



University of Stuttgart
Germany

University of Stuttgart

December 2022

At a Glance

About Us

We are a technology-oriented, globally connected University known for integrating engineering, natural and social sciences and the humanities in an interdisciplinary fashion.

Basic Data

- 24,500 students enrolled at 10 faculties
- 265 full professors
- 3,100 academic staff in total
- 1,900 non-academic staff
- Cooperation with a large number of non-university research institutions
- 6 Collaborative Research Centers
- 2 Clusters of Excellence

An International Profile

- About 5300 international students from more than 100 countries
- International Center for Cultural and Technological Studies
- Master's programs taught in English
- More than 500 partner universities throughout the world



Vision: The Stuttgart Way

We are visionaries for the topics of the future on the Stuttgart Way of integrated interdisciplinary research and teaching.

The “Stuttgart Way”, standing for collaboration of complementary disciplines, initiates unique possibilities to ask new questions and to develop answers together.

Strategic Goals

- Networked disciplines (Stuttgart Way)
- World-renowned research university
- Attractive for students
- Reliable partner for knowledge and technology transfer
- Dependable employer
- Internationally involved and networked
- Active for a sustainable development

Research: Profile Areas

- Architecture and Adaptive Building
- Digital Humanities
- Production Technologies
- Quantum Science
- Simulation Science

Profile Areas (1/2)



Architecture and adaptive building: Rapid urbanization, an enormous construction boom, huge resource consumption, and lack of productivity in construction are the challenges addressed in this Profile Area.

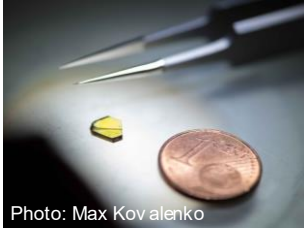


Digital humanities are a bridge between modern digital research methods, digitalization phenomena, and the changes in culture and society caused by digitalization. With the help of computer science, they venture a new look at topics in the humanities.



Since their inception, **production technologies** have been contributing to the industrial success of Stuttgart as a business location. In terms of teaching, technology transfer, and cooperation, this Profile Area features some of the University's most successful institutes.

Profile Areas (2/2)



Quantum science is one of the most promising and pioneering fields of basic research in general. The interdisciplinary Center of Applied Quantum Technology is an example of the relevance and the practical nature of this science.



Simulation science: Under the umbrella of the Stuttgart Center of Simulation Science, more than 200 scientists have developed the focus from previously isolated numerical models and methods to an integrative systems science.

Research: Emerging Fields

- Autonomous Systems
- Biomedical Systems


Emerging Fields



The Emerging Field Autonomous Systems brings together research on complex networks of real machines and devices and their physical and virtual environment, thereby strengthening cutting-edge research in the Cyber Valley partnership.



The Emerging Field Biomedical Systems is dedicated to the transfer from biology to biomedical applications and combines this research with the proven engineering, computer, and quantum sciences. An important field of application are personalized and automated diagnostic procedures.



Excellence Strategy: Two Clusters of Excellence

Data-Integrated Simulation Technology

Simulation in the Era of Data Science:

The Cluster of Excellence “Data-Integrated Simulation Science” targets a new class of modeling and computational methods based on all the data, which is currently available from various sources, in order to take the usability and precision of the simulations as well as the reliability of the decisions based upon them to a whole new level.

