

Norway digital implementing the national spatial data infrastructure – and Inspire



Romania delegation visiting Norwegian Mapping Authority

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Questions

- NSDI concept in Norway
- What is Norway digital
- What have you all done to build Norway digital (we have basic knowledge that there are several hundred agreements behind it, but how have you manage it, where there different phases, what where the biggest problems, etc.
- How does today function Norway digital (principally from organizational point of view, and what does it mean for Statens kartverk)
- How do you see future
- How far have you come on data sharing in sense of INSPIRE directive
- Financial background of the story, who gave initial funds, was cost benefit analysis conducted, what are the present financial mechanisms, pricing policy, ...

context

policy
regulation

organ. &
partners

standards

topic
data

financing
data

technical
solution

Context

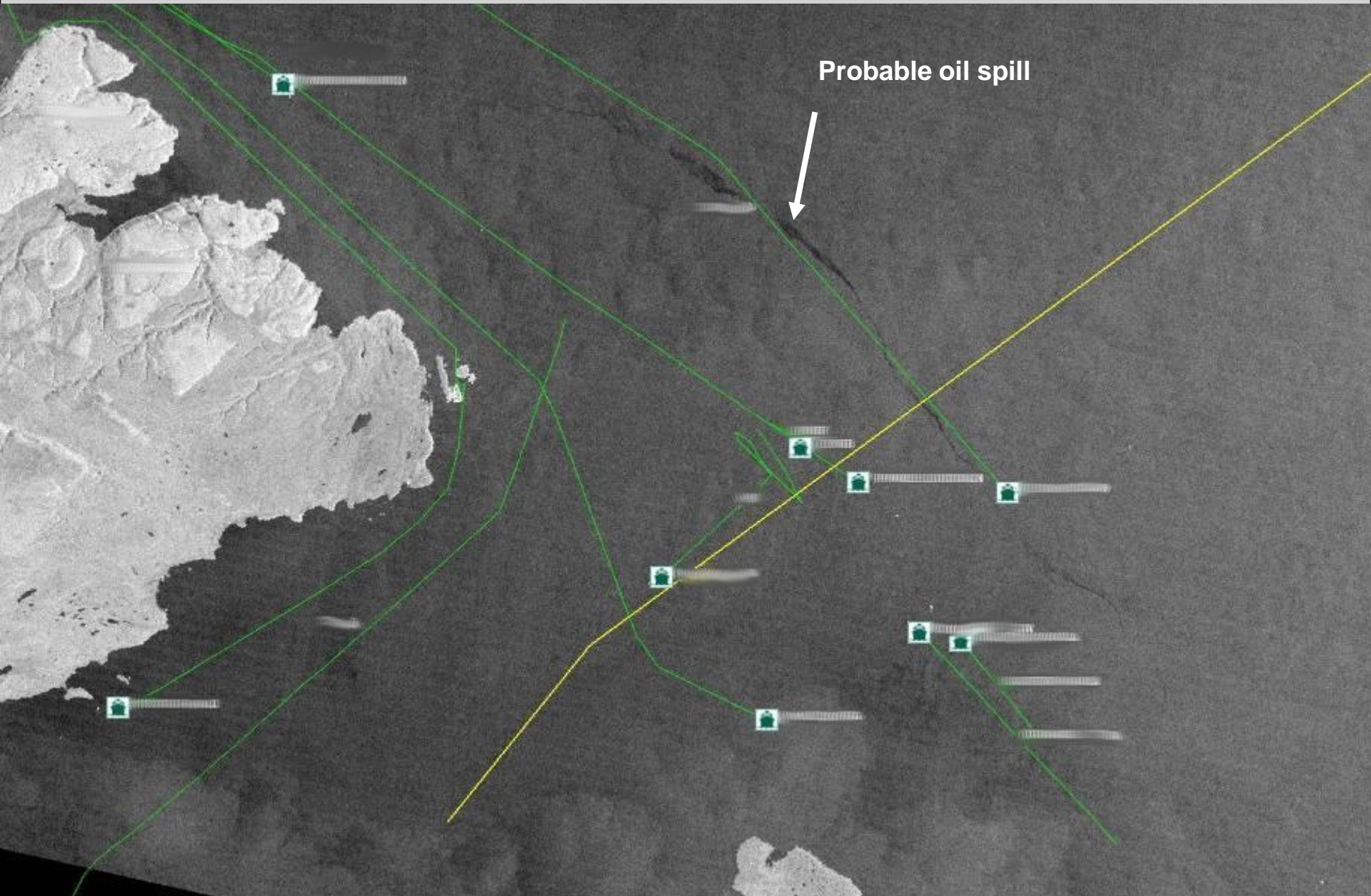
- eGovernment strategies
- Building a system for easy access
- Services on the internet
- Relevant spatial data
- Broad use in public and private sector
- better decisions- more effective planning
- **The Norway digital - an example of a well-working system**



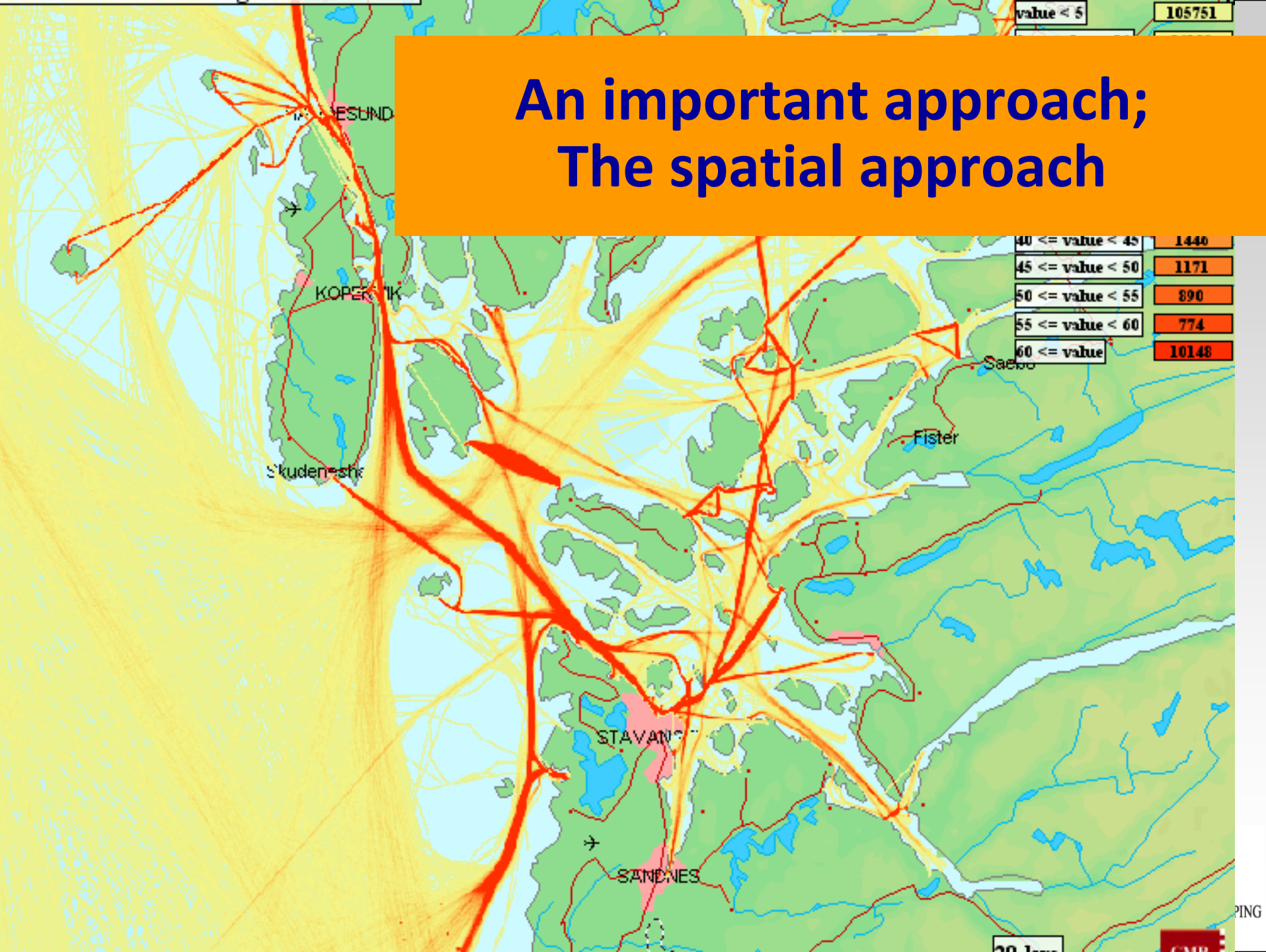
Analysis of incidents



Use of AIS og Radarsat



An important approach; The spatial approach



context

**policy
regulation**

**organ. &
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standards

**data and
use**

**financing
data**

**technical
solution**

Policy and regulation

context

policy
regulation

organ. &
partners

standards

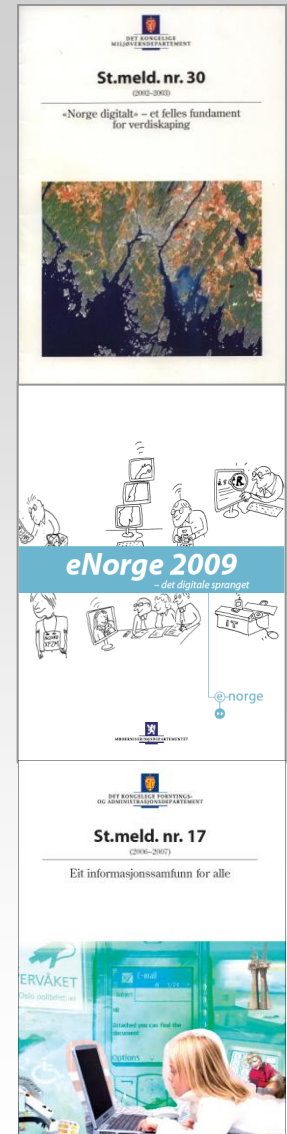
data and
use

financing
data

technical
solution

Political background

- **Parliamentary White Paper (2002-2003) Digital Norway**
(The Ministry of the Environment)
- **eNorway 2009**
(The Ministry of Government Administration and Reform)
- **Parliamentary White Paper (2006-2007) on ICT policies**
(The Ministry of Government Administration and Reform)



context

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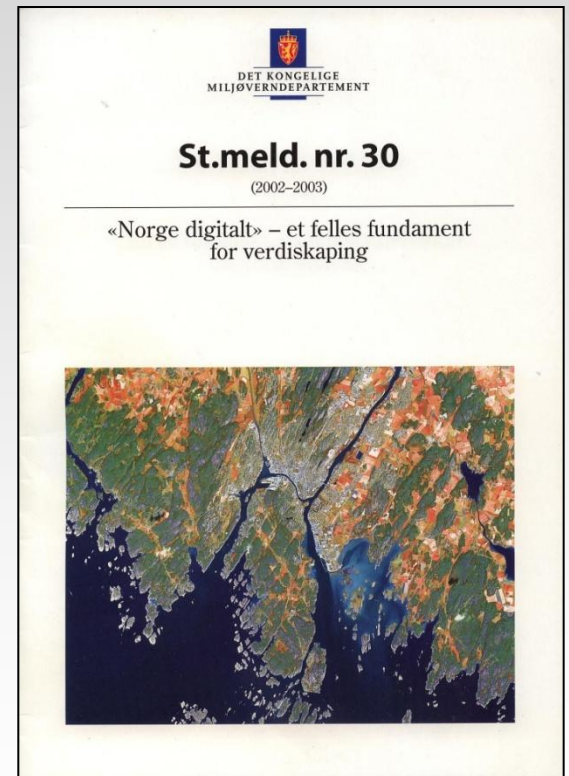
financing
data

technical
solution

The major concept in the White Paper is the establishment of the Norwegian SDI

«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



New geodata legislation under development

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solution

- NSDI Act has partly entered into force
- Includes Inspire -transposition into national law - 2010



- 1. National needs – detailed data, broader and deeper content
- 2. Inspire requirements – simplified data
- Is to a large degree referring to Inspire directive and underlying EU legislation

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Organisation and partners

Norway digital

public authorities cooperate on data
establishment, maintenance and flow of
geographical information

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data

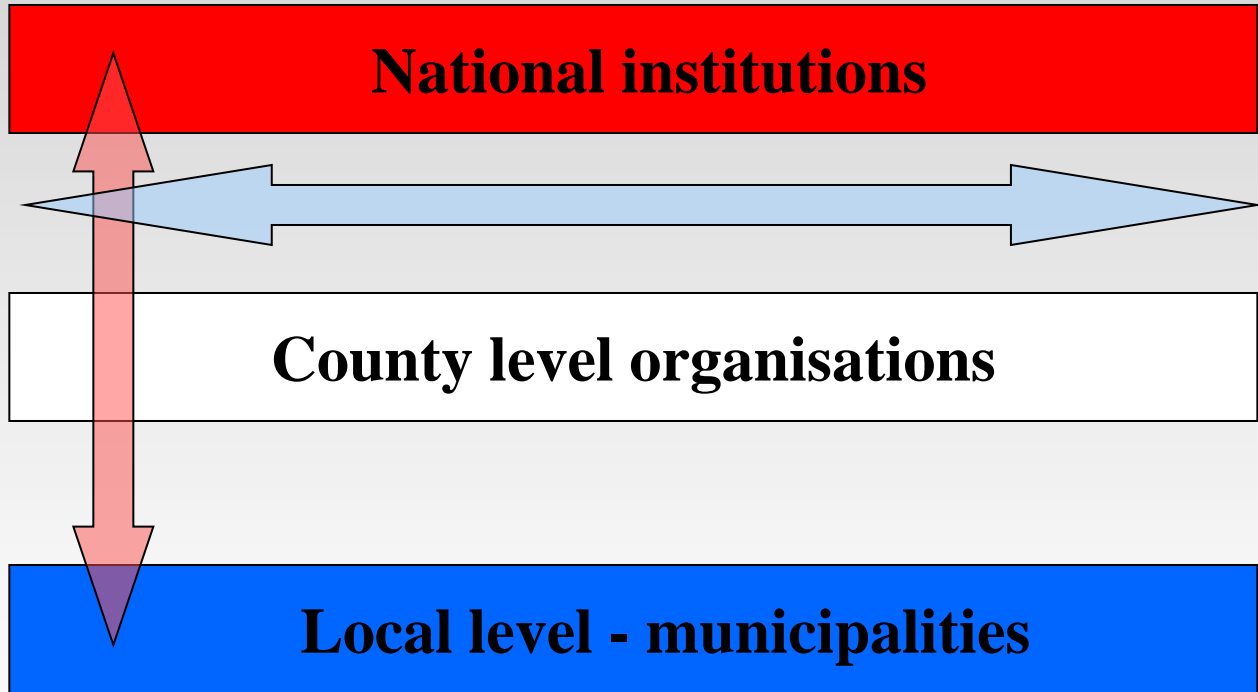
technical
solution

National institutions

County level organisations

Local level - municipalities

Share between sectors
Share between adm. levels



«Norway digital»

The NSDI organisation

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- 620 partners
- national
 - ◆ all ministries
 - ◆ national agencies
- regional
- municipalities
- state owned energy firms



Easy access to all data

context

regulation

organ. &
partners

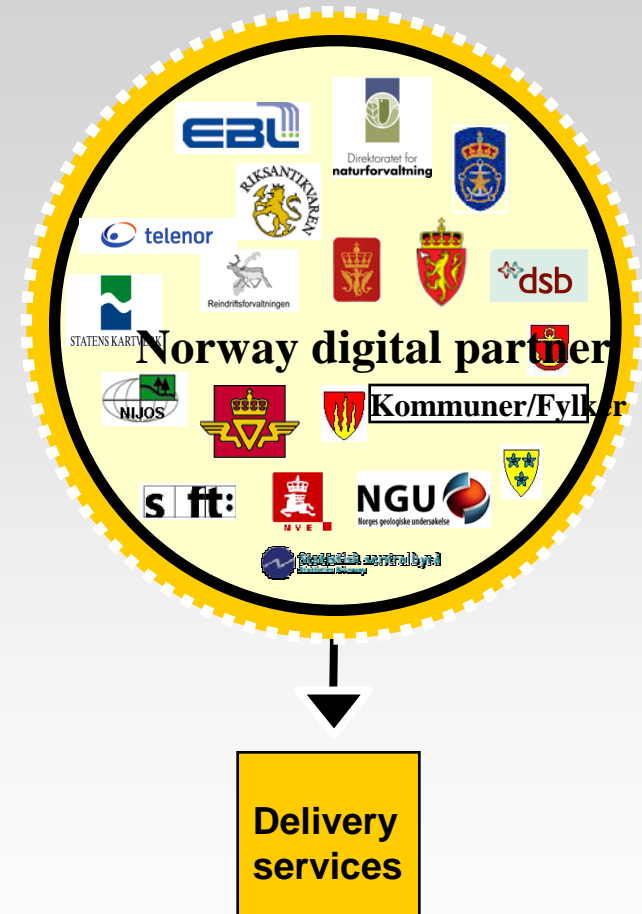
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use

