

FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam



Presented at the FIG Working Week 2019
April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life
and Environmental Resilience"



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FIG WORKING WEEK 2019

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"Geospatial Information for a Smarter Life and Environmental Resilience"



Sharing is everything

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Thank you

He who knows all the
answers has not yet been
asked all the questions.

Author unknown





LÊ LÊ NHÀ HÀN

40

TIGER BRAND





Kenya and Nigeria Lead Africa in Transparency and Data Sharing in the Real Estate Market



Published 8 months ago on August 7, 2018

By Ann Kitare 



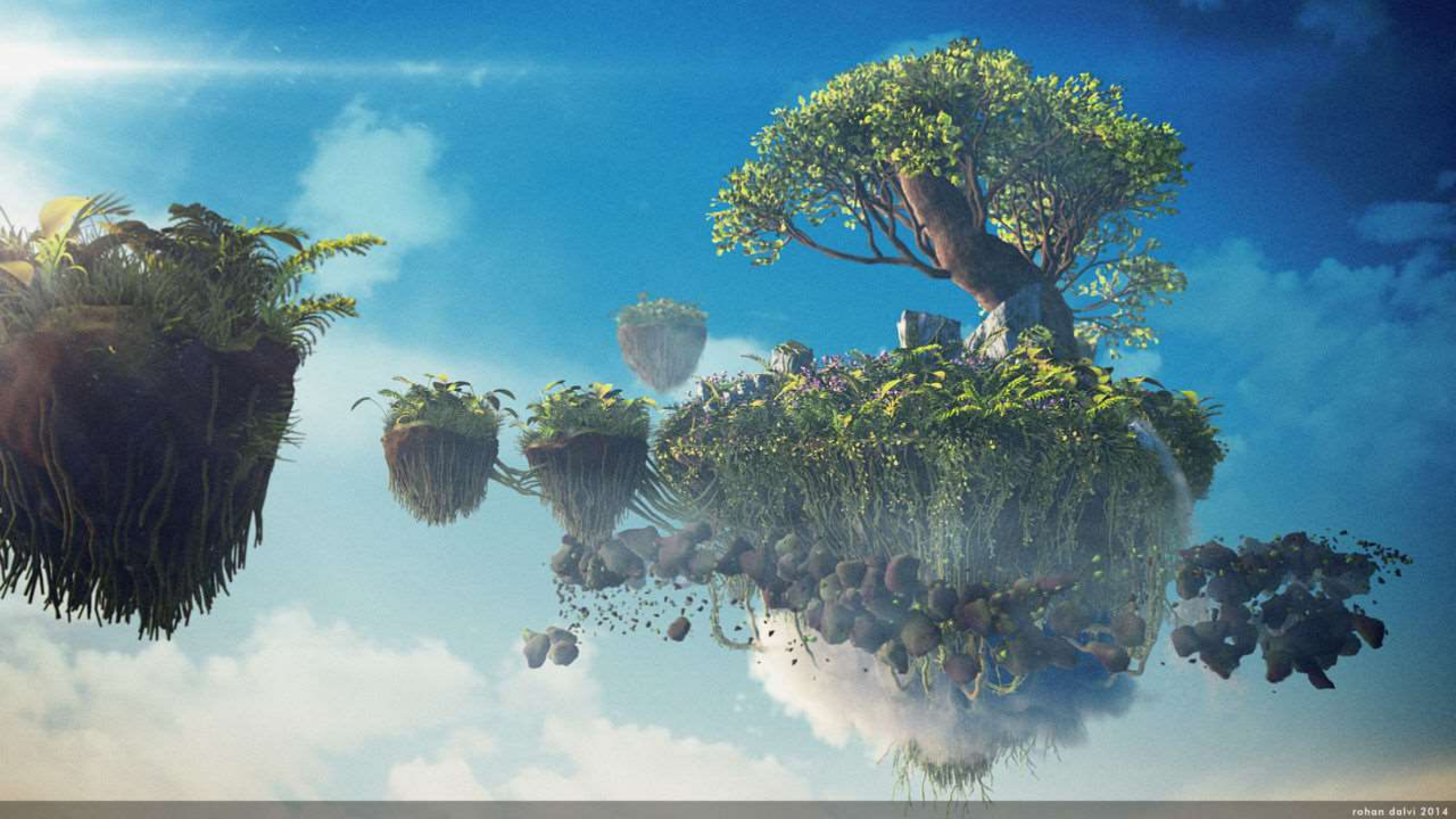
FEATURE STORY

Shared Data Helps Caribbean Islands to be Better Prepared for Disasters

February 28, 2013



Panoramic view of St Kitts and Nevis.



Is that a problem?







Geospatial domain

- In many ways a front runner
 - Everything happens somewhere
 - Location matters to us all
 - Geo is in everything....