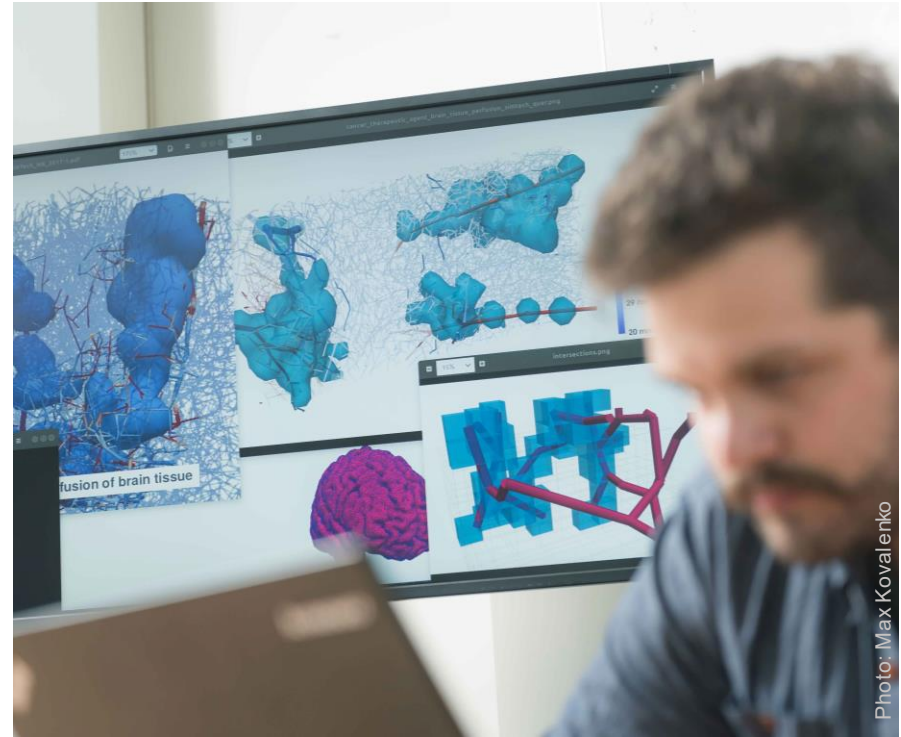


Photo: Max Kovalenko

Integrative Computational Design and Construction for Architecture

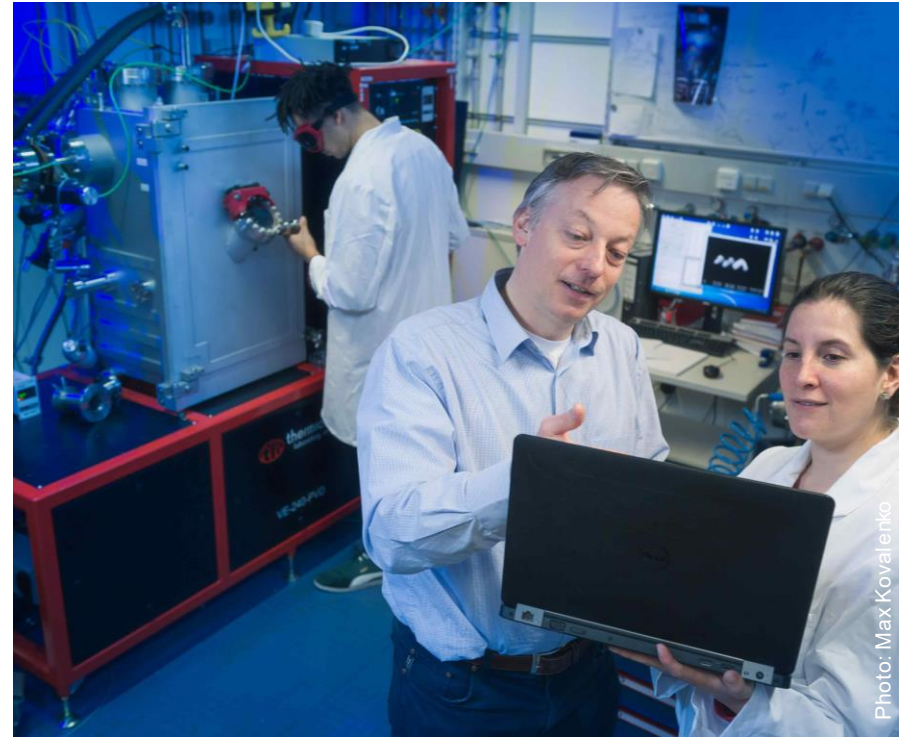
A new way of thinking for the built environment: The Cluster of Excellence “Integrative Computational Design and Construction for Architecture” aims to harness the full potential of digital technologies in order to rethink design and construction, and enable groundbreaking innovations for the building sector through a systematic, holistic and integrative computational approach.