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data

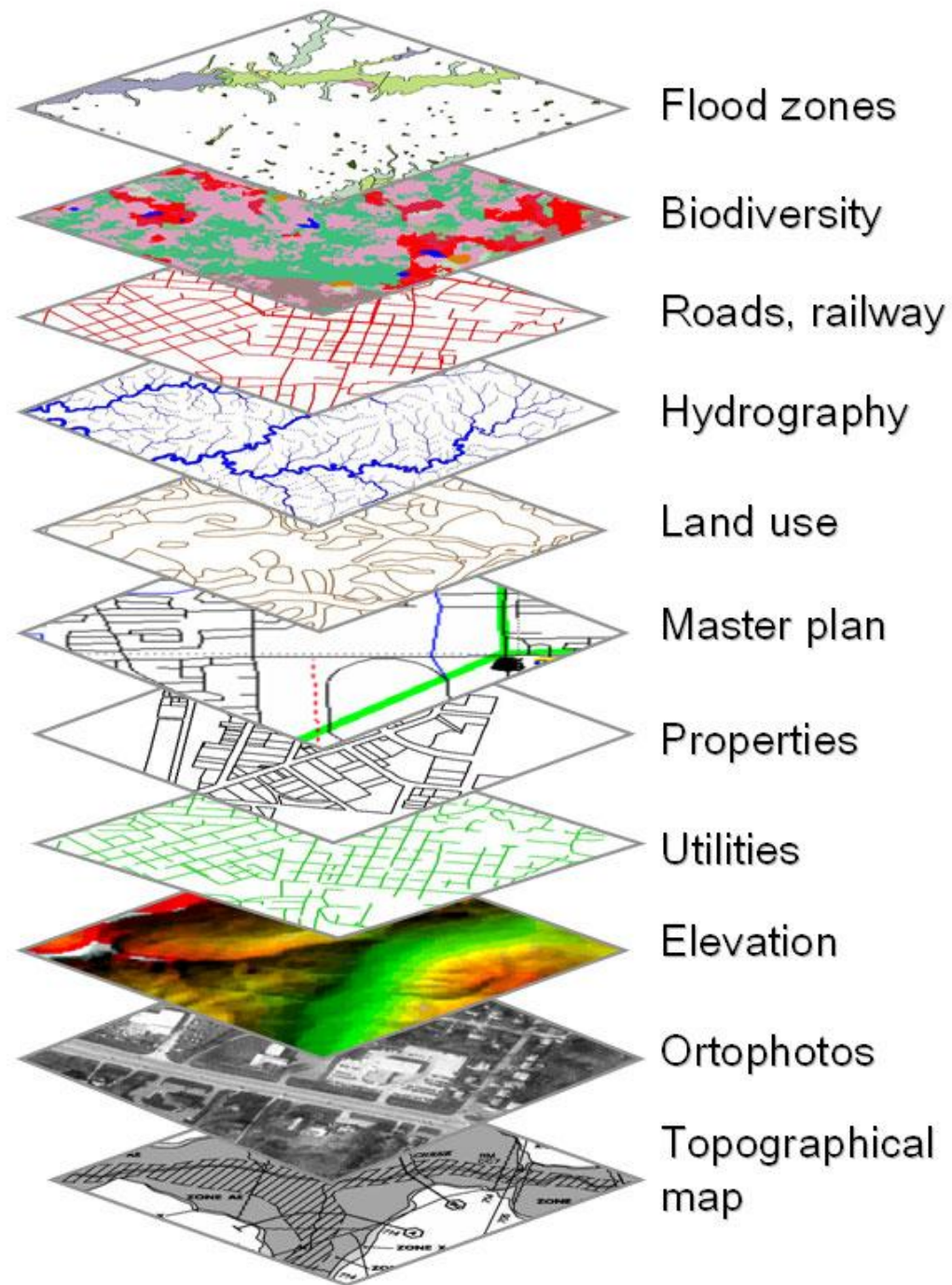
technical
solution

- each organisation pay a yearly entry fee
- all partners share all data
- Mapping agency data to all partners
- provide delivery services to non-partners
 - commercial
 - non-commercial



Different layers are provided from different organisations

The National Inspire
committee needs to
define which national
organisation are to be
responsible for
delivering each theme



Norway digital organisation

context

policy
regulation

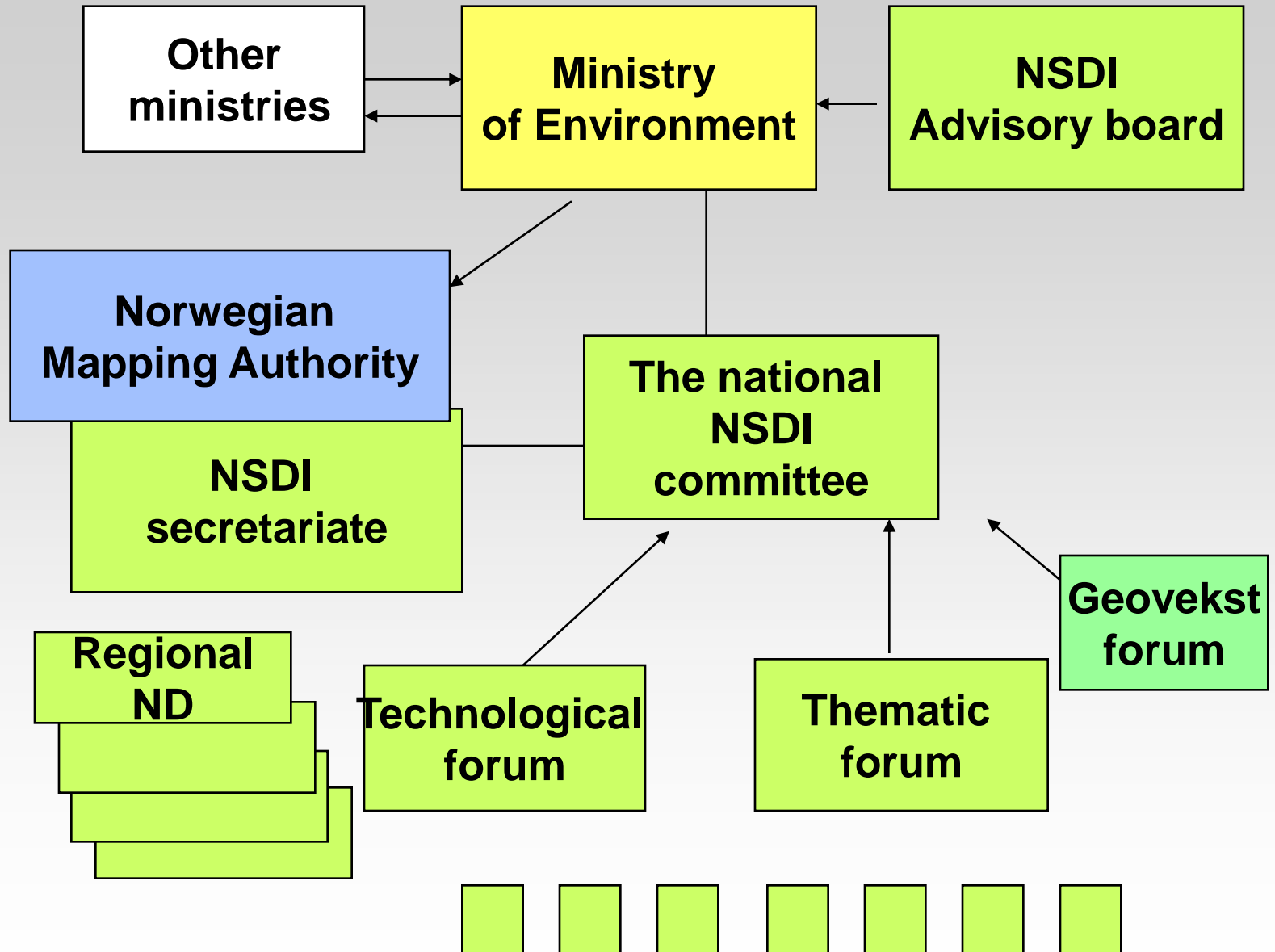
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Formal agreement

general form, annex with restrictions in use, references, other supplies not meeting the general agreed requirements

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BILAG 3 – NORGE DIGITALT 2009

FORBEHOLD / RESTRIKSJONER

og/eller

SPESIELLE AVTALEFORHOLD

Havforskningsinstituttet



1 Begrensninger/restriksjoner på bruk av datasett og tjenester

I dokumentet "Generelle vilkår for Norge digitalt samarbeidet Versjon 2009" fremgår det av pkt. 6 om rettigheter og rett:

Partene plikter å sørge for at brukere av informasjons- og veiledningstjenester etter punkt 2 blir informert om at informasjonen ikke kan gjenbrukes uten at dette er avklart med den enkelte rettighetshaver. Partene skal sørge for at nødvendige skritt blir tatt for å beskytte øvrige parter mot rettighetskonflikter.

Partene plikter å informere om hvilke begrensninger som ligger på deres goddata når det gjelder sikkerhetsforhold, personvern og lignende. De øvrige parter skal sette seg etter dette og informere sine brukere. Rettighetshavere kan ta forbehold om bruk og utnyttelse av dataene. Dette må da klart fremgå av bilag 3 til Avtalen.

Følgende begrensninger/restriksjoner gjelder for alle Norge digitalt-parter ved bruk av Havforskningsinstituttets data, tjenester og applikasjoner.

Det skal rettes til Havforskningsinstituttet ved bruk av Havforskningsinstituttets data, tjenester og applikasjoner.

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usefinancing
datatechnical
solution

Each of the parties, an additional list of which datasets and services the partner is delivering

C	D	E	F	G	H	I	J	K	L
MS_NB_Vern	Områder med juridisk vernestatus etter naturvernloven eller viltloven. Juridisk grense finnes i verneforskriften for det enkelte området. Kartobjektene representerer derfor ikke juridisk grense.		Hele landet	WMS	Ja	B	GetCapabilities		
MS_NB_Verneforslag	datasettet viser verneområder som er under planlegging og sendt på høring i henhold til nasjonalparkplanen, jf. St.meld. nr. 62 (1991-1992) "Ny landsplan for nasjonalparker og andre større verneområder i Norge" eller fylkesvise verneplaner		Hele landet	WMS	Ja	B	GetCapabilities		
MS_NB_Naturtyper	Forekomster av naturtyper som er vurdert som svært viktig eller viktig for biologisk mangfold. 67 naturtyper kartlegges innenfor 8		Deknings-kart	WMS	Ja	B	GetCapabilities		
MS_NB_Art	Arters forekomst og deres funksjonsområder. Er hovedsakelig fokusert på rødlistearter og arter som inngår i viltkartleggingen etter DN Håndbok 11-96.		Deknings-kart	WMS	Ja	B	GetCapabilities		
MS_NB_Friluftsliv	Områder som er sikra for allmenne friluftsførmål ved statlig hjelp.		Hele landet	WMS	Ja	B	GetCapabilities		
MS_NB_Kultur	De høyest prioriterte kulturlandskapsområdene som ble kartlagt i en nasjonal registrering. Områdene er større helhetlige områder og mindre spesialområder, kategorisert etter hovedkategoriene for landskap.		Hele landet	WMS	Ja	B	GetCapabilities		
MS_NB_INON	Områder som ligger mer enn 1 km fra tyngre teknisk inngrep. Områdene er videre soneinndelt etter hvor langt fra tyngre teknisk inngrep de ligger.		Hele landet	WMS	Ja	B	GetCapabilities		

Isolated productions - data not harmonised from the municipalities

context

regulation

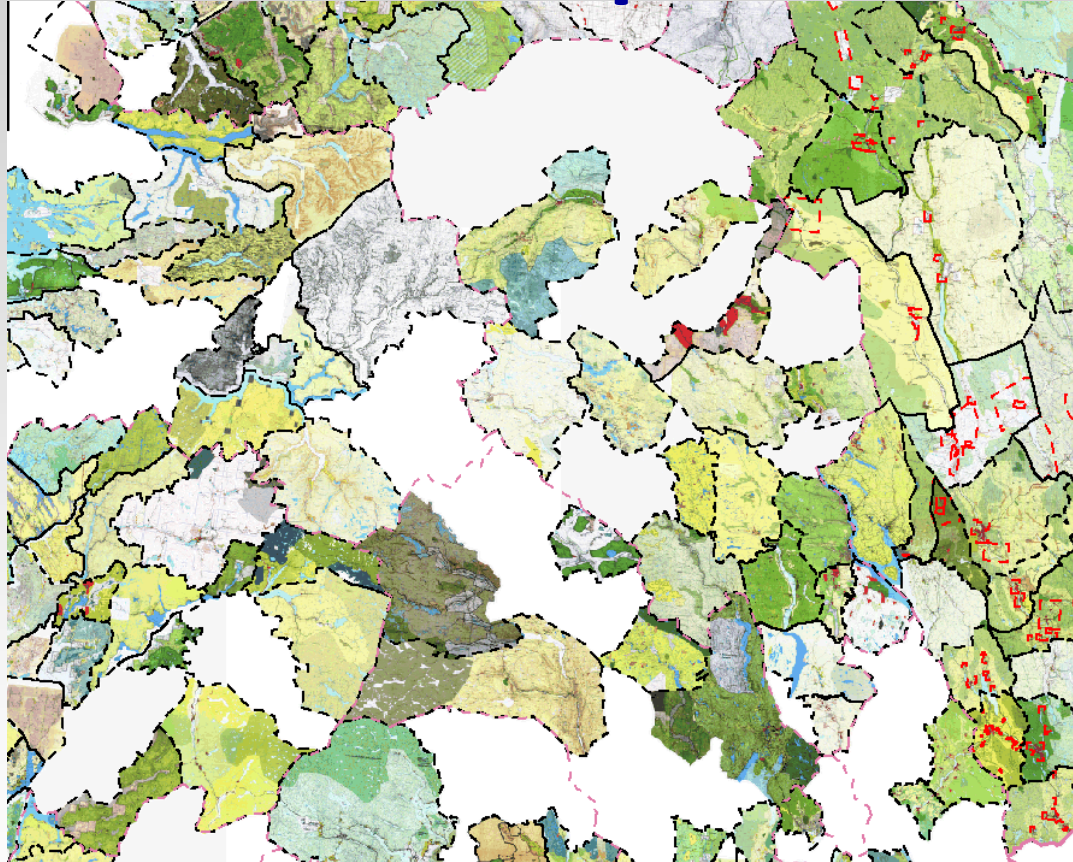
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e.g Master plans

Service based infrastructure

context

regulation

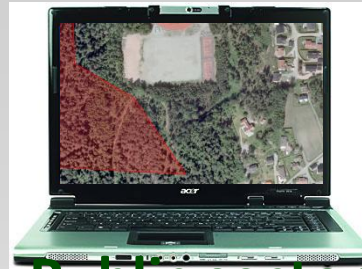
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use

financing
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solution



Public sector, national
and European



Citizens and private
sector

Stick to
standards!



