The Value of Geo-Information for Disaster and Risk Management (VALID)

- Benefit Analysis and Stakeholder Assessment -

Joint Follow-on Publication to

'Geoinformation for Disaster and Risk Management – Examples and Best Practices', JBGIS/UNOOSA 2010

Project Description

01/06/2011

1. Rationale: Why another joint JBGIS/UNOOSA publication?

With the "Best Practices Booklet", information is being provided on what can be done - methods, systems, applications, experiences. As a next logical step it would be useful to provide information on what it is worth: an evaluation of benefits. A publication to that end would further help

- to raise awareness in the political and programmatic environment and
- to set priorities in research and development.

2. Objective: What is the goal?

The intention is to produce a publication to give evidence of the economic, humanitarian, operational and organizational benefit which can be realized by applying geoinformation to disaster management, based on analyses of representative cases, and expert stakeholder assessment as well. The expected outcome is a differentiated, scientifically founded answer to the crucial question: "What is the difference you can make with geoinformation?"

3. Methodical approach: How to do it?

By the classical Cost-Benefit-Analysis (CBA) approach the costs of an investment are compared with the monetary value of societal and economic benefits generated thereby. Whereas the costs of a given geoinformation product can be easily assessed by any geodata or GIS provider, monetizing societal benefit is more complicated and fuzzy. E.g., a comprehensive socio-economic Benefits Analysis has been performed for the services offered by the European GMES programme, including issues of risk and civil protection[1]. An alternative approach, based on evaluation of reference information products through

[1] PricewaterhouseCoopers (2006): Main Report Socio-Economic Benefits Analysis of GMES. ESA Contract Number 18868/05

expert stakeholders, was followed to assess the potential benefits of satellite remote sensing application to the mandatory tasks of the German Federal Ministry for Environment and Nuclear Safety[2].

Both approaches will be applied in this project, taking into account that the monetized benefit analysis will probably lend itself more readily to assess the impact of geoinformation products in the phase of early emergency response, when there is a more immediate relationship between information availability and efficiency of relief measures. In parallel, an expert stakeholder assessment might be the method of choice to evaluate the benefits of geospatial information products addressing the support of disaster prevention and risk reduction, such as risk and vulnerability maps.

For a logic flow chart outlining the overall methodology see Fig. 1.

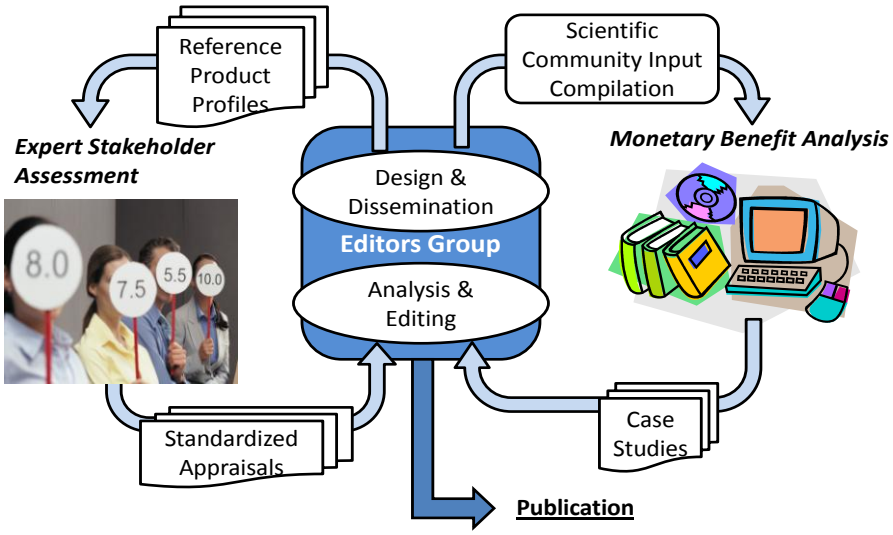

Figure 1: General Approach

3.1 Socio-Economic Benefit Analysis

Work in this context will be focused on a thorough review of published papers covering the cross-sectional field of geoinformation, disaster management, and cost-benefit analysis. Dependent on the availability of funds, this literature-based approach will be complemented by selected case studies addressing recent major disasters.

An internal database for the compilation of publications, initiatives and programmes in this field has been set up already.

[2] Backhaus, R., and Beule, B. (2005): *Efficiency Evaluation of Satellite Data Products in Environmental Policy.* Space Policy 21, 173-183

The expected outcome will be a critical literature review, highlighting benefits as well as shortcomings and needs, and specifying the particular effects of physical, societal and organizational boundary conditions. Topical case studies, if available, might serve to exemplify major conclusions from the literature review.

