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Language is everywhere

We all use language, daily, hourly, every second. We speak to ourselves and to others. And we hear others speaking. We understand or do not understand what is said. Maybe we’ll inquire. Language and speaking trigger ideas in us, arguments, feelings, approval, rejection, affection, love and hatred. It goes back and forth with language in our heads and between our heads. Between senders and receivers. We also see language, in e-mails, letters, documents, newspapers, books, on screens. We’re surrounded by language. Language and speaking are part of us, we are part of language and speaking. Language gives us identity.

Language is diverse and blurred

Language and speaking are the results of historical developments. The variety of languages is vast and confusing. We distinguish between written language and spoken language. Linguistics speaks of 7,000 languages worldwide – not counting dialects. Some languages are threatening to disappear. New forms emerge. Youth languages, milieu languages, technical languages, computer languages, logical formal languages. Language is on the move. It differentiates itself.

“The most human thing that we have is language, and we have it in order to talk.”
Theodor Fontane, Poet

In addition, there are different comprehensive insights in the respective languages. I never know with certainty whether I understand the terms in a conversation as my counterpart does. Willard Van Orman Quine therefore speaks of a semantic uncertainty relation. This blurring is of a fundamental nature.

Language knows hermeneutic differences. This increases the diversity of the individual linguistic universes. What is said can be ambiguous, can be said from different perspectives and can be understood from different perspectives.

Language develops in phases according to its individual history. This also increases diversity. Paaget and others have shown that children don’t usually pass through language phases that make it possible to understand abstract concepts, such as general ethical norms, until the age of twelve.

We comprehend reality through language

Everything we think and know about our inner and outer reality is filtered to us through language. Without words and concepts I cannot know about the world and its things. “Whereof one cannot speak, thereof one must be silent”, says the philosopher Ludwig Wittgenstein, and “The limits of my language mean the limits of my world”. Martin Heidegger says: “Language is the house of being”. Even the architect cannot understand the statics and technology of his house without speech. The philosopher Hannah Arendt specifies: “Everything exists for thinking for which language has a word. What language has no word for falls out of thought”.

Language makes an impact

Hannah Arendt also says: “Language connects and communicates thinking and acting. The limits of thought fit the mute, with the mute view of the truth, the limit of action a mute violence.”

Language connects, language separates. More precisely: speaking, the way (use) language, connects or separates people, societies and more. Language is the central foundation of societies. It makes a particular impact in two areas:

Worldviews
On the one hand, it enables us to build up and exchange views of the world. Common ideas of and about reality connect. Social cohesion happens because and if people share a common collection of convictions. Conceptions about what the common values and norms are, what people want to look at together, which forms of government are the most suitable, how exchange relations should play out among each other, and what significance culture and nature have as bases of life. This requires a common history – not only in the sense of a historically lived togetherness, but also a narrative that contains the meaning of communal and individual existence and reconciles them both.

“Metaphors can kill.”
George Lakoff, Linguist

Atmospheres
On the other hand, language has subconscious, subliminal effects. It creates atmosphere in a society. Bude described this as the “feeling of the world”. Open societies and free democracies, in particular, depend on this atmosphere. Only if society’s atmosphere is favourable to a political objective can majorities, as a rule, be won over.

Language can destroy cohesion

But this is also the greatest threat to democracy. Language and speaking can destroy cohesion. Language and speaking can be benevolent, approachable and connecting, but also misleading, hostile and divisive.

We are currently witnessing irritating, outrageous, and dangerous developments in parts of the political world and society that have much to do with language and speech. Something dark is dawning on the horizon of the world. Erosaic presidential tweets, populist taboos, senseless...
Language is the key to the world

Good teaching promotes both an understanding of interrelationships and the ability to communicate with one another. We find many positive examples of this in the following pages: the Language Centre’s Writing Centre develops students’ abilities to express themselves in science, the Tutoring School teaches communication and didactic skills, and in his Master’s course, Karl Kirschner, visiting professor from America, promotes not only methodical approaches but also a cosmopolitan worldview. To improve understanding, Stefan Freitag, Klaus Lehmann and Daniel Fine use new digital methods, and in the CSR & NGO Management course, students simulate a UN peacekeeping mission.

Last but not least, our three new Bachelor’s degree programmes, International Business, Sustainable Social Policy, and Sustainable Engineering, promote an understanding of larger contexts and overarching issues.

Many thanks to all staff members – whether mentioned in this annual report or not – whose dedicated teaching contributes to the success of our students and hands them the key to the world!

Prof. Dr. Iris Groß
Vice President Teaching, Learning and Further Education

Everyone must ensure that his or her own language is not neglected, that his or her own language and speech are not used to ignite explosives.

