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Trends in national institutional arrangements in global geospatial information management

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Note by the Secretariat

Summary

The present paper contains the report of the Working Group on Trends in National Institutional Arrangements for consideration by the Committee of Experts on Global Geospatial Information Management.

At its sixth session, held in New York from 3 to 5 August 2016, the Committee of Experts adopted decision 6/104, in which it noted the report and background document prepared by the Working Group on Trends in National Institutional Arrangements and by its three task teams. Recognizing the complexity and broad scope of the topic, and that there is no single universal solution or model that fits all countries, the Committee commended the Working Group for its considerable efforts in formulating indicators for national geospatial institutional arrangements. The also encouraged the Working Group to use and promote good practice case studies to demonstrate the diversity of the institutional landscape, to continue its work in close consultation with the global geospatial community and to report its progress to the Bureau of the Committee prior to presenting it to the Committee at its next session. In this report and associated background documents, the Working Group and its three task teams provide information on its recent activities, including supporting the consultancy exercise conducted by the Secretariat and the preparation of five work packages and related deliverables. In the report, the Working Group also describes the methodologies and approaches to: (a) preparing national institutional arrangement guidelines and recommendations; (b) formulating the framework of structural and managerial instruments used to establish recommendations to evaluate or improve management structures across governments; and (c) identifying good practices and their applications across Member States. The institutional arrangements framework, good practices, guidelines and recommendations are presented for consideration by the Committee of Experts.

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I. Introduction

1. The global importance of national institutional arrangements in geospatial information management was recognized by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) at its third session in July 2013 when it identified the need for countries to examine institutional arrangements in geospatial information management, and thereby provide governments with options on how best to create national geospatial entities. This need arose from earlier discussions at its second session in August 2012, when the Committee of Experts considered an inventory of issues that should be addressed in the coming years. At its third session, the Committee of Experts further agreed that there was an urgent need to identify good practices related to national institutional arrangements for geospatial information management. A small Working Group on National Institutional Arrangements (WORKING GROUP) was established to continue the work with Member States and regional and international entities.

2. At its fourth session in August 2014, the Committee of Experts reiterated the strategic importance of national institutional arrangements, noting that Member States are at different stages of geospatial development, and that institutional and policy frameworks are dependent on these legal, fiscal arrangements and governance models, which are quite different across the globe. At the fourth session the Working Group proposed the following definition for institutional arrangements: “National institutional arrangements for geospatial information management may be defined as formal and informal cooperation structures that supports and links public and private institutions and or organizations and which are used to establish the legal, organizational and productive frameworks to allow for sustainable management of geospatial information, inclusive of its creation, updating and dissemination, thereby providing an authoritative, reliable and sustainable geospatial information base for all users.”

3. At its fifth session in August 2015, the Working Group presented to the Committee of Experts an extensive analysis of the results of a set of questionnaires from Member States which provided evidence to the importance and complexity of national institutional arrangements, and which generated a valuable source of information to be used in the future. The Committee of Experts, in its decisions, provided guidance on how the Working Group might evaluate the status of efforts on progress in national institutional arrangements, including providing additional clarity on the process and on the conclusions drafted.

4. At its sixth session in August 2016, the Committee of Experts recognized the complex and broad scope of the work that the Working Group was undertaking, noting that there is no single universal solution or model that fits all countries. Reiterating the need to provide Member States with options on how best to create robust national geospatial institutional structures, the Committee of Experts encouraged the Working Group to continue its work. Additionally, in order to give its work greater focus, the Working Group was asked to report on its progress to the Bureau prior to presenting to the Committee at its next session.

5. Subsequent to the sixth session of the Committee of Experts, the Working Group made presentations at two UN-GGIM regional committee meetings. Based on discussions coming out of these meetings, and interventions from Member States representatives and the Bureau, it was agreed that the Working Group should focus on generic elements that provide Member States with guidelines and

principles with which to make decisions on their national institutional arrangements, and not delve into technical methods and detail.

6. The present report informs the Committee of Experts of efforts by the Working Group to develop an overarching framework for national institutional arrangements in geospatial information management for Member States. The Committee of Experts is invited to take note of the report and to express its views on the way forward for the national institutional arrangements framework, good practices, guidelines and recommendations. Points for discussion and decision are provided in paragraph 21.

II. An overarching framework for national institutional arrangements

7. In order to focus and consolidate the considerable body of work achieved by the Working Group, at its third annual meeting, convened in December 2016, the Expanded Bureau supported the decision and action taken by the Secretariat to engage the services of a consultant to assist the Working Group. In close collaboration with the Working Group Chair and task team leads, the consultancy exercise assisted the Working Group in developing a high level framework for implementing national institutional arrangements in geospatial information management for Member States, and based on instruments, principles and guidelines. This framework leverages and extends the work of the Working Group to advance understanding of institutional design to support geospatial information management.

8. An overarching framework for national institutional arrangements includes instruments, principles, guidelines and recommendations to support delivery and/or improvement on current national institutional arrangements for geospatial information management. There were two key challenges in formulating the framework: (1) the design had to be simple and straightforward to enable key examples of good practices to be logically borne out of its application; (2) the guidelines needed to be relevant for individual Member States, while also having the potential to be applied at a global level.