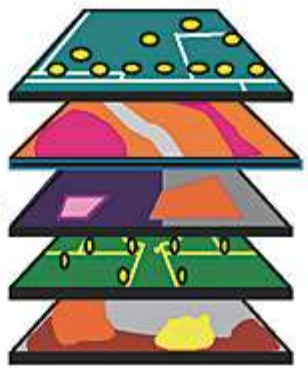
High quality, timely and reliable data

Geodetic
Elevation
Water/Ocean
Land use/cover
Transport
Cadastre
Population
Infrastructure
Settlements
Admin. Bdys.
Imagery
Geology/soils
Observations
etc.

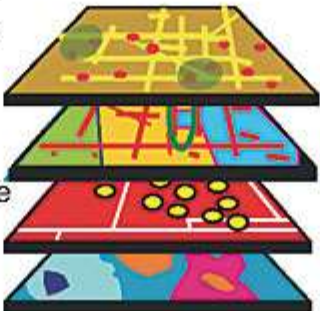


National Spatial Data Infrastructure

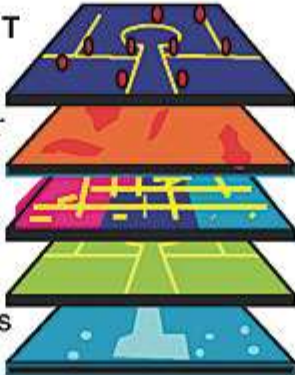
SOCIAL
Society
Poverty
Education
Health
Population
Employment
Water
Sanitation
Equality
Gender
Governance



ECONOMIC
Well-being
Cities
Water
Energy
Infrastructure
Industry
Sanitation
Economy



ENVIRONMENT
Water
Seas/oceans
Land use/cover
Ecosystems
Forests
Agriculture
Climate
Biodiversity
Natural hazards
Pollution



UN-GGIM

United Nations Secretariat
Global Geospatial Information Management

Positioning geospatial information to address global challenges

ggim.un.org

Spatial Data Infrastructure

- Not all that new
 - President Bill Clinton on April 11, 1994, launched the initiative to create the NSDI
- We still speak and work
- Because it is essential



