

THE INTERNATIONAL ARCHIVES OF THE PHOTOGRAMMETRY, REMOTE SENSING AND SPATIAL INFORMATION SCIENCES
ARCHIVES INTERNATIONALES DE PHOTOGRAMMÉTRIE, DE TÉLÉDÉTECTION ET DE SCIENCES DE L'INFORMATION SPATIALE
INTERNATIONALES ARCHIV FÜR PHOTOGRAMMETRIE, FERNERKUNDUNG UND RAUMBEZOGENE INFORMATIONSWISSENSCHAFTEN

VOLUME
VOLUME
BAND

XXXVI

PART
TOME
TEIL

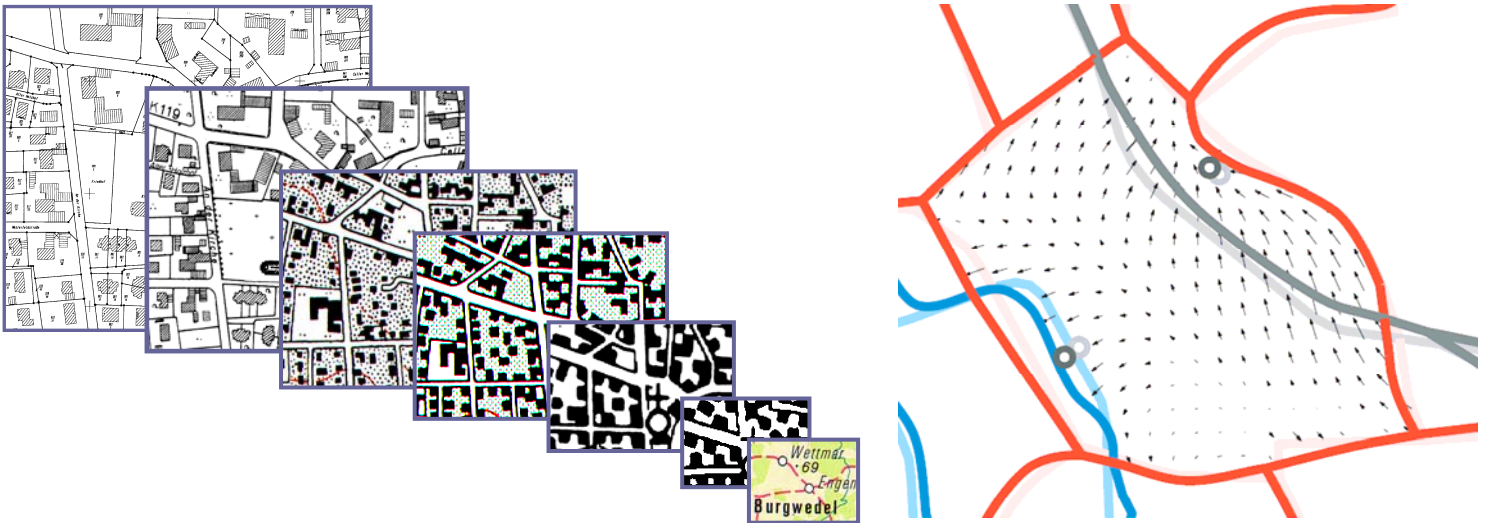
2 / W40

ISPRS Workshop

Multiple representation and interoperability of spatial data

Hanover, Germany

22. – 24. February 2006



Editors

M. Hampe, M. Sester and L. Harrie

Organisers

ISPRS WG II/3 "Multiple Representation of Image and Vector Data"

ISPRS WG II/6 "System Integration and Interoperability"

German Bundle-Project: Spatial Data Abstraction

This compilation © 2006 by the International Society for Photogrammetry and Remote Sensing. Reproduction of this volume or any parts thereof (excluding short quotations for the use in the preparation of reviews and technical and scientific papers) may be made only after obtaining the specific approval of the publisher. The papers appearing in this volume reflect the authors' opinions. Their inclusion in this publication does not necessarily constitute endorsement by the editors or by the publisher. Authors retain all rights to individual papers.

The papers in these proceedings were selected on the basis of a full paper peer review procedure.

Published by

ISPRS Working Groups

- WG II/3 "Multiple Representation of Image and Vector Data"
- WG II/6 "System Integration and Interoperability"

ISPRS Headquarters 2004-2008

c/o ORHAN ALTAN, ISPRS Secretary General
Division of Photogrammetry, Faculty of Civil Engineering
Istanbul Technical University
Ayazaga, 34469 Istanbul, Turkey
Phone: +90 212 285 38 10
FAX: +90 212 285 65 87
Email: oaltan@itu.edu.tr
ISPRS WEB Homepage: <http://www.isprs.org>

Available from

GITC bv
P.O.Box 112
8530 AC Lemmer
The Netherlands
Tel: +31 (0) 514 56 18 54
Fax: +31 (0) 514 56 38 98
E-mail: mailbox@gitc.nl
Website: www.gitc.nl

Preface

The key scientific challenge for GI research today is geospatial interoperability. The crucial matter is to achieve mutual understanding of context and meaning of the geographic domain, both by developers and users of Geographic Information Systems. Geospatial information not only is distinct and special, i.e., differs from other kinds of spatial information, but it has gained acceptance to provide a framework for referencing most other information. To establish a common framework between providers and users of geospatial information, the research agendas of the field is focusing on structuring knowledge about geography and space by using ontologies.

