



Kartverket

# Norwegian INSPIRE implementation – some best practices

*Olaf Østensen, Kartverket*

*INSPIRE conference, Ljubljana, 21-09-2015*



# Message from Norway:



*«I am deeply sorry that we are unable to attend this conference due to other meetings and obligations we could not change.*

*I wish you all luck with the conference, and look forward to continued activities in the project supported under the EEA Grants!»*

*Olaf Magnus Østensen*

# INSPIRE and Norway

INSPIRE implementation was simplified as a natural continuation of a long term national collaboration:

- Standardization from mid 80'ties
- Geovekst (collaboration across public sector) from 1995
- Arealis including the environmental agencies since 1996
- Culminating with Norway digital since 2005

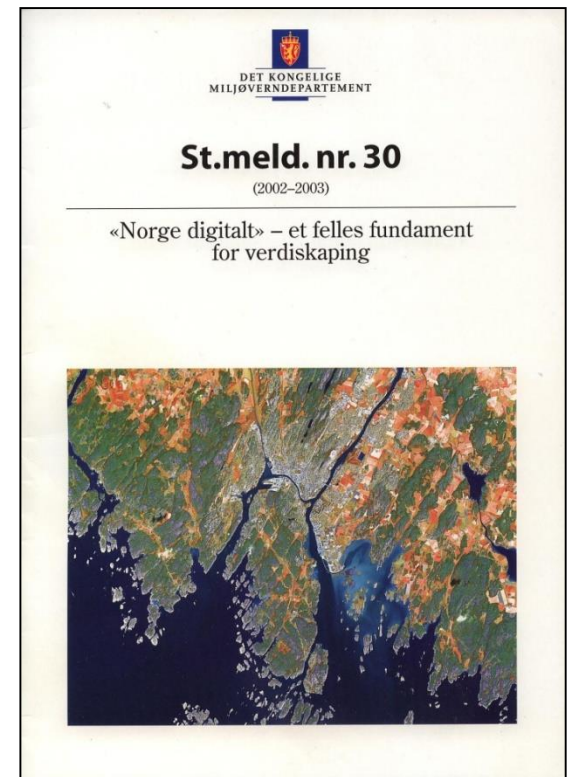
Norway digital today is a formal collaboration under contract between all public sector institutions with an interest in geospatial information  
– users and producers



# The start of the formal Norwegian SDI – the Parliamentary White Paper

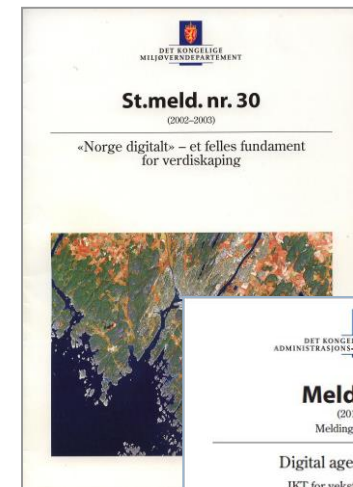
«Norway digital» - a common fundament for value adding

The Parliamentary White Paper presented by the Norwegian government and accepted by the Parliament on June 18, 2003

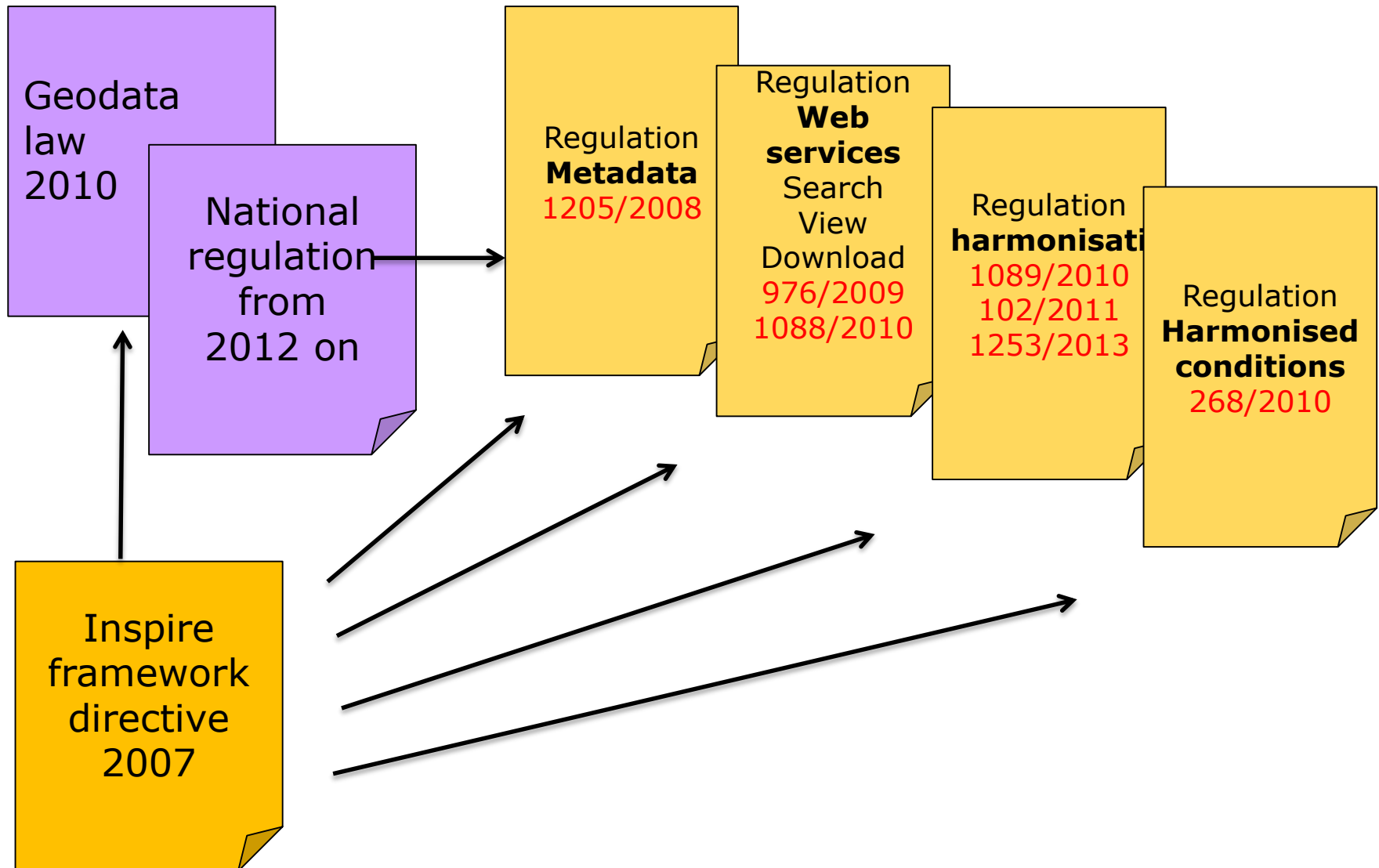


# Norwegian legal framework on NSDI

- White paper 2003
- Norway Digital 2005
- Governmental organisations – 600 parties
- Municipalities, counties, national organisations, ministries
- Geodata act 2010
- Geodata regulation 2012
- Our regulation points to the different Inspire regulations