Financial



Environmental



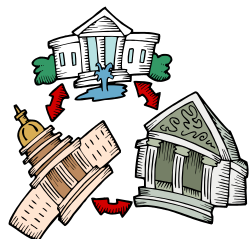
Tourism



Emergency



Parcellation



eGovernment



Agriculture



Navigation



Physical Planning

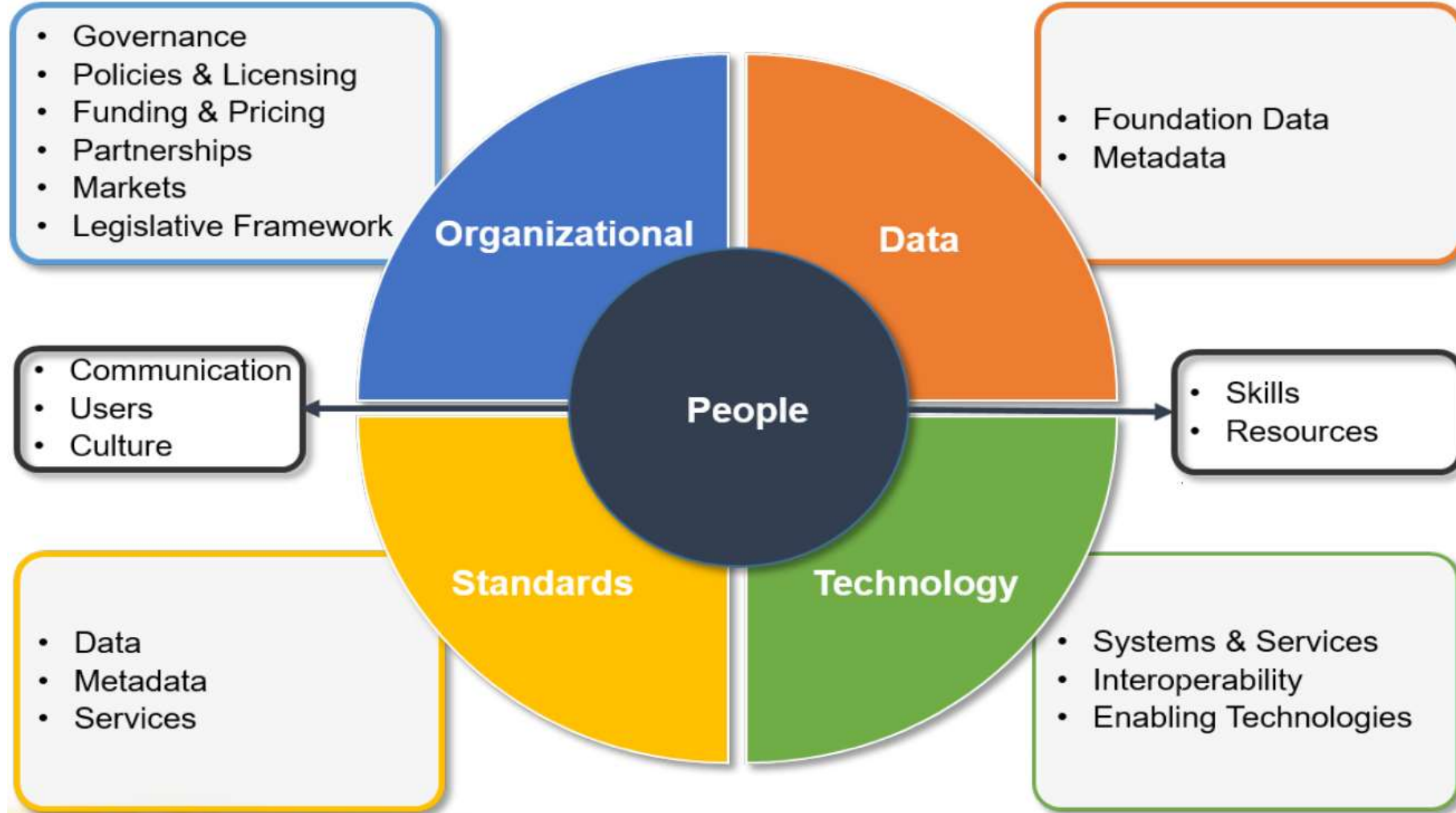


Military



Route-planning

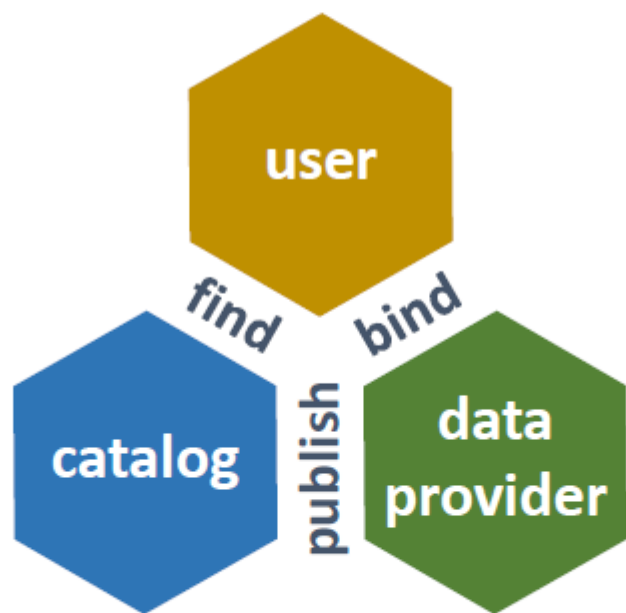
A geospatial infrastructure



Easy to combine



‘interoperability’ means the possibility for spatial data sets to be combined, and for services to interact, without repetitive manual intervention



Support “publish-find-bind” paradigm:

- Data providers publish metadata about resources (geodata sets and geodata services)
- Users (consumers and application providers) discover, evaluate and utilize the resources

Do we need more?

