

GUEST EDITORIAL PREFACE

Special Issue on Data Warehousing: From Occasional OLAP to Real-Time Business Intelligence

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This special issue is one of the outcomes of the Dagstuhl Seminar “Data Warehousing: from Occasional OLAP to Real-time Business Intelligence” (<http://www.dagstuhl.de/11361>). The seminar, organized by Markus Schneider, Gottfried Vossen, and Esteban Zimányi, was held in the Dagstuhl castle in Wadern, Germany, from September 4 to September 9, 2011. The seminar brought together 36 researchers from 14 countries across disciplines that study data warehousing.

This seminar can be seen as a successor of the Dagstuhl Perspectives Workshop “Data Warehousing at the Crossroads” (<http://www.dagstuhl.de/04321>) co-arranged by one of the organizers in 2004. After seven years (in 2011), we felt that it was time to take stock again,

determine the status quo, and reflect on the future of data warehousing. Further, the seminar in 2004 was a perspectives workshop with the exclusive goal of predicting the possible future direction of data warehousing and OLAP. This seminar had a different scope and mainly dealt with current and recent research results. This did not exclude to look into the future and to determine what the field has achieved in the meantime.

In the past, data warehousing and analytical processing (OLAP) have produced fundamental and important technologies for the design, management, and use of information systems for decision support. Indeed, many industrial and administrative organizations have successfully used data warehouses to collect essential

indicators that help them improve their business processes and their decision making efforts. Recent developments like column stores instead of row stores at the physical level, real-time data warehousing and Business Intelligence applications at the conceptual level, and decision support for new emerging applications have raised new research questions.

The participants of the seminar were clustered around five thematic areas as follows:

1. Real-Time Data Warehouses and Business Intelligence;
2. Spatio-Temporal Data Warehousing;
3. Situational Business Intelligence;
4. Query Processing in Data Warehousing; and
5. Knowledge Extraction and Management in Data Warehouses.

This clustering was arranged prior to the seminar so that participants came to the seminar with short introductions describing both themselves and the research topics they work on, as well as identify challenging questions in these thematic areas. Through parallel sessions, each group discussed the state of the art in its thematic area and identified the open questions. The organizers asked each group to answer the following four questions:

1. What are the most pressing research issues?
2. Are these research issues purely industrial or also academic?
3. Where do you expect to be 5 years from now?
4. What would you want a new PhD student to work on?

Further, longer research presentations were given within each group for focusing on the groups' work around a common approach. Each group gave a final presentation of their results at the end of the week.

It is worth noting that the Data Warehousing domain is both an active research domain but also drives a very intense activity in the industrial world. One objective of the seminar was also to establish bridges between these two communities. The seminar attracted participants from major companies active in the Data Warehousing domain (SAP, HP, IBM, and EMC).

Each working group committed to produce an article manuscript after the seminar in order to publish them in a special issue of the *International Journal of the Data Warehousing and Mining* (IJDWM). Each manuscript was anonymously reviewed by three leading researchers in the data warehousing field. One of the reviewers of each manuscript was an internal reviewer, that is, one of the authors of the other manuscripts. The other two reviewers of each manuscript were external reviewers. The internal reviewers were Christian Koncilia, Anisoara Nica, Alejandro Vaisman, Gottfried Vossen, and Robert Wrembel. The external reviewers were Ladjel Bellatreche, Karen Davis, Lukasz Golab, Marcin Gorawski, Jens Lechtenbörger, Alexander Löser, Carlos Ordonez, Franck Ravat, Kai-Uwe Sattler, and Olivier Teste.

The review was organized in two rounds. In the first round, the reviewers produced very detailed and careful reviews of the manuscripts that partially required thorough and extensive revisions by the authors. In the second round, the same reviewers looked at the revised manuscripts and at additional documents that precisely described the performed changes made by the authors and their motivation. If needed, they asked for minor revisions. At a final stage, the authors performed their minor revisions and produced the final manuscripts.

We would like to thank all participants for committing themselves to invest a whole week of their busy schedule to participate in the seminar. The fruitful discussions among all the participants were invaluable and provided all of us with great ideas for future research. We would

also like to thank them for their commitment in producing the five manuscripts of this special issue as well as reviewing the manuscripts of their fellow colleagues. Also invaluable were the comments we received from the external reviewers, we thank them for the time they spent doing these reviews so carefully. Our special thanks go also to the Dagstuhl staff, who gave us the possibility for making this wonderful event a reality. And finally, we want to whole-

heartedly thank David Taniar, Editor-in-Chief of IJDWM, who immediately supported our project of publishing this special issue.

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Markus Schneider is an Associate Professor at the Department of Computer and Information Science and Engineering of the University of Florida, which is located in Gainesville, Florida, USA. He holds an MS degree in Computer Science from the Technical University in Dortmund, Germany, and a PhD degree in Computer Science from the University of Hagen, Germany. His research interests include spatial, spatio-temporal, and moving objects databases, spatial data warehousing and SOLAP, spatial information science, geoinformatics, geographical information systems, applied computational geometry, and extensible databases. He is the co-author of the book Moving Objects Databases published by Morgan-Kaufmann, the author of the book Spatial Data Types for Database Systems published by Springer-Verlag, and the author of the book Implementation Concepts for Database Systems published by Springer-Verlag. Further, he has published more than 100 journal articles, book chapters, and conference papers. He is on the editorial board of the journal GeoInformatica and a recipient of the 2004 National Science Foundation (NSF) CAREER Award.

Esteban Zimányi is a professor and a director of the Department of Computer & Decision Engineering (CoDE). He started his studies at the Universidad Autónoma de Centro América, Costa Rica. He received a BSc (1988) and a doctorate (1992) in computer science from the Faculty of Sciences at the ULB. His current research interests include data warehouses and business intelligence, semantic web and web services, geographic information systems and spatio-temporal databases. He has co-authored/co-edited 8 books and published more than 100 peer-reviewed papers on these topics. He is Editor-in-Chief of the Journal on Data Semantics (JoDS) published by Springer. He is the coordinator of the Erasmus Mundus Master and the Erasmus Mundus Doctorate "Information Technologies for Business Intelligence" (IT4BI). He has served as PC Chair for DOLAP 2009, General Chair for ER 2011, and on numerous program committees, including EDBT, ACM GIS, and DaWaK. He is a member of the ER Steering Committee.