Current situation of the work

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Overview

1. *Introduction*
2. *Framework development*
3. *Framework application*
4. *Key examples*
5. *Principles & Guidelines*
6. *Lessons learnt*

1. Introduction - Consultancy

"To develop a framework and guidelines in support of national institutional arrangements in geospatial information management for Member States"

Supporting the Working Group on National Institutional Arrangements (WG-NIA)

Execution: February – June 2017

Regular meetings with UN-GGIM Secretariat and WG-NIA

1. Introduction Team composition

Consultants: Joep Crompvoets and Serene Ho (KU Leuven)

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Working Group on National Institutional Arrangements

Antonio Arozarena (Chair)

Members of Working Group (Mexico, Singapore, Spain)

UN-GGIM Secretariat

1. Introduction

Review what has been achieved by WG-NIA until March 2017

Based on:
- Reports of WG-NIA (2013, 2014, 2015, 2016)
- WG-NIA meeting reports
- NIA-Roundtable at UN-GGIM Europe meeting (5/10/2016)

Set of teleconferences with members of WG-NIA

1. Introduction – Positive features

- Significant and rich body of work over past 3.5 years
- Comprehensive questionnaire(s) distribution
- Addressing relevant NIA-themes in context of UN SDGs
- Questionnaire(s) results are rich in content
- NIA-index approach development
- Being aware that no single universal NIA approach exists

1. Introduction – Key limitations

- Lacking strategic/executive elements of NIA
- Poor understanding of NIA-instruments and their impacts
- Missing governance and/or institutionalization expertise
- Difficulty to scale up the outcomes
- Quantitative oriented

1. Introduction – Review recommendations

- Developing comprehensive/overarching NIA-framework
- Simple and straightforward in design
- Based on relevant NIA-instruments (operational – executive)
- Using governance and/or institutionalization expertise
- Making use of previous WG-NIA achievements

- Identifying key examples of good practices
- Generating set of generic NIA-principles and NIA-guidelines
- Aggregating the findings at global level while relevant for MS

2. Framework development - Concepts

NIA: Formal and informal (management) structures aiming to enhance, frame or regulate the voluntary or forced alignment of tasks and efforts of organizations in the pursuit of geospatial information management of a country

3 Mechanisms underpinning Institutional Arrangement (IA):
- **Hierarchies** *(Authority, Rules, Regulations)*
- **Markets** *(Competition, Pricing)*
- **Networks** *(Cooperation, trust, solidarity)*

Each mechanism: Illumination of different aspects of IA
Each mechanism: Explanatory deficiencies
Relevant at general and abstract level

2. Framework development - Instruments

Institutional arrangements rely on certain instruments,
i.e. specific management activities or structures

Instruments
1. Structural – Creating new or changing structures
2. Managerial – Procedures, incentives, and values for
   planning, monitoring and evaluating the use of resources

2. Framework development - Instruments

Structural	Managerial
- S1. Establishment of coordinating functions or entities	- M1. Strategic planning
- S2. Reshuffling division of competences	- M2. Financial management: input-oriented
- S3. Establishment of a legal framework	- M3. Financial management: performance-oriented
- S4. Regulated markets	- M4. Financial management: joined up working and cooperation
- S5. Systems for information exchange and sharing	- M5. Inter-organizational culture and knowledge management
- S6. Entities for collective decision-making	- M6. Capacity building
- S7. Partnerships	

2. Framework development - Clusters

Instruments	Hierarchy	Market	network
Structural	- S1. Establishment of coordinating functions or entities - S2. Reshuffling division of competencies - S3. Legal framework	- S4. Regulated markets	- S5. Systems for information exchange and sharing - S6. Entities for collective decision-making - S7. Partnerships
Managerial	- M1. Strategic planning - M2. Financial management: input-oriented	- M3. Financial management: performance-oriented	- M4. Financial management: joined up working and cooperation - M5. Inter-organizational culture and knowledge management - M6. Capacity building

2. Framework development – Link with WG-NIA indicators

NIA-instruments	NIA TG indicators	
Structural	Strongly related	Weakly related
S1. Establishment of coordinating functions or entities	35	16
S2. Reshuffling division of competences		
S3. Establishment of a legal framework	26, 27, 28	29, 30, 31, 36
S4. Regulated markets		13, 31
S5. Systems for information exchange and sharing	17, 19, 20, 22	18, 21, 25, 42, 49
S6. Entities for collective decision-making		33, 34, 35
S7. Partnerships	9	2, 37
Managerial		
M1. Strategic planning	32	
M2. Financial management: input-oriented	8, 10	11, 14, 15
M3. Financial management: performance-oriented	8, 12	10, 11
M4. Financial management: joined up working and cooperation	8, 15	4, 10, 11, 14
M5. Inter-organizational culture and knowledge management	39	
M6. Capacity building		23, 24, 37, 43, 48

3. Framework application

Application of the overarching **NIA-instruments framework**

Examples of good practices of each NIA-instruments

Subjectivity of good practices -> Consultancy team + WG-NIA

- Review of existing key source materials/documents (WG-NIA deliverables, UN-GGIM Knowledge Base, etc.)