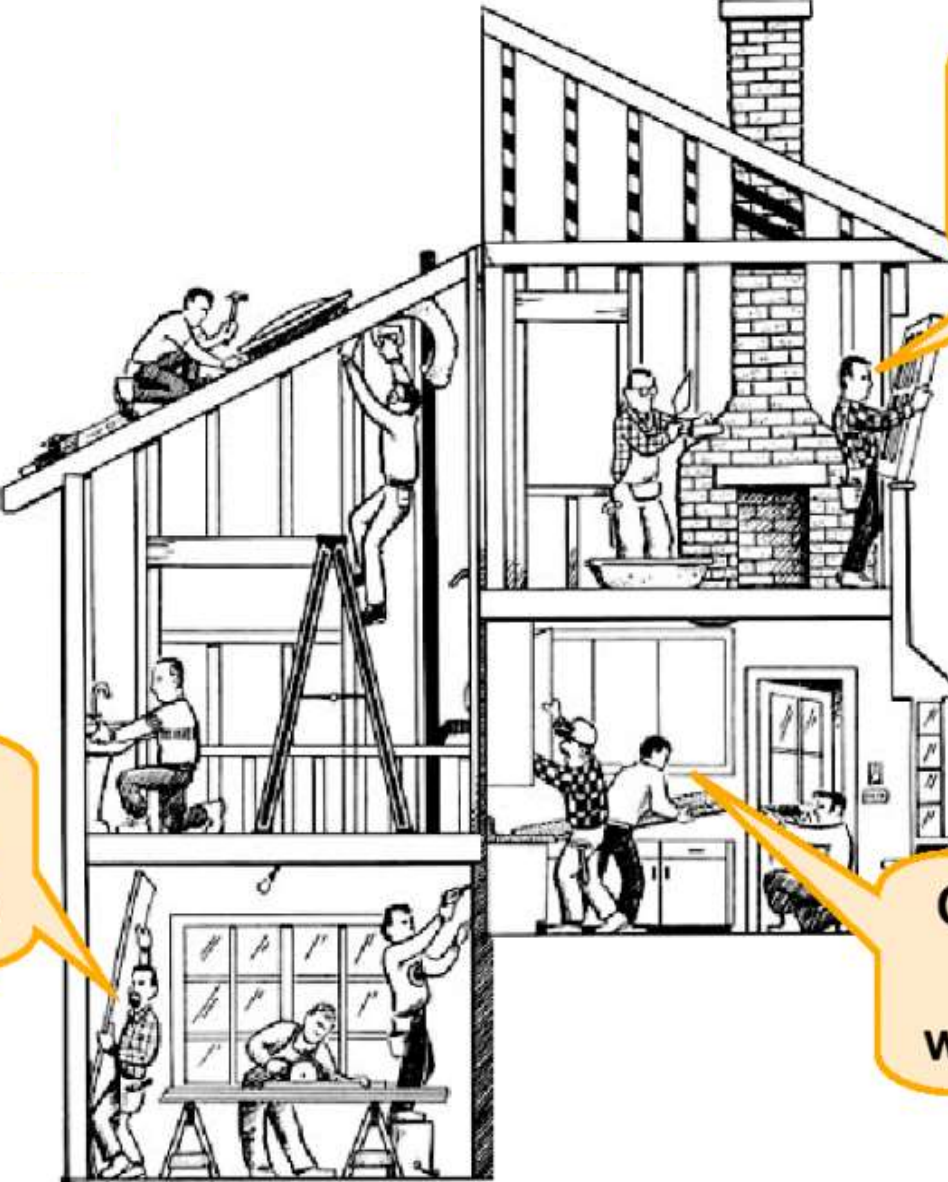
Open up and connect to other sectors and data types
and ways of using “our” spatial data

There is more to interoperability....

Interoperability (EIF)



Oops! Who is this supposed to hand off to?



Oops! What does this connect?

Oops! Where does the water flow to?

