

## Preface

Methods, software and tools in the geospatial field have been strongly growing for 20 years. The ongoing digitalization with data exchange across often very heterogeneous and physically disconnected groups requires the availability and implementation of data exchange standards. Especially Open Source GIS keep well pace with the adoption and sometimes even definition of standards; the software development is furthermore pushed by the raise of new standards within participatory and exchange platforms. Other needs are driven by territorial decision makers guiding towards sustainable development and data sharing. Decision makers and leaders are greatly supported through the availability of Geospatial Free and Open Source Software (GFOSS) which includes geospatial programming libraries, desktop GIS, web mapping, and catalog systems for handling metadata. The GFOSS history lasts back more than 25 years when the first desktop GIS, GRASS became available with its numerous scientific applications (landscape ecology, epidemiology, remote sensing, urban planning, 3D representations). With the advent of wider Internet usage, the researchers at the University of Minnesota gave birth to MapServer, the first Open Source platform for publishing geospatial data and interactive mapping applications in the Web. As of today, more than 350 GFOSS tools are listed in the FreeGIS web site (<http://www.freegis.org>). With no doubt, GFOSS has created a new dynamic in the GIS field, largely promoted by the Open Source Geospatial Foundation (<http://www.osgeo.org>) and its series of Free Open Source Software for Geospatial conferences (FOSS4G).

Many applications have their roots in the heart of research activities and likely this will remain in future. In this context, the initial goal of the International Open Source Geospatial Research Symposium (OGRS) 2009 was to provide a large panel of the innovative works currently carried out within research projects around the world. And, what renders a symposium of this shape particularly interesting is the focus on Open Source development: an entire research and innovation symposium dedicated to free and open source geospatial methods and technologies. The first symposium was held in Nantes (France) from July 8–10, 2009, and organized by IRTSV (Research Institute on Urban Sciences and Techniques), a Research Federation founded by CNRS (*Centre National de la Recherche Scientifique*) and the French Ministry of Research.

The organizers of OGRS wanted to stand up for the idea that leading research projects with open source software as backbone will help to offer better solutions for the manifold challenges which our society is facing today, especially in the field of sustainable development. During the last few years, new communities including researchers, local authorities GIS administrators, companies and citizens have appeared. This evolution has led to new dynamics in the geomatics sphere towards finding solutions together by sharing knowledge and methods without starting with license constraints. In this framework, OGRS shall represent a hub to network, share and develop ideas for future collaborative work between academic research activities and everyday operational activities (companies, local authorities, and others).

This book aims at unveiling new ideas and methods provided in the field of research in 2009 in this symposium. It presents a collection of full scientific papers accepted at the first OGRS symposium. Additional best short papers which had been selected by the scientific committee were extended and also published in this book. We have included not only original scientific research papers, but also selected papers on applied GIS-related issues (feedback and experience, concepts, software development, etc.) which were also important topics for the symposium's aims.

The articles are organized in four chapters that intend to summarize recent progress and identify key research issues concerning: geoprocessing, remote sensing, cartography and standards, and geospatial web. The last chapter is especially dedicated to feedback and future.

To make GFOSS activities and their outstanding results better understandable to a wide audience, a series of chapters were derived from selected conference contributions. The scope of this book is to illustrate the variety of functionalities which GFOSS software covers today as well as the high level of expertise being the framework for such development.

We hope that our readers will find the chapters included in this book interesting and we believe that they may represent a helpful reference in the future for all those who work in any of the GFOSS research areas.

***Erwan Bocher and Markus Neteler***

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