- Provision of good practices by members of WG-NIA

Minimum of three good practices for each NIA-instrument

Set of selection criteria (Relevance, Information availability, Currency, Geographical representation)

Good practices: Not necessarily transferable to another MS

Application of a standard template to describe good practices

Applied in UN-GGIM five regions

3. Framework application - Template

Annex 2: Template for NIA-instrument practice description

This template is designed for describing good practices of the NIA-instruments. Each NIA-instrument is explained in the Annex of this template

Classification of NIA-instruments into structural and managerial instruments

Structural	Managerial
- S1. Establishment of coordinating functions or entities	- M1. Strategic planning
- S2. Reshuffling division of competences	- M2. Financial management: input-oriented
- S3. Establishment of a legal framework	- M3. Financial management: performance-oriented
- S4. Regulated markets	- M4. Financial management: joined up working and cooperation
- S5. Systems for information exchange and sharing	- M5. Inter-organizational culture and knowledge management
- S6. Entities for collective decision-making	- M6. Capacity building
- S7. Partnerships	

Title:
[Short title briefly presenting the good practice]

Country
[Name Country]

Type NIA-instrument
[choose the name of one of the 12 listed NIA-instruments]

Aim
[Statement presenting the objective for implementing the NIA-instrument]

NIA-instrument description
[Short text block describing the NIA-instrument practice]

Background
[Short text block providing background information explaining the context behind NIA-instrument practice]

Use
[Description of the usage of NIA-instrument in practice]

Good practice motivation
[Short block describing why this is a good practice of the NIA-instrument]

[Add a relevant figure, image, photo, graph, or table illustrating the NIA-instrument practice]

Reference
[Provision of relevant publication(s), website addresses]

3. Framework application – Good Practice sheet

Namibia National Spatial Data Infrastructure (NSDI): Strategy and Action plan 2015-2020

Country
Namibia

Type NIA-instrument
M1. Strategic planning

Aim
The strategy and action plan 2015-2020 aims to coordinate, facilitate and support the implementation of an information infrastructure that ensures efficient production, use, maintenance and dissemination of relevant, quality and accurate spatial information that is fit-for-purpose, particularly in providing evidence-based decision making at all levels of society.

NIA-instrument description
This 5-year Strategic Plan (2015-2020) sets out the first and most critical phase of a longer term implementation strategy to achieve the ultimate goals of a national SDI in the future. During the 5-years covered by this Strategy and associated Action Plan the most critical groundwork will be laid for all that is to follow, including:
- inventorying and documenting existing datasets available in different government agencies
- building capacity in government institutions responsible for maintenance and management of fundamental datasets
- creating the many standards that are needed if all stakeholders (data producers and users) are to receive the most benefit from implementing the NSDI
- setting the many policies to be followed by all stakeholders for efficient operation of the NSDI, including data access, sharing, use and re-use policy; and pricing and licensing policies,
- developing and implementing a comprehensive Communication Plan for raising awareness, informing all stakeholders of progress in the NSDI, and providing practical support in NSDI delivery
- ensuring wide spread access to and use of quality fundamental datasets and services
- mediating over national spatial data collection projects in order to ensure compliance and avoidance of duplication and wasteful of government resources

Background
Namibia has taken a giant stride in recognizing spatial data information as an important national infrastructure in order to improve evidence-based development planning and socioeconomic intervention. On 06 March 2015, the Government of Namibia approved a National Spatial Data Infrastructure Policy (NSDI) to guide the acquisition, maintenance and dissemination of spatial data in Namibia. Aligning this policy, a strategic action plan was developed.

Use
The five year strategic plan is set in place since the end of 2015 and will be evaluated in 2018.

Good practice motivation
In Namibia, there is high political willingness from government to establish the NSDI. There is also high-level commitment from government agencies earmarked to participate in this infrastructure. The citizens have been made aware of the importance and usefulness of location data and the benefits of the NSDI for access to such data and applications. Due to the high levels of public engagement, there are equally high expectations from politicians, decision-makers and the citizens for the NSA to deliver on the NSDI. Consumption of spatial data has increased since the start of the NSDI programme (Mudabeti and Longhorn, 2016). .