Prof. Dr. Hartmut Ihne
President of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences

Study

Language is the key to the world

This quote from Humboldt should be savoured. Language is the key to everything: to the world around us and to an infinite world of thoughts in our heads. The invention of language is virtually the invention of teaching. Our species developed language so that we could pass on our experiences, i.e. our knowledge. All of our thinking is tied to language. We think in words and we use words to convey our thoughts to others. If we want to go out into the world and learn from it, then we have to learn to understand its language, be it English or French – or the language of science.

Only after someone is completely “at home” in this technical language, when its use has become second nature, does the feeling of belonging to and participating in this world arise. In this sense, language competence is a fundamental component of professional success.

Prof. Dr. Hartmut Ihne
President of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences

Hate speech in social media, inhuman battle raps are concerning developments. Something destructive, barbaric is on the way. Too many people are listening, lowering the threshold of inhibition. Nihilistic negativity against everything. A brutal and brutalising language as a populist harbinger of a brutal world?

The path to free, democratic societies has been a long one. Respectful and clear language was the strongest means to this end.

Human rights and the state of the community

Language and speaking express the status of civilization in a community. The way we talk about ourselves and each other determines the cohesion of a society and its ability to survive.

After long historical birth pangs in standards of civility, we have agreed to think of ourselves as people beyond gender and ethnicity with equal dignity, to consider lies not as good but as reprehensible, to consider truthfulness not as uncommercial but as valuable, and to meet different concepts of life and culture with tolerance and respect. The human document that sets forth these moral implications is the Universal Declaration of Human Rights of 1948, based on the repulsive experiences of war, the recognition of its causes and the realisation that we as humanity only have a future if we are communicative, cooperative and inclusive.

Only in this way can freedom, justice, democracy and prosperity be sustainably secured. We should read it again.

First and foremost, everyone must ensure that his or her own language is not neglected, that his or her own language and speech are not used to ignite explosives that threaten the cohesion of an open, free and democratic society. And where fundamental rights are in danger, the state must act resolutely.

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Learning what matters

Writing groups at the Language Centre help students and tutors

Scientific writing differs significantly from writing tasks at school and must be learned at university.

This is a process that the Writing Centre German and the Writing Centre English at the H-BRS Language Centre support through workshops and individual advice. Since 2017, a new service has been added at the Language Centre, and for good reason: “Students often came to consultation hours with completely formulated texts—a workload that we were unable to attend to in the scope of individual consultation,” says Gabriele Menne-El-Sawy, Head of German Language Courses and the Writing Centre German, “which is why we set up writing groups.”

In the groups, the focus is on writing methods. “In the weekly sessions, the students work on their texts independently,” says Dr. Yates-Wolff, Head of General English and the Writing Centre, who has been polishing their methodological and didactic knowledge in training courses. In addition, at the beginning of the semester all new tutors from the departments come together to work out the basics of their teaching activities. “Self-expectation and expectations of the tutoring activities are just as much a part of the programme as teaching approaches, implementation and methodology,” says Gabriele Menne-El-Sawy, who developed the concept and carries out the training together with Dr. Yates-Wolff. At the end of the semester, all tutors, as well as candidates from the previous semester, meet for feedback. “The aim is to gradually create a tutor network,” says Yates-Wolff. “Cross-departmental exchange is very valuable to everyone involved.”

More information

- Writing Centre German
  
  www.h-brs.de/pkt/schreibwerkstatt-deutsch

- Writing Centre English
  
  www.h-brs.de/pkt/writing-centre-english

Learning good scientific practice

One of his focuses is the seminar “Advanced Research Strategies and Dissemination.” “Courses on research methodology were being held in all departments except EMT”, Kirschner recounts. Among other topics, his seminar deals with how to quote correctly, find important articles, visualise data properly, work with the software package Scientific Python, design posters, and deal with ethical issues. “When students follow good scientific practice, this has a positive impact on the research profile of the university.”

As an American and thanks to his experiences at a liberal arts college, the holder of the International Chair looks at things differently. “My background influences my choice of topics and how I deal with them. In the course Technical and Scientific Computing, he became a research assistant at H-BRS. “At first I only conducted research, but thanks to the International Chair I’m teaching now, too,” says Kirschner. This is a great enrichment. “I can set my own teaching foci, and enjoy and value the direct contact with students.”

Learning teaching

The tutors, often students at H-BRS themselves, also receive support at the Language Centre. “They have been polishing their methodological and didactic knowledge in training courses. In addition, at the beginning of the semester all new tutors from the departments come together to work out the basics of their teaching activities. “Self-expectation and expectations of the tutoring activities are just as much a part of the programme as teaching approaches, implementation and methodology,” says Gabriele Menne-El-Sawy, who developed the concept and carries out the training together with Dr. Yates-Wolff. At the end of the semester, all tutors, as well as candidates from the previous semester, meet for feedback. “The aim is to gradually create a tutor network,” says Yates-Wolff. “Cross-departmental exchange is very valuable to everyone involved.”