Long term standardisation

context

regulation

organ. &
partners

standards

topic
data

financing
data

technical
solution

- more than 15 years of standardisation - ISO
- textual specification and data models in national feature catalogue
- all relevant themes
 - ◆ reference data, topography, elevation, hydrography, property, building ...
 - ◆ heavy focus also on environmental issues....
- **Active use - being implemented in municipal and national databases**



Norwegian feature catalogue – SOSI

context

regulation

organ. &
partners

standards

data and
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data

technical
solution

Geodetic points

Elevations data

Coast line

Sea chart information

Inland watersystem

Property information

Administrative boundaries

Buildings

Road network

Road, other info

Railway

Utility networks

Airport

Historic remarks

Vegetation

Agriculture

Planning information

Geographic names

Misc. other

*will be adjusted and
mapped to the Inspire
specifications*



Broad participation

context

regulation

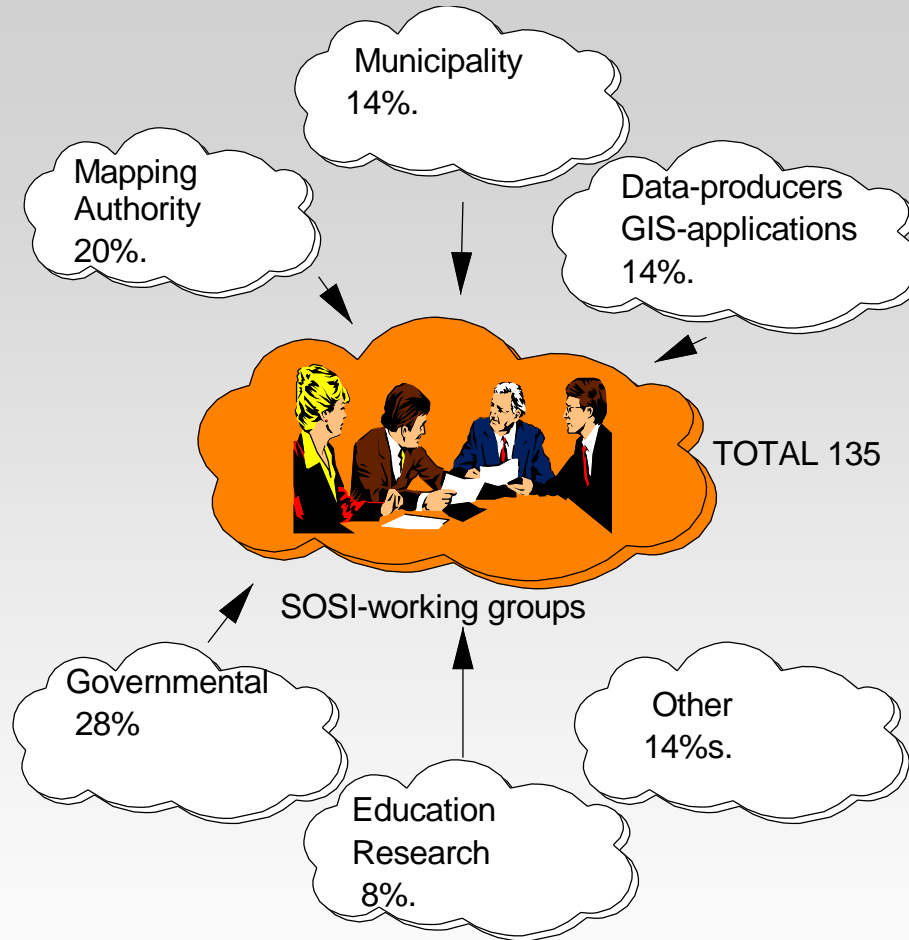
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use

financing
data

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solution



thematic standardisation committees – broad participation from government and industry - since 1993

NSDI technical working groups

– all norwegian system providers participating



- users depend on a good relationship to private system providers
- mutual benefits - use their skills - they learn the new Inspire standards

context

regulation

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partners

standards

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solution

context

regulation

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partners**

standards

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and use**

**financing
data**

**technical
solution**

Spatial data and users

A working infrastructure with lots of online services-wms/wfs

Variety of users and user applications

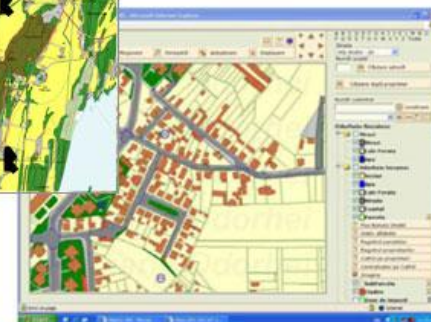
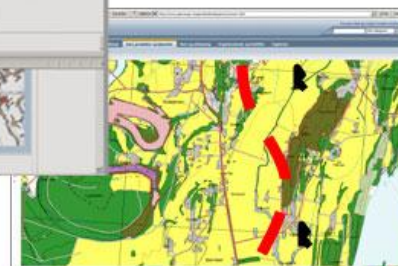
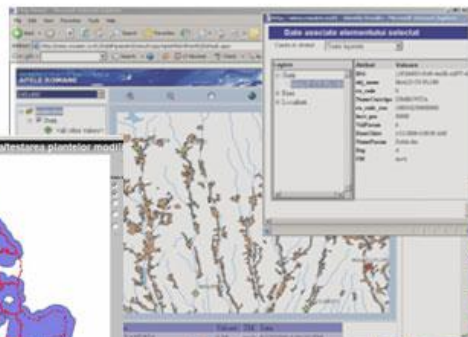
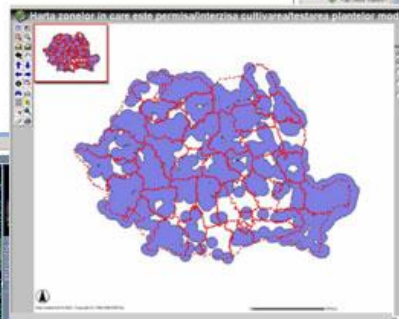
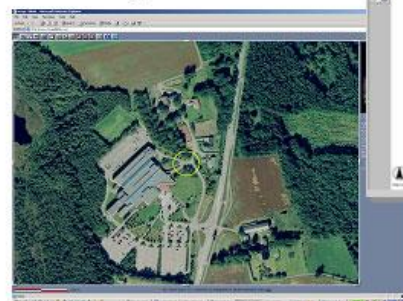
Regional administration
systems

National
planning
applications

Environmental
impact assessment
applications

Local cadastral
and master plan
applications

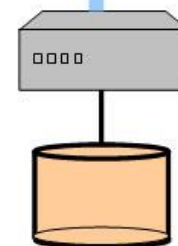
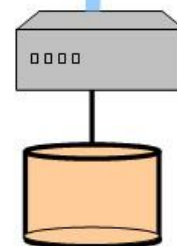
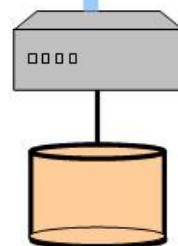
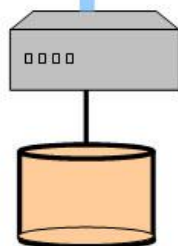
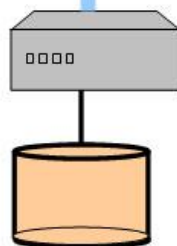
National web
viewers for the
public



National infrastructure - data connected to Internet as online services

Internet servers
providing geodata
services

Underlying spatial
topographic or
thematic databases



National and regional organisations owning and providing data

Statistics - 2009

context

regulation

organ. &
partners

standards

data
and use

financing
data

technical
solution

- Norway digital partners
- 200 different map services with national coverage
- with 2000 layers....
- Delivered through **Norwegian Mapping Authority** services:
- View services: 60 million wms-requests
- Tiled wms services: 170 million tiles since April
- Downloaded files: approx. 1 million

Each municipality – system for property information, buildings, addresses

context

regulation

organ. & partners

standards

data
and use

financing
data

technical
solution

Velkommen til Matrikkelen Torjan

Arkiv Vis Matrikkelenhet Krets Gate Område Adresse Bygning Bruker Hjelp

Matrikkelenhet: Grunneiendom Matrikuler umatrikulert grunn som grunneiendom Opprett ny grunneiendom ved fradeling

Søk etter: Består: ☐ Bygning: ☐ Bygningsnr: Adresse: Husnr: Alt. navn:

Matrikkelenhet: Gnr: Bnr: Fnr: Snr:

Hjemmelshaver / Bygningseier: Fødsels- eller org.nr: Fornavn: Etternavn:

Blank Søk

Nøkkel	Verdi
Type	Grunneiendom
Kommune	NITTEDAL
Gårdsnr	50
Bruksnr	7
Festnr	0
Seksjonsnr	0
Etablert dato	1914-12-16
Utgitt	<input type="checkbox"/>
Oppgitt areal	0.0

Kommune: 0233 NITTEDAL Målestokk 1: 539 Koordinatsystem: 2 Nord: 236 961,46 Øst: 5 273,68

Type	Kommune	Gårdsnr	Bruksnr	Festnr	Seksjonsnr	Etablert dato	Utgitt	Oppgitt areal	Beregnet areal
Grunneiendom	NITTEDAL	50	1	0	0	01.01.1873	<input type="checkbox"/>	0.0	196381.0
Grunneiendom	NITTEDAL	50	2	0	0	01.07.1873	<input type="checkbox"/>	0.0	0.0
Grunneiendom	NITTEDAL	50	3	0	0	24.06.1898	<input type="checkbox"/>	1950.0	2065.6
Grunneiendom	NITTEDAL	50	4	0	0	07.01.1909	<input type="checkbox"/>	1586.0	1586.3
Grunneiendom	NITTEDAL	50	5	0	0	11.09.1914	<input type="checkbox"/>	0.0	1983.3
Grunneiendom	NITTEDAL	50	6	0	0	16.12.1914	<input type="checkbox"/>	0.0	186699.3
Grunneiendom	NITTEDAL	50	7	0	0	16.12.1914	<input type="checkbox"/>	0.0	4431.5
Grunneiendom	NITTEDAL	50	8	0	0	16.12.1914	<input type="checkbox"/>	607.0	618.3
Grunneiendom	NITTEDAL	50	9	0	0	16.06.1915	<input type="checkbox"/>	1967.0	1967.0
Grunneiendom	NITTEDAL	50	10	0	0	23.08.1916	<input type="checkbox"/>	0.0	9954.3

Linked to the NSDI

context

Maps for all farmers

regulation

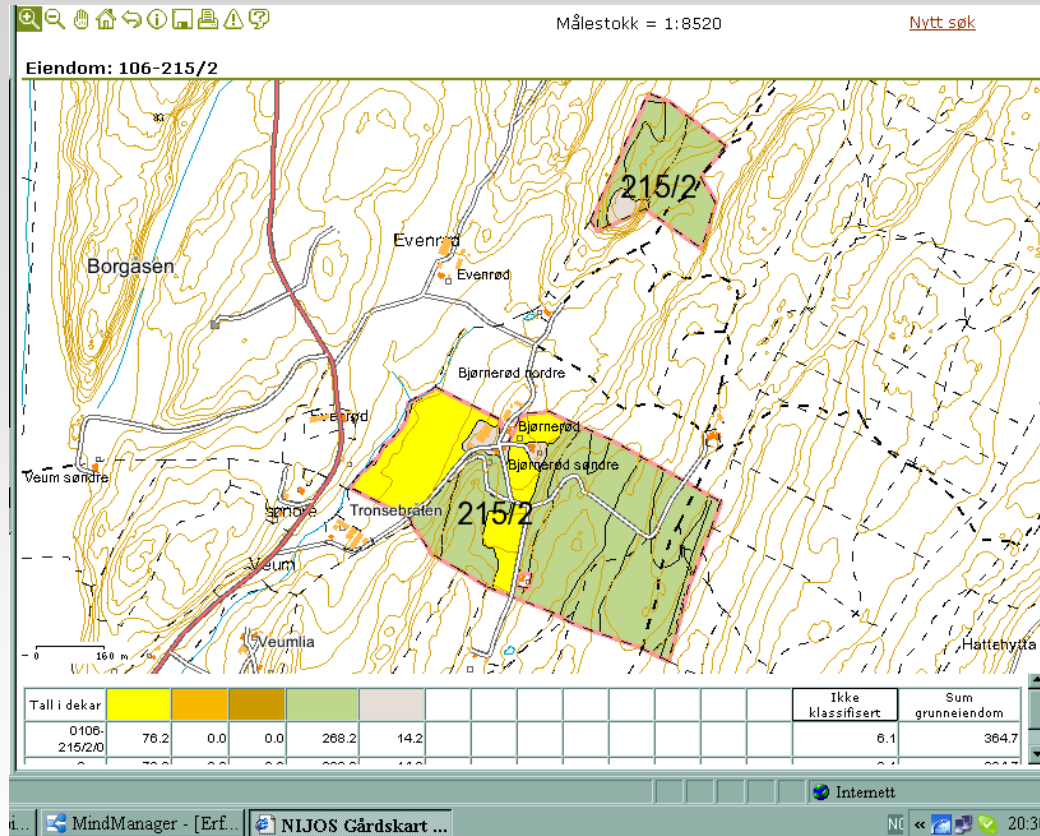
organ. &
partners

standards

data
and use

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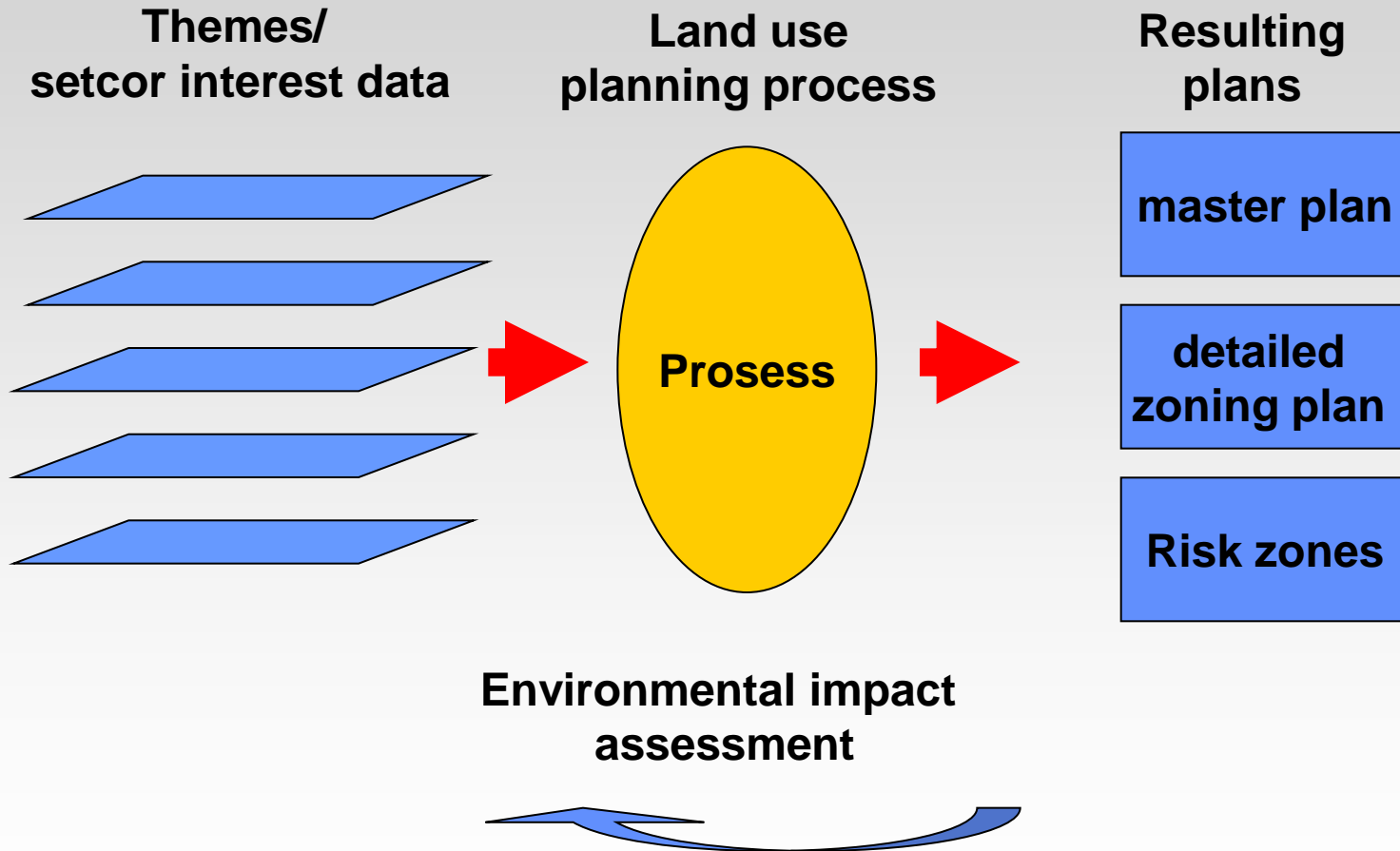
technical
solution



- internett solution
- each farmer get map of own land, property, fields
- statistics for own land

Land use planning

use of thematic data and sector data in land use mapping



context

Use in all municipalities

regulation

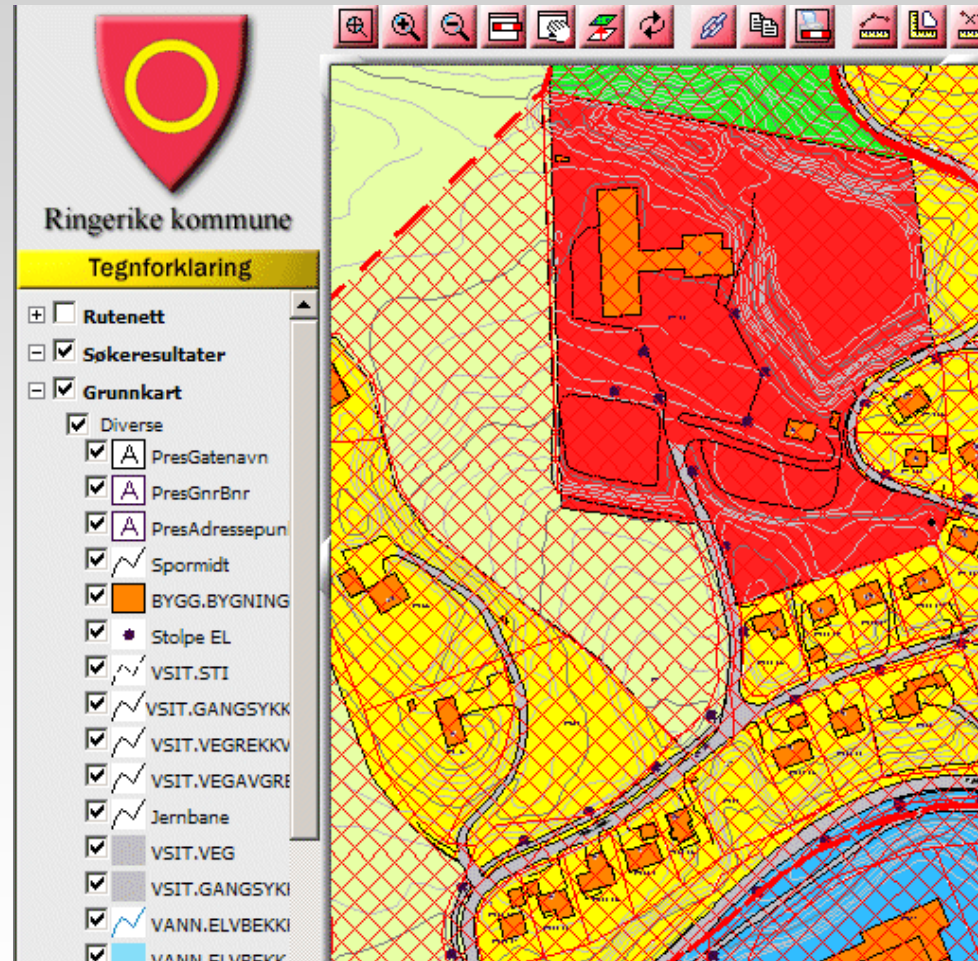
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- large volume
- in land use planning
- following building act