Figure: Front page Strategy and Action Plan 2015-2020

Reference
- Namibia Statistic Agency (2015). Namibia National Spatial Data Infrastructure (NSDI): Strategy and Action plan 2015-2020.
- Mudabeti, A. and Longhorn, R. (2016). Developing the Namibian NSDI. Accessible at: https://www.gim-international.com/content/article/developing-the-namibian-national-spatial-data-infrastructure [accessed 2nd May 2017].

4. Key examples

Showcases of good practices for each NIA-instrument

61 key examples identified and described
- 20 Europe
- 17 Americas
- 16 Asia-Pacific
- 5 Africa
- 3 Arab States

Examples of good practices of NIA-instruments from 38 UN Members collected

13 countries – More than good practice

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Key examples – S1. Establishment of coordination functions/entities

Creation of influencing lines of control with the establishment of new functions or entities with clearly allocated roles, or responsibility tasks

Examples of good

Country	Title
Mexico	Coordination of the National Information System for Statistical and Geographic Information
New Zealand	A Clear Geospatial Governance Framework
Panama	Coordinating structure of the National Spatial Data Infrastructure of Panama
Spain	SIGPAC Coordination Board

Key examples – S2. Reshuffling division of competences

New or changing structures and institutional forms in the context of the management of geospatial information (e.g. reshuffling of competences between ministries)

| Country	Title
Belgium	Reshuffling of public agencies in the Belgian region of Flanders
Czech Republic	Governmental role clarification and the development of a SDI Coordination Structure
Portugal	Reshuffling Division of competences in the Portuguese Spatial Data Infrastructure within the broader governmental reform context
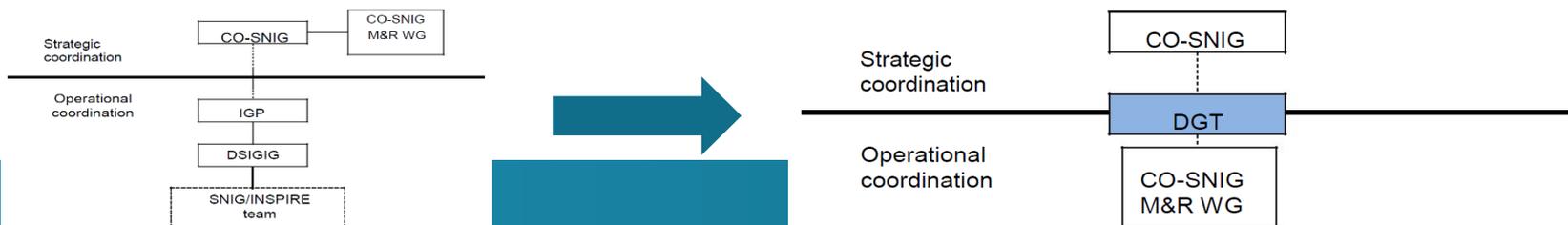
Key examples – S3. Establishment of legal framework

The construction and adoption of a regulatory framework(s) for geospatial information management at different administrative levels and the associated legal conditions.

Country	Title
Ghana	Land administration project and subsequent reforms of the National Institutional Arrangements
Mexico	Legal Framework of the National Information System for Statistics and Geography
The Netherlands	Integrated legal framework concerning planning and the environment
Russia	Law on geodesy, cartography and spatial data
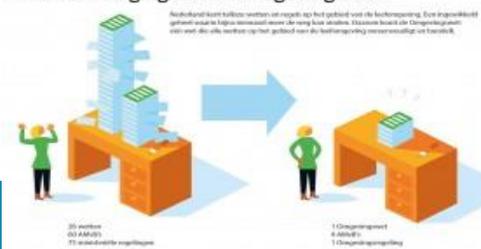
Key examples – S4. Market Regulations

Creation of regulated markets in order to create stimuli and sanctions that induce appropriate behavior by public organizations. Arrangement done through mechanisms of price and competition, offer and demand.