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Karl Kirschner understands how to approach cross-disciplinary work. As a graduate of a liberal arts college with a focus on Bachelor’s degrees in the humanities, he dared to take the leap into computer chemistry, a subject at the interface of natural sciences and computer science. The balancing act between the departments continues to this day. Kirschner works at H-BRS for the Department of Computer Science and since 2017 also for the EMT Department. In the newly established International Chair: The chair gives foreign lecturers the opportunity to contribute to the curriculum for one year with English-language courses and an international perspective.

Crossing the big pond was just as easy for Kirschner as building bridges between the disciplines. In 2007, the American followed his future wife—a German he met at Hamilton College in New York—to her home country. After holding positions at the Max Planck Institute for Molecular Physiology in Dortmund and the Fraunhofer Institute for Algorithms and Scientific Computing, he became a research assistant at H-BRS. “At first I only conducted research, but thanks to the International Chair I’m teaching now, too,” says Kirschner. This is a great enrichment. “I can set my own teaching foci, and enjoy and value the direct contact with students.”

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From St. Joseph to Sankt Augustin

Dr. Karl N. Kirschner, an American, is the first holder of the International Chair

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New in the programme: Three Bachelor’s
Programmes in Management Sciences, Engineering and Social Policy launched

The new Bachelor’s programmes at H-BRS take in the bigger picture while at the same time enabling students to specialize, preparing them for in-depth Master’s programmes or entry into professional life.

International Business (BSc)

The economy is internationally networked. People who want to play an active role in shaping it need solid study backgrounds – this is what the Bachelor’s programme International Business offers. Based on current theoretical concepts, students learn to analyse the global economy and meet challenges in marketing, accounting or human resources management. The required depth is provided by the main subjects Business-to-Business Marketing, Management Accounting and International Management. In addition, graduates are linguistically prepared for the international job market. From the second to the fourth semester, they lay the foundation for or deepen their knowledge in Spanish, French, Mandarin or German.

Sustainable Engineering (BIng)

Demands on engineers change at least as quickly as the business world. Sustainability is the word of the day. This also applies to the social, economic and ecological consequences of engineering activities. The Bachelor’s degree programme in Sustainable Engineering shows how resource-friendly technological solutions can be achieved in addition to basic engineering and natural sciences, courses on renewable energies, life cycle assessment or energy-efficient residential buildings create an understanding of sustainability. Project weeks, laboratory internships during which ecology assessments are prepared, and a 20-week practical semester in a company guarantee a close link to practice.

Sustainable Social Policy (BA)

Sustainability not only counts when dealing with natural resources but also with human capital. Growing poverty, unequal educational opportunities and social injustice prevent a society from realising its potential. To counteract this, H-BRS trains future experts in sustainable social policy. After an introduction to sociology, economics, political science, law and communication studies, students can focus on business, society or communication. Interdisciplinary access to the topic is provided through cooperation with the University of Bonn (Institute of Political Science and Sociology) and the University of Cologne (Chair of Social Policy and Methods of Qualitative Social Research, Seminar for Cooperative Studies).

Fictional country with real problems

CSR & NGO-Management – students simulate UN peacekeeping mission

Kolpoto is torn by civil war. Refugees, war crimes and the development of infrastructure are the main challenges facing the country and the United Nations has offered support. The catch: Kolpoto is fictitious and the UN mission part of a two-week simulation at the German Armed Forces Command and Staff College in Hamburg. Originally offered as part of the general staff training for officers, the seminar was opened to civilians in 2016. This includes students in the MBA programme CSR & NGO Management at H-BRS.

“The UN is not an NGO, but when it comes to work in crisis countries, there are overlaps,” says Max Bolz, administrative director of the programme. “Peacekeeping missions today follow a multidimensional approach. Military and civilian organisations work together, so it makes sense to cooperate beforehand.”

The H-BRS students have often already gained experience in NGOs or in humanitarian aid, but the simulation is new territory. “Everyone gets a role with a clear short style of information – from UNO abbreviations through the meaning and basics of peacekeeping operations to facts about Kolpoto,” says Bolz. “With this background knowledge you can delve deeply into the topic during the seminar.”

From military cooperation to logistics

In the first week, the focus is on theory. UN staff and other experts offer insights into their experiences. In the second week, the knowledge acquired is applied to a specific crisis situation. The planning staff members are supported by the Bachelor’s mentors, former Deputy UN Secretaries General. “You quickly realise that theory and practice don’t always fit together seamlessly,” says Blue Bolz. Each country faces its own challenges, and Kolpoto is no exception. If the task is to supply people with food, multiple factors must be considered: how many calories does an adult need per day? Which delivery routes are safe? How can food be transported? “Even if you’re exclusively responsible for logistics, you have to keep an eye on the other issues,” says Bolz. “Just like in real life.”