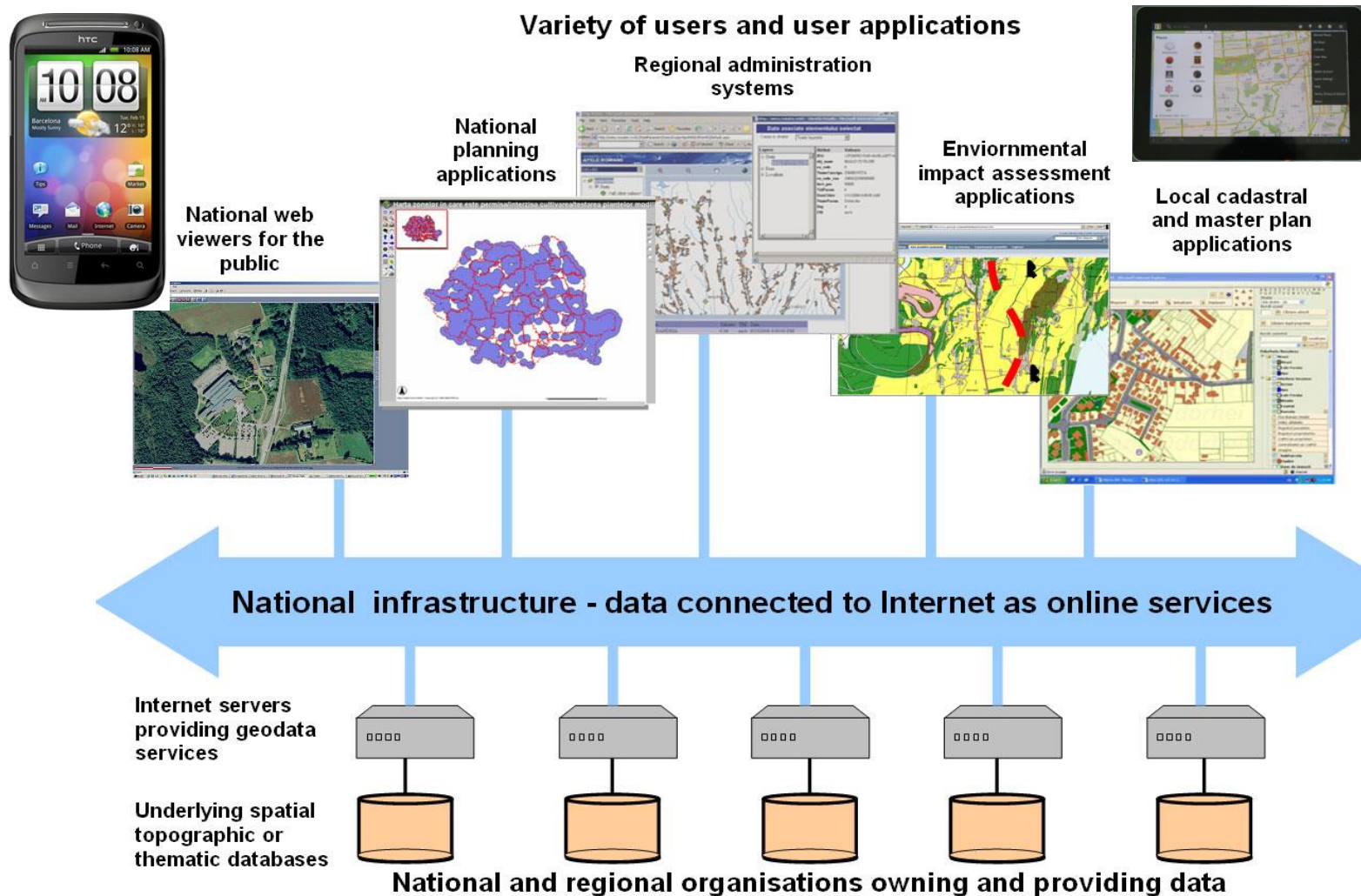


# National law/regulation points to INSPIRE regulations



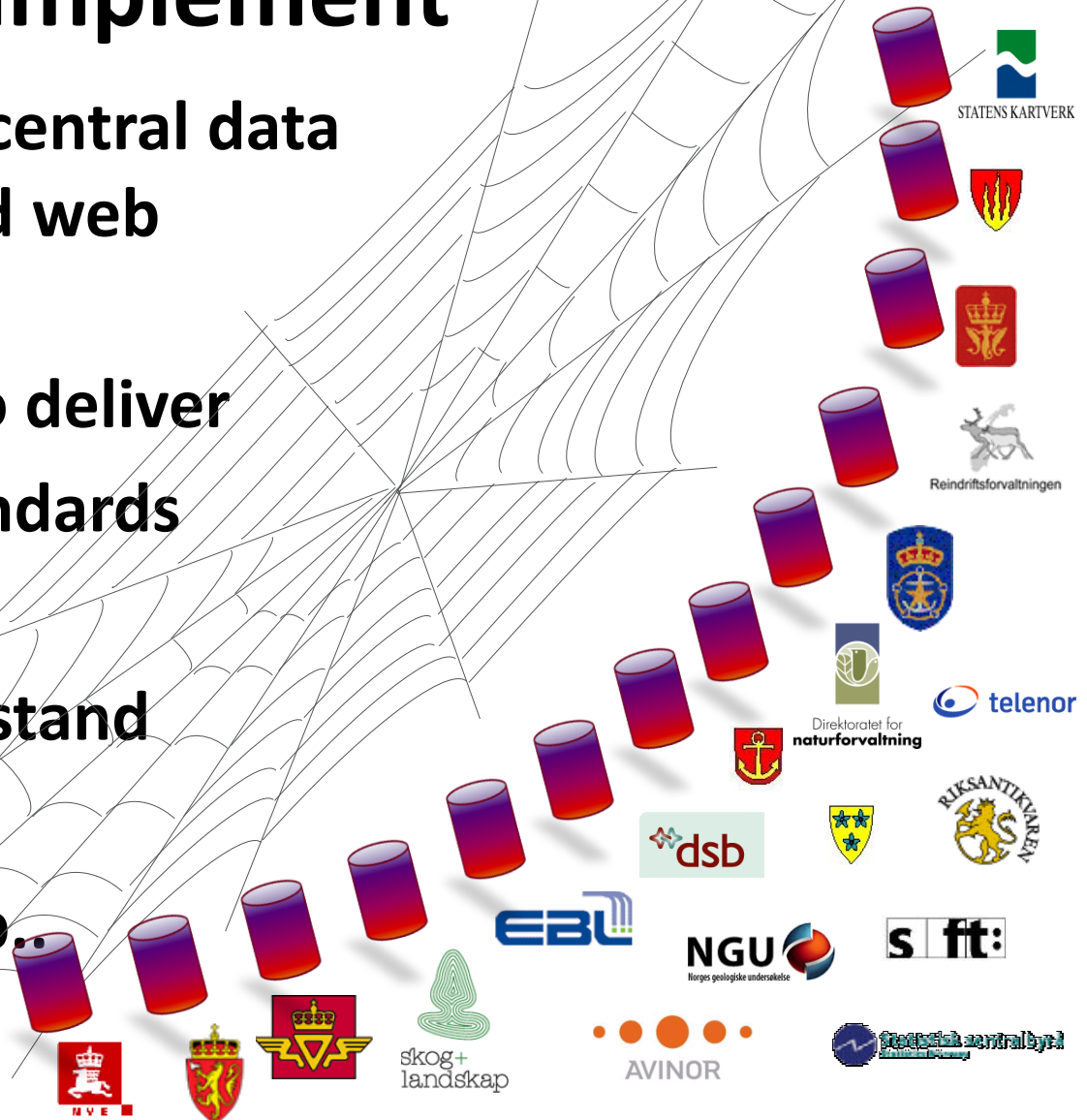
# The NSDI a system of distributed responsibilities

