

Final Words

All the participants of the working group meeting were satisfied with the results achieved. Everybody knows the other board members better and the aims of the working group are now stated more clearly. The meeting was closed with a glass of wine.

All readers of this report, working in the fields of the working group, are invited to join and become active members. Please visit our homepage at the following web address: www.homometrica.ch/isprs.



The First International Symposium on Geoinformation for Disaster Management

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The First International Symposium on Geo-information for Disaster Management, Delft, The Netherlands, 21-23 March 2005 was the first event allowing people with different background and interests to meet and discuss topics important for disaster management. Amongst the 331 registered participants of 58 countries (from 6 continents) were researchers, developers, end-users and geo-providers. The event was organised by Delft University of Technology in cooperation with ISPRS (WG IV/8, WG IV/3), OOSA, AGILE, EuroSDR, ICA, FIG, OGC). The symposium was sponsored by Bentley, Intergraph, ESRI, GIN, Rijkswaterstaat, and Octaafadviesgroep.

The goal of the symposium was to establish the state-of-the-art in Disaster Management by:

- reviewing tools, software, existing geo-information sources, organizational structures and methods for work in crisis situations
- outlining drawbacks in current use, discovery, integration and exchange of geo-information, and
- making suggestions for future research directions

The presentations and discussions were centered around following topics: user needs and requirements, technology developments, data collection and management, end-user environments for interaction, visualization and updating, positioning and location-based communication. The three days symposium included 4 keynotes, oral presentations



Figure 2: Welcome by the mayor of Delft in the City hall.

distributed in 22 plenary and 49 parallel sessions, 50 posters, an ISPRS panel session, a workshop on 'Geo-Web services in flood situations', as well as social activities.

The symposium was opened by Jacob Fokkema, the Rector of the Delft University of Technology. The first keynote speaker, Henk Geveke (Director Crisis Management, Ministry of the Interior and Kingdom Affairs, the Netherlands), presented the policy of the responsible national government institution. Mike Goodchild (University of California, Santa Barbara, USA) presented desired contributions to disaster management from the geo-information science angle. Richard Guillaude (GeoSciences Consultants s.a.r.l, Bagnaux, France) and Dudung Muhally Hakim (Bandung Institute of Technology, Indonesia) concentrated on the Tsunami disaster in South Asia. Richard Guillaude presented the help GeoSciences has provided in the first days to the countries affected by the Tsunami. Dudung Hakim discussed the development of the disaster in Aceh, Indonesia.

During the symposium two basic types of presentations could be recognized: the ones with more focus on research and development of geo-information technology, and the ones with more focus on the practical needs and solutions for users and managers in disaster management. Several presentations were directly related to the Tsunami in South Asia, discussing availability of data, damages in



Figure 1: Jacob Fokkema opens the symposium.



Figure 3: ISPRS panel.

different regions and the help provided by international and national geo-organisations.

The ISPRS panel (Karen Fabbri, European Commission, Thomas Kemper, German Aerospace Center and Nick McWilliam, Map Action) moderated by Orhan Altan (Secretary General ISPRS) addressed challenging questions for disaster management, such as:

- whether geo-specialists can deliver appropriate, timely geo-information after disaster
- quality/accuracy of geo-information for disaster management
- needed scientific and technical expertise after disaster
- involvement of geo-information scientists in prediction, prevention and mitigation

All the discussions (during the ISPRS panel, oral and poster sessions and coffee breaks) have clearly shown the problems for the disaster management sector are still numerous. It was possible to hear various opinions:

'GIS is a tool, it does not solve everything by itself'
'there is difference between 'small' disasters and 'big' disasters'
'we have to educate disaster managers'
'geo-ICT has to learn from disasters'
'technologically everything is possible'
'the problem is organization and communication between partners'



Figure 4: The Auditorium of Delft University of Technology during the Symposium.

'our geo-information dates from 1973'
'response phase cannot be isolated from prevention'
'data integration should be based on ontology and semantics'
'data are available after 3 days' vs. 'data were available after 3 hours'
'we have to stay close to the users'
'not all the people can work with total station but everybody can measure with steal type'
'is it possible to extend this software to 3D?'

