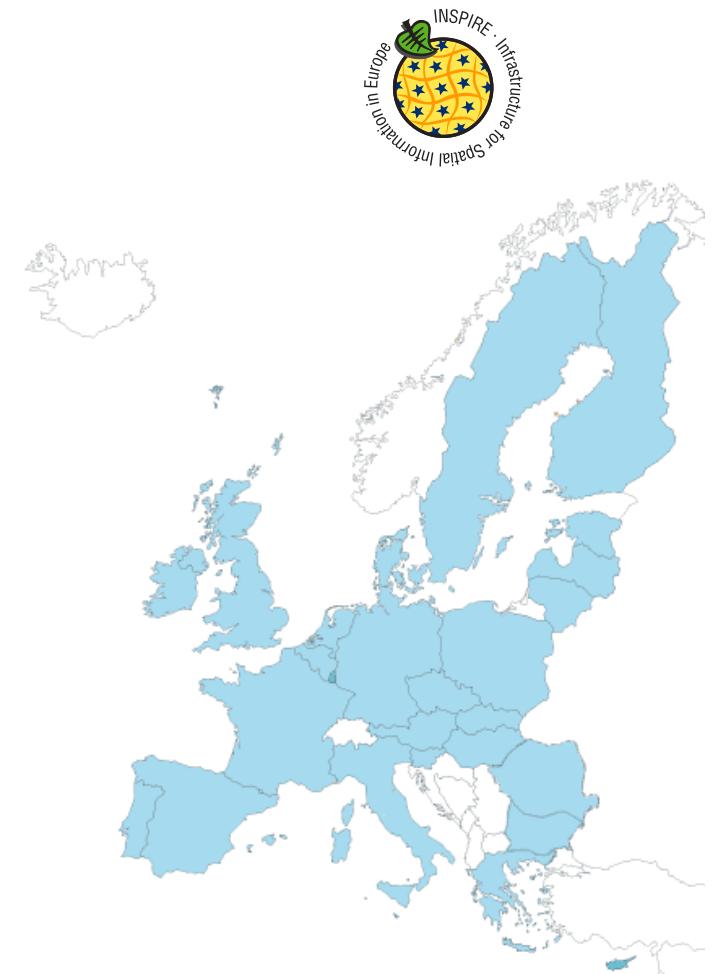


Who will coordinate SDI?

## Implementing Rules

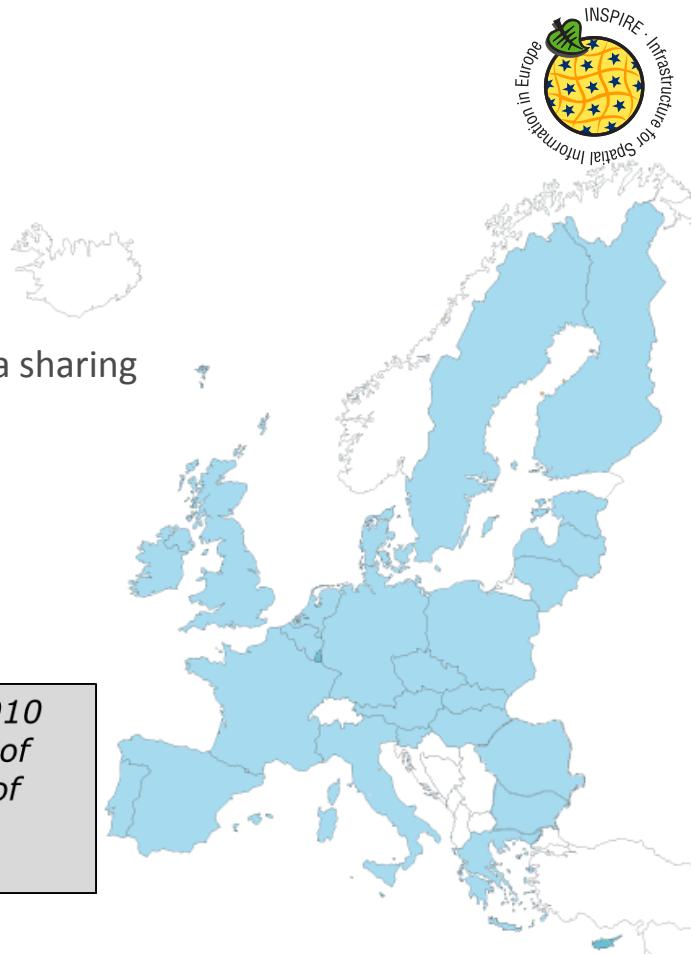
The Implementing Rules specify in more detail how different parts of the infrastructure shall work. These implementing rules are :

- Metadata
- Interoperability (data specifications)
- Network services
- Data sharing
- (Monitoring and Reporting)



## Data sharing

- INSPIRE requires that Member States' authorities share data between themselves and with institutions at EU-level
- The implementing rule for “data sharing” describes how data sharing shall take place with the EU institutions and bodies .



