



FIG Working Week 2024

19-24 May

Accra, Ghana

Your World, Our World:
Resilient Environment
and Sustainable
Resource Management
for All

Presented at the FIG Working Week 2024,
19-24 May 2024 in Accra, Ghana

From Spatial Data Infrastructure to Geospatial Knowledge Infrastructure: the Role of Management and Financing Models

Martin Vestnes Saeter

Ministry of Local Government and Regional Development

Norway

GIS, BIM, Digital Twin, and NSDIs: Pushing-forward the Smart City Vision

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GEOSA
General Authority for Survey
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Smart City Vision and spatial data infrastructure

Data, technology, IoT and information to improve life and provide better services in cities

Geospatial data and technology
Spatial data infrastructure – the bedrock for smart cities





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From spatial data infrastructure to geospatial data infrastructure

- Spatial data infrastructure:
“Framework of policies, legislation, institutional arrangements, technologies, data, and organizations that enable the effective sharing and use of geographic information”
- UN GGIM Future trends in geospatial information management (2022):
“There is now a paradigm shift from a spatial data infrastructure (SDI) to knowledge infrastructure”
- Technological limits of SDIs



UN-GGIM
UNITED NATIONS
COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Future trends in geospatial information management: the five to ten year vision

THIRD EDITION





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Geospatial Knowledge infrastructure

- Provides knowledge directly to users
- Shift from provision of data to knowledge delivery
- Addressing challenges of understanding complex data
- Leveraging new technology
- Some key goals:
 - All data has attributes that enable geo-location
 - Up-to-date foundation authoritative geospatial information is available for use

Spatial Data Infrastructure

- data-centric
- centralized system
- desktop/web-portal
- 2D representation
- supply-centric
- static data
- limited data range
- professional users only
- linear and independent

Geospatial Knowledge Infrastructure

- analytics-centric (fit for analytics data)
- distributed system
- distributed cloud-based
- 4D/5D representation
- demand-centric (user-centric)
- dynamic data with wide range of data (crowdsourced, mobile, IoT, etc.)
- non-spatial users as well
- intelligent search
- on-the-fly data analysis
- predictive modeling

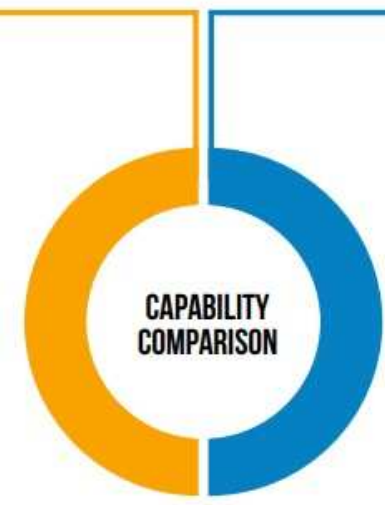




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- Data Integration and Management
- Improved Public Services
- Smart Infrastructure and IoT Integration
- Citizen Engagement and Participation





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Challenges to transform the Norwegian SDI to a geospatial knowledge infrastructure

- Clear ambition to evolve and transform the SDI
- Geospatial strategy for Norway:
 - Geospatial data provided as knowledge
 - Importance of new technology

