

EuroSDR a multi-level network linking European Geoinformation production with Research and Development

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1. Introduction

In recent years, the emphasis of the typical European National Mapping and Cadastre Agency (NMCA) has seen rapid change

- from a provider of paper and digital map data to a data warehouse primarily concerned with maintaining, updating and disseminating modern reference geoinformation to support the development of advanced and integrated geoinformation infrastructures;
- from an agency using analogue technology and specialised hardware and software to one employing increasingly mainstream IT solutions;
- from an independent national agency to one of many players in a larger pan-European context of Galileo, GMES, INSPIRE and EuroSpec;
- from a national administrative body with in-house production to an agency with an increasing share of commercial activities, including outsourcing significant parts of its activities.

During times of change, such as these, knowledge about the latest technology and systems is recognised as a major advantage. Cooperation between European NMCAs and research institutions is the key to ensuring appropriate applied research is carried out and knowledge is transferred between the research laboratories and NMCA operations. This paper describes and evaluates the merits of a pan-European network, of over fifty years standing, linking NMCAs, leading universities and research institutes with the common goal of exploring the future needs of geoinformation infrastructures at national and European levels and addressing the outstanding and emerging issues through applied and focused research activities (EuroSDR, 2005).

2. EuroSDR as a multi-level network

Specifically EuroSDR aims to

- Develop and improve methods, systems and standards for the acquisition, processing, production, maintenance and dissemination of reference information and to promote applications of all such data.
- Encourage interaction between research organisations and the public and private sector to exchange ideas about relevant research problems and to transfer research results obtained to geoinformation production organisations.

At specific technical levels networks have emerged advising European organisations on new technology developments in areas such as digital camera calibration and development of standards to name but two. Most developments in the geoinformation sciences, technologies and systems affect production workflows in geoinformation production organisations. New spaceborne and airborne acquisition systems such as digital cameras and LiDAR require modifications to, or replacement of, existing workflows. By bringing together members of the production workforce and researchers from the same and other European countries a two-way synergy is developed whereby the GI producer can explore the detail of research outcomes with the researcher and the researcher can learn the impact and practicalities of his research. Furthermore the research plan of the organisation is drafted by production personnel and researchers together thereby ensuring that the research activities will be focused, applied and relevant (EuroSDR 2007).

The EuroSDR network operates at a number of levels.

2.1 A Network of Organisations

At one level, member organisations, through utilising permanent correspondents and the EuroSDR science committee, have immediate access to the collective experience of nearly twenty similar - but diverse - geoinformation organisations across Europe. Through this mechanism, many European joint ventures in production and research have been successfully realised.

2.2 A Network of Experts in Research and Production

On a second level EuroSDR delegates comprise a geoinformation production expert and a researcher from a university or Institute in each country. This leads to significant economies of scale and cost in the securing by geoinformation production organisations of contracted research and continuing professional development of staff.

2.3 A Network of European Contacts and SDI Participants

Thirdly, a series of focused workshops over recent years, particularly addressing the enabling research and development required for European initiatives such as INSPIRE and GMES, has resulted in the emergence of an effective network of individuals in Europe that are now actively contributing to the drafting of the implementing rules for the INSPIRE legislation.

3. From the Research to the Production Domain

3.1 Official Publications

In order to transfer the outcomes of research activities to production, the network publishes an official series of reviewed reports and proceedings, which reached its fiftieth volume in 2006.

A flavour of the extent of the research activities of the network can be gleaned from the subjects of the two most recent EuroSDR publications, namely reports on

- Evaluation of building extraction (Kartinen and Hyyppä, 2006)
- Change Detection (Steinnocher and Kressler, 2006)
- Sensor and Data Fusion Contest – Information for Mapping from Airborne SAR and Optical Imagery (Bellmann and Hellwich, 2006)

- Automated Extraction, Refinement, and Update of Road Databases from Imagery and Other Data (Mayer et. al., 2006)

and proceedings of workshops on:

- Positional Accuracy Improvement 2: Achieving Geometric Interoperability of Spatial Data (Roensdorf, 2006)
- Next Generation 3D City Models (Kolbe and Gröger, 2006)
- Feature/Object Data Models (Woodsford, 2006)

3.2 Distance E-Learning Courses

The publication of reports alone is not sufficient to transfer the outcomes of research activities to the user domain, for example to key personnel in geoinformation production organisations and industry. To address this shortcoming EuroSDR commenced EduServ, a series of E-Learning courses based on research projects and recommendations of workshops (Heipke, 2004; Höhle, 2004; Mooney 2005). The Internet courses are preceded by a workshop at which participants meet tutors and receive guidelines for following the courses from their own locations. This paper will evaluate the effectiveness of such courses based on considered feedback from participants and tutors over five years.

Courses are designed to follow the principle of ‘Learning by Doing’ and therefore include practical assignments which require, for example, the participant to manipulate data or processes, evaluate the consequences and draw reasoned conclusions. It is generally accepted that active learning produces better results than purely passive learning. Participants come from diverse educational and cultural backgrounds and are not required to possess any formal academic or personal qualification because it is important not to impose barriers to accessing this type of educational resource. However, participants must possess a working competence in Information Technology (IT). A pre-course workshop helps to identify and remedy weaknesses in this area. Bringing course participants together from many European countries and from a variety of working backgrounds generates a synergy which results in fruitful exchange of experience. EduServ organizers have noticed a significant unanticipated benefit of the pre-course workshop, that of providing a forum for the inter-state exchange of ideas on the practical implementation of technologies and methodologies covered by the courses. This, in turn, informs the course tutors of the practical realization of theory in busy geoinformation production environments, which can only improve the effectiveness of current and future course development.

