HPI Hasso Plattner Institut

IT Systems Engineering | Universität Potsdam

Hall 6, D18

Get in touch with us!

The Hasso Plattner Institute
at CeBIT 2016

Hasso Plattner Institute at a Glance

The Hasso Plattner Institute for Software Systems Engineering is Germany's university excellence center for IT-Systems Engineering. HPI is financed entirely through private funds donated by its founder Prof. Hasso Plattner, who co-founded the software company SAP. HPI is the only university institution in Germany offering the Bachelor's and Master's degree in "IT-Systems Engineering" – a practical and engineering-oriented alternative to conventional computer science studies. Current enrollment is at approximately 480 students. The HPI School of Design Thinking is Europe's first innovation school for university students. It is based on the Stanford model of the d.school and offers 240 places annually for a supplementary course of study.

There are a total of twelve HPI professors and over 50 guest professors, lecturers and contracted teachers at the Institute. HPI carries out research noted for its high standard of excellence in its eleven topic areas. Research work is also conducted at the Potsdam HPI Research School for PhD candidates as well as at its branches in Cape Town, Haifa, and Nanjing. HPI teaching and research focuses on the foundation and application of large-scale, highly complex and distributed IT systems. The development and exploration of user-driven innovations for all sectors of life is an additional area of importance. HPI always earns the highest positions in the CHE university ranking. Its free, open online courses on openHPI.de are available to everyone.
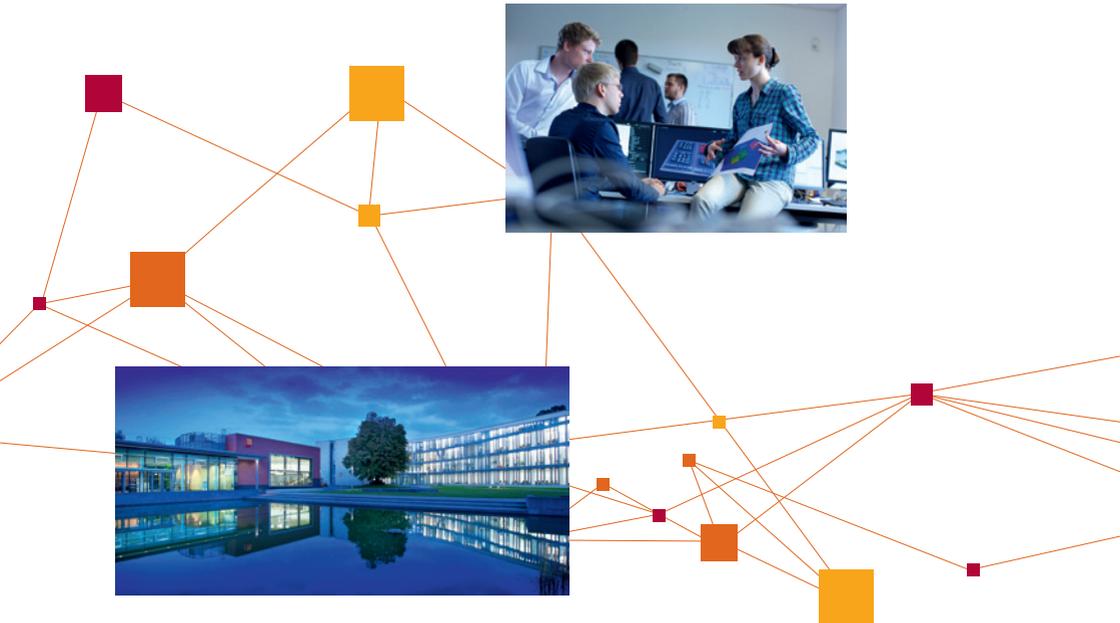
State-of-the-Art Research: The HPI Future SOC Lab

Since 2010, the HPI Future SOC Lab (with its international industry partners EMC, Fujitsu, Hewlett Packard Enterprise and SAP), has provided an especially powerful infrastructure for academic research. The most modern high-performance systems with high capacity RAM and large hard drive storage volume are available for projects.

Not only its own HPI scientists but also other universities, research institutes, and companies can use the lab for academic projects free of charge. A 1000 core computer cluster, multi-core servers with up to 64 cores and up to 2TB RAM, and the SAP in-memory database HANA, enable the realization of innovative research. These projects include the areas of cloud computing, parallelization, and in-memory databases.

