

Digital transformation and entrepreneurship at Hasso Plattner Institute (HPI), Germany



1. HPI's profile, digitisation activities and entrepreneurial approach

The Hasso Plattner Institute (HPI, German: Hasso-Plattner-Institut für Digital Engineering gGmbH), is the **Information Technology Faculty** of the University of Potsdam.¹ It is located in the City of Potsdam Southwest of Berlin. Research and teaching at HPI focus on information technology (IT) systems engineering. Currently, approximately 550 Bachelor and Master students study at the Institute.² Since the Institute's inception in 1998, more than 130 doctoral candidates gained their PhD.³ HPI is entirely privately funded through donations from its founder, Hasso Plattner, who co-founded SAP SE, the largest European software company. Plattner is currently the chairman of SAP's supervisory board. Nevertheless, HPI is a public-private partnership. The private partner is the "Hasso Plattner Foundation for Software Systems Engineering"; the public partner is the Federal State of Brandenburg that provided the real estate

HPI also equips its students with entrepreneurial skills and encourages them to develop own business ideas.⁴ There are related courses, guest lectures, coaching and consulting offers, events, a co-working space for start-up teams, pre-seed finance, a business competition, and scientific research. HPI students and alumni so far founded more than 150 startups. Currently, HPI bundles all entrepreneurial activities at the **HPI School of Entrepreneurship** ("E-School").⁵

The HPI established a **School of Design Thinking**, also called D-School, in 2007. The D-School plays a key role in the HPI at large and an important part in HPI's approach to entrepreneurship and innovation. The School offers students from different fields of study at the University of Potsdam the opportunity to work in multi-disciplinary teams. Here they learn how to innovate and to develop particularly user-friendly IT products and services. Through the HPI Academy, HPI offers further education in Design Thinking and IT to professionals.

The Institute also emphasises digital transformation of its research, teaching and administration. HPI's major IT tool is **openHPI**, established in 2012.⁶ openHPI is an internet-based educational platform that offers massive open online courses (MOOCs). It provides interactive online courses about various IT topics for free. Participants can also benefit from discussing issues and developing solutions in a global virtual community.

¹ See <https://hpi.de/en/the-hpi/overview.html>.

² See <https://hpi.de/das-hpi/personen/studierende.html>.

³ See <https://hpi.de/en/studies/degree-programs/phd-program.html>.

⁴ See <https://hpi.de/en/entrepreneurship/the-e-school.html>.

⁵ See <https://hpi.de/en/studies/entrepreneurship.html>.

⁶ See <https://open.hpi.de/?locale=en>.

2. How HPI fosters a digital culture as a means for innovation and entrepreneurship

HPI's leaders are strongly committed to foster digital transformation, innovation and entrepreneurship. This applies first of all to HPI's patron and founder, **Hasso Plattner**.⁷ Specifically for entrepreneurship, in 2005 Plattner launched a venture capital fund named Hasso Plattner Ventures⁸, to support entrepreneurs in the IT sector and finance venture growth. In spring 2011, the SAP Innovation Center⁹ that works closely with HPI was established in Potsdam. Since 2015, early stage start-ups from HPI can apply for pre-seed financing at the HPI Seed Fund, which provides up to 50,000 Euro for initial funding of IT-based founding ideas. Specifically for digital transformation, in 2012, Plattner launched the online learning platform openHPI.

HPI has laid down its strategic objectives in a **mission statement**.¹⁰ This statement relates to the Institute's objectives in teaching, research and technology transfer. One item relates directly to innovation and entrepreneurship, seeking "to complement our study program in computer science by fostering social skills (soft skills), innovation and entrepreneurship". The mission statement does not directly refer to digital transformation of HPI as an institution. However, as HPI focuses on the subject of IT, the Institute takes it for granted to use and develop digital technologies in all its activities.

The benefits of digital transformation of the Institute, of its innovation activities in particular, can be demonstrated with the example of the HPI **School of Design Thinking**. Every year, the D-School trains up to 240 students in a supplementary study of Design Thinking. Students come from more than 70 disciplines, 60 universities and roughly 20 countries.¹¹ Project partners are mainly commercial businesses but also non-profit and public organisations. They use the D-School as a think tank and "do tank" to find solutions to their issues. Design Thinking helps to develop new products, services, processes and organisational set-ups in a particularly creative, fast and practice-oriented way. At the core is collaboration of interdisciplinary student teams seeking solutions that are first and foremost customer-oriented. HPI believes that digital transformation is above all a challenge for individual and societal attitudes, not of technology. "Digital technologies allow to interact in a completely different way – in leisure time, at work, in business and production processes", says Maxim Asjoma from HPI. "In our times, human interaction is more important than ever, and it will be at the core for adding value in the future." Hence, the D-School focuses on mind set training, not on using IT.