Full report on Seminar 2017


20th anniversary Department of Natural Sciences

In 1997, Hochschule Bonn-Rhein-Sieg became one of the first universities of applied sciences in Germany to establish a department of natural sciences. Today, the Department of Natural Sciences (AnNa) at the Rheinbach Campus offers three Bachelor’s and three Master’s programmes, two of which are in English. Students in chemistry, biology, materials science and forensic sciences have access to modern laboratories and conduct a wide range of research activities. The department celebrated its anniversary with a Natural Science Slam and a Campus Rally. Congratulations, AnNa!
“What might have divided another student body actually united us”, says Henry Murphy. The Deputy Chair of the AnNa Student Council is alluding to the fact that everything is conducted in English. “We have a lot of international students who don’t speak German well. This way, we get everyone on board.”

The student council is active: film evenings, barbecues at the lake, spring or summer party – there is always an occasion for the department’s students to celebrate or get together. “But the biggest project is the student council itself”, says Sarah Brettschneider. “In addition to our studies, we invest a lot of time and effort in this work”, adds Chair Mara Neuerburg. The student council advises students on questions and problems, sells lab coats and holds practice exams. “We also sit down together every week to discuss topics or plan the next event”, says Neuerburg. All this, despite the fact that the degree programmes of all “AnNas” are very intensive. “We take our time and value personal communication”, says the chair. That makes an impact. “Regular meetings strengthen our community.”

The Department of Natural Sciences (AnNa) Student Council

is a closely-knit international community
Comprehension equals good test results
Digital teaching methods are gaining ground

Digitalisation in the lab

Professor Klaus Lehmann from the Department of Natural Sciences shares this impression. As part of the Pro-MINT project “eLab”, he started a model experiment together with research assistant Daniel Fine in the practical course Organic Chemistry. “We’re both heavily involved in laboratory teaching and wanted to transfer e-learning to this area”, says Lehmann. Since April 2017, a large touchscreen and several tablets have been added to the laboratory. “We’ve set up a virtual classroom and are testing its possibilities in the lab”, explains Fine. “In addition to the practical exercises, there are always phases in which the students solve practical tasks on the tablets and present the results in the plenum.”

The touchscreen also offers the possibility of discussing experiment set-ups or aspects of laboratory safety – including access to online databases. Not only does this lead to a better understanding of laboratory techniques but also more in-depth communication. “Working in the lab is always a social event”, says Lehmann. “eLab will therefore explore the possibilities of e-learning elements in order to increase interaction among the students. The aim is to create a better understanding of what is being done and make the connection between lab and lecture clearer.”

This works. “Most students are happy that we try out so much in the laboratory”, says Lehmann. A great success is the digitalisation of the pre-test, in which students can now demonstrate their prior knowledge electronically before the laboratory phase. “This has a positive effect on the learning atmosphere because there’s no need to check preparation in the lab”, says Lehmann. “Now we can focus even more on the content.”

Opportunities to expand are currently being discussed. “We’re constantly discussing new possibilities – and the project is far from finished”, notes Lehmann. “In a small eLab team, we’re currently discussing new possibilities – and the students can and should be part of that.”

Wiris and blogs, communication tools and clicker systems for voting with mobile phones in the lecture hall – the possibilities for digitalising teaching are endless. At H-BRS, too, more and more instructors are finding new ways to impart their knowledge. One of these is Stefan Freitag. Lecturer with Special Responsibilities in the Department of Management Sciences, in his courses Business Mathematics for repeaters and Accounting Basics, he uses videos to supplement conventional methods. But instead of using material that already exists, he prefers to produce it himself. “My own formats are better suited to the needs of the students in my courses”, says Freitag. “That’s why the videos are a success.”

More learning success – higher scores on tests

There is another reason for the positive response. The videos are not just recordings of the lectures but rather preparatory materials for them. “Students watch a recording beforehand, on the topic of curve sketching, for instance”, Freitag explains. “In it I demonstrate step by step how to proceed. We then have time for discussion and, most importantly, practice during the class period.” The result: students are more motivated, enjoy learning more – and perform better on the final exam.

Freitag is a proponent of what is known as the flipped classroom concept. “I can dip into the students’ perspec- tive and solve the specific problems they have in under- standing mathematics”, he says. “Frontal teaching is not very attractive, neither to the students nor to me as a lecturer.” Nevertheless, the qualified vocational instructor is the only one at the Department of Management Sciences who designs his course completely in line with the new method. That will soon change. Interested instructors are being supported by the e-learning team of the H-BRS library and the video laboratory. In fact, it does not require an exorbitant amount of effort, believes Freitag. “It’s no longer difficult to produce videos nowadays. Plus, the visual quality of the images is not very important – students simply appreciate it when lecturers apply new methods like these.”