Those interested can apply in the spring and fall of each year for projects at the HPI Future SOC Lab.

Lifelong Learning with Open Online Courses at openHPI

At its Internet educational platform openHPI.de, the Hasso Plattner Institute offers free online courses on IT topics, which are accessible to everyone. Since the beginning of openHPI in September 2012, there have been more than 253,000 enrollments from over 113,000 users and more than 150 countries. Over 35,000 certificates have already been issued to successful participants.

With its focus on information technology and computer science topics, openHPI is helping users worldwide to keep up with digital development. The interactive courses are combined with a social platform and offered in German, English, and Chinese.
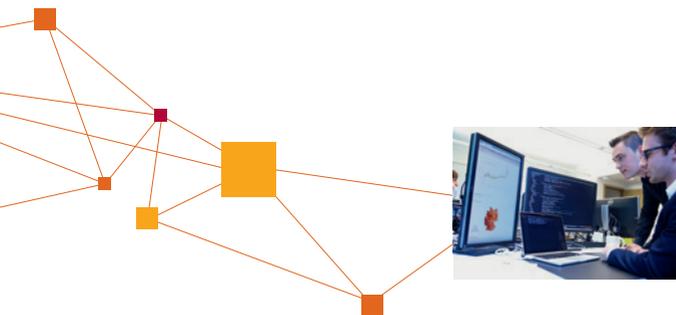
Experiencing Innovation: The HPI School of Design Thinking

The HPI School of Design Thinking,at Hasso Plattner Institute, offers a unique supplementary education in Europe for the user-centered innovation method of Design Thinking. The HPI School of Design Thinking was modeled on the "d.school" at the U.S. Stanford University in Silicon Valley and the California design forge IDEO.

The training is revolutionary. The four to six students in each training group, as well as their professors and instructors, come from completely different disciplines. Together as a group – some participants working in collaboration with industry partners – they develop solutions with a clear focus on the real needs of people.

Currently studying at the HPI School of Design Thinking are 124 students from 20 countries, 60 universities and 75 disciplines. During the semester the students are supported by 35 experienced professors, PhDs and assistants from the various fields on the science landscape in the metropolitan region of Berlin/Brandenburg.

CeBIT Adventure Days Sparks the Interest of High School Students in IT

Together with the BITKOM and CeBIT associations, Hasso Plattner Institute makes it possible for young people to experience a free, special and exclusive program at the high-tech event. During the CeBIT Adventure Days, computer science students lead participants in small groups through the specially selected booths of well-known exhibitors. The young people are invited to speak to experts in the areas of junior staff training and product development.

As part of its Youth Academy (https://hpi.de/schueler), the Potsdam Institute offers customized events to everyone who would like to become informed about the IT-Systems Engineering major or who is generally interested in math and science.

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Real-Time Analysis of Healthcare Data: HPI Makes Patient Care Easier

How can huge amounts of constantly accumulating healthcare data be searched with the latest methods of scientific analysis? Hasso Plattner Institute shows visitors how at CeBIT.

Based on the in-memory data technology, co-developed and researched at HPI, the highly secure web platform "Smart Analysis–Health Research Access" (SAHRA for short) can create a lightning fast, flexible analysis of patient care data. While in the German healthcare system a huge amount of information has been amassed up to now, it has not been used sufficiently to research and improve patient care.

HPI demonstrates how with SAHRA the data of anonymized treatment, billing, study and registry can be combined and made available for healthcare research. Strict compliance as well as technical, legal, and organizational implementation of data protection is guaranteed.

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Tracking Business Process Deviations Automatically

On the basis of digital tracks in IT systems, such as SAP or Salesforce, it is possible to reconstruct and analyze business processes in the sense of process mining. Individual steps of company operations are combined into complete processes that are then visualized as a whole.

With their solution, at CeBIT HPI scientists present an automated comparison between target and actual operations. Transparent and efficient business processes are therefore made possible, which can be factually represented and continually optimized in the future.

The new solution supports business analysts, quality managers, and auditors to quickly identify problems in the processes of companies. Modern technologies that are able to quickly handle large amounts of data are also implemented. As a result, it is possible to uncover issues such as the omission of steps, duplication of work, or violation of the dual-control principle.