- *offering harmonised services*



# Decentralised - many organisations to implement

- We don't have one central data base and centralised web service "motor"
- Each organisation to deliver
- Need to stick to standards
- They need to understand
- They need guidance
- They need follow up..

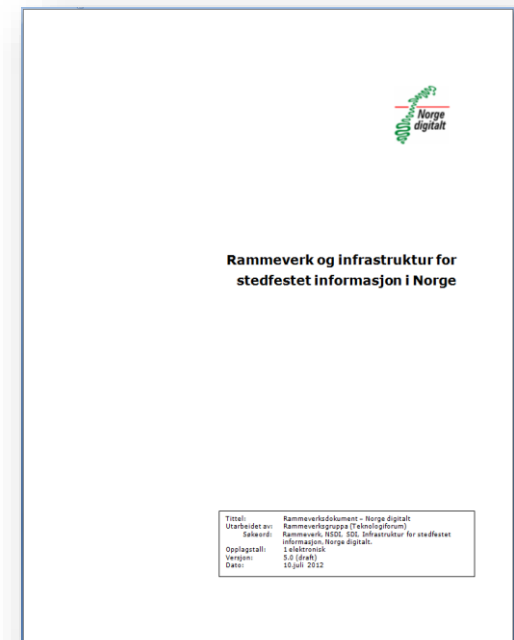


# Guidance and support



# NSDI Technical framework document

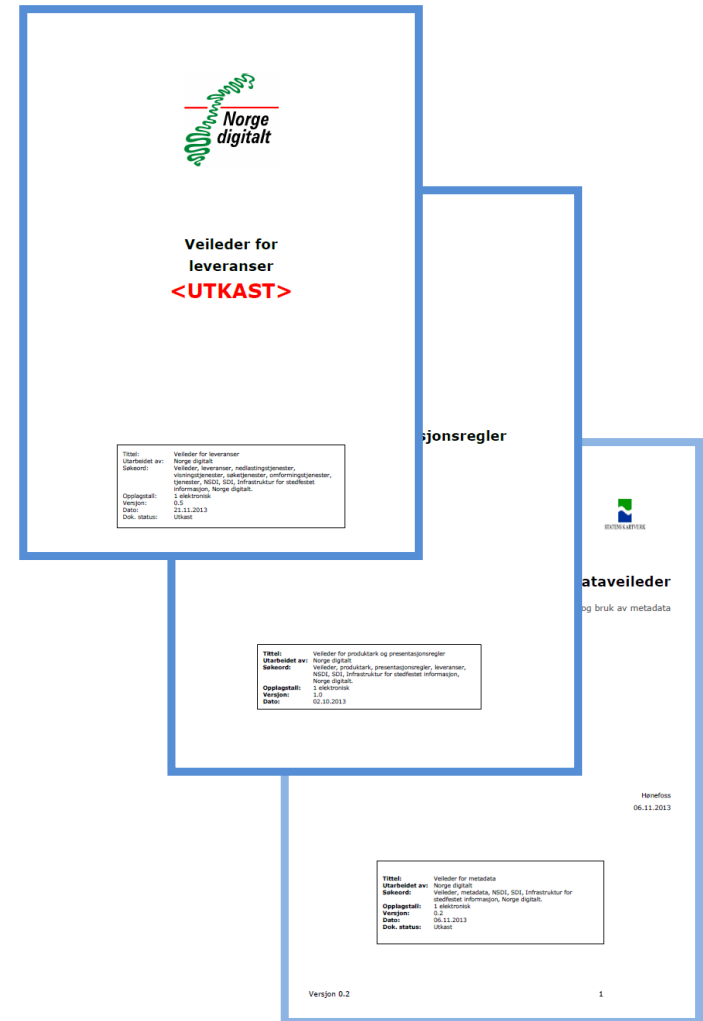
- Statements of the
  - Overall idea and architecture
- Technical requirements
  - Data sets, services, documentation
- Formal time schedule for requirements
  - What to be delivered when
- National adjustments and agreements
  - how do we understand Inspire
- Needs to be dynamic – things change.....
- Points to national guidance documents



# Guidance documents

## – how to deliver and use

- How to deliver data and services
- How to use data and services
- Guide: Metadata
- Guide: Product specification
- Guide: Factsheet and portrayal
- Guide: WMS
- Guide: WFS
- Guide: GML
- Guide Atom Feed
- Guide: SLD