HPI also exploits the benefits of digital transformation in its **entrepreneurial activities**. These activities include seven main elements: a lecture on IT Entrepreneurship, a co-working space for start-up teams, individual coaching and consultancy, pre-seed finance, the HPI Business Plan Competition, start-up events such as bootcamps and workshops, and the Founders Toolkit. The Toolkit has numerous links to eight related topics from idea over product and market to pitching.¹² In its events, the Institute also offers opportunities for experienced entrepreneurs, including alumni, and aspiring entrepreneurs to learn from each other. Specific events to support this exchange include a failure night, start-up talks, and networking events. Students can also watch MOOCs like "Startup Talks at HPI" that feature founders of

⁷ See <https://hpi.de/en/the-hpi/founder.html>.

⁸ See www.hp-ventures.com.

⁹ See <http://www.sap-innovationcenter.com>.

¹⁰ See <https://hpi.de/en/the-hpi/organization/mission-statement.html>.

¹¹ See <https://hpi.de/en/school-of-design-thinking/hpi-d-school/>.

¹² See <https://hpi.de/en/entrepreneurship/services/founders-toolkit.html>.

well-known new companies.¹³ While the students are IT experts through their education at HPI, the institute offers digital learning tools such as openHPI to teach them also about business and social skills.

Another example of digital transformation at HPI is the **Bachelor projects**. These projects cover the fifth and sixth semesters and involve working on concrete problems coming from a partner in industry or society. In teams of six to eight persons, students learn to develop software solutions and master complex IT systems using structured, goal-oriented methods and role playing. Students work on newest IT and develop them further in their thesis.

HPI recently introduced a new online career platform named **HPI Connect**.¹⁴ It provides information about career opportunities, job offers and career-related events. Companies can present themselves as employers and establish direct contact with HPI students and alumni for recruitment. Hence, HPI Connect is a kind of trade fair.

HPI communicates the benefits of digital transformation in innovation and entrepreneurship activities via its **social media** and **press activities**. As regards social media, HPI is represented on Facebook¹⁵, Twitter¹⁶, YouTube¹⁷ and IT Summit Blog¹⁸. For example, HPI's Youtube channel informs about the Institute's MOOCs. Press activities include regular press releases and a newsletter that informs about current study and research topics, events and other topics of the HPI twice a year. For example, on 5 September 2018 there was a press release about a MOOC expert meeting at HPI.¹⁹ On 29 August 2018, the HPI posted a news item about a conference of the Global Design Thinking Alliance that focused on "Designing Digital Transformation".²⁰

HPI also monitors digital transformation processes at the Institute. In the openHPI project, HPI uses various tools to **monitor the effect of the courses**. One of these tools is the Learning Analytics service. It retrieves live usage data from students enrolled in a MOOC for the purpose of learning analytics research. The service is based on a real-time, extensible architecture for consolidating and processing data in versatile analytics stores.²¹ Such tools help HPI to see, for example, how many students participate, how many of them finish the courses, and how many are active in the forum. HPI also collects course feedback and evaluates it. HPI researchers often present findings from such evaluations at academic conferences.

3. How HPI plans, manages and develops its digital infrastructure and services

HPI considers managing and optimising its ICT systems and services as a continuous task. The Institute offers a couple of special services and technical infrastructure to its staff and partners. A major example is the **Future SOC (Service-Oriented Computing) Lab**. The Lab cooperates with industry partners such as SAP, Fujitsu, Dell EMC and Hewlett Packard Enterprise. Its mission is to enable and promote exchange and interaction between the research community and industry. The Lab applies

¹³ See <https://open.hpi.de/courses/startup-talks>.

¹⁴ See <http://www.hpi.de/connect>.

¹⁵ See www.facebook.com/HassoPlattnerInstitute.

¹⁶ See www.twitter.com/HPI_DE.

¹⁷ See HPI TV, www.youtube.com/hpityv1.

¹⁸ See <https://hpi.de/meinel/knowledge-tech/learning-engineering/tele-task/e-publications/it-gipfelblog.html>.