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Managing Sensitive Data Securely in the Cloud with the New CloudRAID System

At CeBIT the Hasso Plattner Institute shows how users can reliably secure and manage their documents in the public cloud. The software CloudRAID, 2015 recipient of the Innovation Award of the IT security association TeleTrusT, enables storing sensitive files with providers of public clouds in such a way that the data is never transmitted unencrypted or in its entirety.

This ensures a high level of confidentiality in data storage. After encryption, the files are broken up into many "puzzle pieces." These fragments are then distributed independently to different cloud storage repositories. Neither the HPI system nor the storage vendor can access the data as a whole since the key material remains exclusively at the user.

Thanks to the secure distribution of data, the HPI system meets higher demands of availability and security than would be possible with a single provider. A crucial aspect of the security of the CloudRAID system is its access to the identity management of the Bundesdruckerei (German Federal Printing Office).

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New Protocol for the "Internet of Things"

Researchers from Hasso Plattner Institute present an innovative security solution for wireless technology in the "Internet of Things" with their new protocol "Adaptive Key Establishment Scheme" (AKES) at CeBIT. The protocol controls which device can enter an IEEE 802.15.4 wireless network and enables encryption of the corresponding wireless communication.

At this time, IEEE 802.15.4 has been developed as the de facto wireless standard for the Internet of Things (IoT), mainly because of its low power consumption and range of up to around 200 meters. The standard is particularly well-suited for the wireless communication of sensors and actuators, for instance in applications for smart homes, smart factories and smart cities. A fully functional implementation for the IoT operating system Contiki is available as an open source code.

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From Tweet to Lead: HPI's Social Media Analysis Automatically Leads to Potential Customers

A new sales software to optimize sales processes between business partners is being presented by scientists from Hasso Plattner Institute at CeBIT. The new software, based on the analysis of social media channels, makes cold calls (the unsolicited calling of a stranger usually to generate a sale) completely superfluous. It means only reaching those potential customers who actually offer an excellent business prospect; in other words: from Tweet to Lead!

HPI's social media suite identifies potential business customers on the basis of their published texts in social networks. Due to the huge amount of contributions in the social web, it would be extremely time-intensive, to find interesting business clients manually. That's why the HPI system automatically searches for sales-related contributions, assigns them to a product, and presents the overview in a web application whose surface looks like the Outlook emailing software.

The innovative system evaluates entries by learning beforehand from the company's information and marketing documents the typical expressions and terms applied to certain products. The HPI system evaluates the relevance to the sale with the help of the sales staff. This way, typical advertising messages or technical details where no purchase request is recognized are filtered out.

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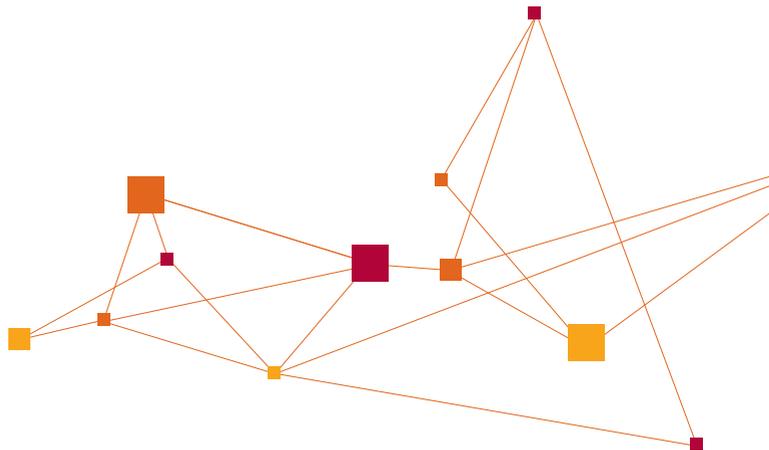
Safe Haven for User Data: openHPI Provides MOOC House for Open Online Courses

Hasso Plattner Institute demonstrates how education providers can deal responsibly with the data of their open online course participants. Germany's pioneer offree Massive Open Online Courses (MOOC) is presenting its new MOOC House (https://mooc.house) at CeBIT.

