

# Solving Problems with Visual Analytics: Challenges and Applications

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**Abstract.** Never before in history data is generated and collected at such high volumes as it is today. As the volumes of data available to business people, scientists, and the public increase, their effective use becomes more challenging. Keeping up to date with the flood of data, using standard tools for data analysis and exploration, is fraught with difficulty. The field of visual analytics seeks to provide people with better and more effective ways to explore and understand large datasets, while also enabling them to act upon their findings immediately. Visual analytics integrates the analytic capabilities of the computer and the perceptual and intellectual abilities of the human analyst, allowing novel discoveries and empowering individuals to take control of the analytical process. Visual analytics enables unexpected insights, which may lead to beneficial and profitable innovation. The talk presents the challenges of visual analytics and exemplifies them with several application examples, which illustrate the exiting potential of current visual analysis techniques but also their limitations.

## Bio

Daniel A. Keim is full professor and head of the Information Visualization and Data Analysis Research Group at the University of Konstanz, Germany. He has been actively involved in information visualization and data analysis research for about 20 years and developed a number of novel visual analysis techniques for very large data sets with applications to a wide range of application areas including financial analysis, network analysis, geo-spatial analysis, as well as text and multimedia analysis. His research resulted in two recent books “Solving problems with Visual Analytics” and “Interactive Data Visualization” which he both co-authored. Dr. Keim has been program co-chair of the IEEE InfoVis and IEEE VAST symposia as well as the SIGKDD conference, and he is or was member of the IEEE InfoVis, IEEE VAST, and EuroVis steering committees. He is an associate editor of Palgrave’s Information Visualization Journal (since 2001) and has been an associate editor of the IEEE Transactions on Visualization and Computer Graphics (1999–2004), the IEEE Transactions on Knowledge and Data Engineering (2002–2007), and the Knowledge and Information System Journal (2006–2011). He is coordinator of the German Strategic Research Initiative (SPP) on

Scalable Visual Analytics and he was the scientific coordinator of the EU Coordination Action on Visual Analytics called VisMaster. Dr. Keim got his Ph.D. and habilitation degrees in computer science from the University of Munich. Before joining the University of Konstanz, Dr. Keim was associate professor at the University of Halle, Germany and Technology Consultant at AT&T Shannon Research Labs, NJ, USA.