Geospatial data and processes can only be fully understood when they are explored and inspected taking their thematic and spatial multi-dimensionality into account. Furthermore, different scales or resolutions reveal different aspects of the underlying structures and processes that are of crucial importance for all applications. These issues are relevant for all kinds of spatial data, namely raster, vector and surface data, but also verbal expressions.

A topic of growing importance is the availability of data and services via the internet. In order to allow for a flexible and adapted use of data and services from any source in any given spatial and thematic resolution for a given application, both methods for semantic and geometric integration have to be available, as well as methods to extract, transform and integrate data from different scales and resolutions.

The workshop is held at Hannover, Germany, and is organized by two ISPRS working groups in the fields of multiple data representation and interoperability. The third organizing body is a group of scientists in Germany funded by the German Science Foundation in a project dealing with “data abstraction”. The workshop intends to bring together researchers and practitioners dealing with semantic and geometric data integration, data representation in Multiple Representation Database (MRDB) structures, as well as generating and exploiting the links between multiply represented objects. It is expected that the workshop, which includes in-depth discussion sessions on two very important topics in the field, will encourage and stimulate a fruitful exchange of ideas. The papers for the workshop have undergone a full paper peer review procedure.

The organization of the workshop would not have been possible without the help of many people. We would like to thank the members of the programme committee for reviewing the papers. A special big thank you goes to Mark Hampe who managed all the organizational issues in Hanover.

Monika Sester, Institute of Cartography and Geoinformatics, University of Hannover, Germany
Lars Harrie, Lund University – GIS Centre, Sweden

Table of Contents

Workshop Committees	IV
Preface	V
Session 1: <i>Generalisation and web services</i> <i>Thursday, February 23, 09:30 – 10:30</i>	
Improving efficiency for developing automatic generalisation solutions <i>N. Regnauld</i>	1
Spatial structures as generalisation support services <i>M. Neun, D. Burghardt, R. Weibel</i>	6
Session 2: <i>Semantic integration</i> <i>Thursday, February 23, 11:00 – 12:30</i>	
Towards intensional / extensional integration in a multiple representation environment <i>E. Tomai</i>	16
Semantic data integration of a topographic database <i>J.E. Stoter, R.L.G. Lemmens, B. Köbben, N. J. Bakker</i>	22
Some ideas for integrating multidisciplinary spatial data <i>W. Shi, L. Meng</i>	30
Session 3: <i>Cartographic production</i> <i>Thursday, February 23, 14:00 – 14:30</i>	
The future production of generalised maps at IGN Belgium <i>A. Féchir, J. De Waele</i>	36
Session 4: <i>Generalisation</i> <i>Friday, February 24, 09:00 – 10:30</i>	
Encoding and decoding of planar maps through conformal Delaunay triangulation <i>E. Verbree</i>	43
Hierarchical structures for rule based incremental generalisation <i>J.-H. Haurert, K.-H. Anders, M. Sester</i>	49
3D building generalization based on half space modelling <i>M. Kada</i>	58

Session 5: Hierarchies in images and in text

Friday, February 24, 11:00 – 12:30

Automatic scale-dependent adaption of variable object models <i>J. Heuwold, K. Pakzad</i>	65
Levels of abstraction in textual representations of geoinformation - example: Cadastral description <i>M. Müller</i>	71
A multi-resolution hierarchy classification study compared with conservative methods <i>G. B. Zhu, X. L. Liu , Z. G. Jia</i>	79

Session 6: Matching

Friday, February 24, 14:00 – 15:30

Automatic integration of raster and vector maps: first checks <i>M. A. Brovelli, G. Zamboni</i>	85
Results of experiments on automated matching of networks <i>S. Mustière</i>	92
An iterative approach for matching multiple representations of street data <i>S. Volz</i>	101
Author Index	111

Programme Committee

Thomas Bittner, SUNY Buffalo, USA
Gilberto Camara, INPE, Brazil
Wolfgang Förstner, Bonn, Germany
Lars Harrie, Lund, Sweden
Christian Heipke, Hanover, Germany
Marinos Kavouras, Athens, Greece
William Mackaness, Edinburgh, UK
Helmut Mayer, München, Germany
Anne Ruas, Paris, France
Monika Sester, Hanover, Germany
Emmanuel Stefanakis, Greece
Robert Weibel, Zürich, Switzerland
Stephan Winter, Melbourne, Australia
Esteban Zimanyi, Brussels, Belgium
Liqiu Meng, Munich, Germany
Nicolas Regnault, Southampton, UK
Wolfgang Förstner, Bonn, Germany
Kristin Karlsson, Sweden
Hanna Stigmar, Lund, Sweden

Local Organising Committee:

Mark Hampe, Hannover, Germany
Monika Sester, Hannover, Germany
Lars Harrie, Lund, Sweden