Educational maps

agreement with the Directorate for Education

context

regulation

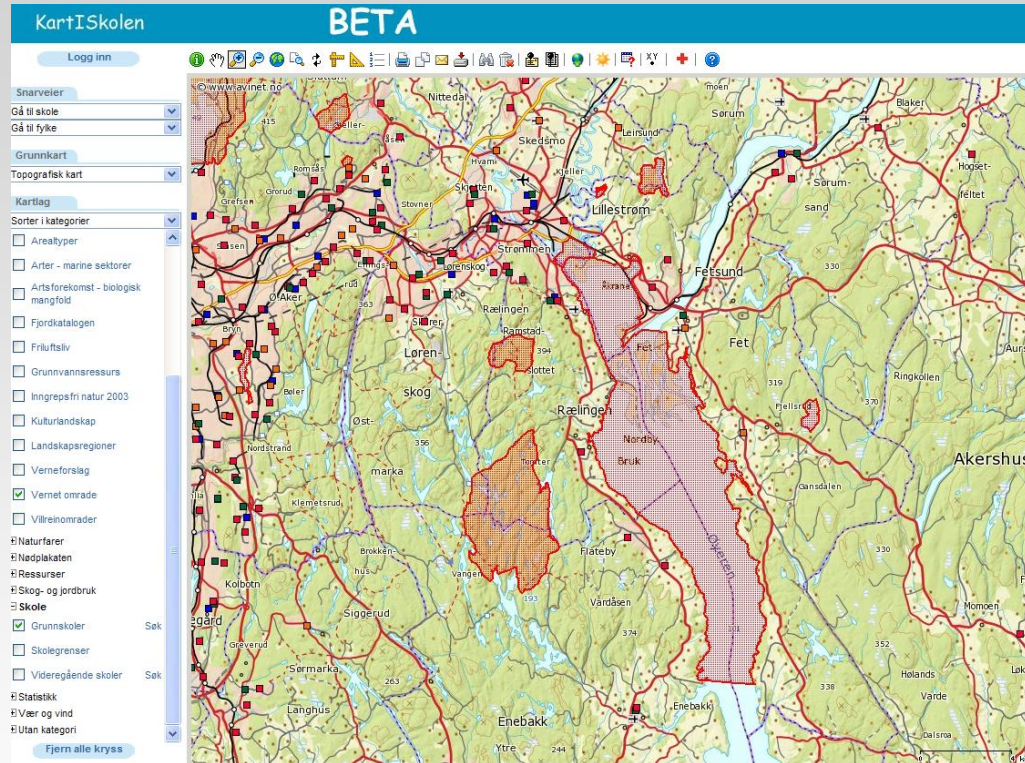
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Access
for all
pupils

Flood zones - wms

context

regulation

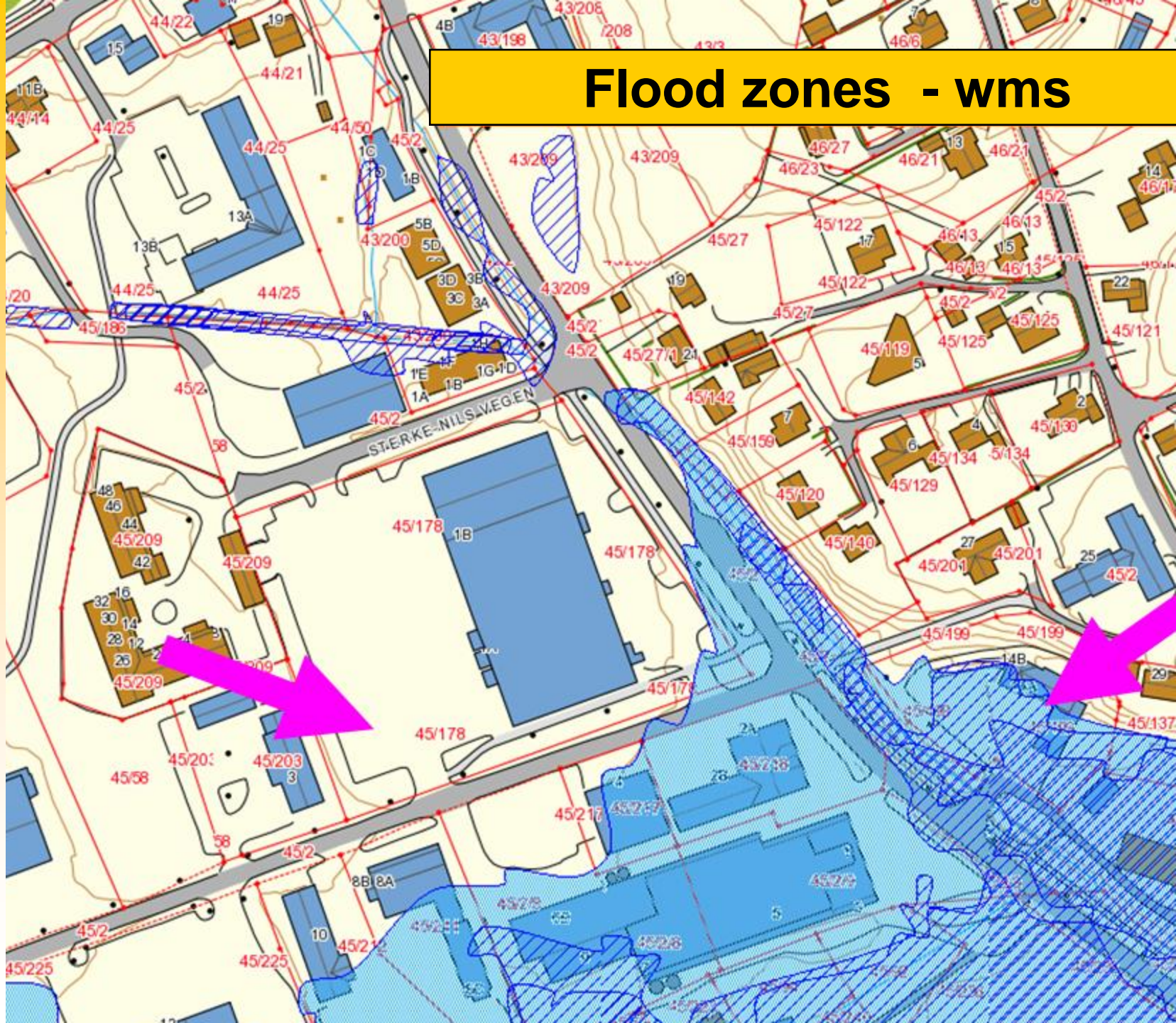
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data

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solution



context

**Air photos over time, can be used to detect
pollution, land fillings etc**

regulation

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partners

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context

regulation

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Cultural heritage

context

regulation

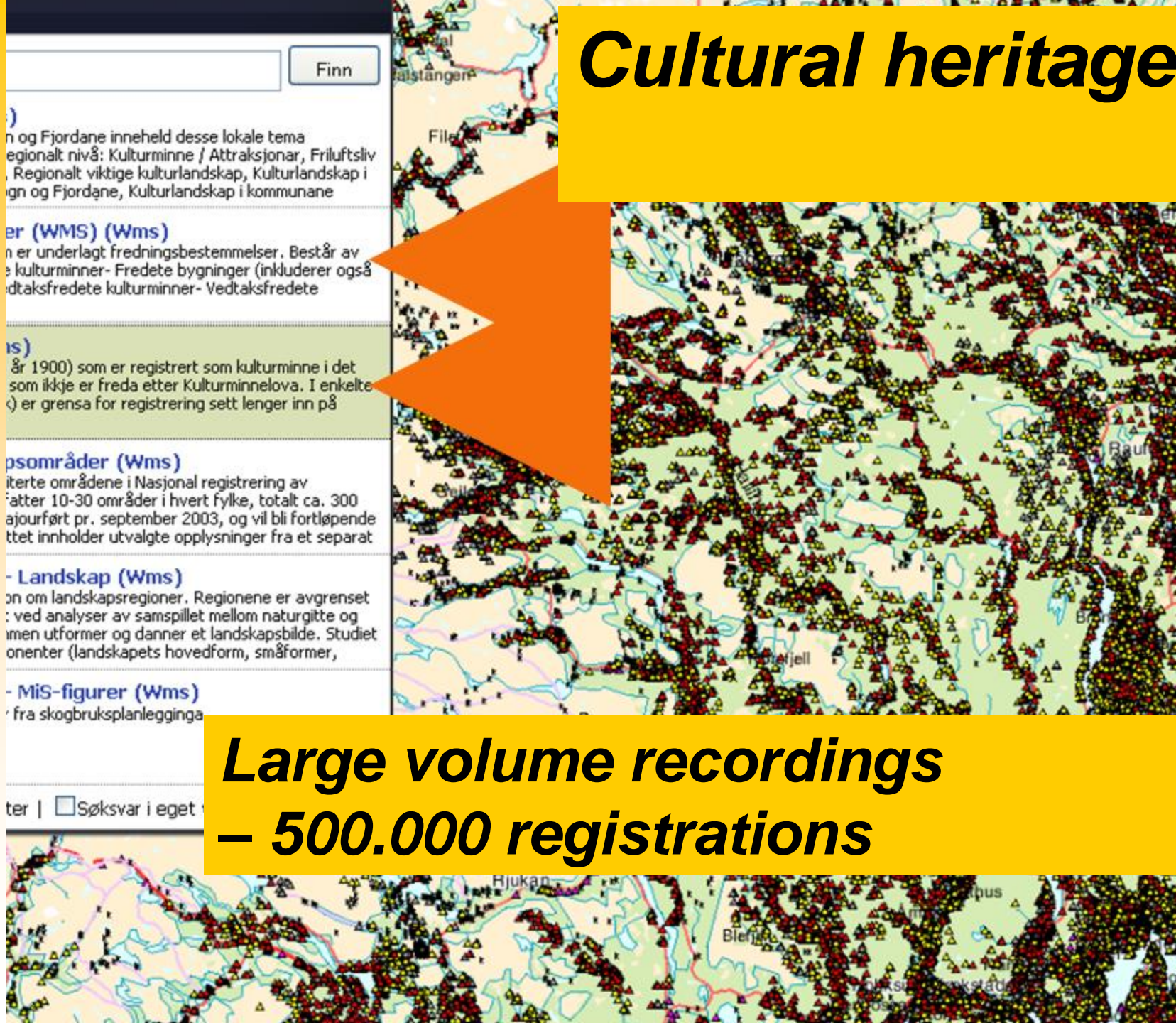
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**Large volume recordings
– 500.000 registrations**

Biodiversity and protected sites - detailed map information

context

regulation

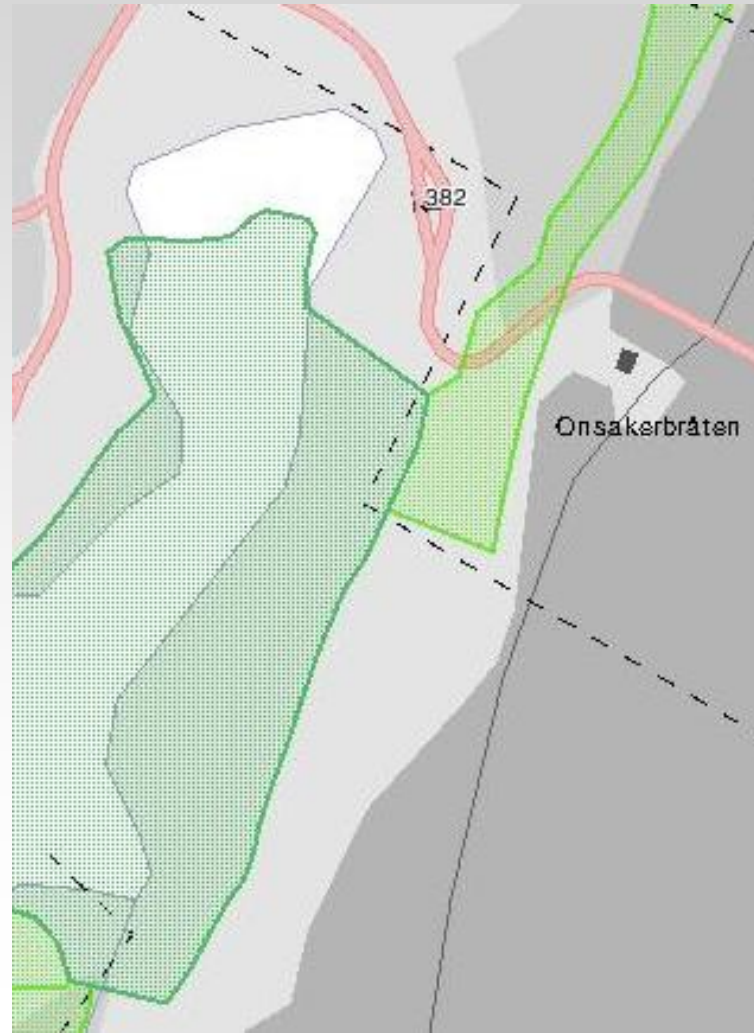
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Biodiversity
localities - exact
location within
properties