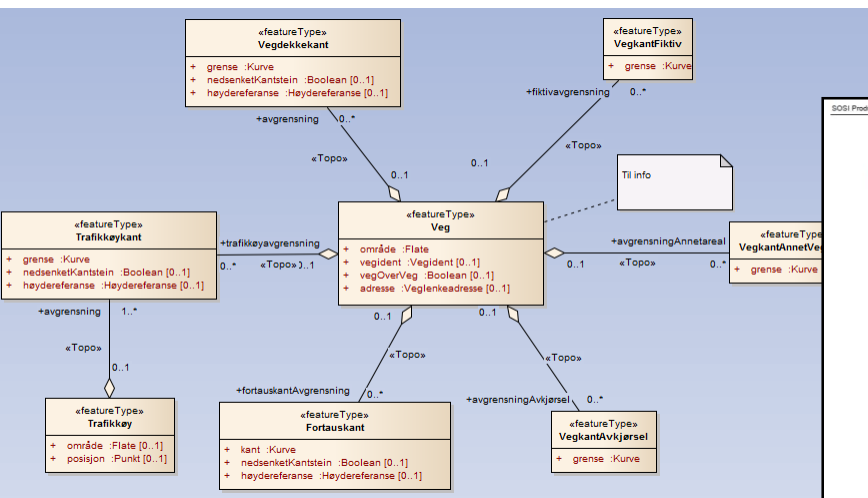


# Technical workshops - annual programme

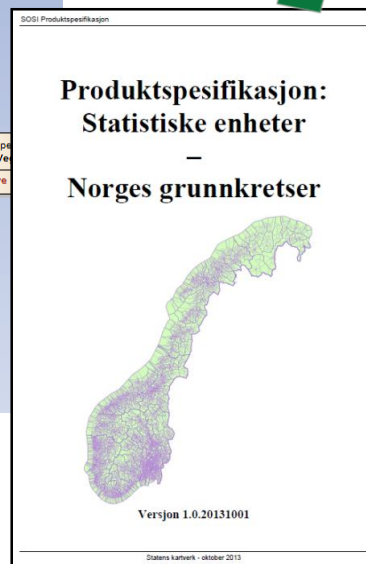
- Courses dependent on
  - Ready made guidance docs
  - Tools
- Courses autumn 2013-2015
  - Metadata og CSW
  - GML
  - WFS
  - Harmonisation

# Data modelling – model driven approach

Data model using UML



Full product specification  
According to ISO 19131



Deriving INSPIRE services

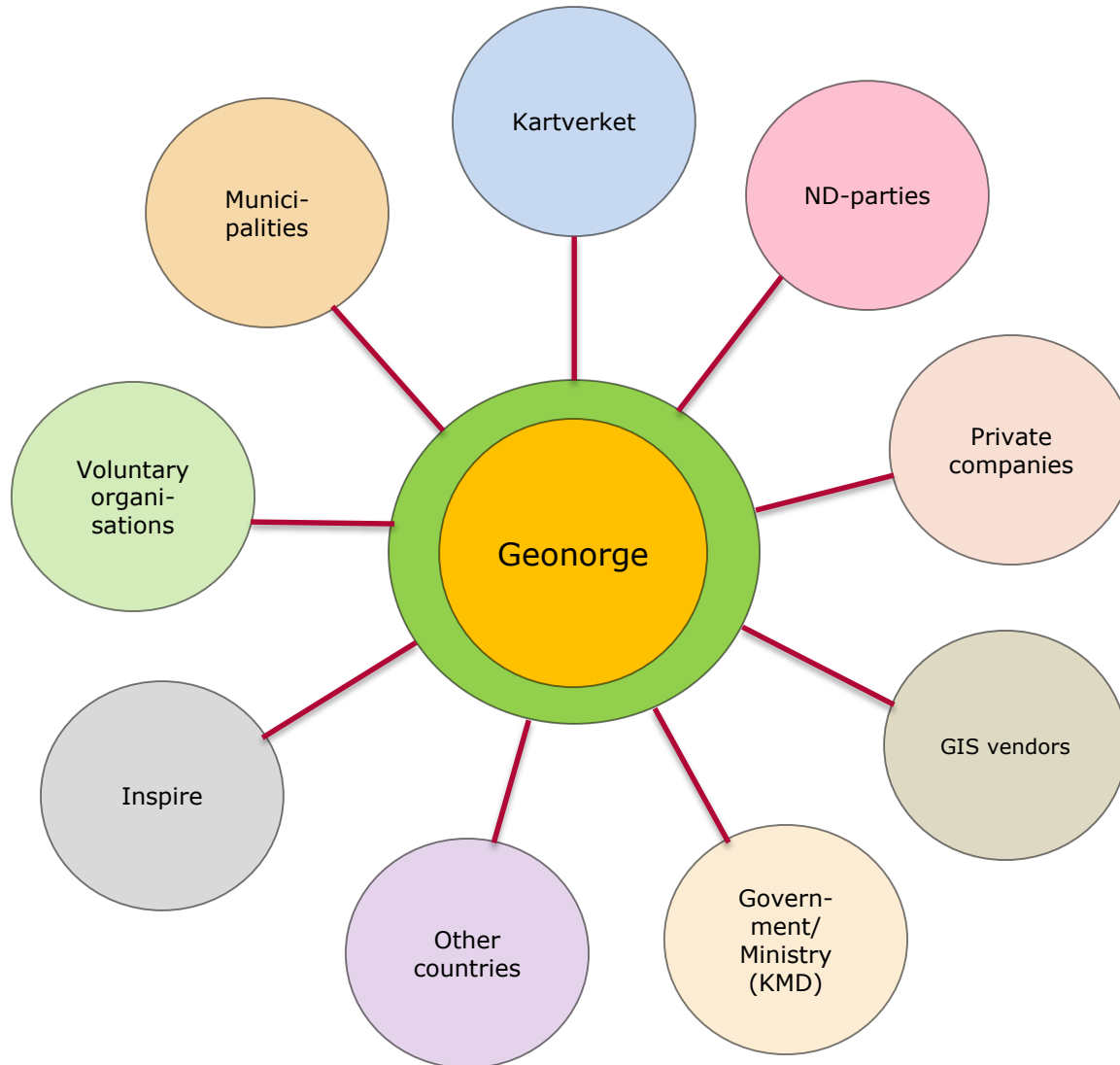


... and other products

# Clients and applications



# The Geoportal = the Hub



# National geoportal project 2014-2016

New development project – catalogue, registry, map viewer, tools, AAA,

...

The screenshots illustrate the Geonorge metadata catalog interface, showing a list of metadata records and a detailed view of a specific record.

**Metadata Record List:**

Tittel	Organisasjon	Ressurstype	Lenker
NVE snø og klima WMS	Norges vassdrags- og energidirektorat	Tjeneste	Vis i kart
seNorge.no	Norges vassdrags- og energidirektorat	software	Gå til nettside
Innsjødatabasen	Norges vassdrags- og energidirektorat		
wms_elvenett	Norges vassdrags- og energidirektorat		
Vann-Nett	Norges vassdrags- og energidirektorat		
wms_svekket_is	Norges vassdrags- og energidirektorat		
Kraftanlegg (wms)	Norges vassdrags- og energidirektorat		
Arealisdata på nett	Norges geologiske undersøkelse		
SkredKvikkleireWMS2	Norges geologiske undersøkelse		

**Detailed View of 'NVE snø og klima WMS':**

Daglig oppdaterte kart viser snø, vær, vann og klima for Norge. Du finner kart med data for døgn, måneder, år, klimaperioder og klimascenarier. Døgnkart finnes fra 1960 til og med i morgen. Flere titalls tema rommer til sammen flere hundre tusen kart. Vis bildeserier fra databasene til NVE og met.no. ...