At this technology platform, companies and educational institutes can each conduct their own open online courses on any topic. Personal information, communication data, and performance records never leave the secure server in Potsdam, which is protected under the Federal Data Protection Act. Since 2012, the software institute has used this server for its own Internet learning platform: openHPI. In the meantime, already more than 113,000 participants from over 150 countries have registered at openHPI.

The knowledge transfer via MOOCs is always interactive. Through the large number of course participants, who engage in exchange among themselves and with the instructors, valuable feedback can be used for individual improvements.

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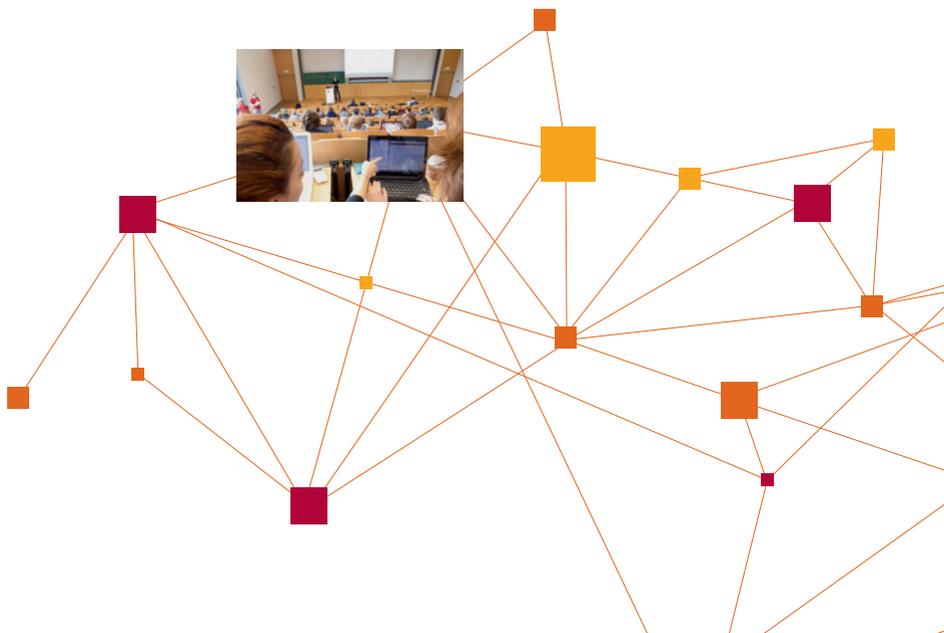
How a Ride on the S-Bahn Becomes Smart: HPI Helps Customers with the Analysis of Twitter Entries

Every day millions of people use public transportation. They resent when sudden disturbances arise, disrupting the course of their travel plans. In the future, the "S-Bahn Analyzer" from Hasso Plattner Institute will help customers with the lightning-fast analysis of multiple entries in the short message service Twitter. With this solution, presented by HPI at CeBIT, customers are better able to adjust to irregularities in public transport travel.

Aided by technology for high-speed databases – in-memory data management – HPI scientists analyze Twitter entries about the S-Bahn lines and train stations, link them and calculate a prognosis. In live statistics, the S-Bahn Analyzer can also indicate at any time the most common types of incident and what times of the day which events are reported and with what frequency for specific lines. As a result, passengers will better be able to choose the route and means of transport best suited to the situation at hand.

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Strong Data Support for Weak Hearts

When a heart fails, various reasons can come together–whether pressure overload, hereditary factors, environmental influences or disturbances in the immune system. Computer scientists at Hasso Plattner Institute are helping physicians with a new IT system to evaluate the risk factors for heart failure and to assess them comprehensively.

With a demonstrator, HPI shows the integration and interactive analysis of relevant data in an Internet platform at CeBIT. It allows clinical doctors to make treatment decisions faster and to support them more broadly. The SMART project, sponsored by the Federal Ministry of Research, aims to develop customized prevention and treatment strategies for individual patients. This objective primarily involves early detection of the complex causes of heart failure and their inter-action. On the basis of in-memory database technology, researched and developed at HPI, it is possible for predictions to be made about the possible course of the disease and for therapeutic successes to be achieved.

