Lecture Notes in Geoinformation and Cartography

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Editor

Preservation in Digital Cartography

Archiving Aspects

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Preface

This book “Preservation in Digital Cartography: Archiving Aspects” should give an overview on how to preserve digital cartographic applications and geospatial data in a sustainable way. The intention of this book is to shape the opinion of affected parties and to bring together various disciplines. Therefore adjacent chapters will generally deal with information technologies, Service-Oriented Architectures, cybercartography, reproduction and historic cartography, which all together can be subsumed in prospective cartographic heritage. The survival of this digital cartographic heritage will base on long-term preservation strategies that make use of extensive dissemination on the one hand and sustainable digital archiving methods on the other. This includes a massive development of paradigm that expands from “store-and-save” to “keep-it-online”. The paradigm “store-and-save” is mainly used for analogue masters that consist of storage media, like vellum, and their visible content. Avoiding the storage media from degeneration in climate-controlled areas will help to keep the content accessible. In the digital domain the high interdependency of storage media, format, device and applications leads to the paradigm “keep-it-online” which for example describes the migration to new storage devices. In fact this expansion of paradigm means that the digital domain calls for ongoing actions in order to preserve cartography for a long term.

The topics within this book span from a prospective cartographic heritage´s complexity, aspects of geospatial preservation, problems in keeping digital cartography online to pragmatic considerations for a prospective cartographic heritage. The contributions of this book will describe and help to identify main foci of preservation in digital cartography supported by state-of-the-art practices and experience reports.

The first section focuses on complexity of a prospective digital cartographic heritage. Especially the field of cybercartography, which uses interactive, dynamic, multisensory formats with employing multimedia and multimodal interfaces, and new developments of cartographic communication, especially neo-cartography with its massive use of Geo- and Map Services in Service Oriented Architectures (SOA), lead to unsolved archiving topics, which necessitate new methods, structures and technologies.

The second section deals with sustainability in terms of geospatial preservation. Sustainability concerns various aspects in cartographic heritage, where the change of media carrier from analogue to digital, the accessibility of content in terms of various formats, codings and (hard- and software) requirements have to be addressed. Additionally this section may show up main difficulties in long-term accessibility of digital media and possible methods to ensure long-term accessibility of digital cartography. Standardization initiatives, like the data preservation working group of the Open Geospatial Consortium (OGC), are one keyfactor for the sustainable preservation of geospatial data. Sustainability by means of accessibility focuses on needs, formats and relationships for enabling long-term data collections on the one hand and data mining (finding the right content) on the other hand.

The third section lists experience reports on keeping digital cartography online, which is an important part of preservation in digital cartography. Only the knowledge and consciousness of digital cartographic heritage allow for designing appropriate preservation strategies and making expenses on their implementations in order to assure this heritage for future times. These selected examples will give an introduction to the viewpoint of a digital library and cartographic archive. The section will be concluded with a chapter on user-friendly access to geospatial data collections, which highlights the importance of WYSIWYG interfaces.

The fourth section discusses pragmatic considerations, which span from reproduction quality to legal issues in Service-Oriented Architectures. The chapter on digital reproduction compares advantages of direct digitalization versus hybrid methods in terms of long-term preservation. The Arcanum project highlights difficulties due to administration change and their influence on cartographic heritage applications. At least the development of distributed digital map libraries leads to an intellectual property rights approach that should be considered in future distributed applications.

Finally the editor likes to appreciate the support of following institutions, which gave their benefit to realize this book:

- The Research Group Cartography at the Vienna University of Technology and the Hasso Plattner Institute at the University of Potsdam encouraged the editor in his interest on preserving digital cartography with several discussion- and working opportunities although this was not their specific research area.
- The Institute of Cartography at the Technical University of Dresden granted access to personal knowledge resources, material and

reproduction camera for comparing studies in the field of reproduction quality.

- The Commission on "Digital Technologies in Cartographic Heritage" of the International Cartographic Association (ICA) provided an adequate discussion- and presentation forum for acquired experiences, ongoing ideas and developments in digital cartographic heritage. As one result of these discussions several members contributed their experiences in this book.