This slogan encourages students to bring their deposit bottles to a special collection bin, thereby donating their deposit money to a good cause. Five students from the Department of Management Sciences developed the initiative with the support of Professor Christoph Zacharias. The collection bin stands in front of the student canteen at the Sankt Augustin Campus. The initiative has met with active support. The donated deposit money goes to a dating agency for people with disabilities, offered by the Bonn association ‘Der Kärner’. “Donate your deposit” – “Sei keine Flasche – Steck’s nicht in die eigene Tasche.” This slogan encourages stu- dents to bring their deposit bottles to a special collection bin, thereby donating their deposit money to a good cause. Five students from the Department of Management Sciences developed the initia-
A successful Company Day 2017 with 120 businesses setting up exhibits, a very good response to the university’s new job portal, well-attended seminars on all aspects of career entry, and plenty of individual counselling - this is the result of a single year of Career Service. The open hours consultation with direct personal contact is extremely important to Alexandra Lopes da Silva, Head of the Career Service. Twice a week she advises students, and the results are impressive. “Many counselling sessions ultimately lead to an employment contract”, says Lopes. Take Joshua Röthig for example. The Business Management student applied to Teqcycle Solutions GmbH as a working student in business development. “Thanks to the advice, I came to my interview relaxed and confident,” he says. “The information material you get during the consultation is great, but the personal commitment of the Career Service staff is truly outstanding.”

Finding the right partner

The Career Service is also the right place for those who don’t yet know where their career paths are heading. Students and employers are also brought together through the event series Careers on Campus (“Karriere am Campus”). In exclusive workshops, company representatives explain what is most important when starting a career. “It’s crucial for companies to be present on campus”, says Lopes. The perfect opportunity comes on Company Day (“Unternehmenstag”), which is coordinated by the Career Service. “We could easily have found 200 companies for the job fair, but with 120 exhibits in 2017, we’ve already reached our spatial limitations,” says Lopes.

In order to provide as many companies as possible with a platform, the university launched a new online job portal in 2017. From jobs for student trainees and practical semesters to final theses and direct job entry, the exchange offers contacts to industry. “New offers go online every day”, says Alexandra Lopes. Both companies and students benefit.

First year shows great success

Career Service: from job fair to individual counselling

What is the mission of research? Is there even a mission for research? And does research need a mission? Many scientists would say no. Nevertheless, research fulfils an important purpose in our society. It is the engine that can drive the development of a society forward. Technologically, it leads to innovations that further develop the economy; sociologically, it analyses the basis of our coexistence and can make a significant contribution to improving living conditions. Research always makes an impact on society, whether this is intended or not. The cohesion of a society is heavily dependent on economic and social conditions, which are also shaped by research.

As a society, we need research, and as a university we represent the interface between the two. We train students based on the latest research findings, and they transfer this knowledge to society. Through well-structured relationships between our university and business, we learn to understand the challenges facing companies and how we in science can contribute to overcoming them.
Health was an important focus of work at the International Centre for Sustainable Development (I4E) in 2017. As diverse as the content of the various projects is, they all share the characteristics typical of the I4E: they are interdisciplinary, regional and international. Social cash transfers and health insurance in Kenya and Ghana The project “Social and Health Policies for Inclusive Growth” (SHP) was successfully completed in July 2017. Economists, political scientists and ethnologists from Ghana, Kenya, the Netherlands and Germany looked at which factors influence the development and implementation of social health insurance and social cash transfers in Kenya and Ghana – positively and negatively. The findings of H-BRS professors Katja Bender and Esther Schüring show that measures such as social health insurance and social cash transfers in Kenya and Ghana are more pronounced than in the social sector, says Katja Bender. “The country has been suffering from an energy crisis for years. Large sections of the population do not have stable access to electricity”, Katja Bender describes the situation. The effects on the health sector are devastating: vaccines become unusable without refrigeration, operations cannot be carried out due to power failure, and women have to deliver their children at night in the dark. As in the SHP project, scientists determined before the start of the project which social conditions influence sustainable energy transition and which supply solutions are feasible. In contrast to other African countries such as Kenya, solar energy is not widespread in Ghana. “We’ve invited stakeholders from the private and public sectors to workshops and conducted interviews. We encountered a great willingness to do something about the poor energy supply in the health sector. Hybrid solutions, in particular the combination of diesel generators and solar energy, have emerged as a practicable approach”, Bender explains. This was the go-ahead to apply for further research funding from the Federal Ministry of Education and Research (BMBF). The H-BRS scientists are now investigating how the power supply can be improved with this combined form of energy. “We need to adapt existing solutions to the specific needs of health facilities in countries like Ghana”, says Meilinger. In addition, the specific power requirements of hospitals must be determined and energy production from solar cells must be made more efficient. Local weather data plays an important role in the latter. Stefanie Meilinger provides an example: “If we can predict how strongly the sun shines and when clouds form, we can optimise control of the power facilities.” Understanding health holistically Fifteen international doctoral students from the University of Bonn, the United Nations University and H-BRS are investigating the connections between human health, animal health and environmental health. Professors Wilhut Terlaak and Katja Bender, together with Dr Martin Hamer, will supervise four doctoral students in the project “One Health”. Fifteen international doctoral students in the project “One Health” launched in 2017. An interdisciplinary team of natural scientists, social scientists, humanities scholars and physicians compares the health systems in the Ruhr area with those in three other metropolitan regions: São Paulo (Brazil), Accra (Ghana) and Ahmedabad (India). The doctoral projects are diverse. One doctoral student is investigating the risks of extreme weather events and their effects on agriculture in urban areas around São Paulo. Another PhD student is investigating how rock meal can be used as fertilizer in agriculture to increase the nutrient content of the soil. Another PhD student is investigating how rock meal can be used as fertilizer in agriculture to increase the nutrient content of the soil. More information: www.h-brs.de/one-health-metropolregionen-ganzheitlich-begreifen
Elvis lives?