context

Petroleum fields

regulation

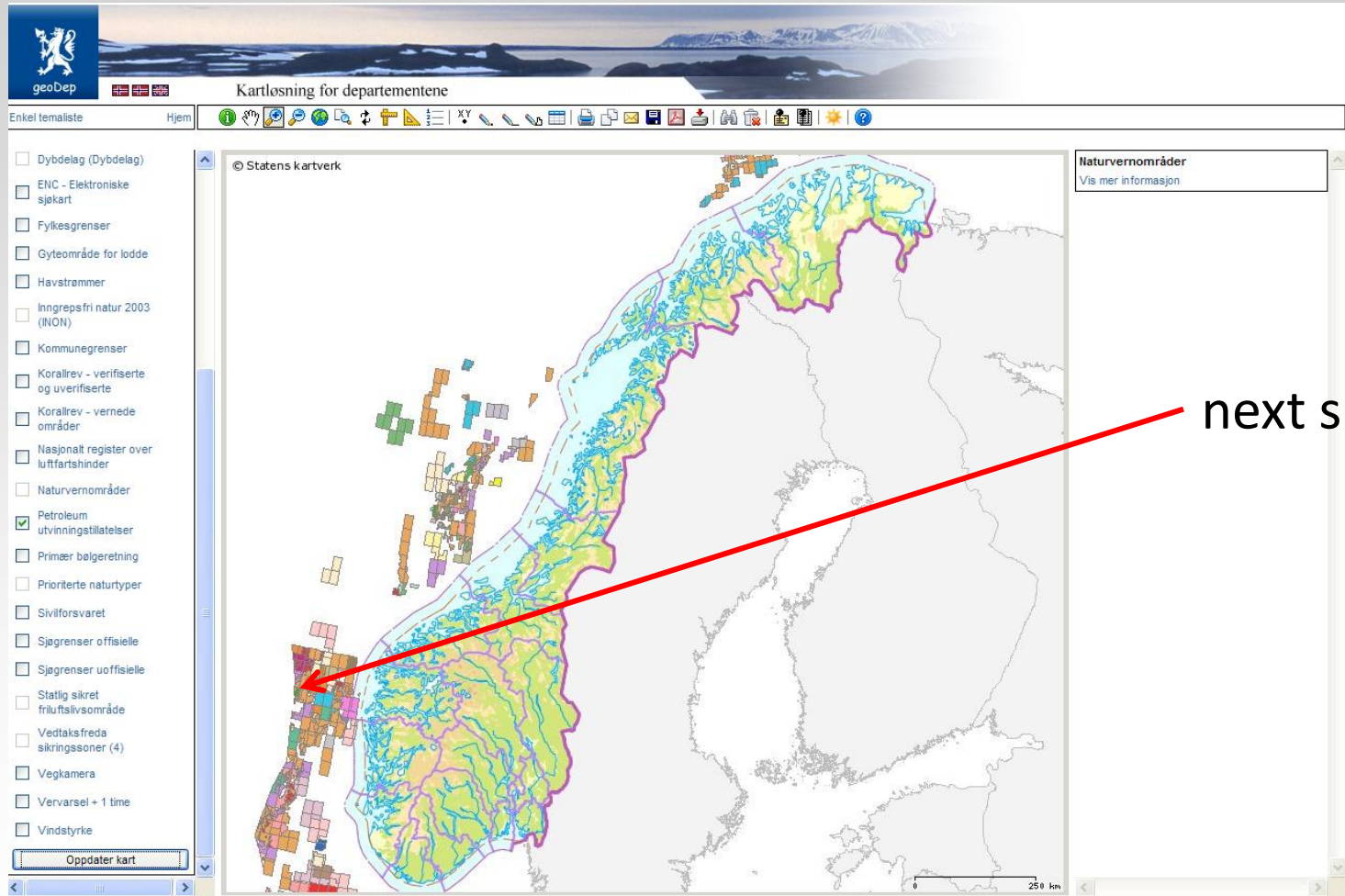
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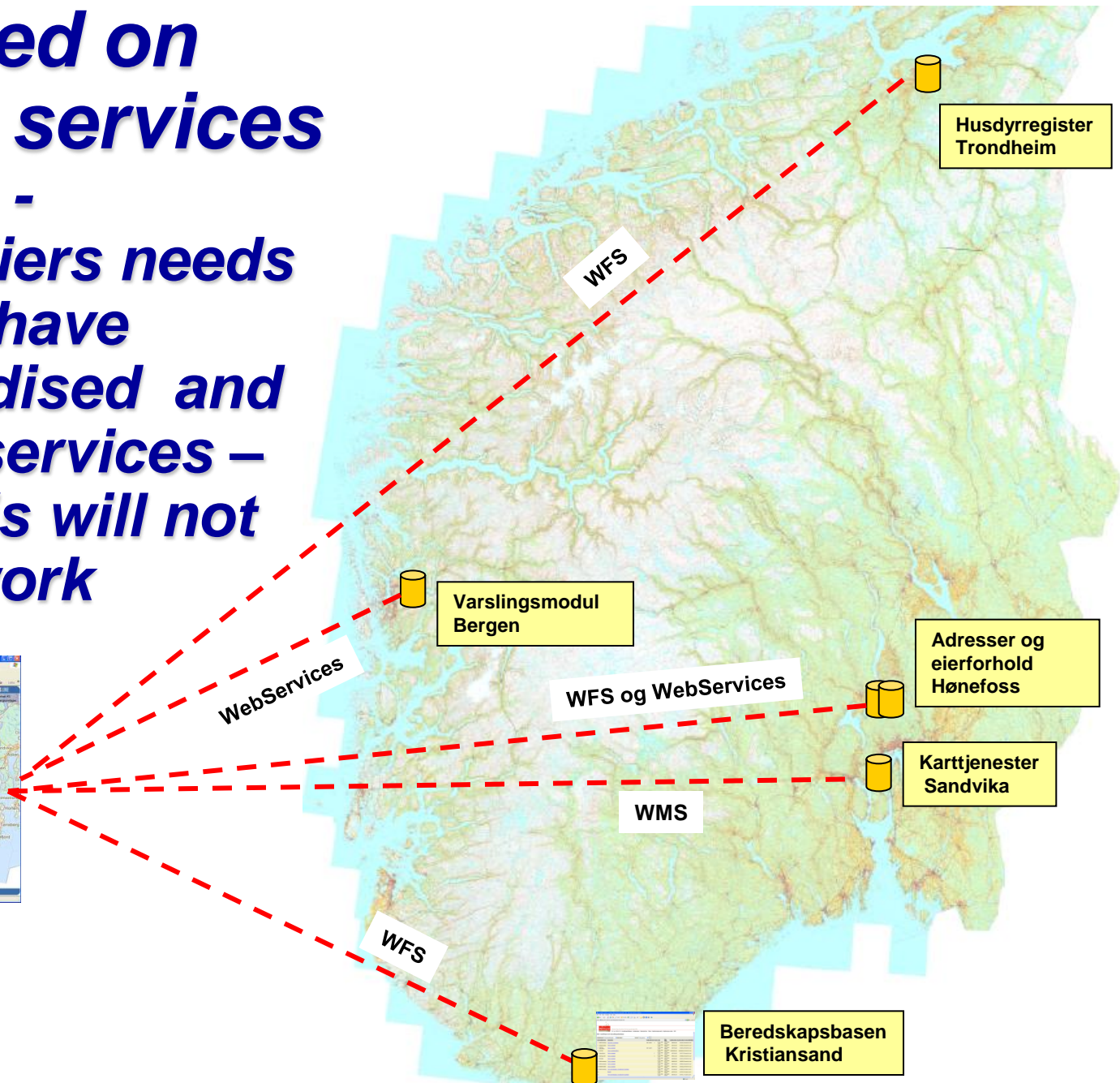
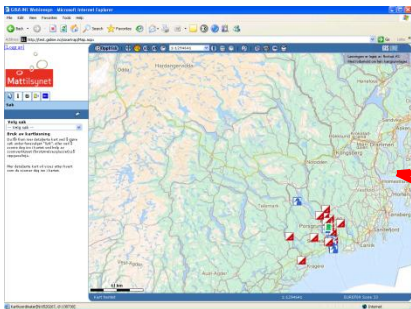


next slide

Based on several services

***-
all suppliers needs
to have
standardised and
stable services –
else this will not
work***

map client



context

regulation

organ. &
partners

standards

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Visit a few applications

www.kartiskolen.no

context

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Financing of data and infrastructure

context

Financing the NSDI

regulation

- **Ministry of Environment**
 - ◆ coordination cost
- **Each ministry – underlying national agencies**
 - ◆ responsible for own data
- **Geovekst and Norway digital**
 - ◆ cost sharing
- **Municipalities**
 - ◆ Cadaster and master plans
- **Pricing**
 - ◆ Sales of data to private firms
 - ◆ All environmental data free of charge
 - ◆ Online services with raster maps free of use
 - ◆ Charging for download of data
- **All revenue used to update data**

standards

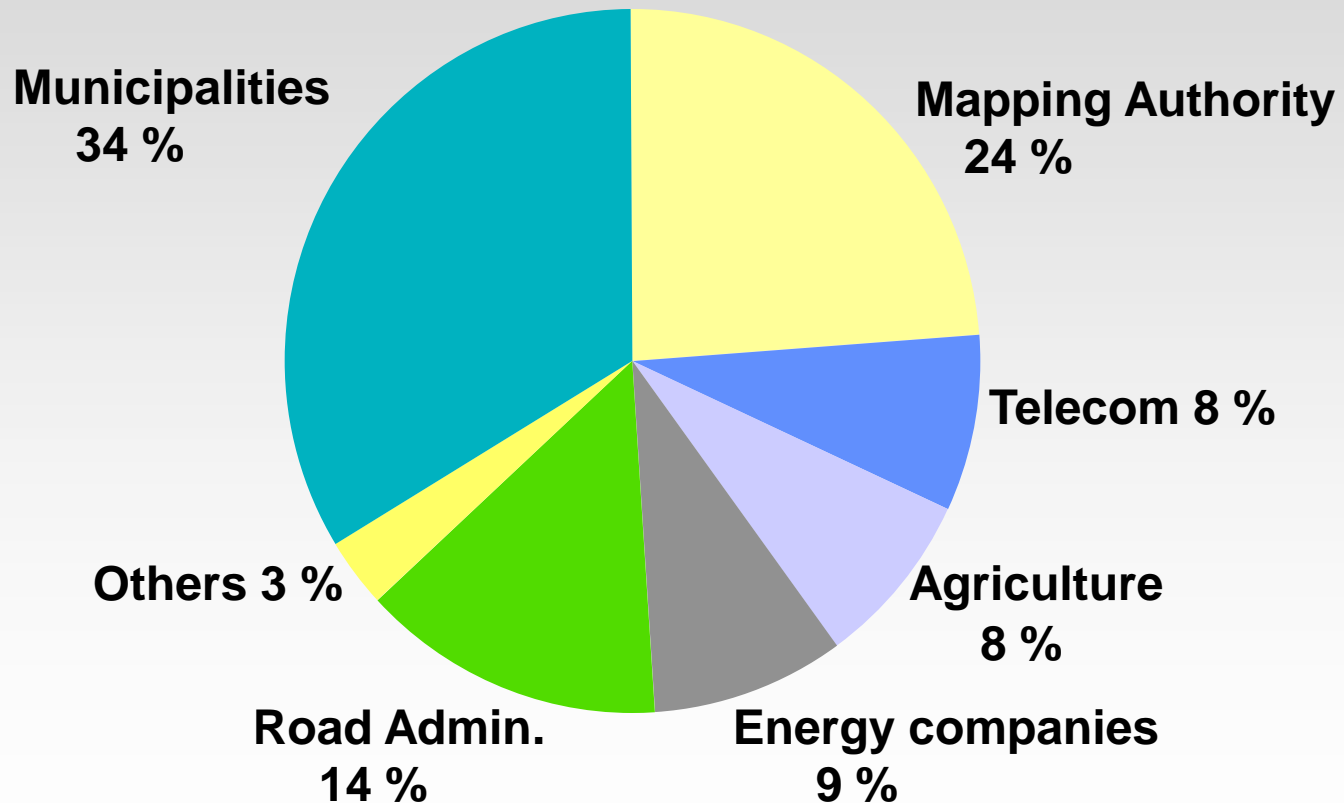
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Long tradition of national co-operation – 15 years

– e.g. Geovekst, cost-sharing for establishment and updating of GI



Large scale geographic information

context

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Funding - Finances

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- Geovekst: 100 mill/y kr. 80 Kuna/y share to build common detailed databases
 - ◆ includes all municipalities
- Norge digitalt. 40 mill/y kr. 30 mill Kuna/y to databases
 - ◆ with Geovekst all transfer with little fee 500-5000 € for participation
 - ◆ national authorities pay 200.000-2,5 mill kr each. (40.000-300000 €, depend on number of employees, and kind of data)
- Norway Mapping Authority. 400 mill/y 330 mill Kuna/y. For all coordination, for data capture, maintainence, fieldwork, databases, distribution
- Nearly not ekstra funding for NSDI – data distribution system and Inspire implementation. First in 2010, 4 mill kr, 3,3 mill Kuna
- Seed money through research council - eGovernment tecncilogical support programme

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Technical issues of the infrastructure

4

**Technological
framework for
Norway digital**

The framework document

- describes the technological aspects of a geographical infrastructure
- focus on platform/ software independent solutions/formats for geographical data, services, based on standards and specifications.

3

**GeoNorway as focal
point**

NORGE DIGITALT
Nasjonal geografisk infrastruktur

Søk etter: Søk

Nettstedkart Kontakt oss

Om Norge digitalt Parter Møtesteder I fylkene Basisdata Temadata Plandata Metadata Teknologi Prosjekter Inspire

Du er her: Hjem

Svarveier

- Metadata
- Nedlasting av data
- Karttjenester - WMS
- Geoportal 2007
- Mareaho
- Kortnavn for temadata
- Konkurranse

Kontaktinformasjon

Norge digitalt-sekretariatet
v/Statens kartverk
3507 HÅNEFOSS
Tlf. 32 11 81 00
post@norgedigitalt.no

Norge digitalt

Norge digitalt er et bredt samarbeid mellom virksomheter som har ansvar for å fremskaffe, stedfestet informasjon og/eller for å gjøre informasjon tilgjengelig. Norge digitalt er et samarbeid mellom 30 (2002-2006) offentlige og private virksomheter med ansvar for verdiskaping.

Nyheter

Åpen høring - Inspire Metadata

EU-kommisjonen til regelverk bestemmelse Statens kart tilbakemelding samarbeidet

Aktivitetskalender

« November 2007 »

M	T	O	T	F	L	S
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2

Norge fev -

30. juni 2007

23. februar 2007

15. februar 2007

www.norgedigitalt.no

www.geonorge.no

Portal and documentation

geoNorge
nasjonal geografisk portal

Min geoNorge

- ☐ Hjem
- ☐ Start kartleser
- ☐ Avansert søk
- ☐ Stedsnavnssøk
- ☐ Logg inn

Brukernavn:

Passord:

Registrer ny bruker!
Glemt passord?

Hjem

Søk Avansert søk

Velkommen til geoNorge

geoNorge er det nasjonale nettstedet for kartdata og annen geografisk stedfestet informasjon i Norge. Her kan du søke etter, få informasjon om og tilgang til det som er tilgjengelig av slik informasjon.

geoNorge er en del av Norge digitalt, et samarbeid mellom offentlige virksomheter med ansvar for å etablere og forvalte kartdata og annen stedfestet geografisk informasjon eller som er store brukere av slik informasjon.

Les mer om geoportalen og våre samarbeidspartnere i Norge digitalt.

Problemer med tjeneste

Det er for tiden problemer med tjenesten "Dybdedata" - (http://wms.geonorge.no/skwmst/wms-dybdedata). Objekttypen Dybdedata mangelfull, og må utelates i klienten. Det jobbes med å få tjenesten i full drift.

Aktuelle kart og tjenester

Fagområder

- Basisdata
- Befolkning og kultur
- Eiendom og grenser
- Energi (infrastruktur)
- Geologi
- Kyst og fiskegrunnet
- Landbruk

geoNorge

Hjem | Søk | Hjelp

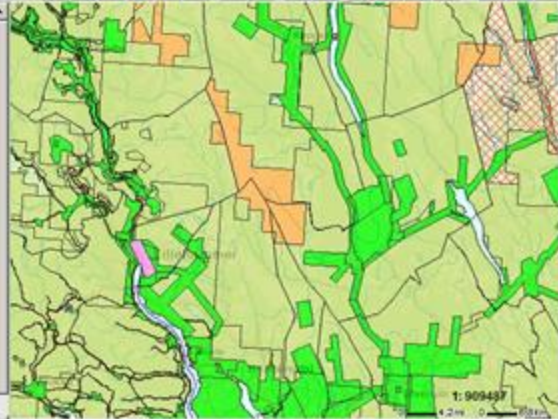
Web Map Service

georef_fkb

- ☒ FKB prosjekt avslutta
- ☒ FKB Konstruksjonsdata tilgjengelig
- ☒ FKB prosjekter under arbeid
- ☒ Planlagte FKB prosjekter

Topografisk_norgeskart

- ☒ N1000 Stedsnavn linje
- ☒ N1000 Stedsnavn punkt
- ☒ N1000 Administrative grenser
- ☒ N1000 Veger
- ☒ N1000 Elver
- ☒ N1000 Kyst- og vannkontur
- ☒ N1000 Hav og vann
- ☒ N1000 Markslag



1: 909437

Done Internet

National geoportal

context

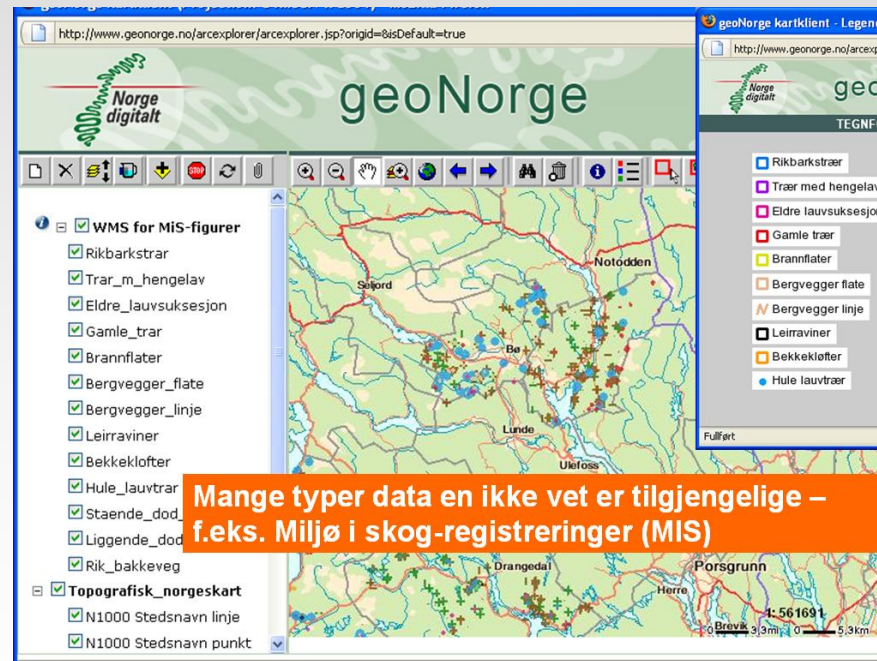
- Overview of all available data and web map services (WMS/WFS)

regulation

- The geoportal is not an end-user application – most users will never use the geoportal

organ. & partners

standards



topic data

financing data

technical solution

- New development 2009-2010 - based on open source geoNetwork – system to system communication (catalogue service web CS-w)

STATUS

Versjon 2.6.1 blir installert i neste uke
Utfordringer mht. standarder/maler/xslt
Noe oversetting gjenstår også

The screenshot shows the geoNorge web application interface. At the top, there is a header with the "Norge digitalt" logo and the "geoNorge" text. Below the header is a navigation bar with links: "Hjem", "Kontakt oss", "Koblinger", "Om", and "Hjelp". On the right side of the navigation bar, there are input fields for "Brukernavn" and "Passord", and a button for "Innlogging".