**COMMISSION REGULATION (EU) No 268/2010** of 29 March 2010  
implementing Directive 2007/2/EC of the European Parliament and of  
the Council as regards the access to spatial data sets and services of  
the Member States by Community institutions and bodies under  
harmonised conditions

## National cooperation concerning spatial information

Lantmäteriet administers a model for co-operation, including harmonised conditions for licensing of data. The agreement has been in force from 1 January 2011 .

- Agreement concerns organisations with public tasks
- Pay a yearly fee, get access to all data/services



# Public Sector Information (PSI-Directive)

The purpose of the Directive:

- To create a set of minimum and harmonized rules for the re-use of documents held by public sector bodies
- Implemented in Swedish law through Act on re-use of Public Sector Information (PSI Act)
- If re-use is allowed, the documents shall be re-usable for non-commercial and commercial purposes in accordance with the conditions in the PSI Directive.

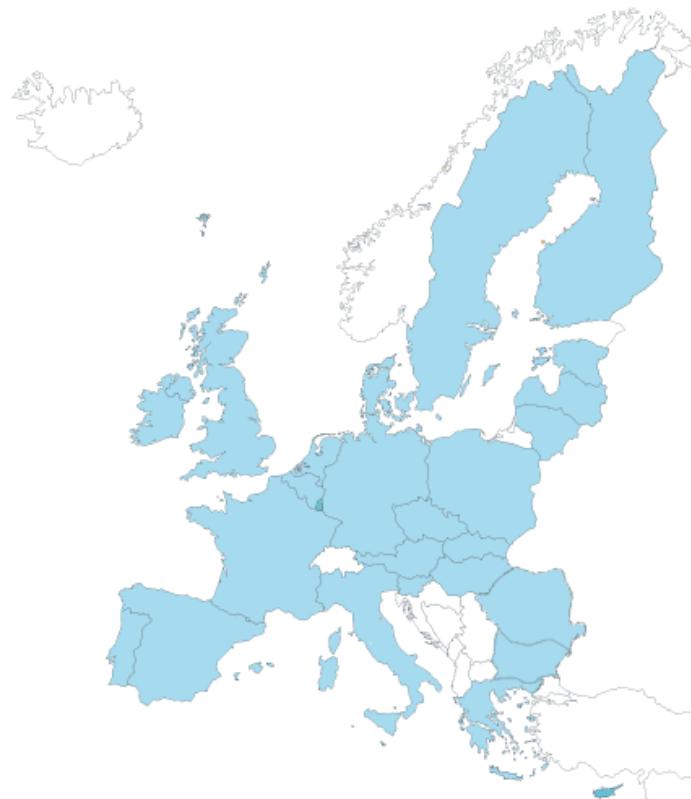
Conditions:

- Processing of requests for re-use
  - Charging
  - Transparency
  - Licenses
  - Non-discrimination
  - Prohibition of exclusive arrangements