ND\_TJ, NVE, NORGE, INPOMAPACCESSSERVICE, KLIMA, NEDBØR, REGN, SNØ

**Detailed View of 'seNorge.no':**

seNorge.no viser daglig oppdaterte kart for snø, vær, vann og klima for Norge. Du finner kart med data for døgn, måneder, år, klimaperioder og klimascenarier. Døgnkart finnes fra 1960 til og med i morgen. Flere titalls tema rommer til sammen flere hundre tusen kart. Til nytte for håndtering av trusler fra flom, tørke, energiforsyningssvikt, skred o. ...

ND\_AP, NORGE, CLIMATOLOGYMETEOROLOGVATMOSPHERE, KLIMA, NEDBØR, REGN, SENORGE, SNØ

**User friendly**  
**Maps, lists and filters**  
**Links between related**  
**"All" existing**  
**Detailed**

# Geoportal – Geonorge.no

[Forsiden](#) [Geonorge](#)

## Søk i Geonorge

Søk i alt


Skriv inn søkeord her

Søk

### Aktuelt


Geonorge ute i versjon 3.0.  
Enklere å legge inn metadata og få Geonorge inn i egne systemer. Lag produktark og søk/finn i kartkatalog.

[Les mer og se video](#)




Gå direkte til kartkatalogen

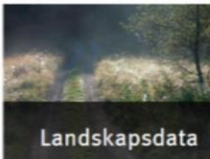
### Aktuelle temakart



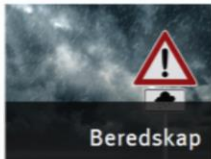
Marine data




Polare data





Landskapsdata





Beredskap


 Informasjon og dokumentasjon

 Samarbeidsarenaer

 Verktøy

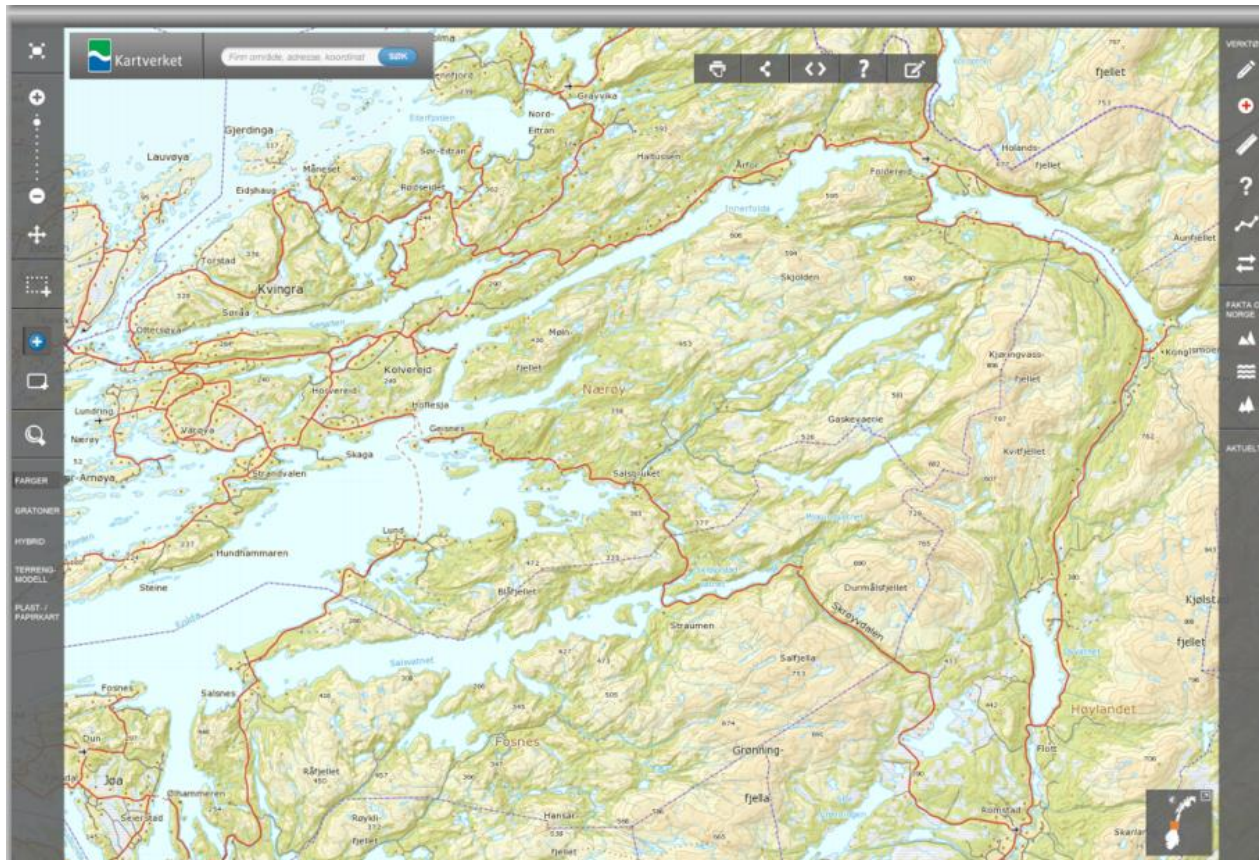
 Register

 Last ned kart og data

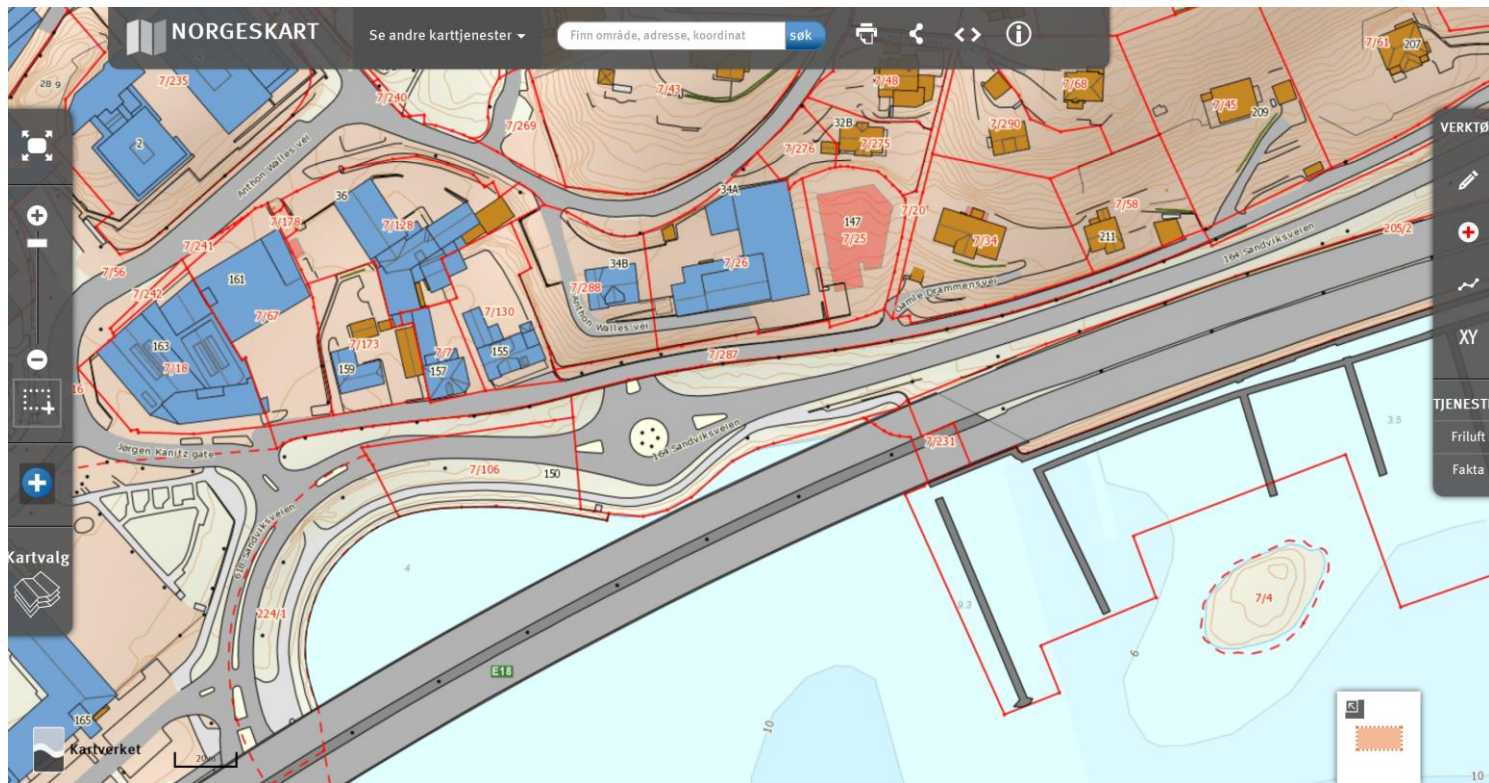
 Finn i kartet

# Norgeskart.no

## – Kartverket's viewing client



# Includes addresses, bathymetric data in sea (depths from sea charts)

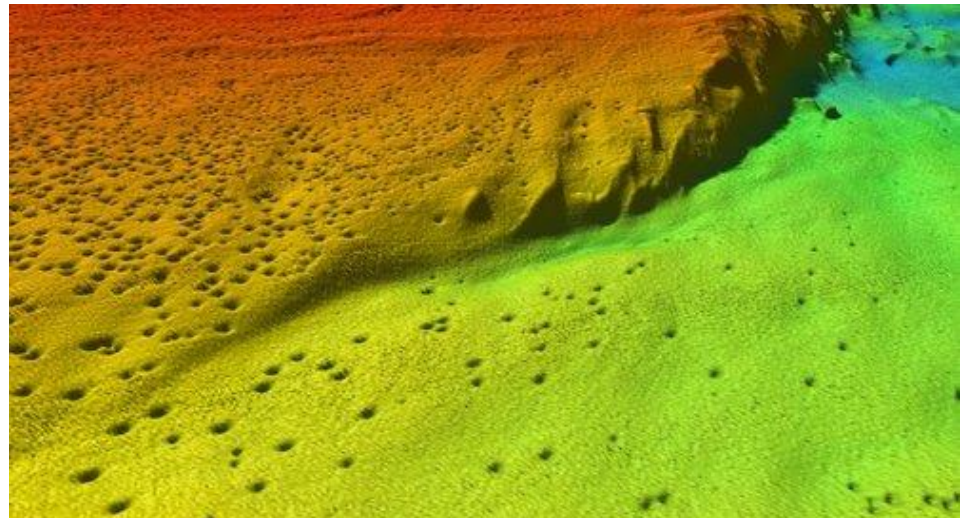


# Services

Web Service development and maintenance

Laserdata/3D data

RDF



# INSPIRE services and more ...

## View

### WMS



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## Download

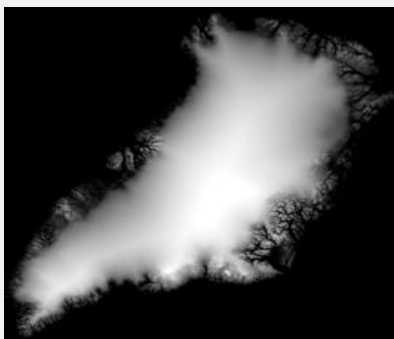