Highlights

Cyber Valley

Cyber Valley is Europe's biggest research collaboration into artificial intelligence. As well as the University of Stuttgart, the University of Tübingen, the Max-Planck Institute for Intelligent Systems, the state of Baden-Württemberg, and the Fraunhofer Society, the collaboration also includes seven industrial companies. Cyber Valley is also supported by four foundations.



International Architecture Exhibition – IBA 2027

As a result of its tradition and expertise, the University of Stuttgart has a 5% stake in “IBA 2027 StadtRegion Stuttgart GmbH” - and will showcase the first adaptive demonstrator high-rise building in the world at the IBA 2027. Developed within the framework of the Collaborative Research Center “Adaptive Skins and Structures for the Built Environment of Tomorrow”, it focuses on sustainable, resource-friendly construction using new and adaptive materials.



Photo: University of Stuttgart/Uli Regenscheit

“Mobility of the Future” InnovationCampus (ICM)

The University of Stuttgart and the Karlsruhe Institute of Technology are pooling their expertise in the “Mobility of the Future” InnovationCampus (ICM). Through excellent interdisciplinary basic research in the areas of mobility and production, the ICM develops new technologies, transfers them into businesses, and thereby actively contributes to the shaping of tomorrow’s mobility.



Quantum Technology

The University of Stuttgart is committed to quantum research – as to the basis for multiple technologies – in two ways: through the Center for Integrated Quantum Science and Technology (IQST) together with the University of Ulm and the MPI for Solid State Research in Stuttgart, and through the BMBF future cluster “Quantum Sensors for the Future (QSens)”, likewise in collaboration with the University of Ulm as well as partners from industry and application-oriented research institutions.



Visual Computing

The Collaborative Research Center/Transregio “Quantitative Methods for Visual Computing” investigates quantitative methods and metrics, adaptive algorithms, and new interactivity technologies for visualization, computer graphics, computer vision, and human-computer interaction.



Production Engineering

The Stuttgart Production Center (PZS) bundles the expertise of the university's nine manufacturing institutes. Its goal is to establish a center for production research, university education, and non-university continuing education. The PZS puts technology transfer to the fore and focuses on the process chain in the automotive industry and the necessary production equipment from mechanical engineering.



Photo: Fraunhofer IPA/IFF Universität Stuttgart

ARENA2036 – Cooperative Research Campus

At ARENA (Active Research Environment for the Next Generation of Automobiles) researchers from university, non-university research institutes and industry jointly research on and develop the next generation of production processes for flexible automobile manufacturing.