## INSPIRE and PSI

If INSPIRE describes the WHAT, PSI discusses the HOW

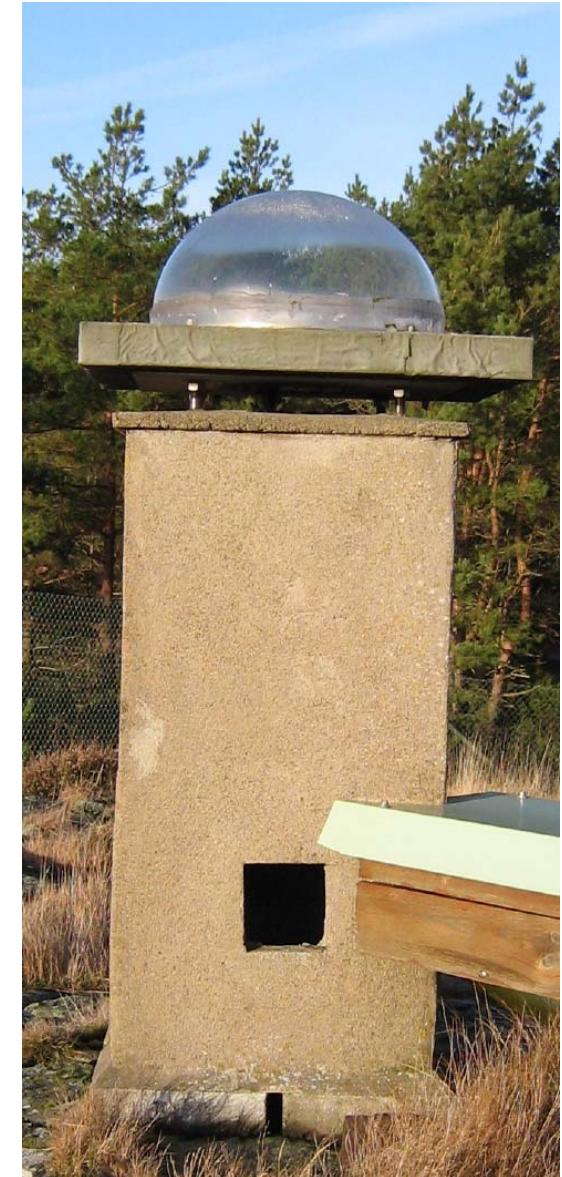


Moving back to geodesy...

### Examples of data sharing from Lantmäteriet to Global organisations

#### International GNSS Service (IGS):

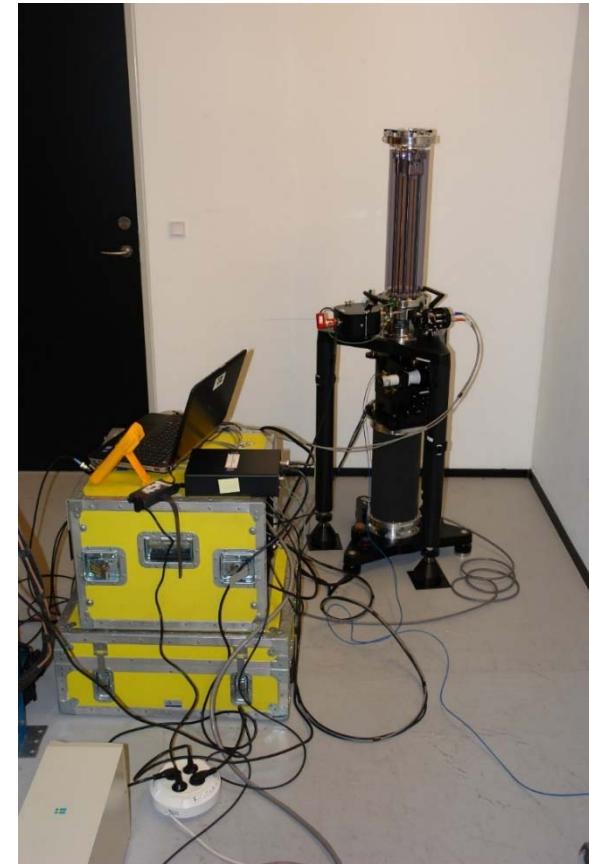
- Sweden has nine IGS stations (five locations).
- We share / send GNSS data, as RINEX files, continuously to IGS data and analysis centres, where data is combined analysed for use in IGS products.
- There is actually **no binding written agreement** between IGS and my office or any other of the IGS Contributing Organizations. Instead, we have a verbal / handshake agreement that we will follow the IGS guidelines as carefully as possible, and collaborate with the IGS to the best of our capability.
- We also agree that our RINEX files are openly available to the global geodetic community.



## Examples of Geodetic data sharing from Lantmäteriet to Global organisations

### BGI – International Gravimetric Bureau

- BGI is an IAG-service.
- BGI has a database including relative gravimetry. The coverage and quality is sometimes good, sometimes bad. Sweden contributes but not on a regular basis...
- BGI also mirrors the absolute gravity database AGRAV (managed by BKG). Those who contribute can also take advantage of others information



## European level

- **Inspire and geodetic information;**
  - Defines the reference frames to ETRS89 and EVRS for sharing spatial information (European versions of global reference frames as well as a European Vertical Reference System).
  - Inspire include also gravity information
- **EUREF (IAG subcommission of Europe)**
  - Has a strong role. Goes all the way down to national reference frames. A national reference frame needs to be accepted by Euref to be an official realization of ETRS89 (~ITRF XXXX with plate epoch 1989.0).



