# Special Program on Information Visualization and Analysis

*with invited speakers from France, Germany, and Austria*
*around the PhD Defense of Cagatay Turkay*

## November 21, Lille Auditorium, Høyteknologisenteret

**17:30** Advanced Interaction for Information Visualization
*(Abstract on the next page)*

Jean-Daniel Fekete, INRIA Saclay Île-de-France

## November 22, Store Auditorium, Høyteknologisenteret

**10:00** **PhD Defence:** Integrating Computational Tools in Interactive and Visual Methods for Enhancing High-dimensional Data and Cluster Analysis

Cagatay Turkay, University of Bergen

## November 22, Lille Auditorium, Høyteknologisenteret

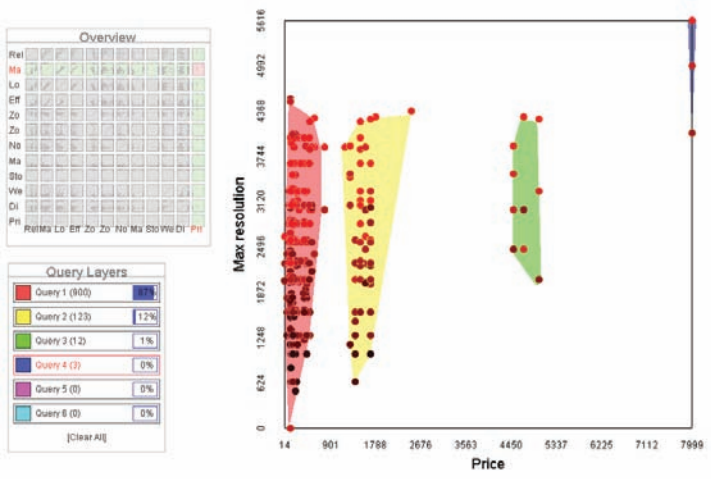
**14:30** How industry users approach visual analytics – Lessons learnt from applied research
*(Abstract on the next page)*

Jörn Kohlhammer, Fraunhofer-Institut für Graphische Datenverarbeitung IGD

**15:30** Sparse multivariate statistical methods for high-dimensional data
*(Abstract on the next page)*

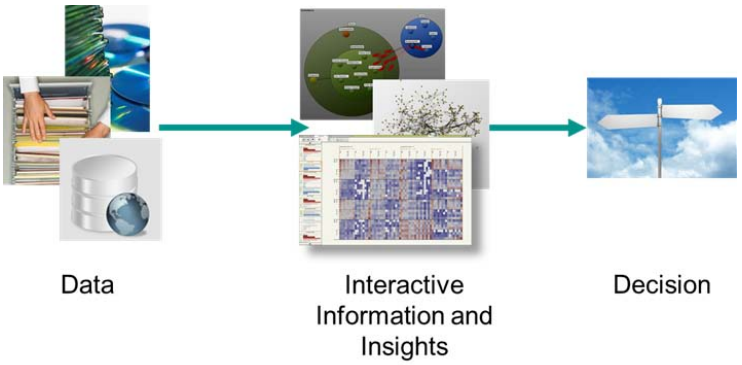
Peter Filzmoser, Vienna University of Technology

## Advanced Interaction for Information Visualization by Jean-Daniel Fekete



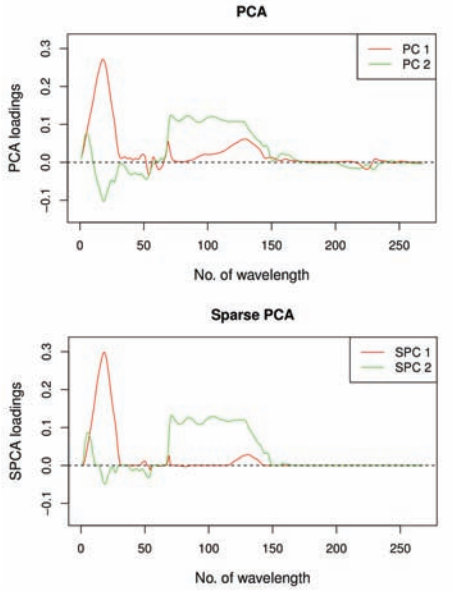

Information Visualization (InfoVis) is a Research field dedicated to the design and evaluation of visual representations and interactions for exploring and understanding large data sets. Until recently, the focus of InfoVis was more on the visual representations and less on the interactions. However, several new interactive techniques have been published in the last years. I will describe some of the work done by the Aviz group at INRIA, linking traditional HCI interaction research with InfoVis interaction research. I will present some of our techniques for navigating large information spaces: OrthoZoom for one dimensional (1D), Mélange for 2D, ScatterDice for high-dimensional spaces, Topology-aware navigation for networks, and some magic lenses. I will outline their applicability in more general Visualization configurations, and highlight some general principles that visualization designers should keep in mind to design fluid interactions that do not interfere with the analyst's flow.

## How industry users approach visual analytics – Lessons learnt from applied research by Jörn Kohlhammer




The first 10 years of visual analytics research (under this name) showcased two major dissemination projects: Illuminating the Path by Jim Thomas and US colleagues, and the VisMaster Roadmap bringingtogether visual analytics researchers in Europe. Thanks to theseefforts, visual analytics is not an "emerging topic" anymore. Industry experts in various domains are actually convinced about the potential of visual analytics in the big data era – but now they (or their bosses) want to see results at the bottom line. A research project in VA has to be sold to many stakeholders before the start, and it has to convince even more to be successful. We have worked with users in several application fields, including risk managers in a large German bank, medical doctors, climate researchers, business analysts and security analysts. I will talk about some lessons learnt from these projects and in these domains, and how we proceed from there.

## Sparse multivariate statistical methods for high-dimensional data by Peter Filzmoser




With increasing dimensionality, the chance that non-informative variables enter a data set gets higher. In the context of regression, those variables add just noise to the model. Even if their corresponding regression coefficients are small in absolute numbers, the noise can cumulate and lead to poor prediction performance. This can be circumvented by suppressing coefficients to zero values. This is achieved within the optimization problem, by including a penalty in form of an L1-norm on the coefficients. The resulting coefficients are called "sparse". We will present this idea not only in the regression context, but also for PCA and in classification problems. The practical aspects are demonstrated with data applications from different fields.