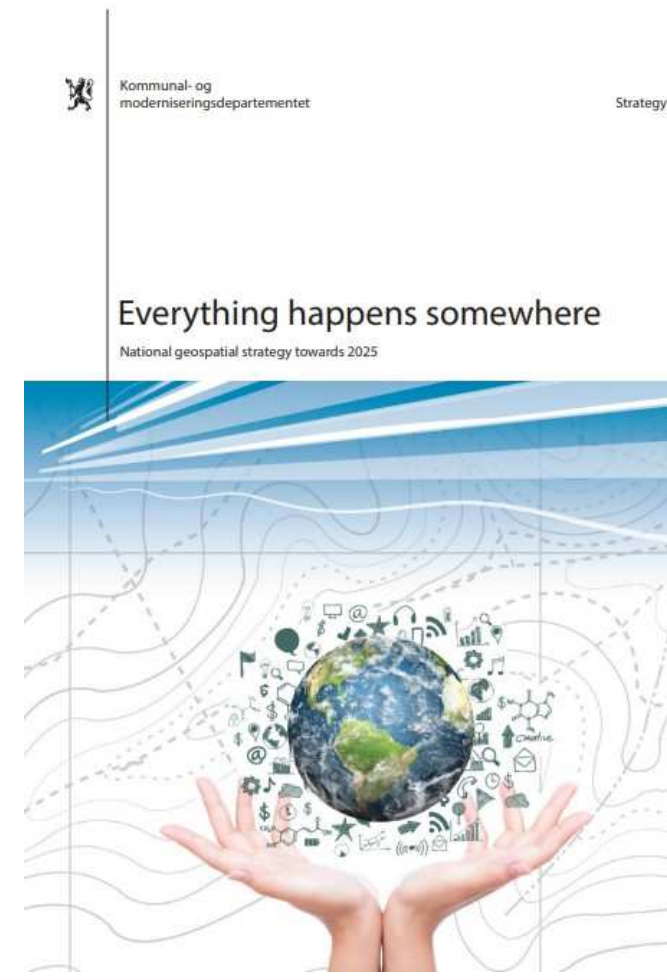




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The Geospatial Knowledge Infrastructure Country Readiness Index

- Insights into the maturity of parameters that enables a geospatial knowledge infrastructure
- Parameters assessed:
 - Integrated Policy Framework
 - Foundation Data
 - Partnerships & Collaborations
 - Industry Leadership
 - Applications, Analytics and Modeling
 - Geospatial Dimension to Digital Infrastructure

LEADERS		
Rank 2022	Country	Score (0-100)
1	USA	100.00
2	United Kingdom	83.89
3	Denmark	81.52
4	Netherlands	80.27
5	Germany	78.53
6	Switzerland	77.04
7	Canada	75.10
8	Singapore	74.82
9	Ireland	72.09
10	France	72.00
11	Australia	71.69
12	China	71.51
13	Sweden	71.19
14	Finland	70.55
15	Norway	70.21

CHALLENGERS		
Rank 2022	Country	Score (0-100)
16	Spain	69.54
17	Japan	69.04
18	Belgium	66.84
19	Poland	65.97
20	Estonia	64.18
21	New Zealand	63.02
22	Italy	62.24
23	Austria	62.16
24	Portugal	60.17
25	South Korea	58.07
26	Russia	58.03
27	India	56.16

ASPIRERS		
Rank 2022	Country	Score (0-100)
28	Hungary	55.68
29	South Africa	50.35
30	Greece	47.88
31	Bulgaria	47.47
32	Saudi Arabia	46.93
33	Indonesia	46.92
34	Philippines	46.41
35	Malaysia	46.06
36	UAE	43.30
37	Mexico	41.92
38	Israel	41.64
39	Brazil	41.60
40	Argentina	39.75
41	Thailand	39.25
42	Chile	38.54
43	Bahrain	37.89
44	Ukraine	37.36
45	Colombia	36.96
46	Iran	36.66
47	Qatar	34.76
48	Brunei	32.43
49	Kenya	27.29
50	Kazakhstan	21.95



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Changes to framework conditions

- Increase in the use of mapping services and shared solutions
- The need to safeguard data
- Changing legal framework – Open Data Directive