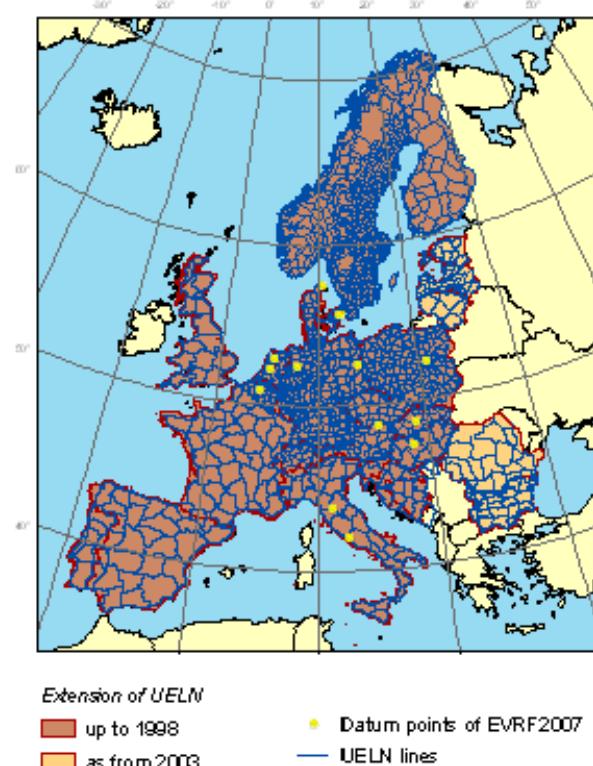
## European Permanent Network

- densification of IGS.
- EPN is based on best effort.
- RINEX files are available through ftp.
- Just as IGS, verbal / handshake agreement that we will follow the guidelines as carefully as possible, and collaborate with the EPN to the best of our capability.



### European Vertical Reference System.

- based on "best effort"
- A nations levelling data not easily accessed. You need to have an agreement with the country first.



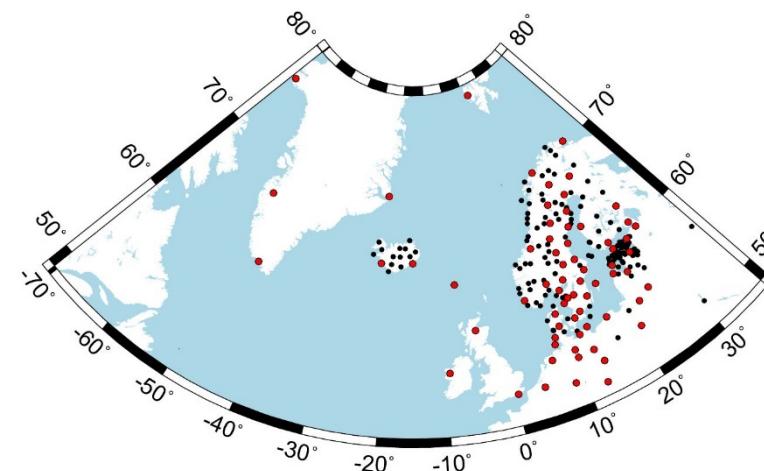
## European research infrastructure.

- Upcoming
- European research infrastructure (EPOS – European Plate Observing System)
- includes geodetic information (currently only GNSS).
- Primarily for research but will be open for all. EU financed initially. Agreements will be signed by data owners and EPOS. Agreement will include sustainability in data sharing as well as data quality.



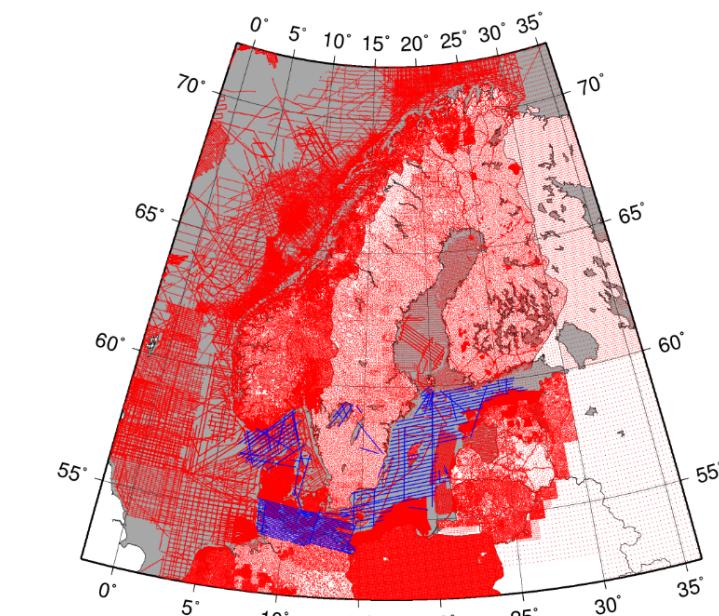
## Nordic Geodetic Commission – cooperation for more than 65 years