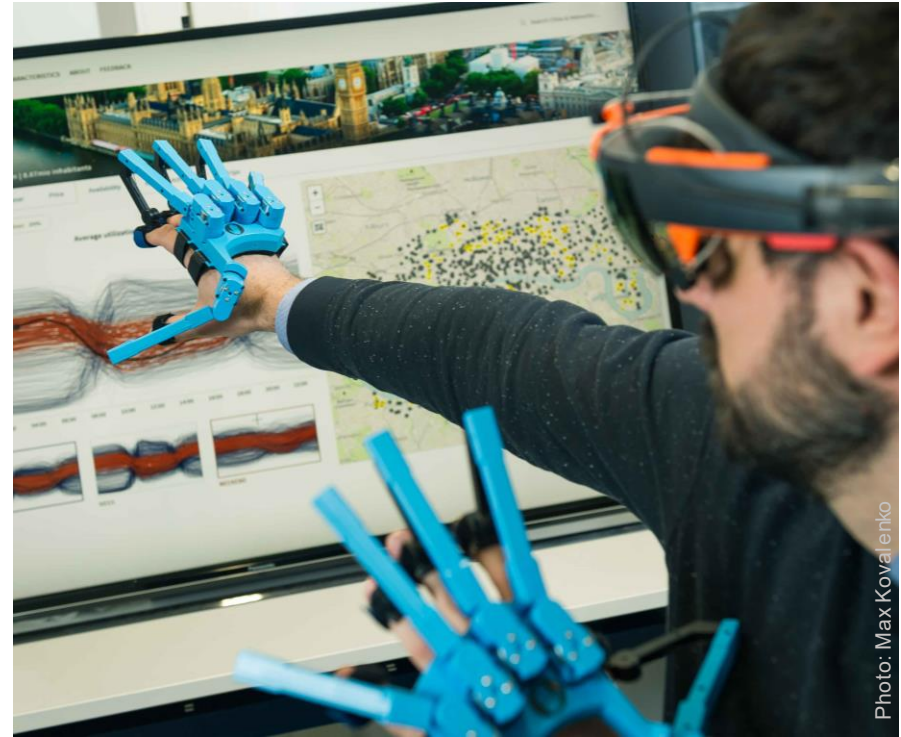
Gauss Center for Supercomputing

With the supercomputer “Hawk”, the University of Stuttgart is part of Europe's most powerful high-performance computing alliance (Jülich, Munich, Stuttgart). Hawk is among the fastest supercomputers worldwide and the fastest general-purpose machine for scientific and industrial computing in Europe - with a peak performance of approximately 26 petaflops (February 2020).



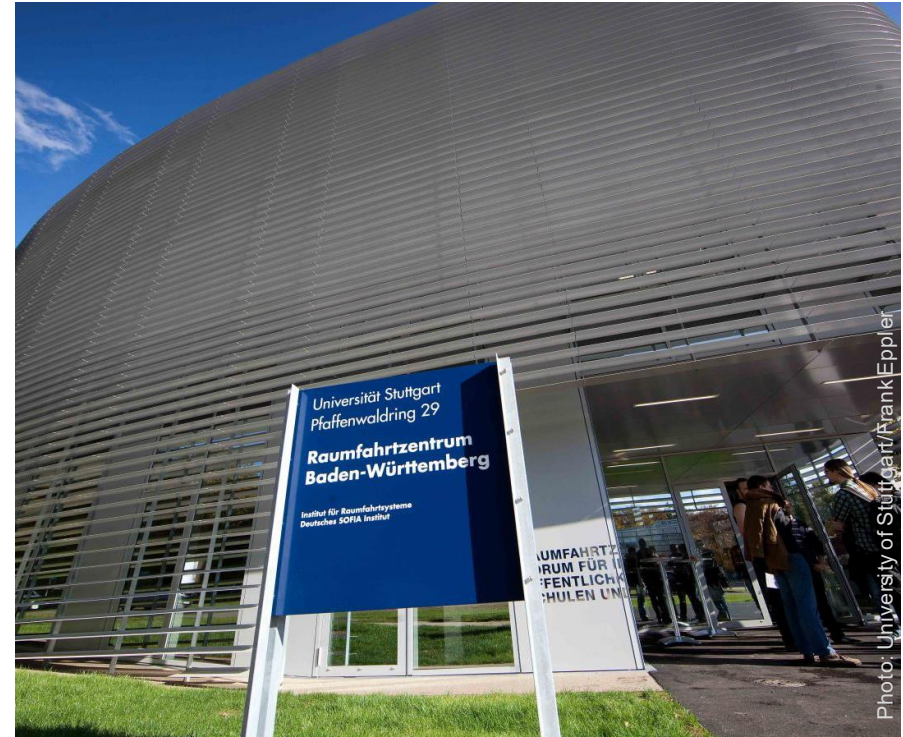
Visualization Research Center University of Stuttgart (VISUS)

VISUS is a central research facility developing foundations and applications of new interactive computer graphics-based technologies. These enable the visualization of big data from simulations, sensor technology, and digital events.