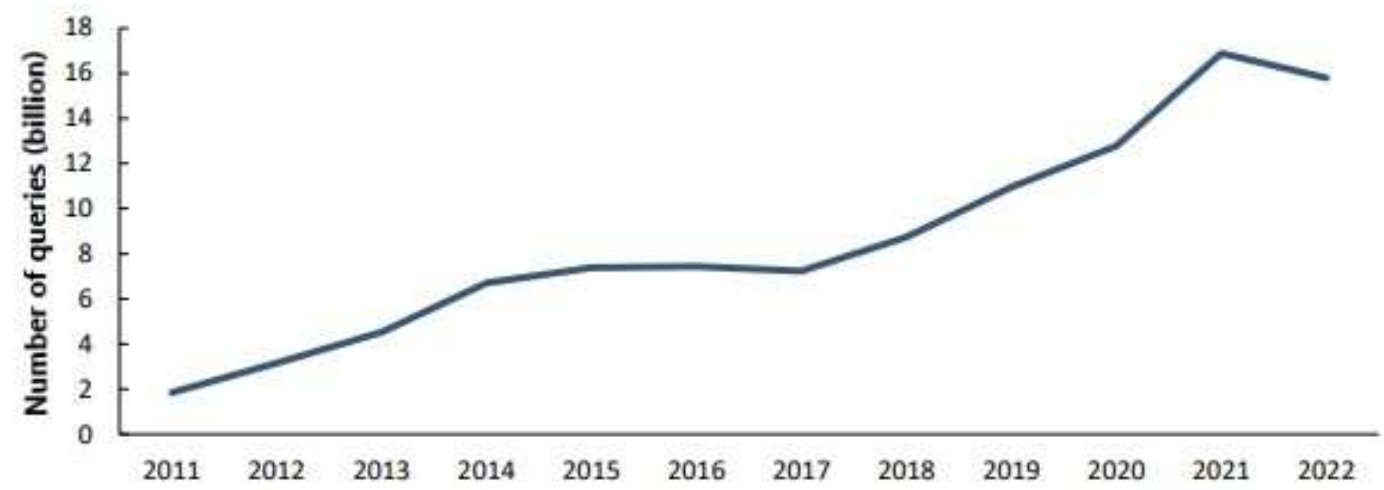




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- New models for management and financing are need
- United Nations Integrated Geospatial Information Framework (IGIF)
- Common models:
 - Government funding with funds derived from taxation;
 - Private sector funding with funds derived from fees charged to customers
 - Public sector funding with funds derived from fees charged to customers
 - Mix method: funds are derived from multiple sources such as advertising, sponsorship etc.

