



# Your Personal Contact

HPI's Professors and Their Research Groups

Design IT. Create Knowledge.



## Enterprise Platform and Integration Concepts

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The Enterprise Platform and Integration Concepts research group, chaired by Honorary Professor Hasso Plattner, focuses on the technical aspects of business software and the integration of different software systems into a single system that meets customers' needs. This involves studying the conceptual and technological aspects of basic systems and components for business processes. The focus is on future users, for whom custom-made solutions are to be realized quickly.



## Internet Technologies and Systems

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The Internet Technologies and Systems research group chaired by Professor Christoph Meinel, the HPI's director, explores scientific principles and new technologies for tomorrow's Internet. It focuses on security issues, Web 3.0 (Social, Semantic, Service Web) and innovative Internet applications for e-learning and telemedicine. Professor Meinel is also active in the field of innovation research and acts as program director of the HPI-Stanford Design Thinking Research Program.



## Human Computer Interaction

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The Human Computer Interaction research group chaired by Professor Patrick Baudisch explores the design, implementation and evaluation of interaction technologies, devices and systems. Its focus is on mobile interaction with miniaturized devices. The group also researches into very large multi-touch systems and develops interactive tables, floors and walls, for which it uses tools from computer science, industrial design and empirical science.



## Computer Graphics Systems

**Prof. Dr. Jürgen Döllner**

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The Computer Graphics Systems group chaired by Professor Jürgen Döllner deals with computer graphics systems and technologies together with their software architectures. The main areas of research are new principles and techniques for the real-time rendering of complex virtual 3D worlds, geo-visualization, and the extraction, analysis and visualization of complex software systems, their dynamics and development processes (software visualization).



## Algorithm Engineering

**Prof. Dr. Tobias Friedrich**  
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The Research Group of Algorithm Engineering, led by Prof. Tobias Friedrich, deals with the theoretical foundation of computer science. This area involves both the design and the analysis of efficient algorithms and the limits of predictability. The Research Group places a special focus on randomized processes and optimization. The main research topics are algorithms, which are investigated mathematically as well as empirically.



## System Analysis and Modeling

**Prof. Dr. Holger Giese**  
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The System Analysis and Modeling group chaired by Professor Holger Giese concentrates on model-driven software engineering. It explores techniques for modeling flexible systems and analyzing and formally verifying such systems with the help of these models. The group also conducts research into model integration, model transformation (synchronization), consistency testing, model synthesis and code generation.



## Software Architectures

**Prof. Dr. Robert Hirschfeld**  
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Professor Robert Hirschfeld and his Software Architectures research group examine basic elements and structures of software systems. They are especially interested in methods, tools and descriptions for improving the design and understanding of complex systems. The research topics range from programming languages and runtime environments to tool support, analysis techniques and software development processes.



## Knowledge Discovery and Data Mining

*in Kooperation mit dem Deutschen GeoForschungsZentrum (GFZ)*

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The Research Group Knowledge Discovery and Data Mining, led by Prof. Dr. Emmanuel Müller, is concerned with efficient data mining algorithms and statistical methods for interactive data exploration. Unknown and unexpected patterns from large and complex data sets are extracted, for example, to be able to feed into decision-making processes. The focus of the research is the subject of big data analytics for complex data sets. The professorship was established in cooperation with the German Research Centre for Geosciences in Potsdam.



## Information Systems

**Prof. Dr. Felix Naumann**

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The Information Systems research group chaired by Professor Felix Naumann focuses on the efficient and effective management of heterogeneous information in large, autonomous systems. Two central motifs are information integration and data quality. Among other things, the group develops methods for schema management, data profiling, data cleansing and ETL management. Other areas of research include service quality and large amounts of data on cloud platforms.



## Operating Systems and Middleware

**Prof. Dr. Andreas Polze**

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Professor Andreas Polze's Operating Systems and Middleware group works on programming paradigms, design patterns and description methods for large, distributed component systems. The group concentrates on the integration of middleware with embedded systems and the predictability of their behavior with respect to real-time capability, fault tolerance and security. Professor Polze is also speaker of the HPI Research School, the institute's international post-graduate program.



## Business Process Technology

**Prof. Dr. Mathias Weske**

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The Business Process Technology group chaired by Professor Mathias Weske is engaged in the development of innovative models, methods and techniques to support knowledge-intensive and flexible business processes. The focus is on languages and concepts for modeling and analyzing such processes as well as on methodologies for the collaborative initiation and improvement of business processes. Research is evaluated using Oryx, the open-source platform for process modeling.



## HPI School of Design Thinking

**Prof. Ulrich Weinberg**

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The supplementary course in Design Thinking, which has been run by Professor Ulrich Weinberg at the HPI School of Design Thinking since 2007, is still unique in European countries. Modeled on the d.school at Stanford University (California), the course enables senior students from virtually all specializations to work in multi-disciplinary teams and develop user-friendly products and services for all walks of life.

**Further information on our research groups at [www.hpi.de/en/research/research-groups](http://www.hpi.de/en/research/research-groups)**

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