- Mapping authorities and universities together. Joint relative gravity database, GNSS/levelling database and DTM. Used for common geoid related products. Data available for others but only after agreement with respective country (or data owner).
- GNSS: Two NKG analysis centres; one for EPN and one for Nordic countries only. Just as IGS and EPN; countries share their RINEX files freely. Best effort. No written agreements. RINEX files not available for others.



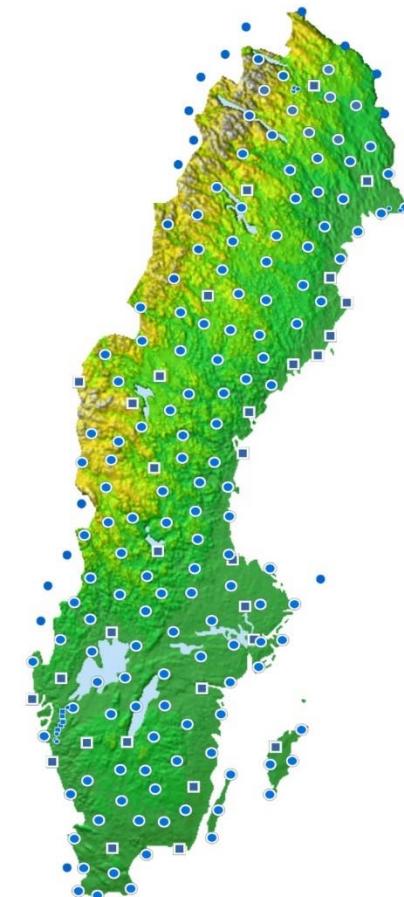
## Nordic Geodetic Commission – cooperation for more than 65 years

- Common products: geoid models, post-glacial rebound models,...
- Each country provides their data and information to the product.
- Gravity data and e.g. DTMs are usually provided using written agreements specifying that they are for work with common products under the umbrella of NKG.



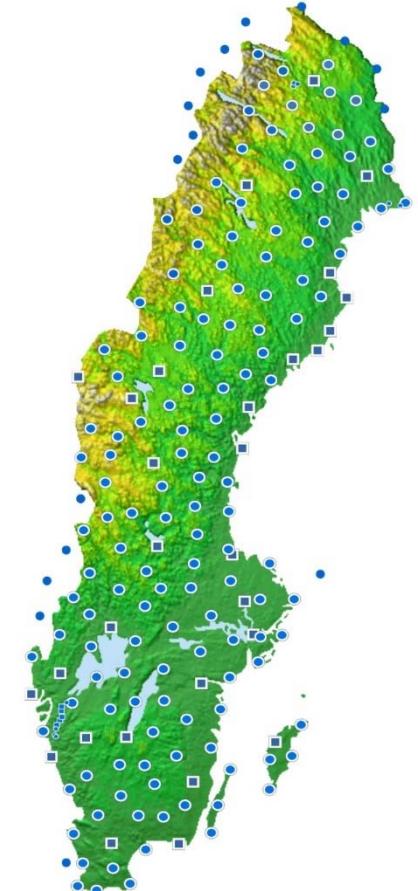
## Sweden

- Lantmäteriet is responsible for national geodetic infrastructure. Common understanding underpins the cooperation with other governmental agencies.
- No geodetic information is considered secret. All geodetic information that we are in charge of is available but not all are free-of-charge.
  - Some gravity information is available through Inspire-service from 1st of October this year.
  - Our digital geodetic archive with information about our passive networks will be free-of-charge from 1st of January 2018.
  - Other geodetic information or services are not free-of-charge due to our business model. The information is free but the services costs. Typical information here is RINEX-files or a national RTK-service.



## Sweden

- Several network-RTK-services exists. All based on the national geodetic infrastructure. Agreement with the other distributors as e.g VRSNow, SmartNet and more.
- For CORS stations along the borders to neighbouring countries we have agreements to share data instead of building stations close to each other.





Thank you for your  
attention!

[mikael.lilje@lm.se](mailto:mikael.lilje@lm.se)