9. The framework focuses on three mechanisms underpinning institutional arrangements that emphasize coordination. They are: **hierarchies, markets and networks**. Each of these mechanisms contribute to understanding the causes of problems experienced in institutional arrangements, the gains to be achieved through institutional arrangements, and the mechanisms through which better institutional arrangements can be achieved. As well as providing a scientific understanding of policy making and evaluation, these mechanisms are also closely related to a set of instruments that can be leveraged to deliver national institutional arrangements.

10. Institutional arrangements may be realized by creating new, or changing existing, structures or management forms within government, so the identified instruments are either **structural or managerial**. Structural instruments refer to the structures of the organizations responsible for geospatial information, and managerial instruments refer to procedures, incentives and values which plan, monitor and evaluate the use of resources (human resource management, finance) or the implementation of policies. The 13 instruments identified are listed in Table 1, while detailed descriptions are provided in the background document to this present report.

Structural	Managerial
S1. Establishment of coordinating functions or entities S2. Reshuffling division of competences S3. Establishment of a legal framework S4. Regulated markets S5. Systems for information exchange and sharing S6. Entities for collective decision-making S7. Partnerships	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

Table 1: Classification of national institutional arrangements instruments into structural and managerial instruments.

11. In addition to the instruments, principles have also been proposed. These provide key concepts for assisting governments in dealing with the barriers and challenges in implementing national institutional arrangements. Principles are the fundamental beliefs that frame and structure the entire set of national institutional arrangements instruments and what they seek to achieve. The presented principles have been formulated using several key inputs. First, there has been strong alignment with the ‘Statement of Shared Guiding Principles for Geospatial Information Management’ endorsed by the Committee of Experts at its fifth session in 2015. However, when viewed through the lens of the needs of national institutional arrangements, there are opportunities to refine and further add to these principles. Input derived from the results of the previous reports of the Working Group, discussions with members of the Working Group and experts in national institutional arrangements, and a desktop review of relevant academic and grey literature have been pertinent.

12. The objectives of the principles are to: highlight the need to consider national institutional arrangements regulations and coordinating practices in the formation of relevant Member States’ policies and programs; cultivate trust in the authoritativeness and reliability of public sector geospatial information; direct institutional frameworks that govern geospatial information organizations; ensure there is 1) commitment to its adoption and 2) understanding of its objectives at all political levels and by stakeholders in national authorities; stimulate the exchange of good practices in national institutional arrangements in the context of geospatial information management; and to foster knowledge and cooperation within and among Member States predicated on a culture of openness and transparency.

13. Therefore, the following principles are applicable for national institutional arrangements in the context of UN-GGIM. Their detailed descriptions can be found in the background document to this report, where we can also see the strong links between the principles and the national institutional arrangements instruments:

- a) Geospatial advocacy;
- b) Coordination;
- c) Collaboration;
- d) Agility and adaptiveness;

- e) Performance;
- f) Open data;
- g) Use of and adherence to geospatial standards;
- h) Adherence to law;
- i) Accountability;
- j) Transparency;
- k) Respect and confidentiality;
- l) Standards of service;
- m) Expertise; and
- n) Participation and inclusion.

14. To understand how these instruments can be used effectively to support geospatial information management operations, and with consideration to the principles for national institutional arrangements, examples of good practices and applications were identified by Working Group members and domain experts. A reported practice constitutes an example of a ‘good’ practice because it was deemed to demonstrate an effective instance of the national institutional arrangements instrument in practice, producing outputs or outcomes that facilitates effective and successful geospatial information management in that country.

15. Sixty-one examples of good practices of national institutional arrangements instruments have been identified and provided at the time of writing this report; Europe (20), Asia-Pacific (16), Americas (17), Africa (5) and Arab States (3). They are presented and detailed in the background document to this report. The good practices were based on a standard template and designed for ease of understanding. An overview summary of all described examples of good practices has also been provided in the background document, and readily demonstrates how different instruments are being applied within and across Member States in all regions.

16. The sixty-one examples, which in itself indicates a considerable response rate, serve to illustrate the benefit of applying the various types of national institutional arrangements instruments and the purpose they serve in the context of supporting Member States. The collected examples demonstrate that some instruments are easily operationalized. This can be seen in the diversity of practice applications for the structural national institutional arrangements instrument, **S5**. “*Systems for information exchange and sharing*”, and the managerial instrument, **M1**. “*Strategic Planning*”. Conversely, some national institutional arrangements instruments less commonly applied are evidenced in the difficulty in obtaining good practice examples for instruments such as **S2**. “*Reshuffling division of competences*” and **M5**. “*Inter-organizational culture and knowledge management*”.

III. Recommendations for implementing national institutional arrangements

17. A series of recommendations from the practice examples were developed to provide directions on the implementation of each national institutional arrangements instrument. Governments can use these as a starting point to apply

the instruments to strengthen the institutionalization of geospatial information management in their country.