Country	Title
Denmark	Open Standard Licensing
Rwanda	Rwanda Open Data Policy
United Kingdom	Open Data Platform data.gov.uk

Key examples – S5. Systems for information exchange and sharing

Creation and maintenance of information systems inducing organizations to take into account the actions of other organizations through processes of mutual adjustments (e.g. development of geoportals)

Country	Title
Canada	Federal Geospatial Platform
Ecuador	Spatial Data Infrastructure facilitating emergency response in case of earthquakes
France	National Geoportal of the French administration
Indonesia	Coordinating Data Sharing through Indonesia's National Geospatial Information Networks
Kenya	National Land Information Management System
Mexico	Digital Map of Mexico

# Key examples – S5. Systems for information exchange and sharing

Country	Title
Morocco	Development of governmental geoportals
New Zealand	LINZ Data Service
Republic of Korea	Integrated Approach towards Data Sharing through NIIS
Rwanda	SpIDeRR: Spatial Information and Data Portal for Disaster Risk Reduction
Singapore	Sharing Data, Delivering Services and Building Communities in GeoPlatforms
Spain	Cadastral Electronic Site (SEC)

Key examples – S6. Entities for collective decision-making

Entities that can make binding decisions affecting multiple actors (e.g. strategic/executive decision-making boards)

Country	Title
Fiji	Fiji Geospatial Information Council
Singapore	Joint decision-making committee with multiple government agencies to drive geospatial information
Slovenia	Slovenian coordination mechanism for infrastructure for spatial information
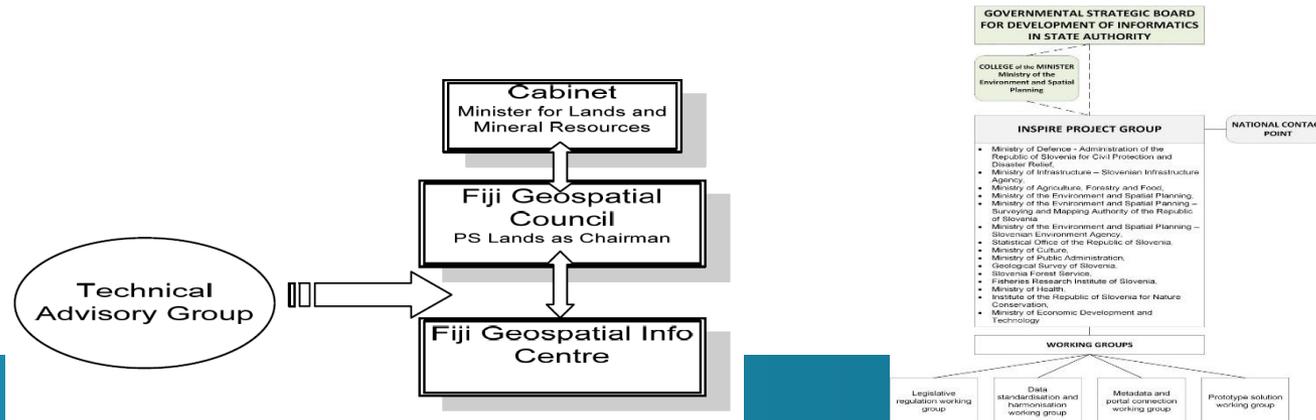
Key examples – S7. Partnerships

Creation of a partnership cooperation between two or more organizations leading to a common organization controlled by the different 'parent' organizations (e.g. G2G, G2B, G2C)

Country	Title
Australia	Building National Datasets through Intergovernmental Partnerships in PSMA Australia Limited
Canada	Canadian Ocean Mapping Research and Educational Network (COMREN)
Japan	GSI Maps Partner Network
Mexico	National and international arrangement signed by INEGI
Spain	Public Agreements of the Spanish Plan for Land Observation (PNOT
Sweden	Data Sharing Model – The Swedish Geodata Cooperation Agreement

Key examples – M1. Strategic Planning

The existence, implementation status and political support of strategy plans regarding geospatial information management in which activities of public organizations are aligned to a system of interconnected levels of plans, objectives and targets

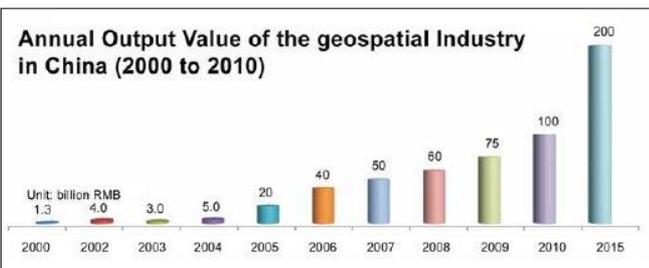| Country	Title
Australia	The Consultative Approach of Australia's 2026 Spatial Industry Transformation and Growth Agenda
Brazil	Action Plan for the Implementation of INDE
Denmark	Good Basic Data Everyone – A driver for growth and efficiency

Key examples – M1. Strategic Planning

Country	Title
FYROM – Rep. of Macedonia	Strategy for National Spatial Data Infrastructure of the Former Yugoslav Republic of Macedonia
Mexico	Programs of the National System of Statistical and Geographic Information (SNIEG or System)
Namibia	Namibia National Spatial Data Infrastructure (NSDI): Strategy and Action plan 2015-2020
Singapore	The Comprehensive Scope of the Singapore Geospatial Master Plan
United Kingdom	Place matters: the Location Strategy for the United Kingdom

