



## GMOSS Report Summary

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### Combining forces to construct a European capacity for processing the enormous quantities of earth observation data

The aim of the GMOSS network of excellence (NoE) has been to integrate Europe's civil security research so as to acquire and nourish the autonomous knowledge and expertise base Europe needs if it is to develop and maintain an effective capacity for global monitoring using satellite earth observation.

During the four years of the duration of GMOSS the consortium pursued to achieve these goals. It proved to be very effective that the planning had to be revised on an annual base, following the critical evaluation of work, thus allowing the network to react to new developments and to counteract possible shortcomings. These capabilities were for example used to restructure the integration cluster, which in the end turned out to be central for the success of the NoE.

This cluster included test cases, workshops, standards and benchmarking, sharing infrastructures, and staffing exchange.

In order to obtain a complex picture of the situation within the test cases the socio-political and socio-economical context was elaborated and discussed. This challenging task was successfully performed utilising the interdisciplinary character of the network. The compilation of test case specifics regarding economic, political and social aspects, is a valuable compilation of relevant facts and background information. It provides a clear, profound picture of the situation at place, by highlighting the interrelationships of factors, the broader context and some key figures. Test case-related scenarios could draw relevant information from this source. In this context respective envelope stories were elaborated for each test case with input from other intelligence sources; drawing a comprehensive picture, especially for the presentation and dissemination tasks to the users and decision makers.

In the course of the investigations on different issues the partners realised that the variety on techniques, algorithms and software packages applied by the members of the network needed a common and thorough understanding. In order to fulfill this requirement, several benchmarking activities were proposed as a new approach in the late phase of the project lifetime. Benchmarking was applied in the test cases, too.

Part of the success of GMOSS was due to workshops and conferences. On average, GMOSS organised two overall integration workshops a year, thus involving all partners and all work packages (WPs). These overall workshops were opportunities to meet other partners and propose new activities. In particular, the suggestion to start common activities on test cases, on benchmarking algorithms and on the GMOSS near real-time exercises (GNEX) was instrumental to facilitate integration. Apart from GMOSS internal meetings, some of the events were opened up for project externals. These were mainly possible end-users or project responsables of other GMES and security projects. This information exchange was leading to the integration of GMOSS partners and/or ideas in related research initiatives, where GMOSS members are in the core of relevant activities. This is a clear indication for sustainable strengthening of this research area.

The network intended to engage partners of respective consortia in training measures as a way to stimulate the exchange of expertise. Users from the communities-of-practice had been involved in training events (such as GNEX, summer schools and seminars) to increase the awareness about the benefits of using spatial information for decision making in security situations. The activities of the training program cater not only for outreach, but also strongly facilitate the integration within the partnership. The year 2007 may serve as an example: following the presentation of the test cases in an integrated analysis framework during the review meeting in the Hague (April), the third summer school on 'Early warning and monitoring of agreements' in Madrid (September), and a seminar on 'Environment and conflict' in Bonn (October) provided platforms for exchange between different communities. It is by these 'interfaces' that the network attracted a substantial number of institutions from sectors such as policy analysis, science and technology and service providers to apply for associated partnership.

Another achievement of GMOSS was the development and setting-up of the so called GNEX exercises. The exercises were set up such, that the teams were confronted with challenging, rapid response (matter of hours and days) analysis

task on a predefined scenario, which no single network partner could handle alone or manage directly. The primary objective of this type of exercise was to strengthen integration and coordination among the partners and associated organisations, by being forced to split a complex analysis task into subtasks, distribute and share the processing and interpretation work and finally compile the individual results into a common answer to the scenario questions. Furthermore, the exercise aimed at helping to assess and demonstrate the state-of-the-art of satellite imagery analysis and handling by the GMOSS NoE partners and teams. In addition, the exercises should help to involve users and decision makers in the domain of civil crisis response into the work of GMOSS and to demonstrate to them the added value of Earth observation (EO) based information in civilian crisis response using GMOSS methods. In doing so, the exercise supported the political process for paving the way for the operationalisation of these new developments.

A very specific achievement of GMOSS is the gender working group that managed to address gender issues in the network both thematically and institutionally by organising on the one hand a conference on gender-specific issues of security and on the other hand by highlighting the importance of work-life balance also in research environments resulting in arts exhibition.

The integration and dissemination activities for gathering a critical mass of resources and the expertise were only one part of the objectives of the network. A central part of the network was the development of generic methods, algorithms and software needed for the automatic interpretation and visualisation of imagery including feature recognition, change detection and visualisation. Using these tools best practises for areas such as effective monitoring of international treaties protecting against proliferation of weapons of mass destruction, better estimates of static and dynamic populations on a global scale, better monitoring of infrastructure and borders and rapid remote assessments of damage were designed and tested. All this was supported by investigations of present and future threats to security and the needs for exchange of information between stakeholders during crises.

## Related information

<b>Result In Brief</b>	<a href="#">Ensuring effective global satellite monitoring</a>
<b>Documents and Publications</b>	<a href="#">Final Report - GMOSS (Global Monitoring For Security And Stability)</a>

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