Baden-Württemberg Astronautics Center (RZBW)

Stuttgart scientists are able to conduct leading-edge research and development in cooperation with Baden-Württemberg's industry at this state-wide astronautics forum on the university campus.



VEGAS

VEGAS is a 700 m² testing center for subsurface remediation – unique in Europe – that allows in situ remediation and site investigation methods for contaminated land and groundwater to be developed and tested under realistic site conditions and using real contaminants.



Photo: University of Stuttgart/Oliver Frohnauer

“ArchiNeering”

The term “ArchiNeering” stands for the typically close cooperation between Civil Engineering and Architecture at the University of Stuttgart. Bangkok’s new airport is an outstanding example of the concept’s application.



Photo: Werner Sobek

The International Center for Cultural and Technological Studies (IZKT) investigates the interaction between cultural formations and technological innovation at an international level.



Beyond Usual Lectures

Racing Team

Year after year, the Stuttgart University racing team takes top spots in the international Formula Student races. Whether in Spain, Germany, the United Kingdom, Australia, or the United States: They always succeed.



Foto: ©FSG_Rankin/
Alastair Rankin

GreenTeam

In 2022, the GreenTeam's electrically driven car once again set a new world record for the fastest 0-100 km/h acceleration, thus winning back the trophy for the third time. The new car hit 100 km/h in 1.461 seconds. Since 2010 the team has consistently been a member of the top 10 teams in the world ranking list of electric Formula Student racecars and are currently leading the world ranking.



Photo: Universität Stuttgart
Bettina Künzler

InVentus Team

Driving against the wind – with a wind-driven vehicle: time and time again, the InVentus team succeeds at the Aeolus-Race, the world championship in the Netherlands. In their last race (2018), the team reached 2nd place in the overall race ranking and also won the category for the most innovative vehicle.



“Crossing Borders”

“Crossing Borders”, the students’ initiative for renewable energy, has achieved a lot already: in 2012 they installed a hot water supply system as well as solar panels for an orphanage in South Africa. In 2014, they carried out an educational project in Montenegro. At present, they focus on school projects in and around Stuttgart and recently built a small windmill near Würzburg.