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Key examples – M2. Financial Management: Input-oriented

Reference to financial management systems encompassing processes and instruments of budgeting, accounting, and auditing

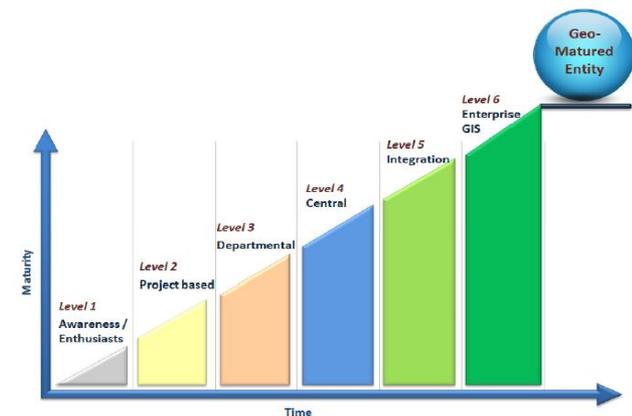| Country	Title
Bahrein	Government Investment in Bahrein Spatial Data Infrastructure
China	Financial investments in Chinese geospatial information Management
India	NSDI Financial Strategy and Funding Models
Mexico	Cadastral Modernization Program

Annual Output Value of the geospatial Industry in China (2000 to 2010)

Unit: billion RMB
1.3 (2000), 4.0 (2002), 3.0 (2003), 5.0 (2004), 20 (2005), 40 (2006), 50 (2007), 60 (2008), 75 (2009), 100 (2010), 200 (2015)

Source: 3S News

Key examples – M3. Financial Management: Performance-oriented

Results-oriented financial management with emphasis on organizational incentives for performance

| Country	Title
Germany	Automated performance procedure for German SDI Monitoring
United Arab Emirates	Geomaturity Assessment of Abu Dhabi Spatial Data Infrastructure
USA	Geospatial Maturity Assessment

Key examples – M4. Financial Management: Joined up working and cooperation

Financial management aiming to joined up working and cooperation between (public) organizations

Country	Title
Australia/New Zealand	Australia and New Zealand Cooperative Research Centre for Spatial Information
The Netherlands	Geonovum
Norway	Digital Norway (NSDI) shared financing of basis geodata
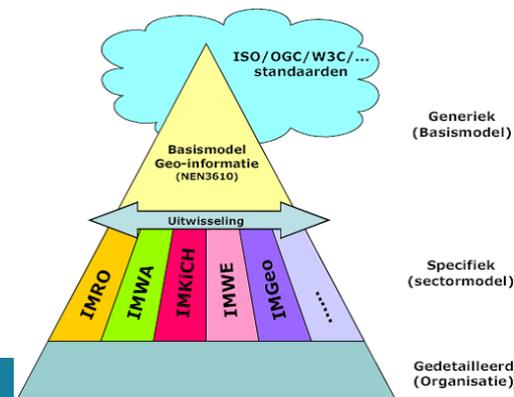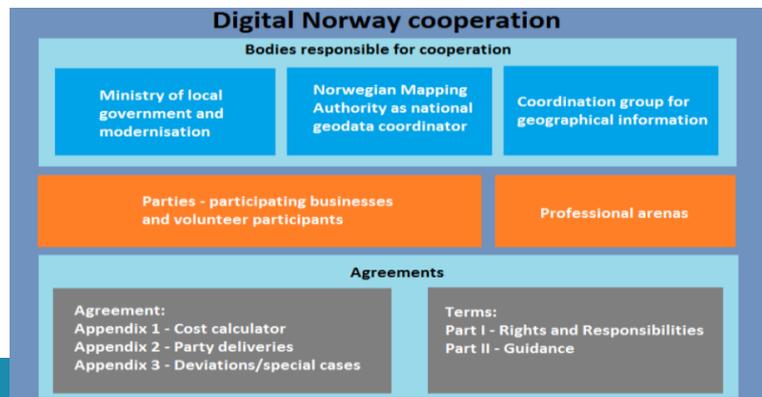
Key examples – M5. Inter-organizational Culture and Knowledge Management

Enhancement of NIA by fostering shared visions, values, norms and knowledge between organizations
►Inter-organizational networks (common education/trainings, staff mobility between organizations, Ethical codes)