H-BRS professors research secure online identification

Researchers created a realistic-looking ID card, and security measures for video identification were tightened.

A closer look at an ID card is interesting. Depending on the angle of view and the amount of light, various holograms appear on the plastic card. Federal eagles, stars and the passport photo shine in rainbow colors. “These are security features that help people recognise whether an ID card is genuine or forged,” explains Professor Rainer Herpers from the Institute of Visual Computing (IVC) at Hochschule Bonn-Rhein-Sieg – University of Applied Sciences. In a project commissioned by the Federal Office for Information Security (BSI), Rainer Herpers, Professor André Hinkenjann of the BSI, and two IVC research assistants examined the ID card.

The security features of identity documents play an increasingly important role in everyday online life, when opening a bank account, for instance. In a video chat, customers must hold their ID card up to the camera of their computer in front of you, not what is left and right. Dr Ernst Kruijff’s team placed there”, explains Ernst Kruijff. In practice, this means that people wearing AR glasses are shown the names of individual buildings during a city tour. Software recognises when the wearer’s gaze lingers longer on a specific building. “The wearer then receives additional information, such as the opening hours of a museum or the menu of a restaurant”, says Kruijff. A big challenge at the moment is the very small field of view offered by AR glasses. If too much information is displayed, human perception is easily overwhelmed. Besides, you only see what is directly in front of your eyes. In the long term, we want wearers of AR glasses to be simultaneously?”

For this purpose, the user wears a headband with vibration motors under the smart glasses. “If the user looks at a museum, for example, a tingling on the left side indicates that there is another museum on the left outside of her or his field of vision”, says Kruijff. If the tourist follows the vibration stimulus and turns his or her head, the appropriate information is displayed. “In the near future, tourists will be able to enjoy a sightseeing tour simply by putting on a pair of Augmented Reality glasses (AR glasses). Dr Ernst Kruijff and his team at the IVC are working on a project funded by the German Research Foundation (DFG).

In this project, IVC researchers are adding an eye-tracking system to conventional smart glasses. “We mount two small cameras below the AR-glasses, and these record the eye movements of the user. This tells us where the wearer of the glasses is looking, and relevant information can be placed there”, explains Ernst Kruijff. In practice, this means that people wearing AR glasses are shown the names of individual buildings during a city tour. Software recognises when the wearer’s gaze lingers longer on a specific building. “The wearer then receives additional information, such as the opening hours of a museum or the menu of a restaurant”, says Kruijff. A big challenge at the moment is the very small field of view offered by AR glasses. If too much information is displayed, human perception is easily overwhelmed. Besides, you only see what is directly in front of you, not what is left and right. Dr Ernst Kruijff’s team is therefore working on translating the information into tangible and audible stimuli.

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Image manipulation is made more difficult

The research results carry consequences: the Federal Financial Supervisory Authority (BaFin) has tightened security measures for video identification procedures in order to make image manipulation more difficult. “During the recording, you have to hold an additional object in front of your ID card, such as your finger”, says Herpers. The idea behind this is that the finger covers part of the hologram afterwards. It may then appear on the fingertip, and the tampering would become visible. However, there were other loopholes, and research to improve security continued accordingly, notes Rainer Herpers.

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Communication with voice-controlled assistants such as Siri, Alexa, Cortana and the like simplifies our daily lives. I no longer need a remote control, and instead of doing lengthy research, I simply ask the question aloud in the room. I see a danger in the lack of data protection and especially in the interaction among many data strands. Whether you buy this or that book at Amazon is of little interest. But if this information is placed within the context of my last holiday, my financial conduct or my behaviour in relation to other people or computer systems, then it’s possible to find out more about people than they really want you to know.