### WFS

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  <wfs_services_ArcSDE_wfs:NAME>Vancouver</wfs_services_ArcSDE_wfs:NAME>
  <wfs_services_ArcSDE_wfs:CAPITAL>N</wfs_services_ArcSDE_wfs:CAPITAL>
  <wfs_services_ArcSDE_wfs:PROV_NAME>British Columbia</wfs_services_ArcSDE_wfs:PROV_NAME>
  <wfs_services_ArcSDE_wfs:POPULATION>1380729</wfs_services_ArcSDE_wfs:POPULATION>
- <wfs_services_ArcSDE_wfs:SHAPE>
  - <gml:Point>
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  </gml:Point>
  </wfs_services_ArcSDE_wfs:SHAPE>
</wfs_services_ArcSDE_wfs:cities>
</gml:featureMember>
```

The gml:id for the city of Vancouver is F293\_1

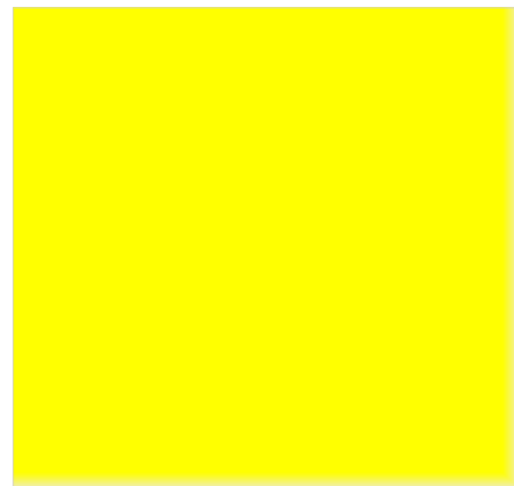
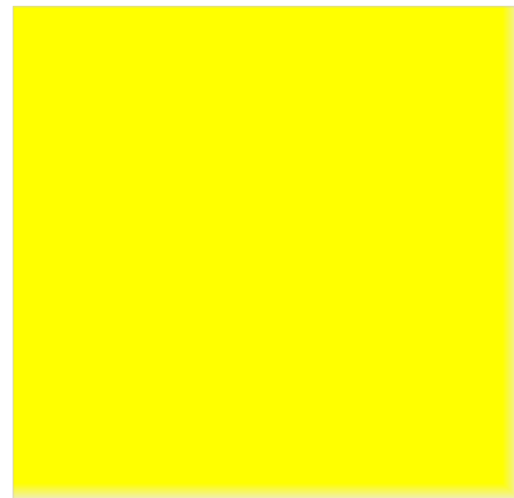
4

### WCS

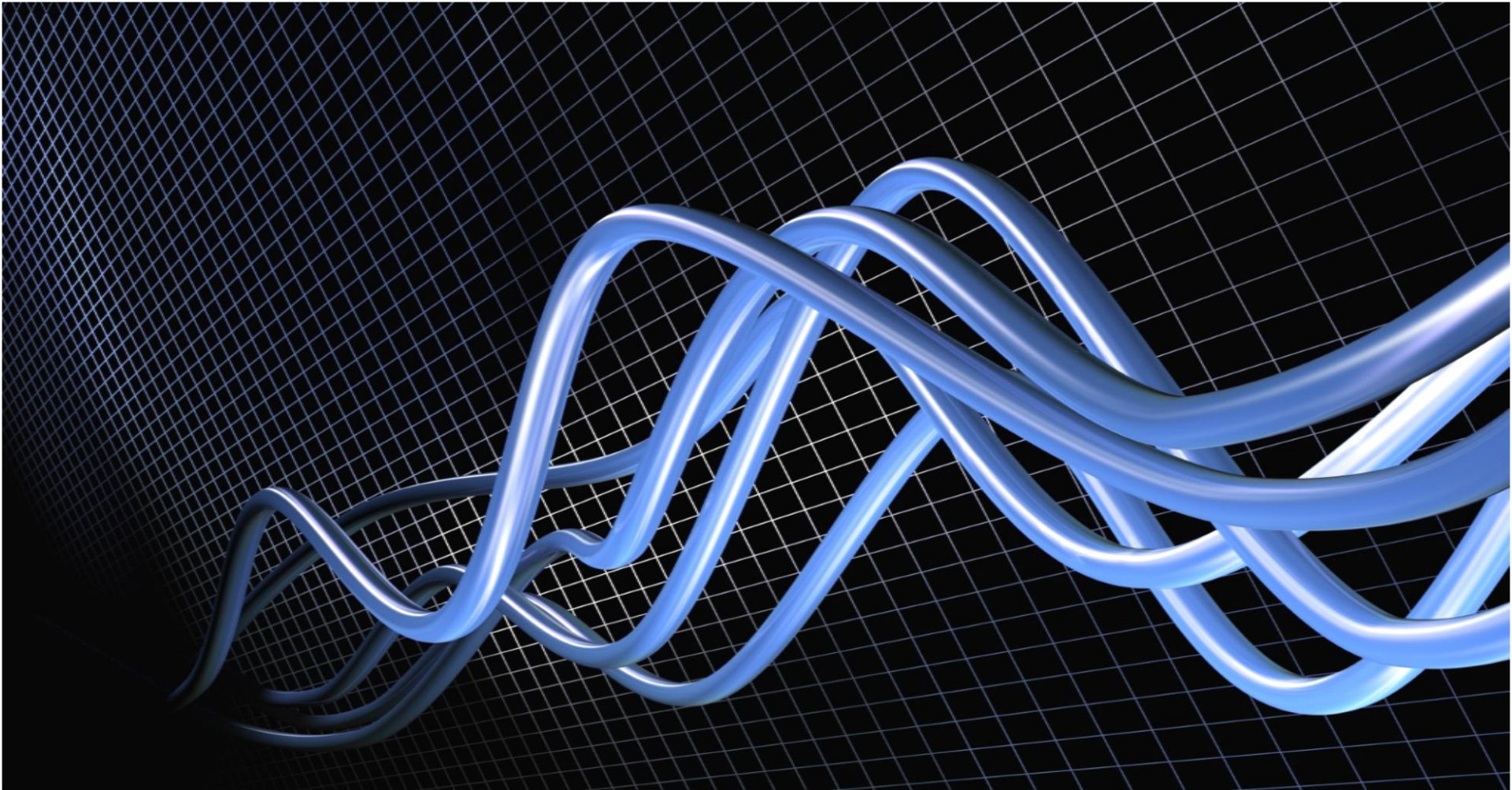


1

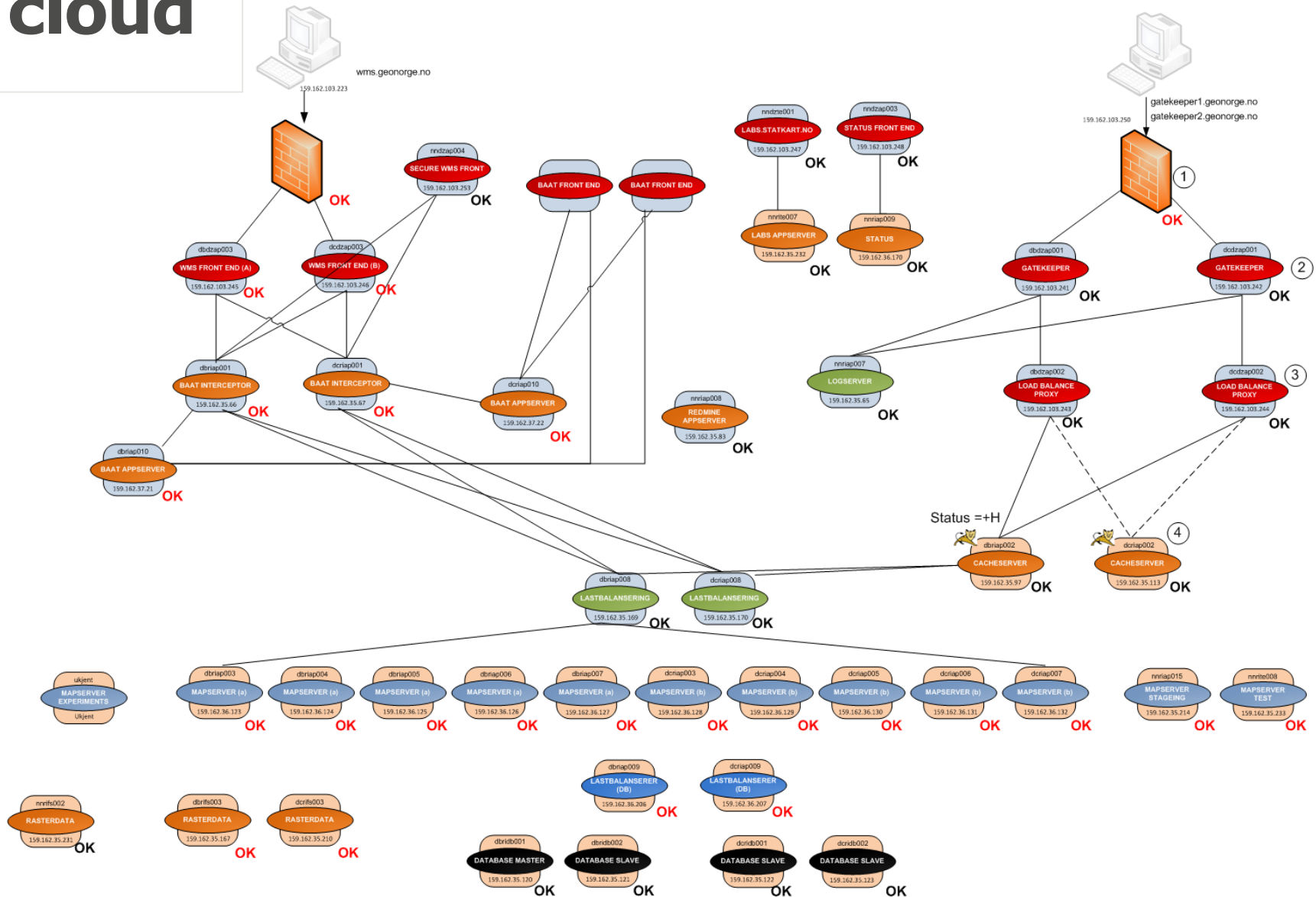
## Other WS

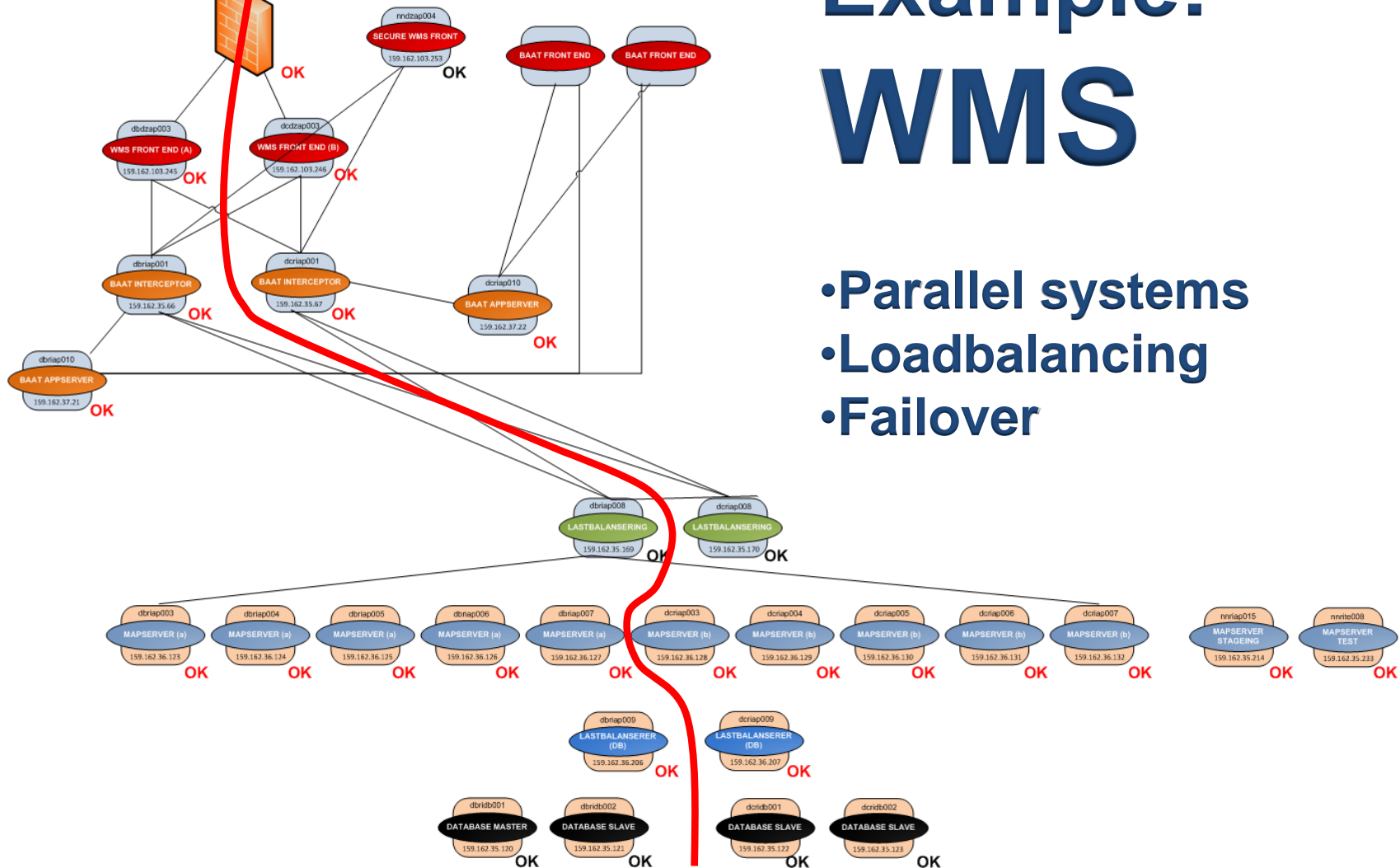


# Infrastructure



# Organised as a private government cloud





# Example: WMS

- Parallel systems
- Loadbalancing
- Failover

# Status today

- The new, modern geoportal in operation – covering metadata far beyond INSPIRE requirements
- Hundreds of wms services covering almost all the 34 INSPIRE themes
  - Operated by the individual agencies
- WFS downloading services emerging – The European Location Framework project – ELF – a driving force



# Summary – success factors

- Based on a more than 20 years of close collaboration in public sector – and private!
- Standards were developed with participation from the full community
- A *wms* infrastructure introduced already from 2000 and onwards
- Supporting activities – guidance documents, courses, collaboration fora
- ***Key principle – involve the community on an equal basis!***

**Thank you for your attention!**



Kartverket