Country	Title
Canada	Federal Committee on Geomatics and Earth Observations (FCGEO) and Canadian Committee on Geomatics (CCOG) – Public Sector Geomatics Cooperation in Canada
Canada	The Canadian Geomatics Community Roundtable and GeoAlliance Canada
Japan	Enhanced cooperation among relevant stakeholders of geospatial information applications and services at local level
Poland	Training cycle on INSPIRE Directive implementation
USA	The COGO Report

Key examples – M6. Capacity Building

Processes by which individuals, organizations, institutions, and societies develop abilities to perform functions, solve problems, and set and achieve objectives

Country	Title
Brazil	Capacity Building in the National Spatial Data Infrastructure of Brazil (INDE)
Chile	Regional training workshops for managing the National System on Territorial Information (SNIT)
Singapore	Strengthening geospatial information capacity and the use of Geospatial Information, Science & Technology
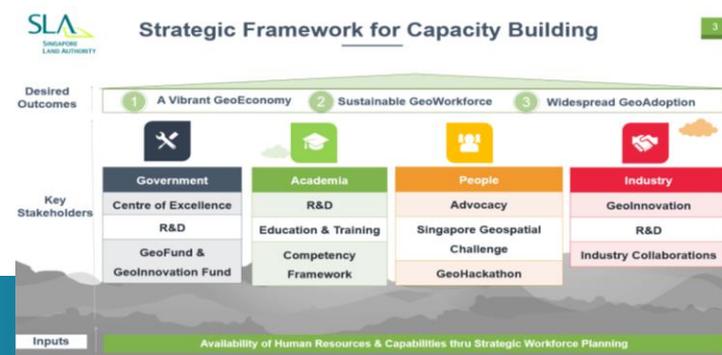
Principles & Guidelines

Provision of principles and guidelines regarding the institutionalization of geospatial information management for national governments

Partly based on the lessons learnt from the key examples of good practices of NIA-instruments

Principles: Fundamental beliefs that frame and structure the entire set of NIA instruments and what they seek to achieve

Guidelines: specific directions on the implementation of each NIA instrument (or several NIA instruments)

Principles – Introduction

Strong alignment with the UNGGIM's Statement of Shared Guiding Principles for Geospatial Information Management
+
Refining and adding ones in the context of the NIA's
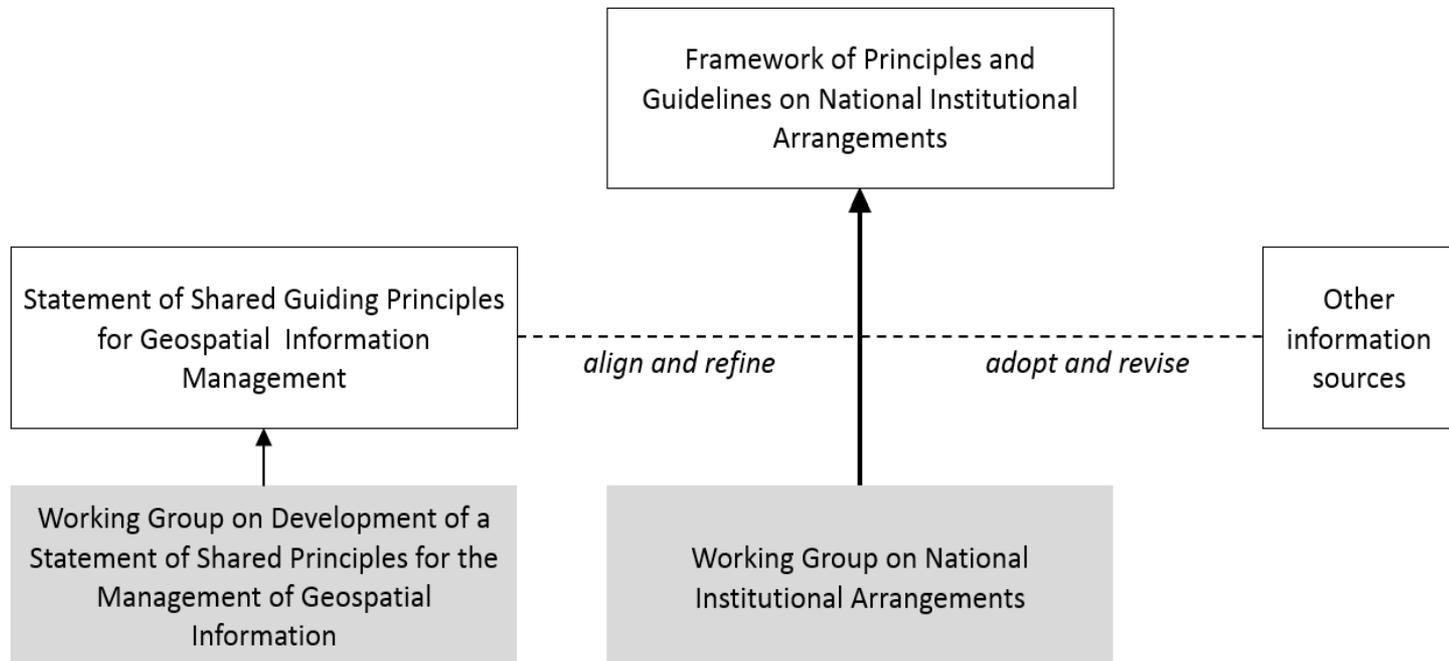
Principles