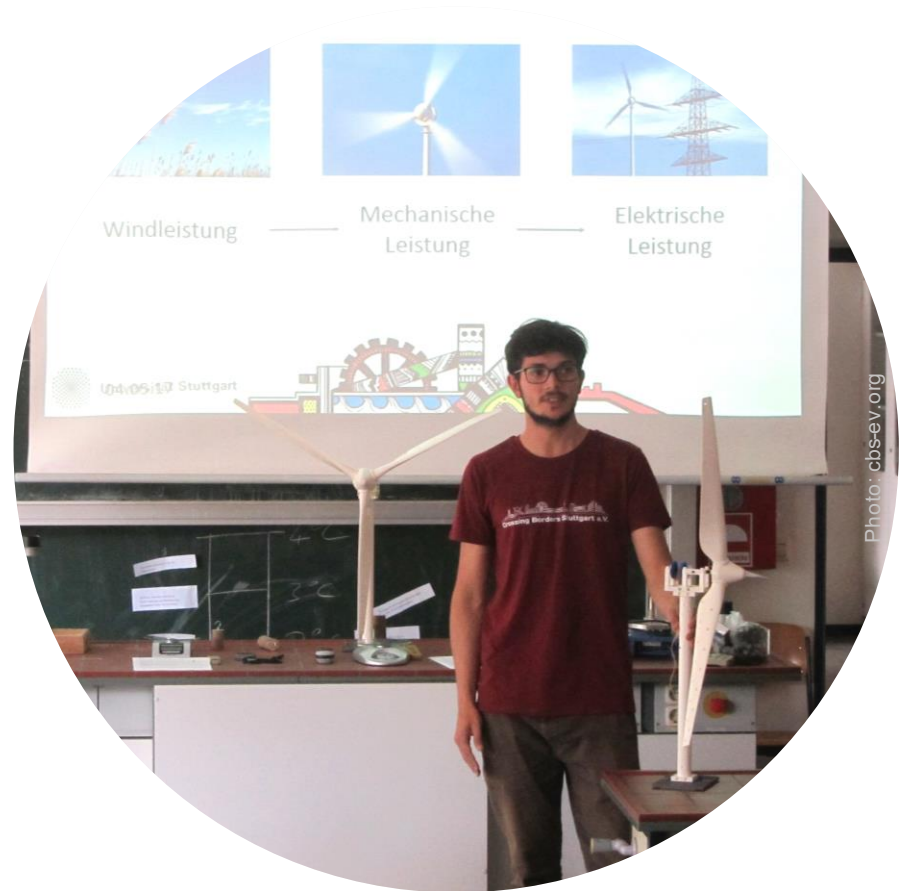


Photo: cbs-ev.org

Choir and Orchestra

Academic Choir and Orchestra: Both ensembles – of around 100 members each – conduct concert tours not only in Europe, but also in Russia, Latin America (Brazil), the USA (Oregon), and China.



Connecting with Refugees

Meeting places, language classes and buddy projects, sports groups, political discussions, and mentoring – the University of Stuttgart offers multiple opportunities for refugees to connect. Students and staff who engage in these projects are mostly volunteers. Their dedication to this cause is remarkable.



Photo: Bettina Künzler

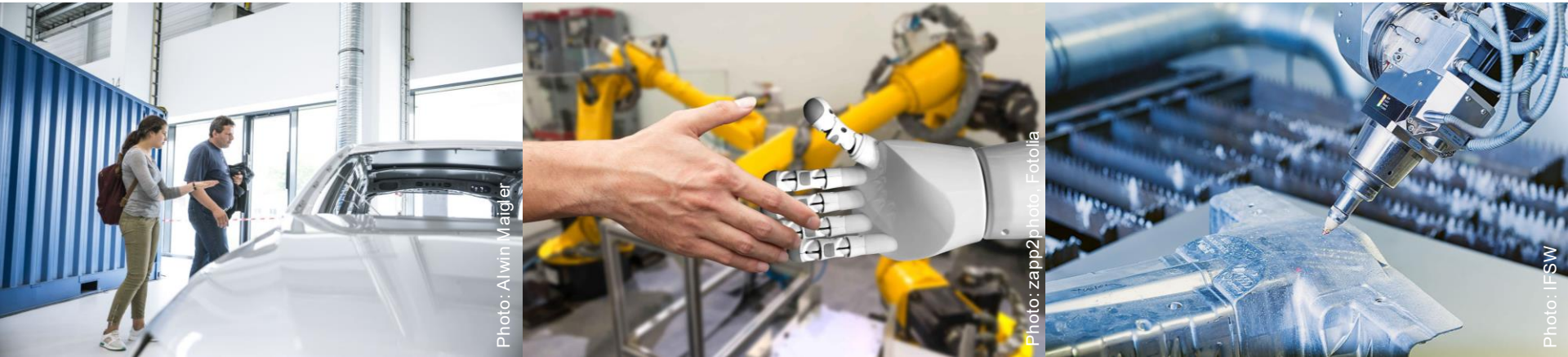
Stuttgart City and Region

Cultural Highlights



- The castles of the former kings of Württemberg and Europe's biggest zoological and botanical garden
- The Stuttgart Opera – repeated winner of the “Best Opera of the Year”
- The legendary Stuttgart Ballet – founded by John Cranko

Hightech and Innovations - The Stuttgart Region



- Head offices and manufacturing sites of global players, such as Bosch, Daimler, Porsche, and IBM
- Region with the strongest innovation index in Baden-Württemberg (Federal Statistical Office 2020)
- Industry investment in Research and Development: 1st place in Europe (Eurostat 2022, data from 2019)



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Thank you!