The main content area is divided into two columns. The left column contains a search bar with the text "HVA?" and "skog og landskap" entered. Below the search bar are buttons for "Søk", "Nullstill", and "Avansert". There is also a link for "Alternativer". Below the search bar is a list of services:

- Geografiske tjenester
- Kartapplikasjoner
- Nedlastbare rasterdata
- Nedlastbare vektordata
- WFS-tjenester
- WMS-tjenester

Below the list of services is a "GeoRSS" section with a list of items:

- Sau og lam sleppt
- Sårbare bygninger
- N250 Raster
- Hovedkartserien Sjø, rasterdata
- N5 raster
- FKB data Stavanger
- FKB-Adresse
- FKB-Annen Naturinformasjon
- FKB-Bane
- FKB-Kulturminner

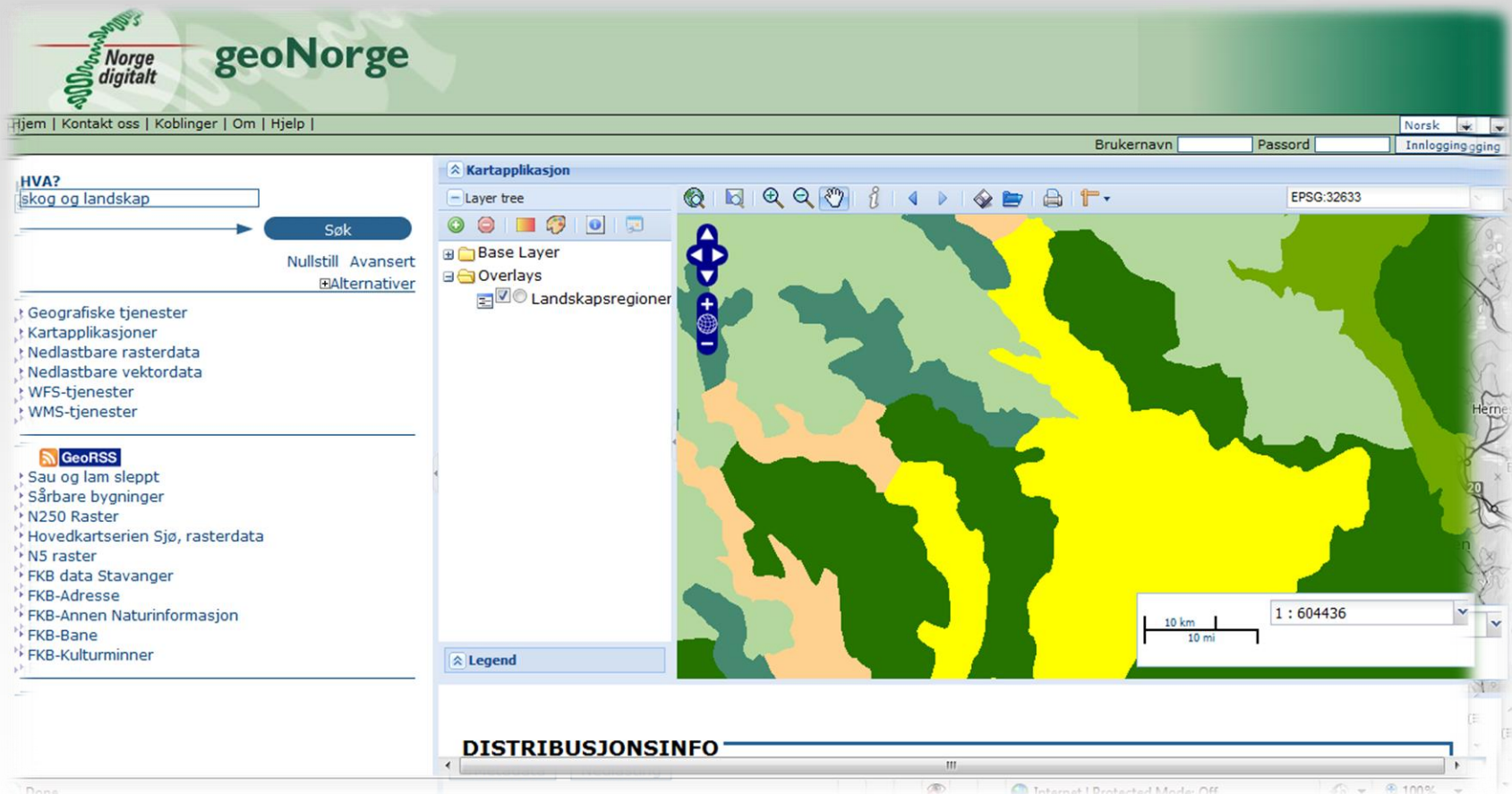
The right column displays two WMS services. The first service is "WMS SKOG OG LANDSKAP - LANDSKAP". It has a "Sammendrag" (Summary) and a "nøkkelord" (Keywords) section. The summary states: "Datasettet inneholder informasjon om landskapsregioner. Regionene er avgrenset ut fra en romlig tilnærming, samt ved analyser av samspillet mellom naturgitte og kulturskapte faktorer som til sammen u...". The keywords are "landskap, Landskapsregioner". There is a map thumbnail showing a landscape with various colors. Below the summary and keywords are buttons for "Metadata" and "Interactive Map".

The second service is "TAPSPROSENT SAU OG LAM". It also has a "Sammendrag" and a "nøkkelord" section. The summary states: "Beitekart - Tapsprosent sau og lam.". The keywords are "Tapsprosent sau og lam, Norge". There is a map thumbnail showing a map of Norway with yellow areas. Below the summary and keywords are buttons for "Metadata" and "Nedlasting" (Download). The "Nedlasting" button is circled in green.

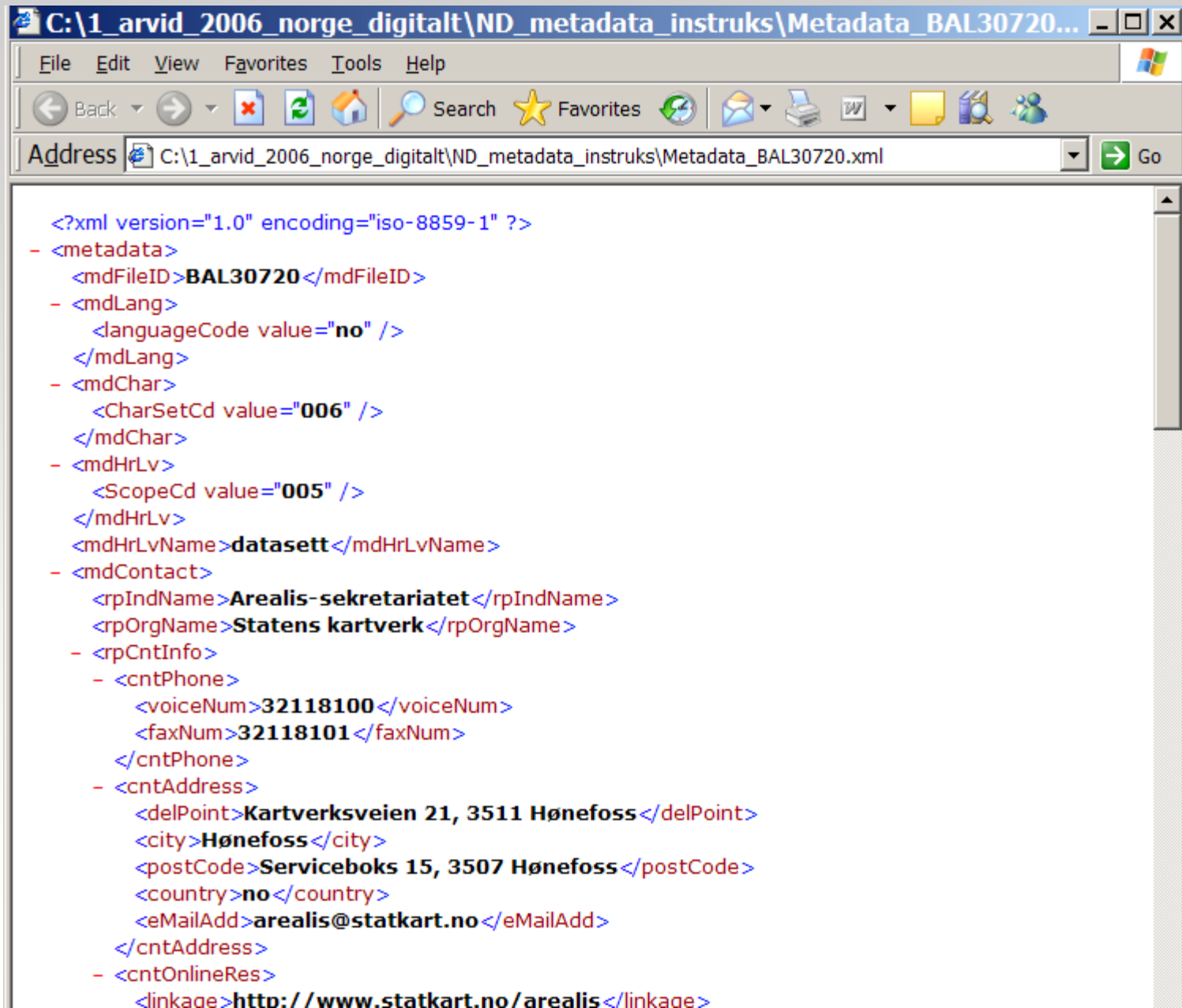
<http://beta.geonorge.no/geonetwork/srv/no/main.home>

STATUS

Versjon 2.6.1 blir installert i november
Komplisert med Inspire/standard/maler xslt
Noe oversetting gjenstår også



Meta – xml – catalogue service web



The screenshot shows a web browser window with the address bar displaying the file path: C:\1_arvid_2006_norge_digitalt\ND_metadata_instruks\Metadata_BAL30720.xml. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The address bar has a 'Go' button. The main content area displays the XML metadata for a file named BAL30720. The XML is structured as follows:

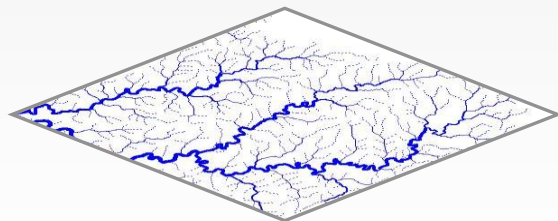
```
<?xml version="1.0" encoding="iso-8859-1" ?>
- <metadata>
  <mdFileID>BAL30720</mdFileID>
  - <mdLang>
    <languageCode value="no" />
  </mdLang>
  - <mdChar>
    <CharSetCd value="006" />
  </mdChar>
  - <mdHrLv>
    <ScopeCd value="005" />
  </mdHrLv>
  <mdHrLvName>datasett</mdHrLvName>
  - <mdContact>
    <rpIndName>Arealis-sekretariatet</rpIndName>
    <rpOrgName>Statens kartverk</rpOrgName>
  - <rpCntInfo>
    - <cntPhone>
      <voiceNum>32118100</voiceNum>
      <faxNum>32118101</faxNum>
    </cntPhone>
    - <cntAddress>
      <delPoint>Kartverksveien 21, 3511 Hønefoss</delPoint>
      <city>Hønefoss</city>
      <postCode>Serviceboks 15, 3507 Hønefoss</postCode>
      <country>no</country>
      <eMailAdd>arealis@statkart.no</eMailAdd>
    </cntAddress>
    - <cntOnlineRes>
      <linkage>http://www.statkart.no/arealis</linkage>
```


6

Online map services - WMS

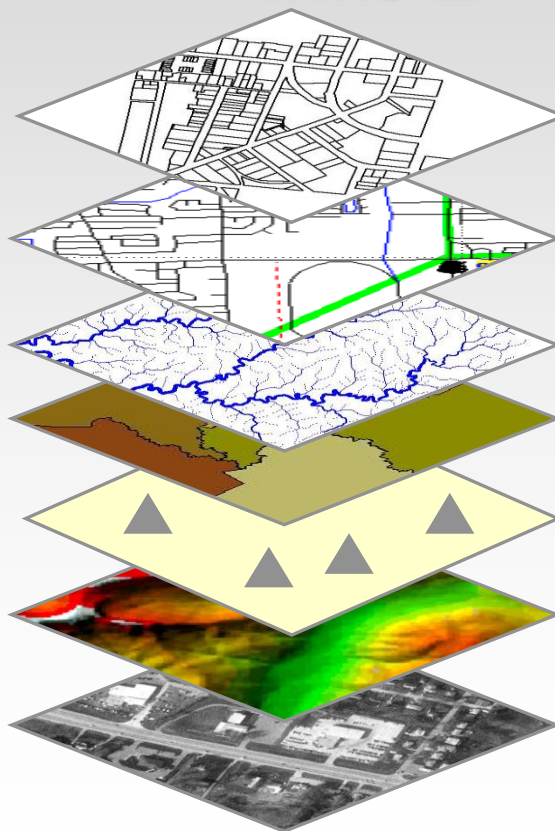
Hvordan strukturere en karttjeneste?

wms-1



Hydrografi

wms-2



Eiendom

Transport

Hydrografi

Adm. grenser

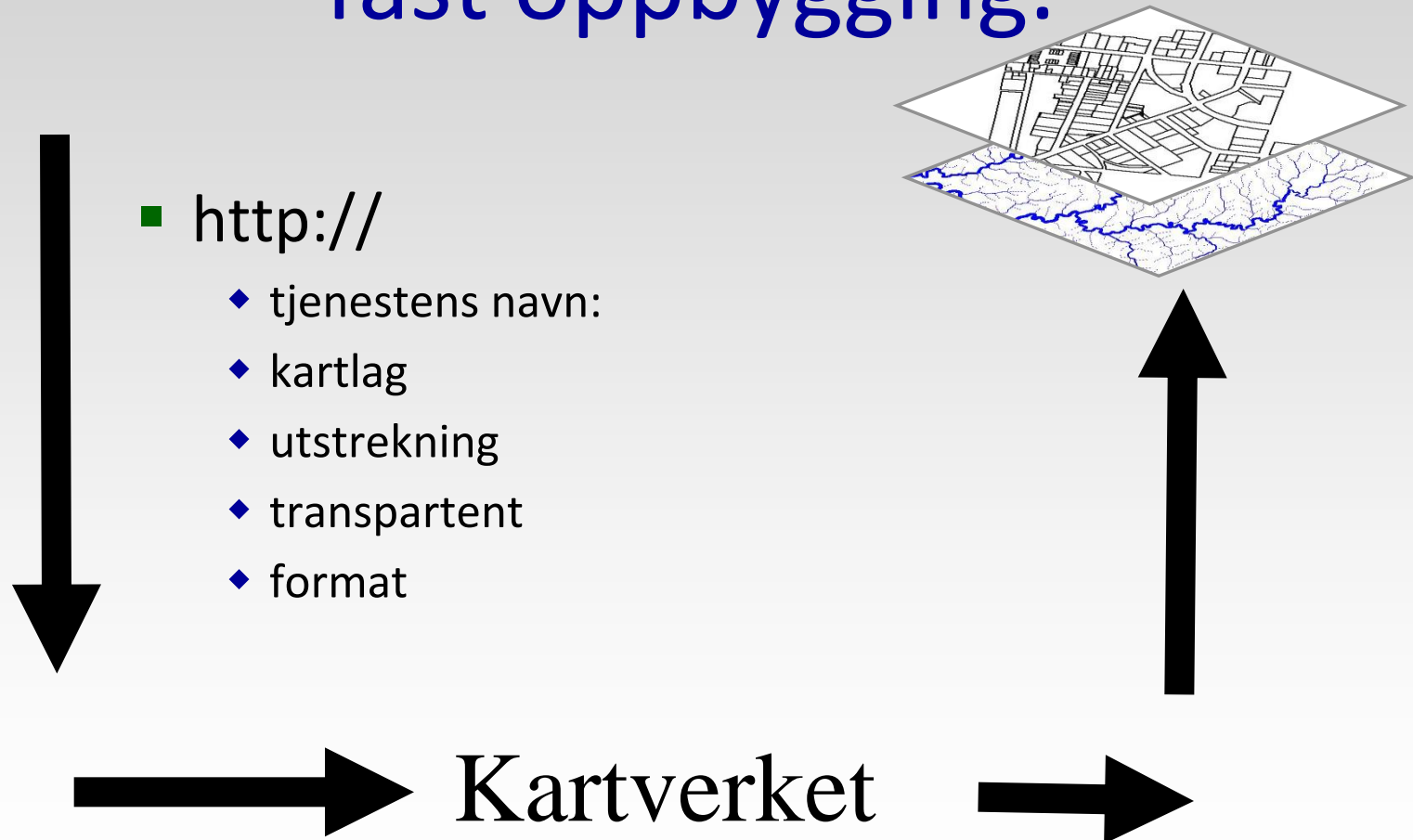
Geodetiske punkter

Høyde

Ortofoto

GetMap

WMS sender kartforespørsler som en internettlink/url med en fast oppbygging.



