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GMES: The Security Dimension[1]

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Introduction and executive summary

On 16 March 2007, the EU Institute for Security Studies held a seminar on the security dimension of GMES. It was organised with the support of the Council General Secretariat, the European Commission, and the EU Satellite Centre – making it the first of its kind. The seminar's principal objective was to raise stakeholders' awareness on the security dimension of GMES and to obtain guidance for implementation. More than one hundred participants attended the event, representing government, think tanks, international organisations and agencies.

The seminar consisted of three sessions. Session I examined users' needs in the area of information services for security – soliciting examples spanning the EU's three pillars.[2] Session II was devoted to GMES' contribution to information services for security. Speakers described GMES applications and services under development. Session III focused on the principal challenges and prospects associated with GMES implementation – identifying areas likely to require additional consideration.

Overall, there was general consensus that there is a growing role for geospatial information services for security. Examples of application areas with growing demand include crisis early warning and support in the aftermath of natural disasters or conflict. Participants noted that the 'S' (Security) component in GMES is underdeveloped in comparison to the 'E' (Environment) component. Boosting the security dimension of GMES, however, will require more proactive steps to prioritise policies and distil security requirements. Potential options to do so include a structured consultation aiming at refining stakeholders' requirements, the set-up of a more permanent EU cross-pillar group to assist with the implementation of the GMES security dimension, and seeking additional political guidance and support.

[1] GMES (Global Monitoring for Environment and Security) aims to provide, on a sustained basis, reliable and timely services related to environmental and security issues in support of policy makers' needs. GMES is an EU-led initiative, in which the European Space Agency will implement the space component and the Commission will identify and develop information services relying both on in-situ (ground-based) and remote sensing data.

[2] Information services refer to space- and ground-based assets that may be used to collect information.

I. Information services for security: what are users' needs?

Two factors complicate identifying users' information service for security. First, it is difficult to define 'security'. The concept has evolved over time – to the point that the boundary between 'hard'/'soft' and 'internal'/'external' security is blurry. For guidance, participants referred to the European Security Strategy and its list of global security challenges and key threats. Second, there are numerous communities likely to be impacted by GMES – magnifying the difficulty of identifying service requirements. Concerning specific information service needs, a variety of examples were provided covering the EU's three pillars:

- *Support to CFSP and ESDP* – Information services for security could provide support in areas such as conflict early warning, counter-proliferation monitoring of sensitive/denied locations, and ESDP operations. With respect to ESDP operations, imagery of key infrastructures in the area of operations is particularly useful. Examples include marking of road networks, embassy locations, identification of potential landing sites for aircraft and helicopters, and other facilities which could either facilitate or complicate the operation. With respect to specific geospatial information services, speakers mentioned rapid mapping, maritime traffic monitoring, and urban three-dimensional (3D) modelling.

- *Support to Justice and Home Affairs* – Information services for security could contribute to law enforcement in its fight against organised crime and drug trade. In the maritime area, police and customs agents have a requirement to be able to track and intercept vessels on the high seas suspected of transporting drugs. Imagery might be particularly useful to recognise certain suspicious activities, such as deviations from declared routes, undeclared stopovers or loitering off normal shipping lanes or holding areas. Reflecting this need is the establishment of the seven-country Maritime Analysis and Operations Centre (Narcotics) in Lisbon over the coming months. Information services that can support other law enforcement activities – such as trafficking in human beings or arms – would likewise be valued. Assistance with more traditional tasks, such as crime scene investigation, might be useful to the extent possible.

- *Support to Community activities* – The European Commission has global information needs. As such, it relies on geospatial information services in several areas spanning humanitarian assistance, civil protection, and critical infrastructure protection. Two examples were provided to illustrate such needs. In one case, imagery was used in support of the Commission's activities within the Kimberly Process.[3] Earth observation imagery was used to identify active and non-active diamond mines in different locations, making it possible to gauge if such mines were located in conflict zones. In another case, information services were used to estimate damages to infrastructure and buildings in Lebanon in the aftermath of the Israeli-Hezbollah conflict.

  With respect to border monitoring, information services for security may provide assistance in two principal areas. First, it may support risk analysis assessments;

[3] The Kimberly process seeks to limit the export of 'conflict diamonds'. For more information see http://ec.europa.eu/comm/external_relations/kimb/intro/index.htm

e.g. to identify external border vulnerabilities. Second, information services might be used in support of deployments – including to remote locations. For example, European assets were deployed to the coast of Western Africa in response to a surge in illegal migration flows to the Canary Islands in the second half of 2006 (Operation *Hera*). Information services that are close to real time, capable of detecting motion, and allow surveillance of difficult targets – e.g. small or possibly concealed – would be highly valued.

Beyond these types of information services, some speakers noted that a GMES contribution towards global secure communications is welcome if technically feasible.

