

# Preface

Human-Centered Visualization Environments combine traditional Visualization techniques with the ability of the human visual-brain system and the haptic-motoric system to explore and analyze complex data comprehensively. This kind of visualization merges several aspects of different research areas, such as Information Visualization, Scientific Visualization, Human-Computer Interaction, Data Mining, Information Design, Graph Drawing, and Computer Graphics. From all subfields in Visualization, this textbook focuses mainly on Information Visualization, which centers on the visualization of abstract data, e.g., hierarchical, networked, or symbolic information sources, in order to help users understand and analyze such data.

For most practical applications, researchers try to find the best visual representation of the given information. That is the core problem of each visualization; but sometimes the seemingly best representation does not suffice if the human information processing and the human capability of information reception are not adequately taken into account. Additionally, these aspects depend on the data to be visualized and on the user's background. While developing Human-Centered Visualization Environments, user abilities and requirements, visualization tasks, tool functions, and visual representations should be equally taken into account. The design of Human-Centered Visualization Environments is one of the big challenges of Information Visualization, Software Visualization, and of many application areas, such as the visualization of biological/biochemical or geographical information.

This textbook is the outcome of a GI-Dagstuhl Research Seminar organized by the editors, which was supported by the Gesellschaft für Informatik e.V. (GI) and took place at the International Conference and Research Center for Computer Science (IBFI) at Schloss Dagstuhl, March 5-8, 2006.

GI-Dagstuhl Research Seminars are targeted at doctoral students and recent post-doctoral graduates who are interested in learning actively about new developments not well covered in textbooks. They were selected mainly according to their scientific qualification.

Subtopics from the area of this seminar were assigned to the participants, who prepared comprehensive overview papers. During the seminar, their summaries and findings were presented and discussed. After the seminar, close to 9 months was spent on writing the chapters of this book, which were cross-reviewed internally. The editors intend the textbook to be used as an introduction to the

field and as a basis for graduate-level courses in Human-Centered Visualization, Information Visualization, etc.

We would like to thank all participants of the seminar for the lively discussions during and after the seminar as well as for writing the chapters of this textbook. Special thanks go to Wim Fikkert, Carsten Görg, Olga Kulyk, Robert S. Laramée, and Martin Nöllenburg for serving as chapter coordinators. We are also grateful to the GI and Schloss Dagstuhl, Germany, for their support and the privilege to hold the seminar at such a great venue.

December 2006

Andreas Kerren  
Achim Ebert  
Jörg Meyer

Human-Centered Visualization Environments  
GI-Dagstuhl Research Seminar, Dagstuhl Castle,  
Germany, March 5-8, 2006, Revised Papers  
Kerren, A.; Ebert, A.; Meyer, J. (Eds.)  
2007, XIX, 403 p., Softcover  
ISBN: 978-3-540-71948-9