Everybody agrees geo-information technologies offer a variety of opportunities to aid management and recovery in the aftermath of natural disasters, industrial accidents, road collisions, etc. However, in development of geo-technology several factors should be taken into account:

- Type and extend of the disaster (e.g. fire in a building vs. flood affecting several countries). Many countries have recognised the importance of this factor and have well-developed organisational structures. Unfortunately in many cases this is only on paper.
- Phase of disaster management. It is apparent that technology for different phases may vary since the tasks and the goal of the phases are distinct.



Figure 5: Poster session.

- Decision-making level. It should be always taken in consideration who needs the information – rescue teams in the field (requesting for a particular building or neighbourhood) or a crisis response centre (responsible e.g. for several provinces)
- Available data & technology (which vary from country to country). Presentations and discussions clearly revealed large differences in availability of geo-information in different parts of the world. While some countries possess geo-data in various forms (maps, images, 3D models, etc.), others only have 10-20 years old maps.
- Legislation & agreements between parties involved in disaster management
- Human factor. Developing technology for emergency response should be closely related to studies of the human psychology and behaviour (stress, pain, fatigue etc.) in disasters.

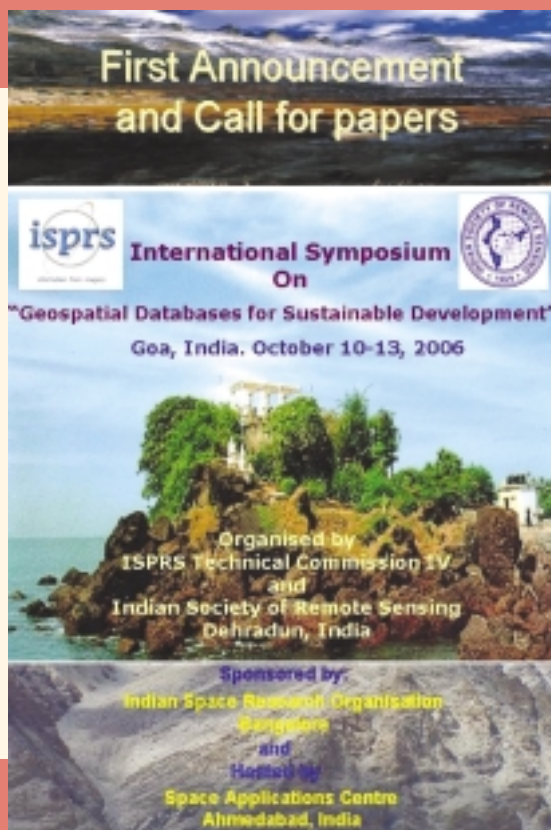
A large number of papers focused on technology needed for the response phase. About 15 of these papers were selected as a basis for a book 'Geo-ICT for emergency response'. The work on the book will be completed at the end of 2005. It is apparent that emergency response has the highest requirements in terms of performance, accuracy and presentation. Emergency response depends on timely delivery of large volumes of accurate, relevant, up-to-date geo-information that various organizations systematically create and maintain. To be used for decision making in emergency response many challenges are posed to data management, discovery, translation, integration, visualisation and communication based on heterogeneous geo-information sources with differences in many aspects: scale/resolution, dimension, classification and attribute schemes, temporal aspects, spatial reference system used, etc. Technology for emergency response has to be:

- Fast
- Context aware 'what/who/where/how'
- Based on integration from multiple sources
- 3D and 4D (time)

- Mixed: indoor (CAD) and outdoor (GIS)
- Able to provide analysis (evacuation routes, flooding prediction, etc.)
- Provide clear presentation (image, 2D/3D graphics, video, text, sound/voice)
- Up-to-date: monitoring by terrestrial, airborne, satellite sensors
- Aware of the position and allow navigation (GPS, Galileo, telecommunications)
- Wireless
- Web-based, open source
- Multidisaster, multiteam

These and many more other issues can be found in the 1434 pages proceedings of the symposium 'Geo-information for Disaster management', (eds.) Peter van Oosterom, Siyka Zlatanova and Elfriede Fendel, published by Springer Verlag.

Follow-up symposiums are already planned: Goa, India (2006, during the Commission IV midterm conference), Toronto, Canada (2007), Beijing, China (2008, during the XX1st ISPRS congress).



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