¹⁹ See <https://hpi.de/en/press-releases/2018/offene-online-kurse-machen-karriere-mooc-expertentreffen-am-hasso-plattner-institut.html>.

²⁰ at <https://hpi.de/en/news/jahrgaenge/2018/designing-digital-transformation.html>.

²¹ See Renz et al. (2016): Enabling Schema Agnostic Learning Analytics in a Service-Oriented MOOC Platform. Available for download at <https://open.hpi.de/files/5cfe141d-309e-4a46-9205-c37940f30b7b>.

supercomputers that would be too expensive for an ordinary institute. Research institutes can use this infrastructure for free under the condition that they share their results with the community once a year on the Future Soc Lab Day.

Another example of a special IT service is the **Identity Leak Checker Client**.²² This tool, developed at the chair of Internet Technologies and Systems, allows users to check if one's identity was leaked by entering an e-mail address. The tool is not only available to HPI students and staff but also the public for free.

HPI also uses its MOOC platform openHPI to provide **training opportunities for its staff** on how to use ICT for teaching, learning and assessment. Using openHPI is voluntary – there are no compulsory training sessions for staff members. As any openHPI user, staff members can increase their IT knowledge in five fields: IT Basic Knowledge, IT Security, IT Technical Principles, Programming, and Recent Developments. For example, the track on IT Basic Knowledge offers courses on “how does the internet work?”, “security in the internet”, “social media – what no one has told you about privacy” and “secure e-mail”. If anything is unclear to the users, they can ask the learning community and the teaching team in the course-wide discussion forum or have a look at the site with Frequently Asked Questions²³. For technical questions they can also turn to the Helpdesk²⁴.

Exhibit: openHPI homepage

The screenshot shows the openHPI homepage with a dark navigation bar at the top. The main content area is titled "Current and upcoming courses" and features four course cards. Each card includes a representative image, the course title, instructor names, dates, and language options. Below each card are buttons for "Show course details" and "Enroll me for this course". A vertical "Helpdesk" button is visible on the right side of the course cards.

Course Title	Instructors	Dates	Language
Startup Talks at HPI	Johannes Reck, André Eggert	Since November 9, 2017	English
Einführung in die Mathematik der Algorithmik	Dr. Timo Kötzing, Dr. Pascal Lenzner	September 10, 2018 - October 1, 2018	Deutsch
Java Capstone Series Pt. 1	Thomas Staubitz (openHPI Team)	September 10, 2018 - September 26, 2018	English
Human-Centered Design: From Synthesis to Creative Ideas	Karen von Schmieden, Mana Taheri	September 19, 2018 - October 26, 2018	English

Source: <https://open.hpi.de/courses?locale=en>, accessed 15 December 2018

²² See <https://sec.hpi.de/ilc/search?lang=en>.

²³ See <https://open.hpi.de/pages/faq?locale=en>.

²⁴ See <https://open.hpi.de/pages/contact?locale=de>.

Furthermore, HPI has dedicated provisions to protect the **ICT-related privacy, confidentiality and safety** of staff and students. Beside the Identity Leak Checker explained above, there are an HPI data protection officer and specific security precautions. The Institute has a detailed data protection policy that is published on its website.²⁵ openHPI has a special privacy and data protection policy.²⁶

4. Digital teaching, learning and assessment practices at HPI

Since HPI solely focuses on IT engineering, it imparts **digital competences and skills** in all of its teaching. HPI offers Bachelor and Master studies in IT Systems Engineering as well as Masters in Digital Health and Data Engineering. There is also a post-graduate study in design thinking. In executive education, HPI offers courses in Design Thinking, IT and digital transformation through its HPI Academy. HPI also has a School Academy to convey digital skills to secondary school students. Furthermore, HPI encourages staff and students to reflect on, research and disseminate their digital teaching, learning and assessment practices as an inherent part of its culture.

HPI's main online teaching tool is **openHPI**.²⁷ openHPI courses offer learning videos, interactive self-tests, tutorials, practical exercises and homework. Students can access all materials easily with any device connected to the internet. Participation is free of charge and not restricted by any pre-requisites. Participants can learn in a large virtual learning community in discussion forums and virtual learning groups. After successfully completing homework and an online final test, participants receive a certificate from HPI. openHPI is not only for HPI students but also for students from any other university, for professionals and the interested public. Partners from business (e.g. SAP), public entities (e.g. Charité, a major hospital in Berlin), politics and international organisations (e.g. World Health Organisation) use openHPI to offer their own online courses.