Finally, I would like to thank my family for their support, understanding and patience during the last months whenever I had to work on this book on weekends and holidays. To Beatrix and Paula...

"My heritage has been my grounding, and it has brought me peace."
Maureen O'Hara

"Heritage is our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration."
World Heritage Definition of UNESCO

September 2010,
Markus Jobst

About the Contributers

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William Cartwright is President of the International Cartographic Association and a Federal Councillor of the Mapping Sciences Institute, Australia. He is Professor of Cartography and Geographical Visualization in the School of Mathematical and Geospatial Sciences at RMIT University, Australia. He holds a Doctor of Philosophy from the University of Melbourne and a Doctor of Education from RMIT University. He has six other university qualifications - in the fields of cartography, applied science, education, media studies, information and communication technology and graphic design. He joined the University after spending a number of years in both the government and private sectors of the mapping industry. His major research interest is the application of integrated media to cartography and the exploration of different metaphorical approaches to the depiction of geographical information.

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Robert Dixon-Gough commenced his professional career as a cartographer working with a multi-disciplinary group evaluating future water management policies in England and Wales. He has been a lecturer and re-

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Rudolf Haller is head of Geoinformation and ICT of the Swiss National Park. He has received his Masters in Geography from the University of Zurich. His main interests are in the application of GI technologies in nature protection and conservation. Recently he has been involved in several international projects on location based services and virtual globe implementations on protected areas as well as international habitat studies.

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Lorenz Hurni is professor and head of the Institute of Cartography of ETH Zurich. Under his lead, the multimedia "Atlas of Switzerland" as well as a new interactive version of the "Swiss World Atlas", the official Swiss school atlas, are being developed. The emphasis of his research lies in cartographic data models and tools for the production of printed and multimedia maps. Another focus of research covers interactive, multidimensional multimedia map representations. The new possibilities are being explored in international, interdisciplinary projects and being imparted to a broad audience in lectures and courses for students and practitioners.

Stephan Imfeld is a senior researcher at the GIScience Centre at the Department of Geography at the University of Zurich and at the Angiology Department at the University Hospital in Basel. He has received a PhD in Natural Sciences from the University of Zurich and a MD at the University of Basel, Switzerland. He is currently responsible for research and development for the GIS of the Swiss National Park. His main interests are in methodological aspects of GIS applications in biological sciences and in applied medical research.

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Markus Jobst is technically coordinating the INSPIRE directive at the Austrian Federal Office for Metrology and Surveying and providing lectures on cartographic interfaces and geospatial data infrastructures at the Vienna University of Technology in Vienna and Hasso Plattner Institute in Potsdam. He finished his PhD in 2008 with the focus on semiotics in 3D maps at the Vienna University of Technology. After being a research assistant at the Institute of Geoinformation and Cartography at the Vienna University of Technology from 2003 to 2007, he worked on geospatial Service-Oriented Architectures as post-doc research fellow at the Hasso Plattner Institute at the University of Potsdam. Throughout the years Markus Jobst acquired substantiated knowledge in digital photography and cross-media production processes. His main foci in scientific work are the

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Wolf G. Koch (born 1943, Diploma in Cartography 1969, Doctorate 1974, Habilitation 1989), since 1990 head of course of studies „Cartography", 1992-2008 Professor for theoretical cartography and map design at the Dresden University of Technology, Germany, since then emeritus. 1992-1994 and 2000-2003 director of the Institute for Cartography, 1993-2005 leader of the commission "Cartographic Terminology" of the German Society for Cartography; co-editor of the dictionary "Lexikon der Kartographie und Geomatik" (2001/2002). Adviser for map design with the National Atlas of Germany (1998 – 2006). International activities: Corresponding member of ICA-Commission "Theoretical Cartography" and "Maps and Graphics for Blind and Visually Impaired People". Fields of interest: Theoretical cartography, map design, tactile cartography, history of cartography.

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