3.2 Expert Stakeholder Assessment

This approach is intended to tap the implicit knowledge of the global stakeholder community with regard to the practical value of geoinformation under specific aspects of disaster management. Stakeholders may be end users, providers or value adders of geoinformation.

In the essence, a reference set of generic geodata products will be described in terms of major user-relevant features such as thematic content, spatial resolution, timeliness, availability etc. The resulting product profiles will be communicated to the global stakeholder community, together with a template for a standardized product appraisal. This template will specify a list of criteria related to various aspects of benefit. Based on a normalized rating schedule, the experts will evaluate all reference products according to the beneficial impact which can be attributed to their application. The outcome will be a differentiated evaluation of specific benefits, which will be supplemented by a cost estimate for implementation.

The global stakeholder community is to be involved already in the selection of the reference geodata products. To this end, a web-based prioritization process has been conducted, where all stakeholders were given the opportunity to identify the most important geodata products on a longlist containing 51 items.

For evaluating the reference set of geodata products and services a standard procedure will be defined in order to attribute a normalized index value to various criteria of benefit.

These criteria will address

- the impact of product availability and application, with reference to specific aspects of disaster management activities, and
- the criticality of specific product features.

The following criteria are foreseen:

- *Impact on operational issues*
    - Humanitarian aid
    - Health care
    - Critical infrastructure
    - Security

- *Impact on administrative and political issues*
    - Efficiency of plans and policies
    - Public acceptance of plans and policies
    - Support of federal/transnational/superregional consistency and cooperation
    - Avoiding losses in public economy
- *Criticality of product features*
    - Areal coverage
    - Spatial resolution
    - Timeliness
    - Repetition frequency
    - Availability / access
    - Data format / processability
    - Standardization

Weighting factors for the criteria and a standard appraisal key are to be defined.

The evaluators group should represent expert stakeholders, i.e. actual or potential users, not providers, of geospatial data products in disaster management. The term "users" is understood to comprise practitioners as well as planners and deciders, affiliated in public disaster management bodies, international organizations and NGOs. Recruitment will be done by an open call via E-mail and Internet.

The evaluators will be provided with a short project description, the reference set of product profiles, and the appraisal scheme (criteria and appraisal key). These documents, as well as the assessment forms that are to be completed will be made available on the VALID project site on the UN-SPIDER Knowledge Portal (http://www.un-spider.org/about/portfolio/publications/valid). The identity of the evaluators will be disclosed only to the editors core group.

The methodology for conducting the expert stakeholder assessment is illustrated in Fig. 2.

The assessment results will be analyzed with respect to, e.g., thematic distribution and clustering, geographical distribution, disaster types addressed, disaster management cycle phases covered, critical priorities, etc.

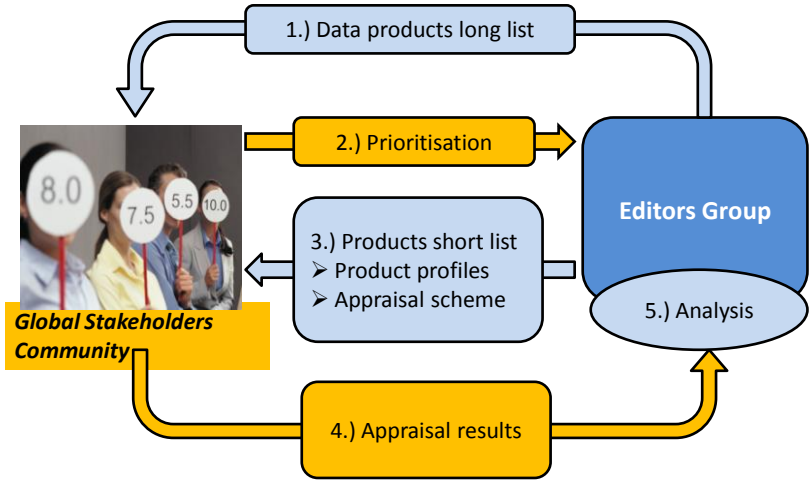

Figure 2: Methodology for Expert Stakeholder Assessment

If estimates of product costs (order of magnitude) can be attributed to the reference product profiles, each product can be characterized by a triple (cost/impact index/criticality index). For sake of unbiased judgment, cost estimates will not be disclosed to the evaluators in advance.

4. Project Group

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