National Institutional Arrangements Recommendations

- (a) **Emergence of a common model.** There exists an array of institutional strategies to achieve good geospatial information management, but there are also commonalities, which reflect the principles identified. These commonalities have been abstracted and are shown as a possible roadmap for institutional design in Figure 1. This should not be read as the ideal model, but simply as a way to support a user's understanding of how to commence, use and implement the instruments. This needs to be done with sensitivity to contextual variables within countries (e.g. sources of legitimacy for decision-making, resources, number of agencies involved, pre-existing inter-organizational relationships, etc.).
- (b) **The importance of a strategic plan.** A strategic plan is an important first step towards identifying the vision, mission, aim and objectives of the geospatial information management initiative. This provides the direction for selecting the appropriate instrument for instigating a new structure. Whether this was more hierarchy- (**S3. Establishment of a legal framework**) or networks-based (**S6. Entities for collective decision-making; S7. Partnerships**), is a function of a contextual variable e.g. where authority comes from, previous initiatives that may have worked or failed, resource flows, existing successful relationships, among others.
- (c) **Catalyzing institutional change.** Legal frameworks are often used to catalyze an institutional change process, as they represent a coercive force and demand a mandatory shift in mental models and culture. The benefit of legislation also lies in the provision of enforcement mechanisms to ensure that organizations comply with changes. A consolidated legal framework can also be a strategic mechanism that aligns the development, use and management of geospatial data with sustainable development principles – a strategy that can enhance the legitimacy for change.
- (d) **An integrated process.** The operational challenges of structural changes often fall to managers to negotiate. It is therefore important that these national institutional arrangements instruments are considered in an integrated way and not perceived as a hierarchical change process.
- (e) **The need for clarity.** Regardless of the coordinating mechanism, clarity over who does what is necessary when multiple actors are involved. For managers, the change trajectory marked by **S1. Establishment of coordinating functions and entities**, and **S2. Reshuffling division of competencies** needs to be considered carefully as this has implications for **M5. Inter-organizational culture and knowledge management** and **M6. Capacity building**.
- (f) **Being open to 'open' data.** It is strongly recommended that governments explore the possibilities of open data policies by making use of Creative Commons licenses as open standard licenses. This allows providers of public sector (geospatial) data to publish their data without the need to develop and update custom licenses. However, issues related to accountability, transparency and sustainable financing need to be also

taken into account.

- (g) **Diverse business models.** The three-financial management national institutional arrangements instruments: (**M2. *Input-oriented***, **M3. *Performance-oriented***, **M4. *Joined up working and cooperation***) represent funding and business model options. Each have their own benefits and limitations, but it is evident that an initial injection of funds is necessary for getting a large-scale geospatial system up and running. There is a growing tension between the cost of geospatial data production and maintenance and the diffused economic benefits that accrue from facilitating its use and reuse. To have a strong regulated market, the main guideline is to establish a consistent pricing policy regarding the use of geospatial data and services.
- (h) **The challenge of culture and capacity.** National institutional arrangements instruments **M5. *Inter-organizational culture and knowledge management*** and **M6. *Capacity building*** can be difficult instruments to apply in practice. The normal approaches tend to be trainings and workshops. While these should not be discounted, they do not necessarily translate to the types of change required to sustain new ways of working. A multi-dimensional approach that targets different user groups and demographics may be more appropriate.

IV. Next steps

18. The following steps will serve to direct the activities of the Working Group forward towards "developing a framework for implementing national institutional arrangements in geospatial information management for Member States, based on instruments, principles and guidelines" and also the thoughts for national institutional arrangements in the future.

19. On one hand, it is necessary to produce a more comprehensive and easy-to-understand report for users without previous experience in the decision-making and implementation of national institutional arrangements in the framework of geospatial information management. On the other hand, given the breadth of the aspects considered in the instruments (structural and managerial), it could be necessary to go deeper into each, both in terms of their concepts and characteristics, and in explaining examples of good practices, and also in the technological tools and standards for its proper implementation.

20. However, one defined activity can be foreseen; the elaboration of global geospatial information management national institutional arrangements guidelines and best practices. This guide should comprehensively inform readers about geospatial information management national institutional arrangements, inclusive of their complex nature, and should present the Working Group's approach on the matter, assisting readers to understand its principles and instruments. The objective is therefore to provide an easy-to-understand guide that facilitates the use of the principles and instruments developed for those users not previously familiar with geospatial information management concepts.

V. Points for Discussion

21. The Committee is invited to:

- (a) Take note of the report and the work carried out by the Working Group, inclusive of the background documents to the present report;**
- (b) Express its views on the methodology and approaches employed to prepare the national institutional arrangements framework, including instruments, principles and guidelines, and consider their endorsement;**
- (c) Endorse the compendium of good practices, and request Member States to contribute to the preparation of additional good practices for all 13 instruments, in order to achieve geographic balance, and;**
- (d) Provide guidance on the way forward for the Working Group.**

Figure 1. Proposed roadmap of institutional design for geospatial information management.