The major group of openHPI learners are no HPI students and in fact no students at all. The biggest part of openHPI learners are professionals who aim to stay on top of scientific knowledge and to refresh this knowledge. Every lecture is recorded on **tele-TASK**,²⁸ a mobile recording system that allows presenting the final video in a dual stream: on one side the lecturer, on the other side his slides. In this way, students who miss a lecture or who want to prepare for the exam can easily find and watch the session as often as they like on the tele-Task portal on the Internet. Some HPI professors tried the Flipped classroom concept. They provided a course on openHPI and asked their students to join. At the same time they offered an on-site seminar. In the face to face meetings they used the time to discuss open questions and work on exercises.

5. Open science and innovation practices at HPI

HPI is clearly oriented towards open science and open innovation. This is also laid down in the Institute's mission statement that stresses collaboration.²⁹ With a view to academia, the statement stipulates that HPI contributes "to the development of computer science internationally, and, in close cooperation with partners from academic research and industry, advancing (...) IT Systems Engineering". With regard to the broader public, the mission statement requires HPI to use "its capabilities to address major societal challenges and to promote the implementation of innovative solutions in industry and society in

²⁵ See <https://hpi.de/en/data-privacy.html>.

²⁶ See <https://open.hpi.de/pages/data-protection>.

²⁷ More detailed information at <https://open.hpi.de/pages/about>.

²⁸ See <https://www.tele-task.de/>.

²⁹ See <https://hpi.de/en/the-hpi/organization/mission-statement.html> for the following quotations.

collaboration with other stakeholders". Beside openHPI, HPI is engaged with the scientific community, the business world and society in numerous ways. This engagement comprises many special events:

- The **D.confestival**, a three-day event for Design Thinking with 900 participants, 350 companies and 150 speakers from 40 different countries that took place in September 2017.³⁰
- **Potsdamer Konferenz für Nationale Cybersicherheit** (Potsdam Conference for National Cyber Security) with high-level representatives from national and international security agencies, policy, business and society that took place from 23 – 24 May 2018.³¹
- The annual **Industrie 4.0-Konferenz**³² (Conference Industry 4.0) of which the fourth edition took place in February 2018.
- The conference **Innovation for Jobs** – Future of Work in April 2018 with experts from science, policy and business.³³
- **openHPI Forum**, an annual e-learning event that highlights diverse applications of MOOCs and current research topics.³⁴ The 2018 edition took place in September.
- The **Schul-Cloud Forum** deals with future-proof IT infrastructure at schools.³⁵ Two such events took place in 2017 and in March 2018.
- The Potsdam **Digital Health Forum** will take place in December 2018 and focus on keynotes, plenary discussions and lectures.³⁶
- At the **Future SOC-Lab Day**, previous Future SOC Lab projects present results from their research, and selected requestors of new projects can expand their ideas.³⁷

Recorded live streams and other forms of documentation are still available online, which increases the open science impact of these events.

Source

This case study was prepared by Dr. Stefan Lilischkis from empirica Gesellschaft für Kommunikations- und Technologieforschung mbH, Bonn, Germany, through collection and analysis of broad documentation about HPI and feedback from key HPI representative. The status of information in this case study is December 2018.

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Key links

Entrepreneurship at HPI: <https://hpi.de/en/entrepreneurship/the-e-school.html>

openHPI: <https://open.hpi.de/?locale=en>

³⁰ See <https://dconfestival.hpi.de/>.

³¹ See <https://www.potsdamer-sicherheitskonferenz.de/konferenz.html>.

³² See <https://hpi.de/veranstaltungen/hpi-veranstaltungen/2018/industrie-40-konferenz.html>.

³³ See <https://hpi.de/veranstaltungen/hpi-veranstaltungen/2018/innovation-for-jobs-die-zukunft-der-arbeit.html>.

³⁴ See <https://hpi.de/en/events/hpi-veranstaltungen/2018/openhpi-forum-2018.html>.

³⁵ See <https://hpi.de/en/events/hpi-veranstaltungen/2018/schul-cloud-forum-2018.html>.

³⁶ See <https://hpi.de/veranstaltungen/wissenschaftliche-konferenzen/2018/hpi-digital-health-forum.html>.

³⁷ For the 2018 edition see <https://hpi.de/en/events/wissenschaftliche-konferenzen/future-soc-lab/2018/hpi-future-soc-lab-day-spring-2018.html>.