Objectives of the principles:
- to highlight the **need** to consider NIA-regulations and coordinating practices in the formation of relevant MS' policies and programs
- to cultivate **trust** in the authoritativeness and reliability of public sector geospatial information
- to **direct** the institutional frameworks that govern geospatial information organizations and **ensure** there is:
    1) commitment to its adoption
    2) understanding of its objectives at all political levels
- to stimulate the exchange of **good practices** in NIAs
- to **foster knowledge and cooperation** within and among UN MS predicated on a culture of openness / transparency

Principles

Geospatial Advocacy (evidenced-based / policy decision-making)
Coordination (voluntary/forced alignment of tasks and efforts)
Collaboration (among stakeholders)
Agility and Adaptiveness (Flexibility)
Performance (efficiency and/or cost effective)
Open Data (adopt relevant policies)
Use of and adherence to geospatial standards
Adherence to law
Accountability
Transparency
Respect and confidentiality (Privacy / Liability)
Standards of Service (appropriate access, fairness and equity)
Expertise (Valuing national expertise)
Participation and Inclusion

Principles – NIA-instruments

Principles	NIA-instruments												
	S1	S2	S3	S4	S5	S6	S7	M1	M2	M3	M4	M5	M6
Geospatial Advocacy	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Coordination	**X**	x	x	x	x	x	x	x	x	x	x	x	x
Collaboration	x	x	x	x	**X**	**X**	**X**	x	x	x	**X**	**X**	x
Agility/Adaptiveness	x	**X**	x	x	x	x	x	**X**	x	x	x	x	x
Performance	x	x	x	x	x	x	x	x	x	**X**	x	x	x
Open Data	x		**X**	**X**	**X**			**X**				x	x
geospatial standards	x		x	x	**X**		x	x			x	x	x
Adherence to law	x	x	**X**	**X**	x	x	x	**X**	x			x	x
Accountability	x		**X**	**X**	**X**	x	x	x	**X**	x	x	x	x
Transparency	x	x	x	x	**X**	x	x	**X**	**X**	x	x	**X**	x
Respect/Confidentiality	x	x	**X**	x	x	x	x	x	x	x	x	**X**	x
Standards of Service	x	x	**X**	x	**X**	x	x	**X**	x	x	x	**X**	x
Expertise	x	x	x	x	x	x	x	**X**	x	x	x	**X**	**X**
Participation/Inclusion	x		x		x	**X**	x	**X**	x		x	**X**	x

Legend: "**X**" means very relevant and "x" means relevant.

Guidelines

- More specific to NIAs
- Governments can use them as specific directions on the implementation of instruments to strengthen the national institutionalization of GI-management of their country
- 'Lessons on what to do' for each NIA-instruments based on good practices

NIA-Instrument	Country	Title	Lessons on what to do
S1. Establishment of coordinating functions and entities	Mexico	Coordination of the National Information System Statistical and Geographic	• Legislation forces the establishment of cooperation links that contribute to institutional coordination, and structures the required policies, plans and strategies It also represents endorsement at the highest level of government, which cultivates the legitimacy changes required for coordination. • Establish a strong governance structure with clear allocated roles, tasks, and responsibilities of the participants as well as financial resources for the participants. • Clear and visible leadership through a clear 'problem owner' provides a focal point for engagement with stakeholders – the external face of the consequence of coordination. This also ensures that coordination is enforced.
	New Zealand	A Clear Geospatial Governance Framework	
	Panama	Coordinating structure of the National Spatial Data Infrastructure of Panama	
	Spain	SIGPAC Coordination Board	

Principles & Guidelines – General Insights

Instruments representing a set of tools supporting strategy development in the national management of GI -> GI and Statistical data are a national asset + Benefits

Recognition by national government (Legislation & governance structures)

Overlap + Relationships between instruments (S1/S2/S3/M1 - S6/S7)

Order in implementing NIA-instruments (S3 -> S1/S2)

Explore the possibilities of open data policies by making use of Creative Commons licenses as open standard licenses