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Selected Dates and Events in 2016

APRIL

04.	Future SOC Lab Day at HPI's top research lab
06. – 08.	11th Symposium on Future Trends in Service-Oriented Computing & Research School Retreat
15.	Information Day for Prospective Students / HPI Open House

MAY

11. – 12.	Innovation for Jobs: Design Thinking for New Labor
19.	Corporate fair: HPI Connect

JUNE

01. – 02.	4th Potsdam Conference on National Cyber Security
10.	Open House at University of Potsdam

JULY

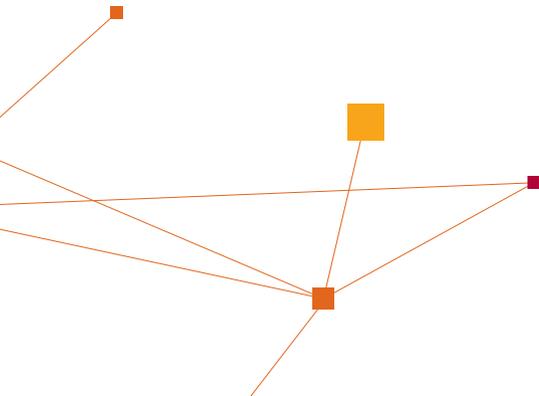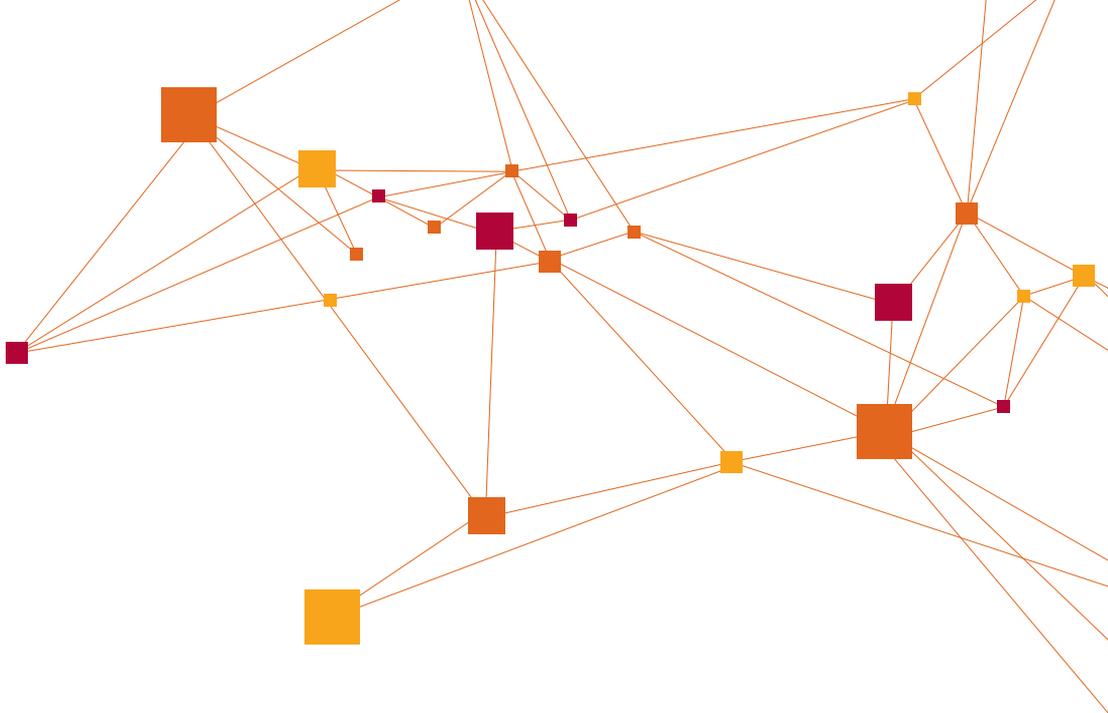|	
14.	HPI Bachelor Podium
15.	Closing date for student applications to HPI (Bachelor / Master), more at www.hpi.de/studium

AUGUST

04. – 05.	7th International Symposium on Semantic Mining in Biomedicine
24. – 28.	HPI Summer Camp for high school students

SEPTEMBER

12. – 14.	LWA Conference
08. – 10.	HPI-Stanford Executive Education Programme