Prof. Dr Paul Plöger

is Vice Dean of the Department of Computer Science. As a specialist for autonomous systems, he sees advantages in communicating with machines but also dangers.
Robots that transport objects from A to B in hospitals already exist. However, they cost six-digit sums and are usually so inflexible that they can only transport a certain type of container. Scientists at H-BRS are about to change this: “We’re building robots for a hospital in Frankfurt that already exist. However, they cost six-digit sums and are usually so inflexible that they can only transport a certain type of container. Scientists at H-BRS are about to change this: “We’re building robots for a hospital in Frankfurt that

Up to now, the motors and gearboxes on robots have been particularly expensive. In the project, however, these would be replaced by standard components. “We use drive mechanics from the consumer sector, wheels with integrated hub motors, for instance, which are also used in electric scooters”, explains Prassler. These “robotic pods” (Ropods) are based on two twin wheels connected by a short axis and the corresponding control electronics. Supplemented by a supporting surface, sensors and an onboard computer, it becomes a robot that can transport up to 200 kilograms. “For a wheel set with steering, we stay below 2,500 euros, which is very reasonable”, says Prassler with satisfaction.

Multitalented robots

In addition, the Ropods can be used for many different applications. A shovel mechanism that can lift any kind of load can be attached to them. “The nursing staff only has to push the object into the shovel so that it can be loaded by the robot”, explains the computer scientist. If an object weighs more than 200 kilograms or is too large, several Ropods are used. Another challenge faced during the daily hospital routine is the use of robots directly in the corridors of the clinic where they encounter people. “For this reason, an additional unique feature of our robots is that they yield. They avoid obstacles or can easily be pushed aside”, explains Erwin Prassler.

Series production of the robots is scheduled to start by 2021 at the latest. The aim is to relieve the nursing staff of tedious and hazardous work so that they have more time available for their most important duty – the care and support of patients.

A sticky business

Scientists develop adhesive for therapy patches

Anyone who has to take medication regularly will find transdermal drug patches a practical alternative to tablets and capsules in certain cases. These patches release active ingredients continuously through the skin into the underlying tissue and the bloodstream. The big advantages over tablets are that these patches eliminate the side effect of gastrointestinal intolerance and patients no longer need to remember to swallow medicine several times per day.

In cooperation with LTS Kohmann Therapie-Systeme AG, scientists at H-BRS are working on optimising the adhesive properties of patches used for pain therapy, smoking cessation or contraception. In the BMBF-funded project MOTTSAL, the team led by professors Bernhard Möginger and Dirk Reith and young academics Dr Marco Hülsmann and Michael Meurer are investigating the three “life phases” of a patch: application to the skin, adhesion time, and removal. “The three phases are characterised by different stress rates,” explains Meurer, PhD student at the Institute for Technology, Renewables and Energy-efficient Engineering. “If the patch is removed from the skin, stress rates are high, but during application or the wearing period, they are low.”

Meurer is investigating the properties of the adhesive to derive the optimum mixing ratio of adhesive components under certain influences at the molecular level. The adhesive strength of patches is currently being tested on steel. “This is necessary because it’s a defined surface”, says Meurer. The problem: just because a plaster sticks well to steel, does not mean that it will behave the same way on skin. Thus, another goal of the scientists is to develop and use artificial skin substrates for use in the measurement process.

Jan Koepernik works as a research assistant in the research project MOTTSAL. Using a rheometer, he checks the adhesive properties of active ingredient patches.

Robots can transport up to 200 kilograms, helping to relieve the nursing staff.
Commitment for Africa

Business Management Professor Margit Ernenputsch investigates the efficiency of aid projects

Cost accounting and group accounting are actually the main focuses of Professor of Business Management Margit Ernenputsch. But in 2010 when she visited the Ostra birth clinic in Asmara, Eritrea for the first time at the invitation of a middle-eastern friend, she developed a new interest: sustainability controlling. The poor care of pregnant women and newborns would not leave her head. “Women are left alone in pain during birth. Primary care for the babies is also inadequate. Many infants are not properly dressed after birth, putting them at risk of hypothermia,” reports Ernenputsch. The maternity clinic delivers 10,000 babies per year – more than three times as many as the average German hospital.

In addition to the misery in the maternity wards, the business management professor is struck by the commitment of the many volunteers. “With such dedication, the ques- tion turns to whether the aid is efficient and effective.”

Based on her experience in Eritrea, she also asked the German helpers in Ghana, Kenya and Uganda about their satisfaction with the organisation and the working conditions. The result: deficient infrastructure and gaps in the energy supply make humanitarian relief work difficult everywhere, and aid organisations do not always work efficiently. Ernenputsch describes an example from Uganda: “Halftime through a 50,000 euro project for prenatal care, it was discovered that women were not taking advantage of the offer because they could not let themselves be examined by men.” This is a cultural taboo in Uganda. “A lot of money is wasted this way. It’s absurd,” says Ernenputsch shaking her head. Investment in acute care is often preferred to sensible preliminary examinations or the training of medical personnel because it is easier to justify to donors. “If you operate on a child or send medi- cal staff, you can pat yourself on the back immediately.”