The experience of four years of EduServ suggests that E-Learning courses are of particular interest to the smaller states within Europe. This may be due to the existence of adequate CPD (continuing professional development) resources in the larger states. However, key staff members of geoinformation organisations in several countries may not have high levels of proficiency in the English language and, consequently, may feel that such courses are beyond them. Addressing the issue of capacity building and skills updating in those European states where a comprehensive geoinformation education resource does not exist (but where considerable training in geoinformation fields is still required) is seen by EuroSDR as a major challenge and is developed further in this paper. This is particularly so in light of a series of recent EC Directives that impact on spatial data and geoinformation.

4. Concluding Remarks

EuroSDR, an organisation of fifty-four years standing, is unique among pan-European organisations operating in the Geographical Information (GI) field in that it brings production and research expertise together through its delegates from eighteen European countries. It has published over fifty technical volumes covering applied research over the entire chain of spatial data provision and GI generation. In addition, annual short distance e-learning courses help in transferring the outcomes of its activities from the research to the production domain. However its strength lies in its multi-level networking activities that lead to a common set of goals and activities relevant to the spatial data and GI needs of a growing and connected Europe.

5. References

- BELLMANN A. AND HELLWICH, O., 2006. Sensor and Data Fusion Contest: Information for Mapping from Airborne SAR and Optical Imagery (Phase I Report). In EuroSDR Official Publication No.50. 284 pages. ISBN 9789051794748. [Accessible from: <http://www.eurosd.net/2002/publications/publications.asp>]
- EuroSDR, 2005. EuroSDR Annual Report. [http://www.eurosd.net/annuals/eurosd_ar_2005.pdf] Accessed 2007-02-12.
- EuroSDR, 2007. EuroSDR Rolling Research Plan 2007 - 2010. [http://www.eurosd.net/rrp/eurosd_research_plan_2007-2010.pdf] Accessed 2007-02-12.
- HEIPKE, C. 2004. Der Educational Service von EuroSDR. In Schiewe, J. (ed.), E-learning in Geoinformatik und Fernerkundung, pp. 53-60, Wichmann Verlag, 2004, ISBN 3-87907-414-3.
- HÖHLE, J. 2004. Designing of Course Material for eLearning in Photogrammetry. In: International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol. XXXV, Part B6. Istanbul 2004. pp 89 - 94.
- KAARTINEN, H. and HYYPPÄ, J., 2006. Evaluation of Building Extraction - Report. In EuroSDR Official Publication No.50. 284 pages. ISBN 9789051794748. [Accessible from: <http://www.eurosd.net/2002/publications/publications.asp>]
- KOLBE, T., GRÖGER, G., 2006. Next Generation 3D City Models, Workshop in Bonn, Germany (June 2005). In EuroSDR Official Publication No.49. CDROM. ISBN 9789051794663. [Accessible from: <http://www.eurosd.net/2002/publications/publications.asp>]
- MAYER, H., BALTSAVIAS, E. AND BACHER, U., 2006. Automated Extraction, Refinement, and Update of Road Databases from Imagery and Other Data. In EuroSDR Official Publication No.50. 284 pages. ISBN 9789051794748. [Accessible from: <http://www.eurosd.net/2002/publications/publications.asp>]
- MOONEY, K. 2005. EuroSDR's EduServ Series - Transferring Knowledge from the Research to the User Domain by Distance eLearning. The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol. XXXVI-6/W30, Potsdam, Germany.
- ROENSDORF, C., 2006. PAI2: Achieving Geometric Interoperability of Spatial Data, Workshop in Munich, Germany (June 2005). In EuroSDR Official Publication

No.49. CDROM. ISBN 9789051794663. [Accessible from: <http://www.eurocdr.net/2002/publications/publications.asp>]
STEINNOCHER, K. AND KRESSLER, F., 2006. Change Detection - Report. In EuroSDR Official Publication No.50. 284 pages. ISBN 9789051794748. [Accessible from: <http://www.eurocdr.net/2002/publications/publications.asp>]
WOODSFORD, P., 2006. Feature/Object Data Models, Workshop in Munich, Germany (April 2006). In EuroSDR Official Publication No.49. CDROM. ISBN 9789051794663. [Accessible from: <http://www.eurocdr.net/2002/publications/publications.asp>]

Biography

Kevin Mooney is Senior Lecturer in the Department of Spatial Information Sciences, at The Dublin Institute of Technology (DIT), where he lectures principally in Photogrammetry. He gained a Diploma in Geo-Surveying (1976) from DIT; a Post-graduate Diploma in Photogrammetry (1977) from ITC, The Netherlands; and a M.Sc. in Engineering (1987) from Trinity College Dublin. His research interests are in extracting core spatial information from spatial and image data sets.

He is a Fellow of the Irish Institution of Surveyors and a member of the Irish Society of Surveying, Photogrammetry and Remote Sensing, where he has served as Council member, editor of the Survey Ireland journal, and currently acts as chairman of the programme committee of the Survey Ireland annual one-day conference of the Society. Since October 2003, he is Secretary-General of EuroSDR (European Spatial Data Research) a pan-European research organisation of eighteen member states..