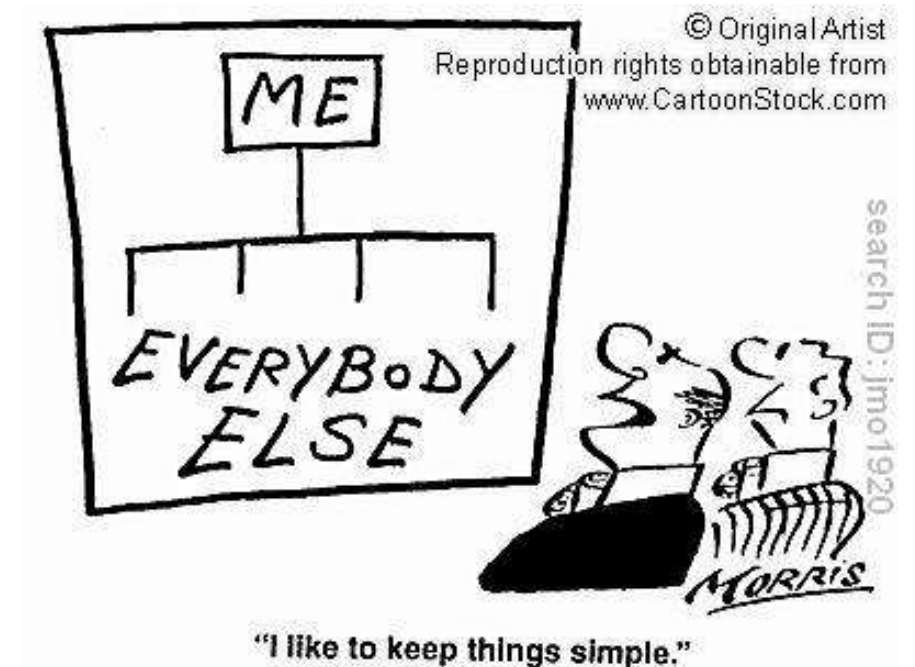
Useful and reliable

Authority structures

Roles and relationships

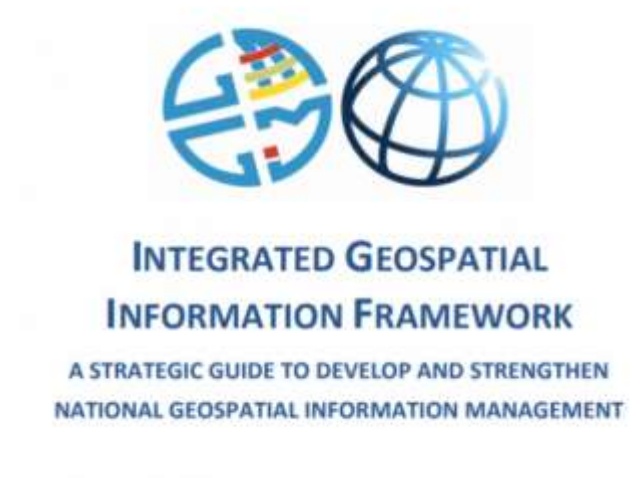
Rules and policies

Processes and mechanisms

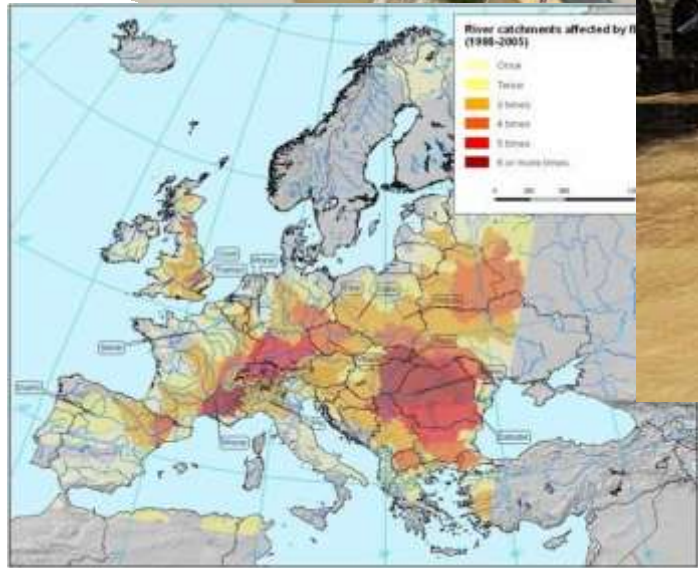


Interoperable data sharing framework

There are a few out there....



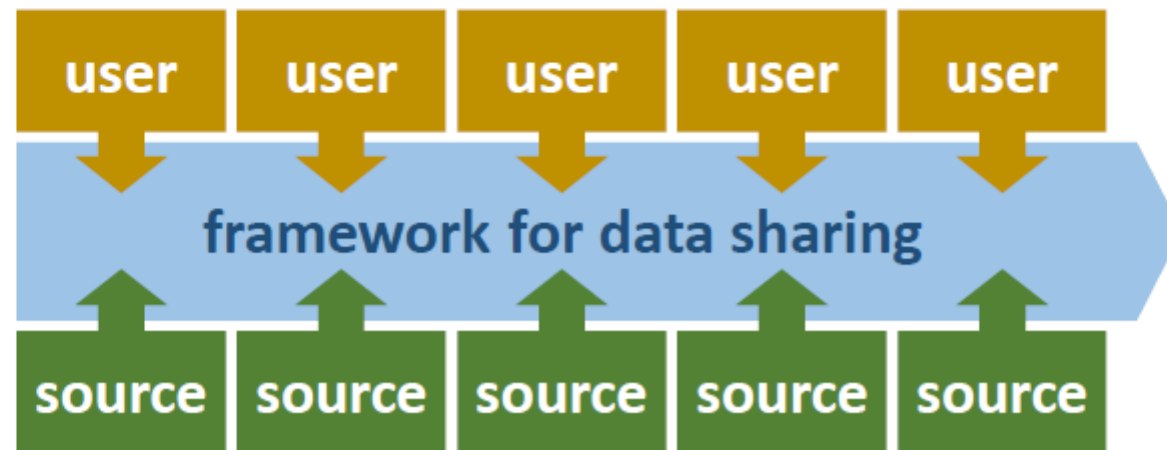
Infrastructure for Spatial Information in Europe = INSPIRE



Spatial Data Infrastructure – another view

“Spatial data come from many sources and is used within many domains. An efficient use of government resources requires that spatial data is stored, made available and maintained at the most appropriate level and that it is possible to combine spatial data from different sources and share them between several users and applications”