Principles & Guidelines – General Insights

- Overlap of Financial Management instruments
- Each have their own benefits and limitations
- Initial injection necessary for getting an large-scale geospatial system up and running
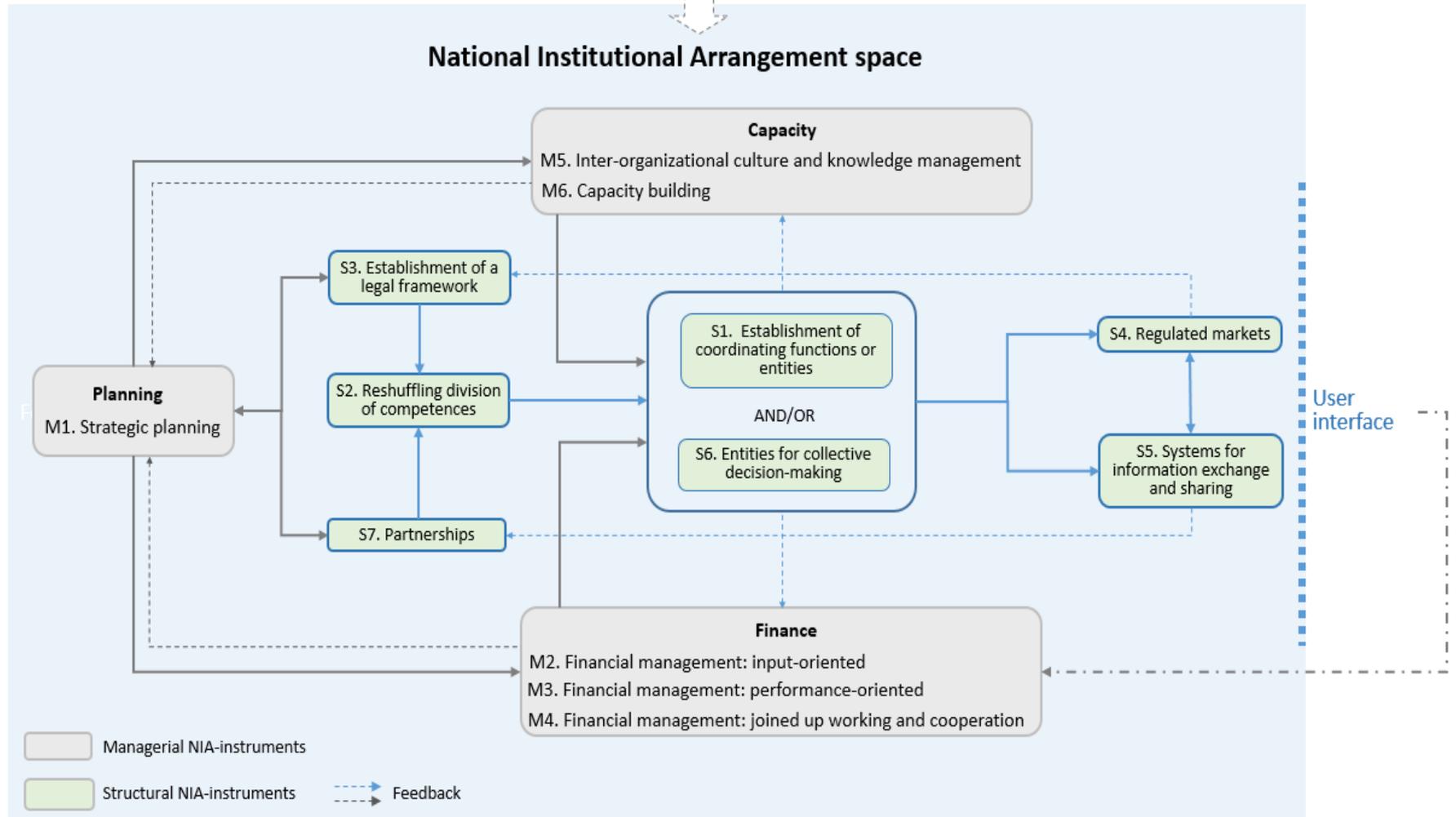
Inter-organizational culture management+ Capacity building
Rather difficult instruments to apply in practice

NIA-instruments could be implemented on their own
But more often in combination with others

No ideal model for implementing NIA-instruments

Proposed model of NIA-instrument

Lessons learnt

Emergence of a common model

Clear trends

Need for an integrated change process

Importance of a strategic plan

Legislation catalyzing institutional change

Need for governance clarity (tasks, roles, power)

Being open to 'open' data

Diverse business models

Challenging inter-organizational culture and capacity building

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