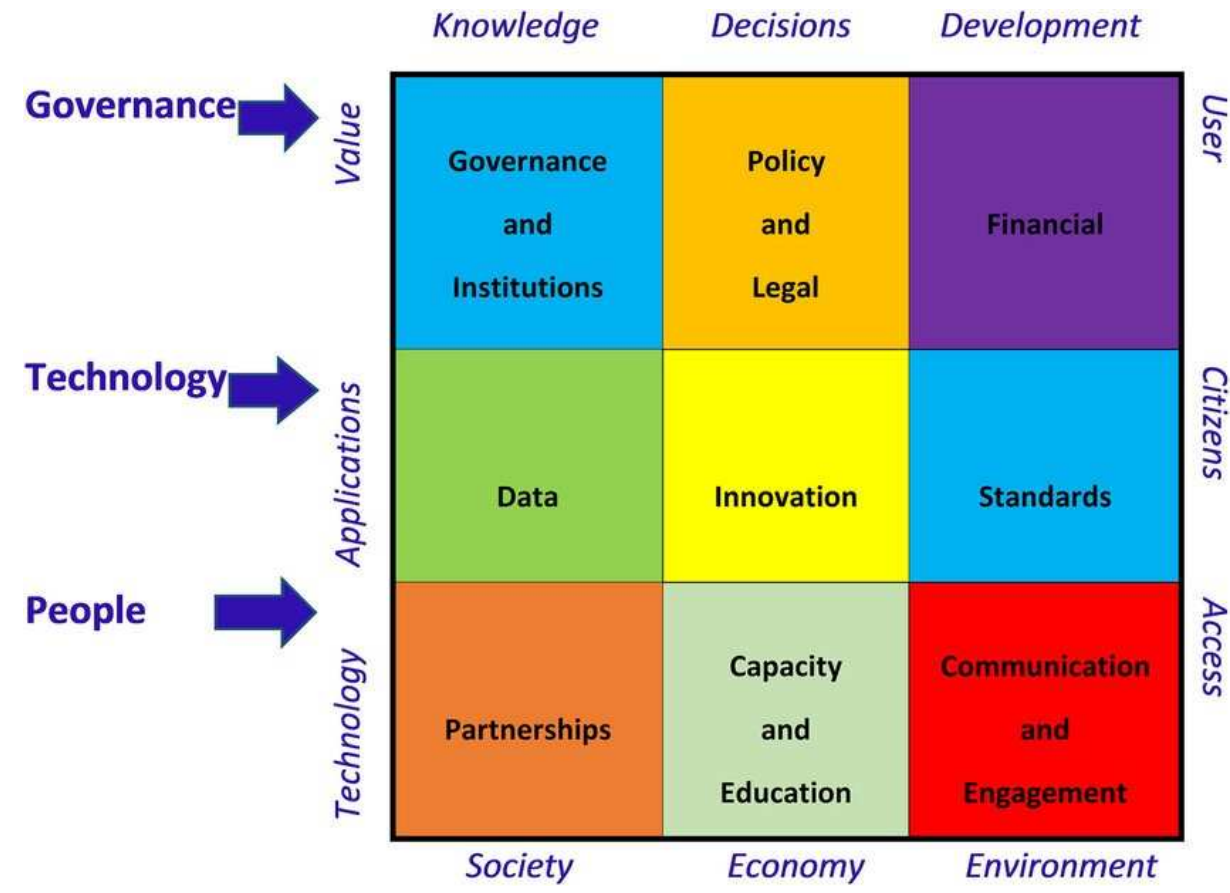




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- Mix of models in Norway
- Assessment of current and new funding models
- Concerns from the Norwegian Geospatial data Council
- New model proposed in 2024



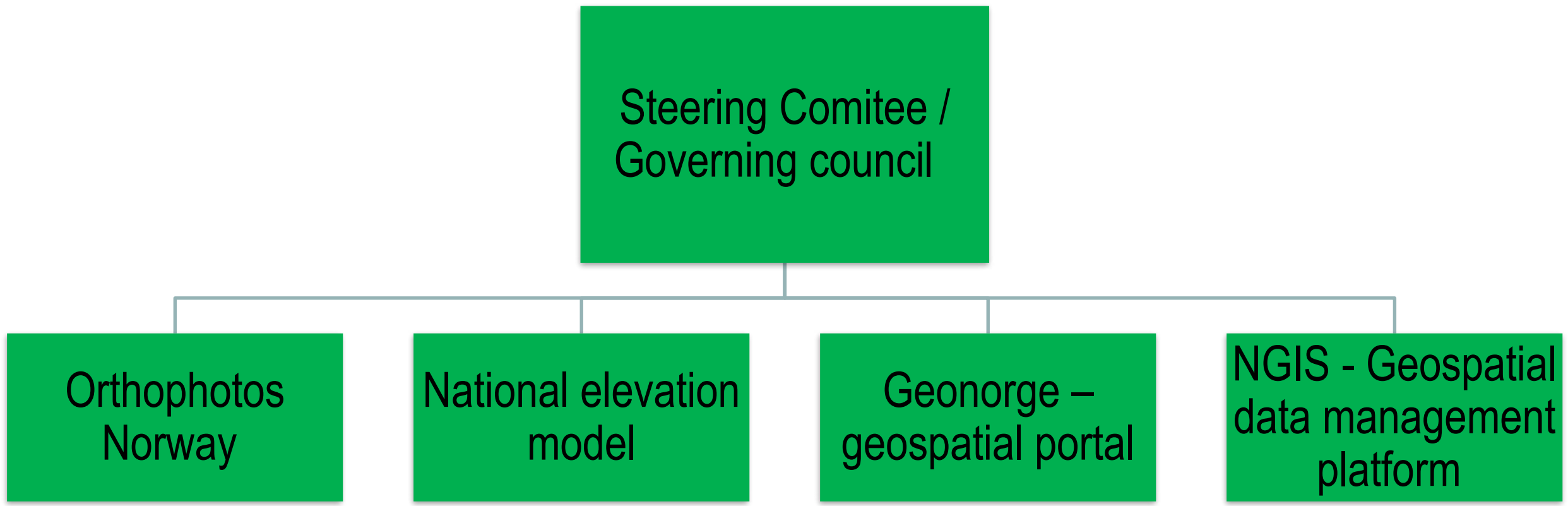


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Looking beyond Norway – Funding in other countries

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Conclusion

- Further work ahead
- Funding - prerequisite for GKI
- Realizing the smart city vision





FIG Working Week 2027

Stavanger Norway 23-27 May

The Power of Where for the new Generations