European Commission – INSPIRE Directive 2007



Good data management

DATA SHOULD ONLY BE COLLECTED ONCE

DATA SHOULD BE MAINTAINED WHERE IT CAN BE USED

IT SHOULD BE EASY TO GET AN OVERVIEW OF THE AVAILABLE DATA AND INTERNET SERVICES

DATA SHOULD BE COMBINABLE, REGARDLESS OF THEIR SOURCE

THERE SHOULD BE CLEAR CONDITIONS WHICH ASSURE THAT DATA CAN BE UTILISED BY MANY USERS IN MANY CONTEXTS

THE INFRASTRUCTURE MODEL



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Figure 4 – Some elements of the physical waters and related objects (1)

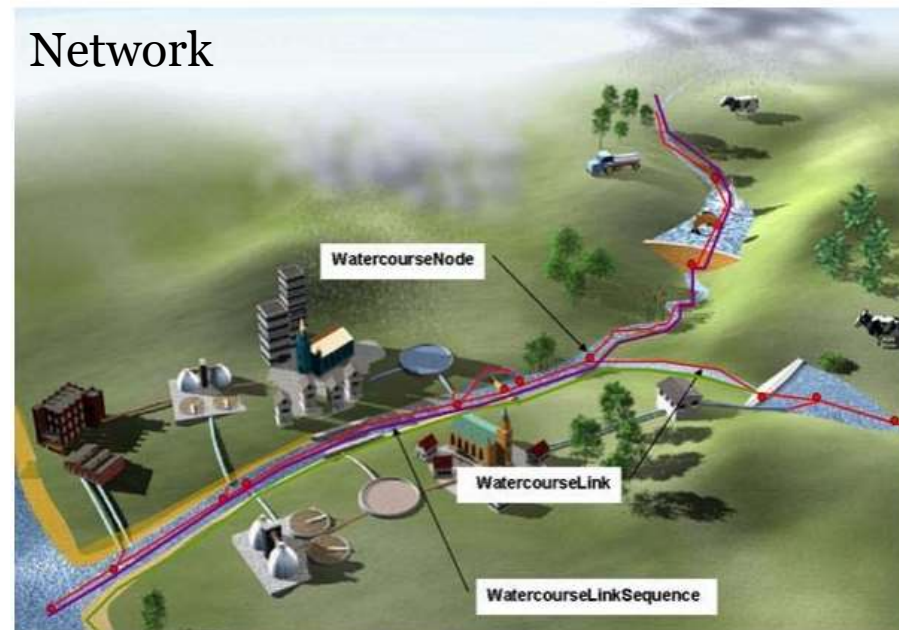


Figure 13 - Elements of the network model

Legislation



All member states of the EU

Step by step implementation

- Directive 2007
- First deadline 2010
- Last deadline 2021

Implementing rules on

Metadata – datasets and services

Harmonization and interoperability of datasets

- Conceptual data model
- Theme specific data models










Services

- Discovery
- View
- Download
- Transformation
- In voke/SDS

Monitoring and reporting procedures

Governance structures (Coordination Committee, NCP and networks)






















Annex I

- Administrative Units 
- Cadastral Parcels 
- Geographical grid systems 
- Hydrography 
- Protected Sites 
- Transport Networks 
- Addresses 
- Coordinate reference systems 
- Geographical Names 

Annex II

- Geology 
- Orthoimagery 
- Elevation 
- Land Cover 

Annex III

- Atmospheric Conditions 
- Bio-geographical Regions 
- Buildings 
- Environmental Monitoring Facilities 
- Human Health and Safety 
- Land Use 
- Mineral Resources 
- Oceanographic Geographical Features 
- Population Distribution - Demography 
- Production and Industrial Facilities 
- Sea Regions 
- Soil 
- Species Distribution 
- Statistical Units 
- Agricultural and Aquaculture Facilities 
- Area Management Restriction Regulation Zones and Reporting units 
- Meteorological geographical features 
- Energy Resources 
- Habitats and Biotopes 
- Natural Risk Zones 
- Utility and Governmental Services 



INSPIRE
Infrastructure for Spatial Information in Europe

D2.8.III.4 Data Specification on Land Use – Technical Guidelines

Title	D2.8.III.4 INSPIRE Data Specification on Land Use – Technical Guidelines
Creator	INSPIRE Thematic Working Group Land Use
Date	2013-12-10
Subject	INSPIRE Data Specification for the spatial data theme Land Use
Publisher	European Commission Joint Research Centre
Type	Text
Description	This document describes the INSPIRE Data Specification for the spatial data theme Land Use
Contributor	Members of the INSPIRE Thematic Working Group Land Use
Format	Portable Document Format (pdf)
Source	
Rights	Public
Identifier	D2.8.III.4_v3.0
Language	En
Relation	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)
Coverage	Project duration

D2.8	
Title	D2.8.iii.4
Created	
Date	
Subject	
Publisher	
Type	
Description	
Contributor	
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D2.8.iii.4