WMS-karttjeneste - kall

- 1. Kartutsnitt Hønefoss, WMS-kall kun for en karttjeneste Topografisk norgeskart_wms
- http://basiswms.statkart.no/wmsconnector/com.esri.wsit.WMSServlet/Topografisk_Norgeskart_wms?version=1.1.0&styles=&service=wms&REQUEST=map&SRS=EPSG:32633&BBOX=210924.955,6668620.35,255289.776,6688292.32&LAYERS=N1000Markslag,N500Markslag,N1000Vanflate,N1000Elver,N1000Vannkontur,N1000Bebbyggelse,N500Bebyggelse,N1000Jernbane,N1000Veger,N500Jernbane,N1000Veger,N500Kommunegrenser,N1000Kommunegrenser,N1000Stedsnavn_punkt,N500Stedsnavn_punkt&WIDTH=45

GetMap

- WMS sender kartforespørsler som url med en fast oppbygging. Det er ønskelig at det på etableres et dokumentregister som er offentlig tilgjengelig med informasjon om den enkelte karttjenestes (fagkartlagets) GetMap-definisjon. Denne kan settes om som som en html-fil eller en xml med stylesheet. Det er ønskelig med følgende felt/opplysninger
- url:
- wmtver:
- srs:
- format:
- bgcolor:
- transparent:
- styles:
- layers
- servicename:

Infrastructure based on online services

context

regulation

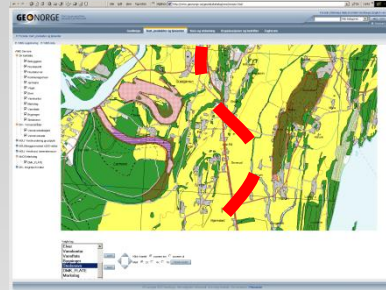
organ. & partners

standards

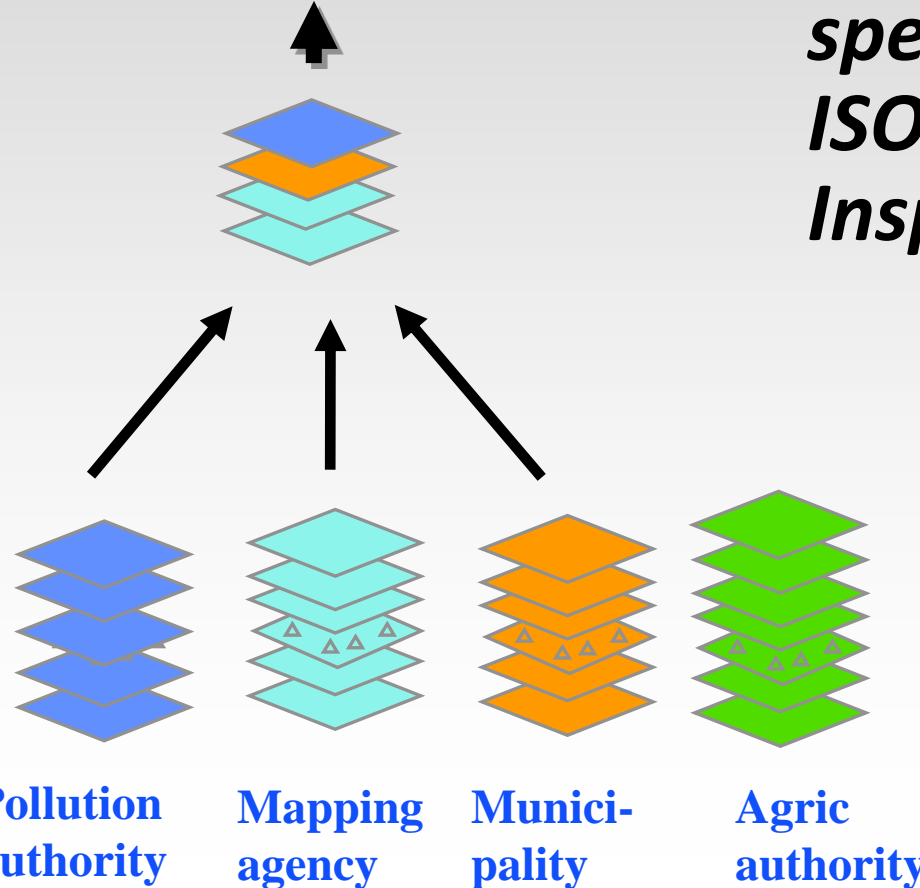
data and use

financing data

technical solution



■ *WMS/ WFS
Web map
services
specified by
ISO and
Inspire*

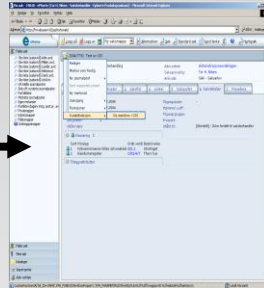


Communication: archive systems - map

clients based on web services, urls, WFS, WMS ...

WebService
address

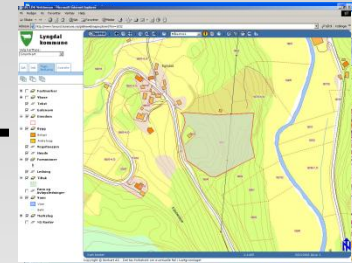
Municipal archive



URL
WFS

<http://www.lyngdal.kommune.no/wfs/wfs.aspx?SERVICE=WFS&VERSION=1.0.0&REQUEST=GetFeature&typename=Arkivsak&bbox=51732,952,69651,32161&SRS=EPSG:27391>

Kartklient



GML export

```
<?xml version='1.0' encoding='UTF-8'>
<gml:FeatureCollection xmlns:gml="http://www.opengis.net/gml" version="1.0.0">
  <gml:featureMember>
    <Arkivsak gml:id="Arkivsak_1">
      <ArkivsakId>123456789</ArkivsakId>
      <ArkivsakName>Arkivsak 123456789</ArkivsakName>
      <ArkivsakDate>2000-01-01</ArkivsakDate>
      <ArkivsakType>ArkivsakType 123456789</ArkivsakType>
      <ArkivsakStatus>ArkivsakStatus 123456789</ArkivsakStatus>
      <ArkivsakLocation>ArkivsakLocation 123456789</ArkivsakLocation>
      <ArkivsakDescription>ArkivsakDescription 123456789</ArkivsakDescription>
    </Arkivsak>
  </gml:featureMember>
</gml:FeatureCollection>
```

Converting to raster symbols
for presentation in the client

Convert to
SVG

On the fly request/generation, updated

Wfs - beta

http://npdwms.npd.no/npdwmsmap_WGS84.asp?SERVICE=WFS&VERSION=1.0.0&REQUEST=GetFeature&TYPENAME= - Windows Internet Explorer pro

http://npdwms.npd.no/npdwmsmap_WGS84.asp?SERVICE=WFS&VERSION=1.0.0&REQUEST=C

File Edit View Favorites Tools Help

Dette stedet er: SIKKERT Varsle oss

http://npdwms.npd.no/npdwmsmap_WGS84.asp...