II. What are GMES contributions to information services for security?

While Europe has a variety of space assets currently in use, earth observation systems are run independently and coverage is incomplete both for the space and ground (in-situ) component. GMES aims to make the best use of existing systems and produce services of guaranteed validity on a sustained basis – addressing EU needs in the environment and security domain. A total of €1.4 billion is dedicated to the Space theme within Framework Programme 7. About €1.2 billion (85%) will fund GMES activities. In the security domain, specific GMES information services may include:

- Prevention, monitoring, risk management and assessment of natural and technological hazards in Europe;
- Organisation and distribution of humanitarian aid;
- Conflict prevention and crisis management support;
- Protection against emerging security threats such as proliferation of WMD and trafficking;
- Border surveillance (land and sea)

The development of GMES is incremental. Three fast track services are expected to be operational by the end of 2008 covering land monitoring, marine core service, and emergency response.[4] The 'emergency response' fast track covers the development of rapid mapping services in support of natural or technological disasters in Europe and/or natural disasters or conflicts outside Europe. A report by the emergency response implementation group recommends that the service be extended in the long-term to include monitoring for crisis prevention and assistance to post-crisis reconstruction.

The European Commission and ESA fund several projects that contribute to the development of the security dimension of GMES. Examples include humanitarian relief support, disaster reduction and reconstruction (e.g. RESPOND and LIMES) as well as land, infrastructure and maritime surveillance (e.g. LIMES). The EU Satellite Centre (EUSC) is operational in similar and related areas and is therefore closely involved in current GMES developments. In addition, the Commission's Joint Research Centre is engaged in GMES developments.

[4] A fourth pilot service focusing on atmosphere monitoring is currently being set-up.

III. Implementing the 'S' in GMES: what are the challenges and prospects?

Speakers and participants identified several challenges associated with the implementation of information services for security. Six general categories of challenges or constraints were noted:

1. **Operational** – The majority of these were raised in conjunction to ESDP-related needs. Examples include:

    - *Responsiveness* – services should be able to react very quickly when needed with little or no prior warning.
    - *Timeliness* – exploitation resources must be adequate to process acquired data within operationally acceptable timescales and services should indicate the earliest point at which requested information can be made available and meet agreed deadlines.
    - *Reliability* – assurance that information will be provided on a continuous basis and meets required specifications.
    - *Persistency* – the assurance that the service is always made available and can deliver regular updates.
    - *Protection* – the ability to allow the requester or provider not to authorise the disclosure of a set of geospatial data when so decided.

2. **Co-ordinational** – There are several stakeholders already active in the domain of earth observation for security, including efforts by individual EU Member States, Commission services, and the EU Satellite Centre. Some products – such as imagery analysis in support of treaty verifications and border monitoring – fall within the scope of the GMES Security domain. Likewise, in-situ data are typically managed by EU Member States, making it more challenging to provide data through a single or limited number of channels. The possibility that data are not made available due to confidentiality creates additional constraints. As the security dimension of GMES evolves, it will be important to ensure continued coherence across stakeholders. Participants also highlighted the need for integration of European space components dealing with positioning/ timing/navigation (Galileo), communications, and earth observation (GMES).

3. **Technical** – Some user needs, such as requests for continuous monitoring in real or near real time that is also able to track small-sized objects may not be feasible, especially in the short to medium term. Some military requirements may likewise not be technically feasible. Balancing the need for real time imagery with adequate analysis of such images (which takes time), adds additional layers of complexity.

4. **Political –** To move beyond projects and achieve the development of GMES services at the EU level, there is a need for political support as obtained for the three fast track services on Marine, Land Cover and Emergency Response. Gaining such support may be difficult given the number of stakeholders in the security domain and their requirements vis-à-vis information services.

5. **Financial** – The GMES budget stems from the Community *Framework Programme for Research Development.* As the system matures, a budget line for operations will be needed. In the words of one speaker, 'to stand, GMES will need another leg' to cover the operational phase (as is the case for Galileo).

6. **Organisational** – This category includes elements such as developing the in-situ component of GMES and formulating protocols for sharing sensitive data in the area of security. The dual use nature of information services makes the latter a particularly challenging task. Since GMES is difficult to understand and 'sell', a branding and marketing strategy may be required. Currently, the project relies on its demonstrator projects to show the different applications as concretely as possible.

IV. The security dimension of GMES: Quo vadis?

Given the multitude of stakeholders in the security domain, GMES governance issues will become increasingly important. According to several participants, the current organisational structure is unable to aggregate users' requirements in the security field. In the words of one speaker, GMES needs a *modus operandi* rather than a *modus vivendi*. Three possibilities – that are not mutually exclusive – were posited to facilitate the identification and evolution of GMES services in the security field:

1. *Follow-up on the seminar debate*. Such a strategy would encourage continued interactions between stakeholders. To deepen interactions, additional seminars or meetings might be held. Through a 'snow-ball' effect, new stakeholders and their requirements would be identified as interactions deepen. This could be used as a consolidation of the work in the next step.

2. *Establish a follow-up procedure*. To cover the entire security spectrum to the extent possible, a structured and more 'permanent' working method might be established combining different services within the Council and the Commission. While creating such a 'working group' might be complex given institutional limitations, the objective should be to minimise the possibility of credibility gaps. The seminar itself demonstrated that identifying stakeholders and their needs as well as implementing the GMES contribution for security requires novel ways of collaboration within the EU.

3. *Seek and encourage political guidance*. GMES is a flagship programme for the EU. While many GMES aspects are mainly technical, its implications are not. 'Top-down' political guidance is perceived as an essential ingredient for direction – especially in the security arena. As a result, policymakers may want to explore whether key stakeholders such as the Group of Commissioners on External Relations, SG/HR Solana, Commissioner Verheugen, GAERC, or EU Ministers of Research can provide additional guidance and political support to the security dimension of GMES.

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