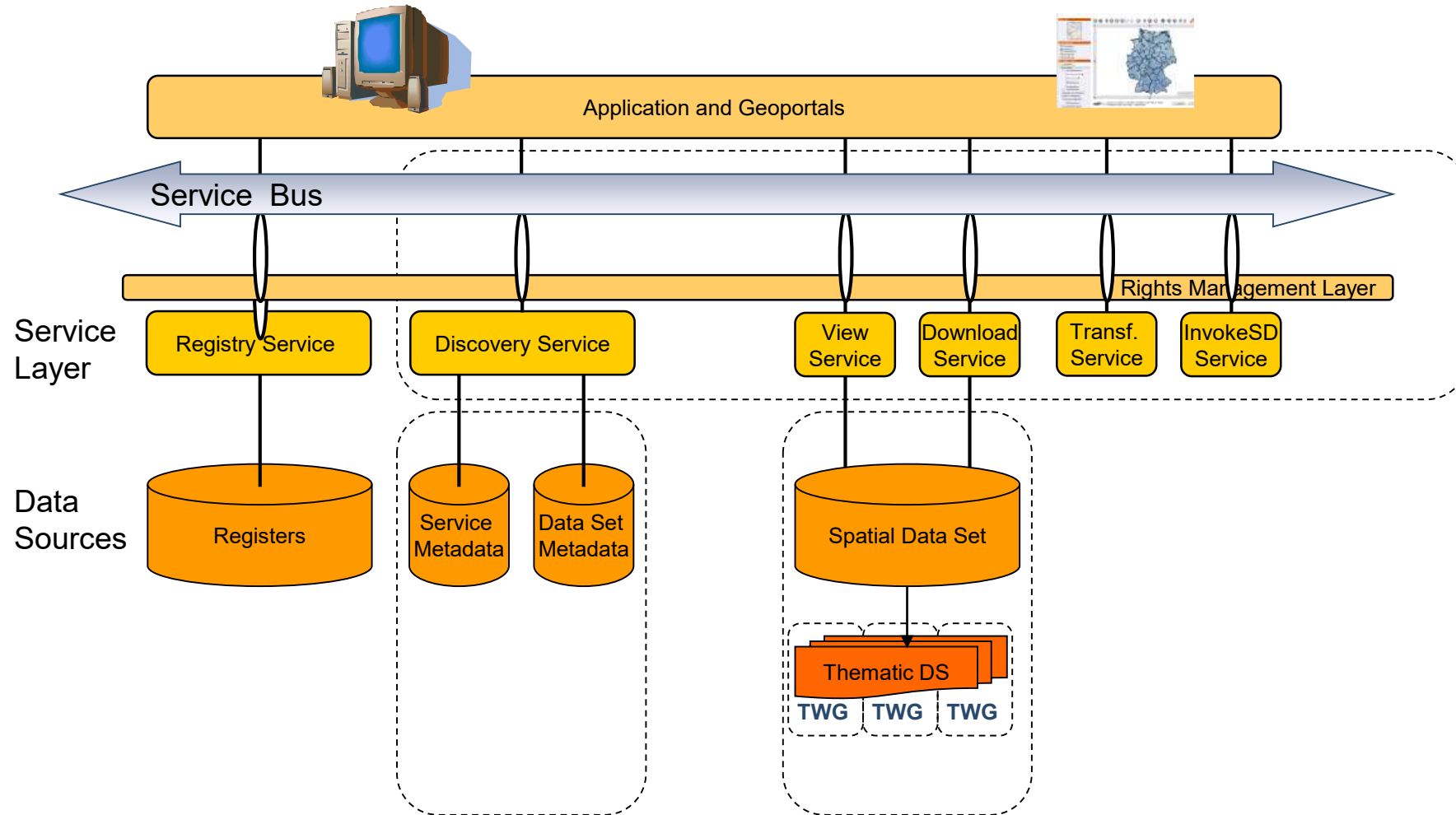
INSPIRE
Infrastructure for Spatial Information in Europe