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
- <wfs:FeatureCollection xmlns:ms="http://mapserver.gis.umn.edu/mapserver" xmlns:wfs="http://www.opengis.net/wfs"
  xmlns:gml="http://www.opengis.net/gml" xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.opengis.net/wfs
  http://schemas.opengis.net/wfs/1.0.0/WFS-basic.xsd http://mapserver.gis.umn.edu/mapserver
  http://npdwms.npd.no/npdwmsmap_wgs84.asp?
  SERVICE=WFS&VERSION=1.0.0&REQUEST=DescribeFeatureType&TYPENAME=Quadrants&OUTPUTFORMAT=XMLSCHEMA">
- <gml:boundedBy>
- <gml:Box srsName="EPSG:4326">
  <gml:coordinates>-0.490726,56.086000 31.996913,74.500409</gml:coordinates>
</gml:Box>
</gml:boundedBy>
<!-- WARNING: FeatureId item 'FID' not found in typename 'Quadrants'. -->
- <gml:featureMember>
- <ms:Quadrants>
  - <gml:boundedBy>
    - <gml:Box srsName="EPSG:4326">
      <gml:coordinates>2.416443,56.287621 2.998527,56.999361</gml:coordinates>
</gml:Box>
</gml:boundedBy>
  - <ms:msGeometry>
    - <gml:Polygon srsName="EPSG:4326">
      - <gml:outerBoundaryIs>
        - <gml:LinearRing>
          <gml:coordinates>2.665157,56.999357 2.998499,56.999361 2.998509,56.749353 2.998519,56.499345
          2.998527,56.287621 2.942216,56.332672 2.915189,56.354247 2.837615,56.416007
          2.831851,56.420584 2.748513,56.486636 2.732440,56.499341 2.665175,56.552401
          2.665157,56.999357 2.998499,56.999361 2.998509,56.749353 2.998519,56.499345
          2.998527,56.287621 2.942216,56.332672 2.915189,56.354247 2.837615,56.416007
          2.831851,56.420584 2.748513,56.486636 2.732440,56.499341 2.665175,56.552401
          2.665157,56.999357</gml:coordinates>
        </gml:LinearRing>
      </gml:outerBoundaryIs>
    </gml:Polygon>
  </ms:msGeometry>
</ms:Quadrants>
</gml:featureMember>
</wfs:FeatureCollection>
```


Developing faster access, better services

context

regulation

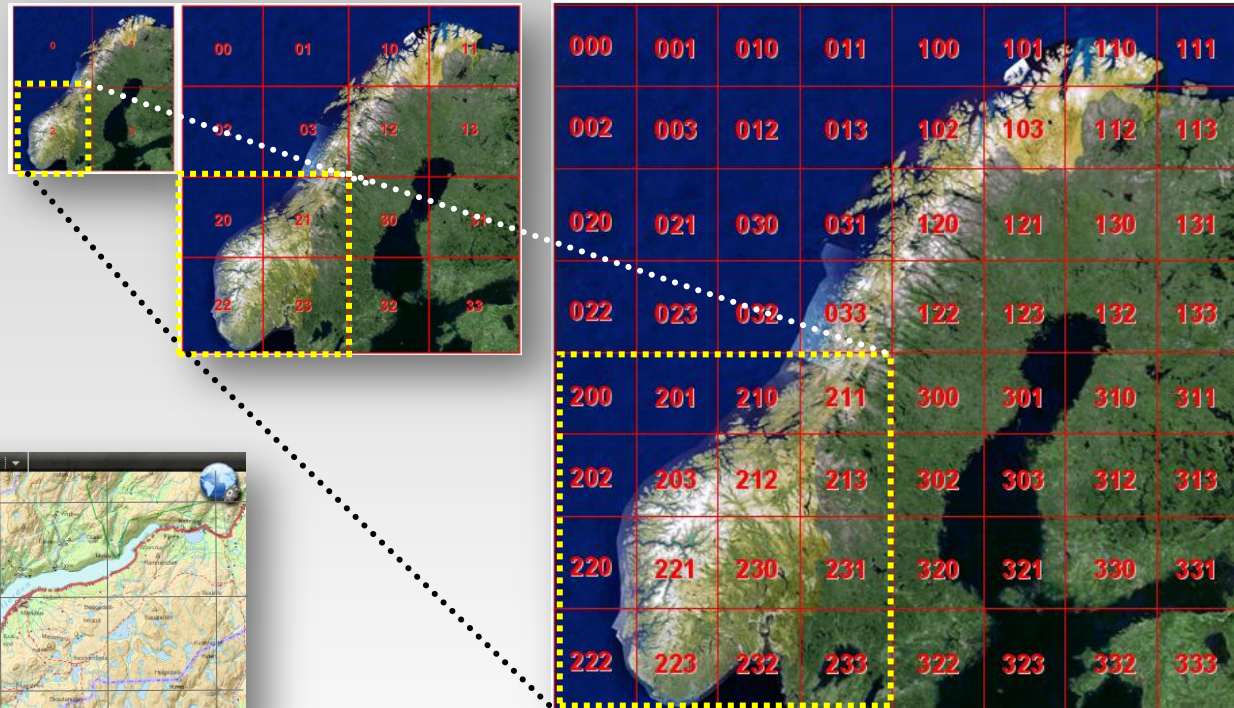
organ. &
partners

standards

data
and use

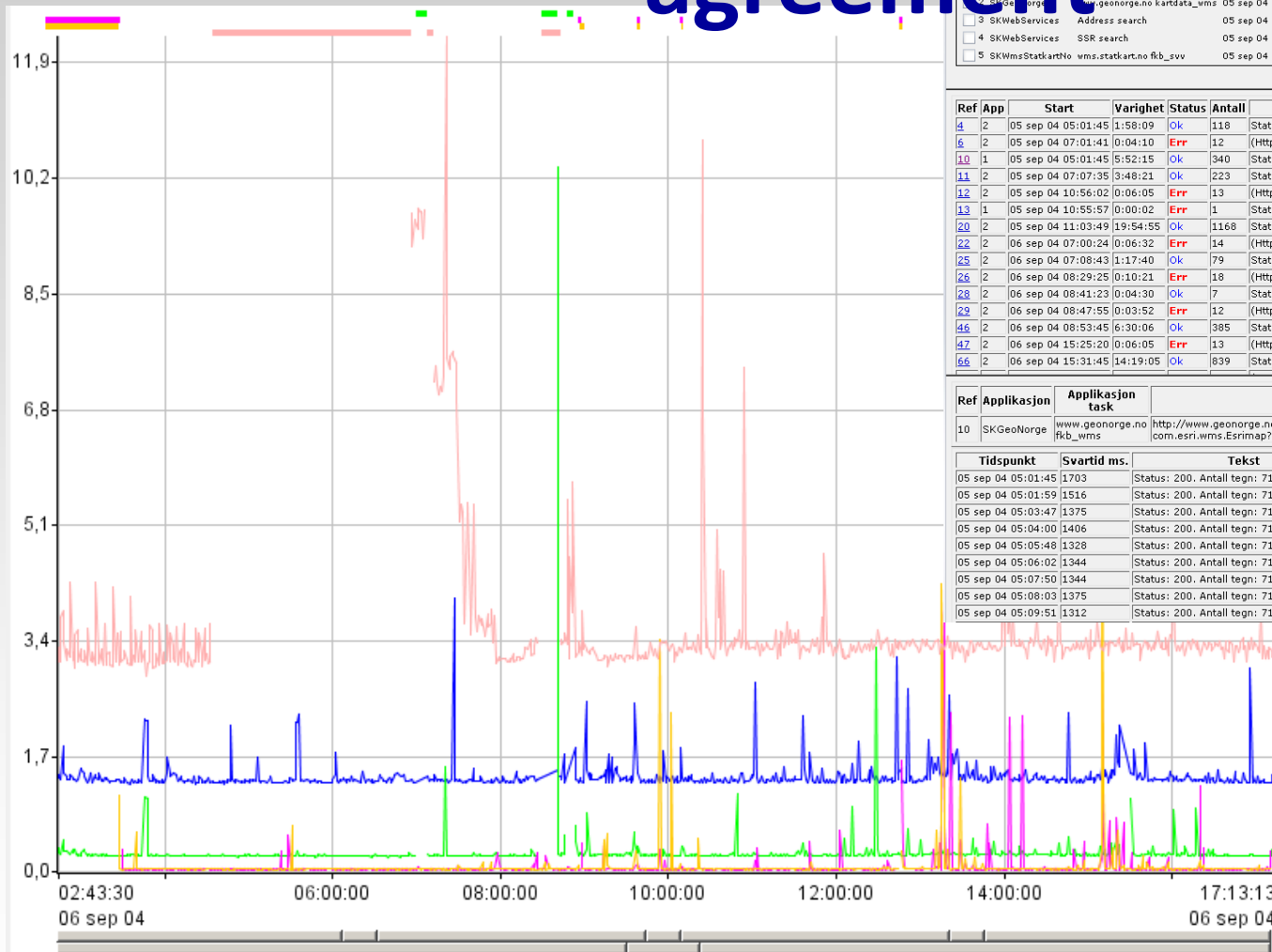
financing
data

technical
solution



Google feel-alike view services

service quality, monitoring, capacity, response time, service agreement



Vis hele graf

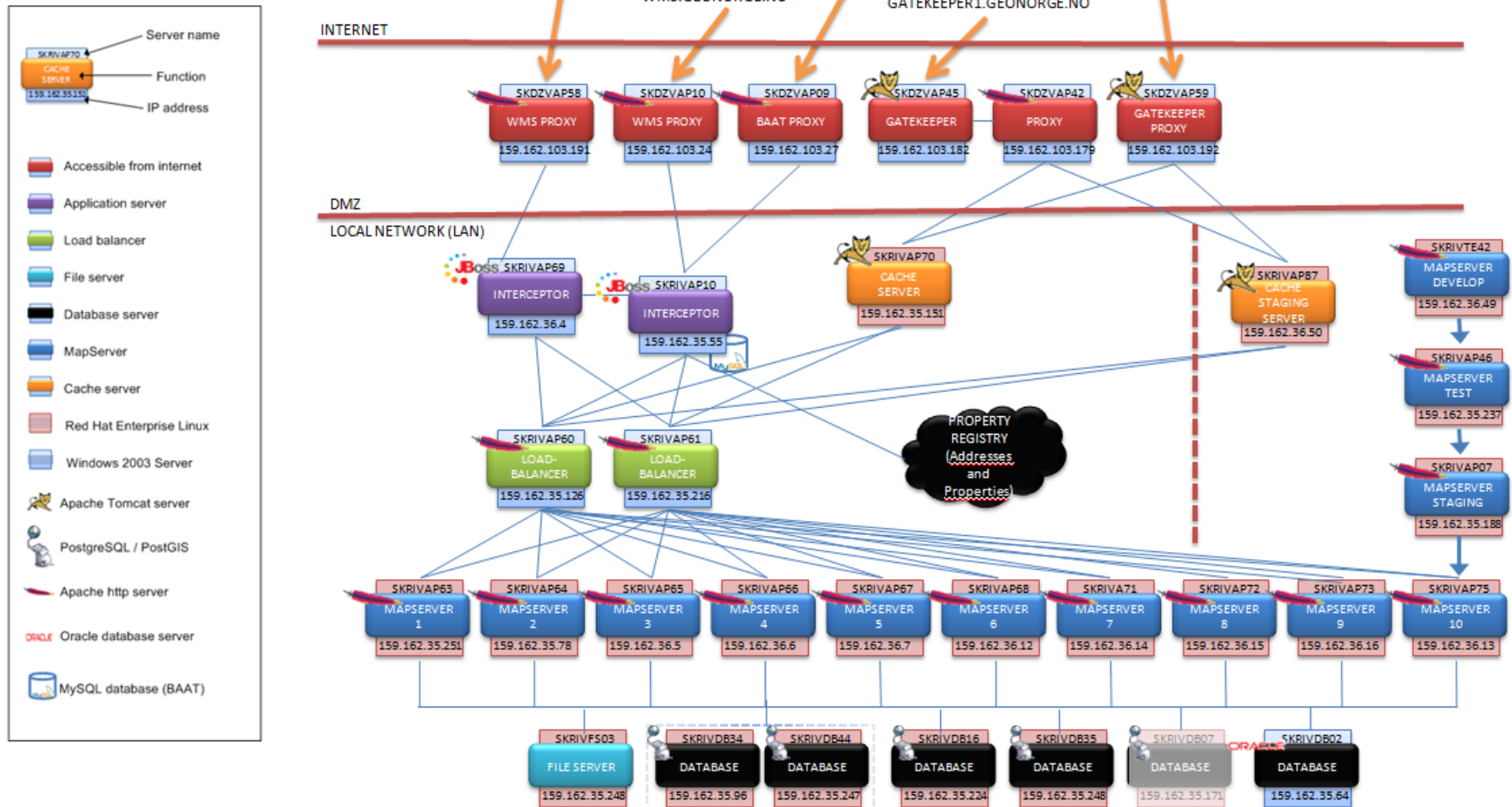
Zoom tilbake

✓	Applikasjon	Task	Fra	Tidsperiode	Antall ok	Antall med feil	Svartid ok	Svartid feil	
1	SKGeoNorge	www.geonorge.no/rkb_wms	05 sep 04 05:01:45	11:09:50	3354	2	1443	2695	Tilbak
2	SKGeoNorge	www.geonorge.no/kartdata_wms	05 sep 04 05:01:45	11:09:49	3356	105	280	13729	Ok
3	SKWebServices	Address search	05 sep 04 05:00:17	11:12:45	3334	182	74	3305	Feil
4	SKWebServices	SSR search	05 sep 04 05:00:18	11:12:43	3329	187	71	3213	Begg
5	SKWmsStatkartNo	wms.statkart.no/rkb_svv	05 sep 04 05:00:20	11:11:17	2995	467	3556	3329	

Ref	App	Start	Varighet	Status	Antall	Tekst fra første logentry
4	2	05 sep 04 05:01:45	1:58:09	Ok	118	Status: 200. Antall tegn: 5904. Msek: 250
6	2	05 sep 04 07:01:41	0:04:10	Err	12	(HttpRecoverableException) java.net.SocketTimeoutException: Read timed out
10	1	05 sep 04 05:01:45	5:52:15	Ok	340	Status: 200. Antall tegn: 7123. Msek: 1703
11	2	05 sep 04 07:07:35	3:48:21	Ok	223	Status: 200. Antall tegn: 5904. Msek: 438
12	2	05 sep 04 10:56:02	0:06:05	Err	13	(HttpRecoverableException) java.net.SocketTimeoutException: Read timed out
13	1	05 sep 04 10:55:57	0:00:02	Err	1	Status: 500. Returnerte data er ikke i PNG format. Antall tegn returnert: 3837
20	2	05 sep 04 11:03:49	19:54:55	Ok	1168	Status: 200. Antall tegn: 5904. Msek: 344
22	2	06 sep 04 07:00:24	0:06:32	Err	14	(HttpRecoverableException) java.net.SocketTimeoutException: Read timed out
25	2	06 sep 04 07:08:43	1:17:40	Ok	79	Status: 200. Antall tegn: 5904. Msek: 266
26	2	06 sep 04 08:29:25	0:10:21	Err	18	(HttpRecoverableException) java.net.SocketTimeoutException: Read timed out
28	2	06 sep 04 08:41:23	0:04:30	Ok	7	Status: 200. Antall tegn: 5904. Msek: 10391
29	2	06 sep 04 08:47:55	0:03:52	Err	12	(HttpRecoverableException) java.net.SocketTimeoutException: Read timed out
46	2	06 sep 04 08:53:45	6:30:06	Ok	385	Status: 200. Antall tegn: 5904. Msek: 688
47	2	06 sep 04 15:25:20	0:06:05	Err	13	(HttpRecoverableException) java.net.SocketTimeoutException: Read timed out
66	2	06 sep 04 15:31:45	14:19:05	Ok	839	Status: 200. Antall tegn: 5904. Msek: 1078

Ref	Applikasjon	Applikasjon task	
10	SKGeoNorge	www.geonorge.no/rkb_wms	http://www.geonorge.no/servlet/com.esri.wms.Esrimap?VMTVER=1.1.0&REQUEST=getmap&BBOX=568403,7588782,568601,7588939&LAYERS
Tidspunkt		Svartid ms.	Tekst
05 sep 04 05:01:45		1703	Status: 200. Antall tegn: 7123. Msek: 1703
05 sep 04 05:01:59		1516	Status: 200. Antall tegn: 7123. Msek: 1516
05 sep 04 05:03:47		1375	Status: 200. Antall tegn: 7123. Msek: 1375
05 sep 04 05:04:00		1406	Status: 200. Antall tegn: 7123. Msek: 1406
05 sep 04 05:05:48		1328	Status: 200. Antall tegn: 7123. Msek: 1328
05 sep 04 05:06:02		1344	Status: 200. Antall tegn: 7123. Msek: 1344
05 sep 04 05:07:50		1344	Status: 200. Antall tegn: 7123. Msek: 1344
05 sep 04 05:08:03		1375	Status: 200. Antall tegn: 7123. Msek: 1375
05 sep 04 05:09:51		1312	Status: 200. Antall tegn: 7123. Msek: 1312

VIEW SERVICES INFRASTRUCTURE



- 24/7 on call duty

- Alarms by

- ◆ SMS

- ◆ E-mail



Status fra overvåkingsapplikasjon - 2010-03-09 12:58:24

Task navn	Type	Status
BAAT interceptor	HTTP	○○● i
BAAT ticketserver	HTTP	○○● i
Rutenett wms	WMS	○○● i
Topo2 gråtone wms	WMS	○○● i
Dybdedata wms	WMS	○○● i
Kartbladinndeling wms	WMS	○○● i
Europakart wms	WMS	○○● i
Georef wms	WMS	○○● i
Kartdata2 wms	WMS	○○● i
Administrative grenser wms	WMS	○○● i
Sjøgrenser wms	WMS	○○● i
Sjø hovedkart wms	WMS	○○● i
Topografisk norgeskart2 wms	WMS	○○● i
Fkb2 wms	WMS	○○● i
Toporaster2	WMS	○○● i
Cache-tjeneste	WMS-CACHE	○○● i
www.geonorge.no	HTTP	○○● i

further technical developments - step by step

context

regulation

organ. &
partners

standards

data
and use

financing
data

technical
solution

- **Solving problems - Missing deliveries from WMS**
 - ◆ no support on legends, attribute delivery etc
 - ◆ controlling the delivery organisations data
- **Speed**
 - ◆ from WMS to CacheWMS – tiled requests
- **Increased details, functionality and flexibility**
 - ◆ from WMS to WFS
- **WFS delivering GML**
 - ◆ based on the national data models defined in feature catalogue (SOSI objektkatalog), (ESDIN)
- **Metadata**
 - ◆ users need more than is required from Inspire.....
- **Continue SOSI, linking to Inspire**
 - ◆ national feature catalogue/data models

context

regulation

**organ. &
partners**

standards

**data and
use**

**financing
data**

**technical
solution**

Inspire

Annex 3 data:

Annex 1

- ◆ coordinate reference systems
- ◆ geographical grid syst.
- ◆ geographical names
- ◆ administrative units
- ◆ addresses
- ◆ transport networks
- ◆ cadastral parcels
- ◆ hydrography
- ◆ protected sites

Annex 2 data:

- ◆ elevation
- ◆ land cover
- ◆ orthoimagery
- ◆ geology

- ◆ Statistical units
- ◆ Buildings
- ◆ Soils
- ◆ Land use
- ◆ Human health and safety
- ◆ Utility and government services
- ◆ Environm. monitoring facilities
- ◆ Production and industrial facilities
- ◆ Agriculture and aquaculture facilities
- ◆ Population distribution - demography
- ◆ Area management/restriction/regulation zone and reporting units
- ◆ Natural risk zones
- ◆ Atmospheric conditions
- ◆ Meteorological geographical features
- ◆ Oceanographic geographical features
- ◆ Sea regions
- ◆ Bio-geographical regions
- ◆ Habitats and biotops
- ◆ Species distribution
- ◆ Energy resources
- ◆ Mineral resources

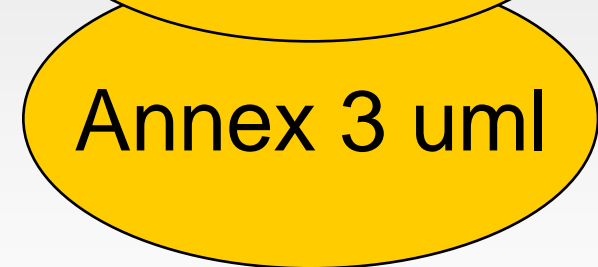
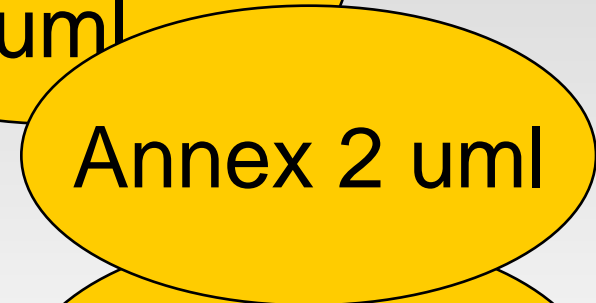
Focus on services and harmonised data

National data

Inspire services



Data content
tranformation

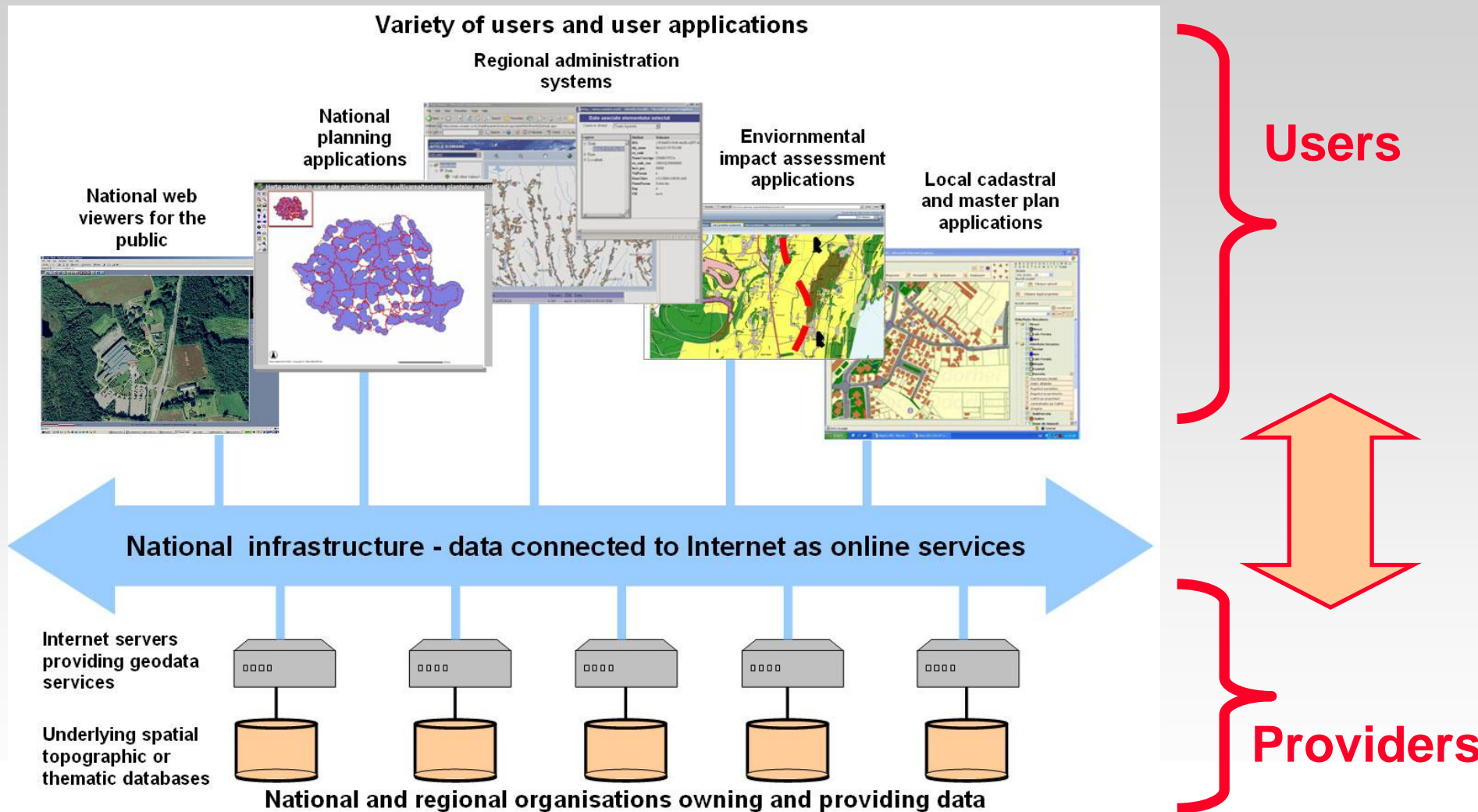


- **Coordinatre ref sys, format, schematransformation etc**

Inspire

- Data should be collected once and maintained at the level where this can be done most effectively
- it should be possible to combine seamlessly spatial information from different sources and share it between many users and application
- it should be possible for information collected at one level to be shared between all the different levels, detailed for detailed investigations, general for strategic purposes

User needs approach – meeting forums, projects, gap analysis



What does it, NSDI mean to the mapping agency – “Statens kartverk”?

- **not much in funding**
- **focus on metadata**
- **focus on web distribution, online services**
 - ◆ **learn about how to do it**
 - ◆ **depend on stability and speed**
- **too much focus on on wms? pictures – not intelligent data**
 - ◆ **municipalities complain**

What does it, NSDI mean to the mapping agency "Statens kartverk"?

- **becoming a focal point in the Country on data flows**
- **contact with very many different national organisation -advise and coordination**
 - ◆ **responsible persons to follow these**
 - ◆ **also for regional / municipal organisations**
- **different kinds of forums, meeting places**
- **has developed a good reputation nationally (and internationally)**

summing up

- step by step
- long term
- follow international standards – Inspire
- broad cooperation
- respect each others fields
- good will

Links – Norwegian solutions

- www.geonorge.no
- www.kartiskolen.no
- <http://www.norgeibilder.no/>
- <http://kart.kystverket.no/>
- www.norgedigitalt.no
- www.statkart.no

Many thanks for your attention!