D2.8.iii.4 Data Specification on Land Use – Draft Guidelines

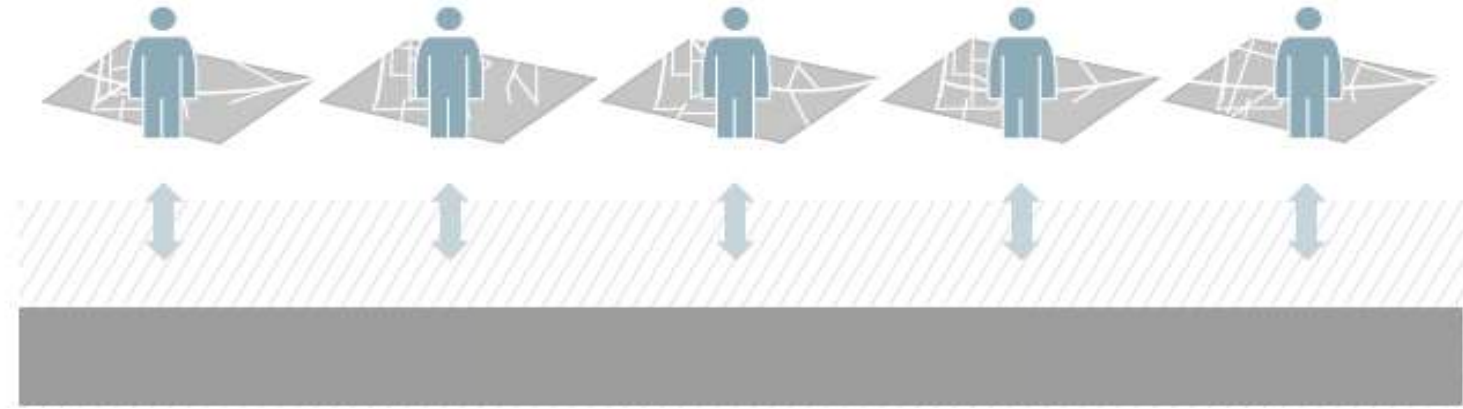
Title	D2.8.iii.4 INSPIRE Data Specification on Land Use – Draft Guidelines
Creator	INSPIRE Thematic Working Group Land Use
Date	2015-09-10
Subject	INSPIRE Data Specification for the spatial data theme Land Use
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Language	En
Relation	Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
Coverage	Project location



INSPIRE architecture – distribution and access



GENERAL PUBLIC, BUSINESSES AND THE PUBLIC SECTOR



INTEROPERABILITET



1.-(1) This Act shall apply to spatial data sets if

- 1) they are in electronic format,
- 2) they relate to one or more of the themes stipulated by the Minister of the Environment pursuant to subsection (2),
- 3) they are held by or on behalf of a public authority, cf. section 2(2), and
- 4) they relate to Danish territory, including territorial waters, or adjacent marine areas.

Data owners must:

- 1) Identify data sets
- 2) Make metadata
- 3) Publish metadata
- 4) Provide access via web services
- 5) Harmonise data according to INSPIRE data models

Annex	Data specification	Authority
2	Elevation	National Survey and Cadastre
	Land cover	Nature Agency
	Ortho-imagery	National Survey and Cadastre
	Geology	Geological Survey of Denmark and Greenland, Nature Agency
	Statistical units	National Survey and Cadastre, National Board of Health
	Buildings	Enterprise and Construction Authority, National Survey and Cadastre
	Soil	Food Industry Agency, Danish Regions, Geological Survey of Denmark and Greenland
	Land use	National Survey and Cadastre, Food Industry Agency, Nature Agency
	Human health and safety	National Board of Health
	Utility and governmental services	Nature Agency, Energy Agency, National IT and Telecom Agency, Environmental Protection Agency
3	Population distribution – demography	Statistics Denmark
	Area management/restriction/regulation zones and reporting units	Environmental Protection Agency, Nature Agency, Maritime Authority, National Survey and Cadastre
	Natural risk zones	Nature Agency, Coastal Authority, Geological Survey of Denmark and Greenland, Emergency Management Agency, Weather Institut
		Emergency Management Agency, Weather Institut
	Atmospheric conditions/ Meteorological geographical features	Weather Institut
	Oceanographic geographical features	Weather Institut, Maritime Safety Administration
	Sea regions	Nature Agency, Coastal Authority
	Bio-geographical regions	Nature Agency
	Habitats and biotopes	Nature Agency
	Species distribution	Nature Agency
	Energy resources	Energy Agency
	Mineral resources	Geological Survey of Denmark and Greenland, Nature Agency, Danish Regions

What is the status?

- Heterogeneous implementation due to:
 - Lack of skills and know how
 - Lack of resources
- Competing standards and heavy legacy
- Will we make it?
 - yes...but the final run is demanding
- Anyhow...
 - INSPIRE has increased awareness
 - Common framework to develop on
 - Legislation that obligates data owners
 - A solid foundation for EU's environmental monitoring and reporting



There needs to be more institutional collaboration, coordination, interoperability and integration across the various national data information systems and platforms.



INTEGRATED GEOSPATIAL INFORMATION FRAMEWORK

A STRATEGIC GUIDE TO DEVELOP AND STRENGTHEN
NATIONAL GEOSPATIAL INFORMATION MANAGEMENT

It's the money, stupid

It's the people, baby

Engage much more with users and offer the SDI as an interoperable platform for all to use.....



Thank you for your attention

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Agency for
Data Supply and
Efficiency

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