The Federal Ministry of Education and Research (BMBF) funded LAGEF with 1.2 million euros for three years in the scope of the “Research for Civil Security” programme. “In the now completed project, we were successfully able to solve all scientific and technical challenges for future applications and realise them in a laboratory setup”, says Gerhard Holl. Practical implementation is planned with industrial partners. The system is to be used on a remote-controlled robot platform to examine suspicious objects from a safe distance. LAGEF will soon be used by police bomb disposal units. A follow-up project aimed at further applications is also being planned.

Unattended baggage at railway stations and airports is a security risk as it may contain a bomb. In order to find out whether an object contains explosive substances and which measures are best suited to disarming it, the contents must be identified as quickly as possible. For this purpose, researchers at the Institute for Detection Technologies (IDT) at H-BRS developed an innovative solution in the LAGEF project, which was completed in 2017. “Previous technol- ogies only allow the inside of suitcases or bust or detect hazardous substances on the outside”, explains project director Professor Gerhard Holl.

The new laser drilling system uses small laser sources to drill micro-holes in suspicious objects without causing them to detonate. “The laser pulses are too short and the openings too small to trigger an explosive reaction”, explains Holl.

Traces of the ingredients are pulled out through the micro- holes and collected on a filter for further analysis using a specially developed system. After a detailed analysis, police bomb disposal units can determine the chemical composition of the substances and better assess the danger.

Made for practical use

New detection procedure makes assessing dangers quicker and more accurate

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Water travels a long way to flow out of the tap in a house. It is pumped from a source, such as a groundwater well, into the waterworks and from there distributed to the supply area. High pressure in the drinking water pumps and water pipes is needed to ensure that it does not just drip from the tap, and this in turn requires a lot of energy.

In view of rising energy prices, waterworks not only have the task of ensuring a supply of high-quality drinking water but also the efficient use of energy. This is where the EWave research project, funded by the Federal Ministry of Education and Research (BMBF), comes in. H-BRS is involved in EWave. Professor of Mathematics Gerd Steinebach from the Department of Electrical Engineering, Mechanical Engineering and Technical Journalism is leading a sub-project. “EWave is an energy management system in the water supply that can be used to optimise the energy costs of drinking water pumps”, Steinebach summarises the research project, which was completed in 2017.

The idea is that the pumps only generate as much pressure as is actually needed at the other end in the house-holds. Up to now, the employees in the waterworks have switched the pumps on and off based on experience. Mathematicians and engineers from H-BRS developed a simulation program for the Rheinisch-Westfälische Wasserwerksgesellschaft (RWW) to calculate flow rates and water pressure in the entire supply area. With the help of this program, cooperation partners of TU Darmstadt, the University of Erlangen and Siemens AG developed optimisation software. “In this way, we can calculate pump schedules that recommend to the waterworks employees when which pump should be switched on and off again, so that they can reduce energy consumption as much as possible and thus incur the lowest possible costs”, says Steinebach. The software calculates water consumption up to 24 hours in advance and even takes into account whether it is a working day or a weekend. Every 30 minutes, the control room in the waterworks receives suggestions such as “Switch pump 3 on at 19:00 and off again at 23:00”.

The pilot phase from January to June 2017 at RWW showed that if the operating personnel adhere to the program’s suggestions, energy savings of up to ten percent can be achieved. In this sense: water on the move – but only when necessary.
Dr Lale Akgün has been senior researcher on the topics of ethics and responsibility at the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychotherapist has been active in the International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences since November 2017. Born in Istanbul in 1953, the psychological psychot...
Language from another star

Astrophysicist Professor Bernd Klein teaches digital signal processing and radio astronomical instrumentation at H-BRS and is setting up the Department of Digital Signal Processing at the Max Planck Institute for Radio Astronomy. Communicating with the stars is part of his daily life.

Do you communicate with people and stars differently?

Spoken human speech works acoustically. Information is transmitted by the slightest pressure fluctuations in the air. Our ear recognizes, by the different pitches and the volume, who is speaking and whether that person is close or further away from us. Stars communicate via electromagnetic radio signals, and we astronomers analyze the frequency. By understanding the language of the stars, we can draw conclusions about how old and heavy a star is and use this information to recognize which star is emitting signals.

Does each star have its own language?

In a way, yes. Depending on the size and composition of the star, the radio signal has different frequency components. If we compare the measured frequency with the resting frequency of the star, we can even determine if and how fast the star is moving. This so-called Doppler effect is also familiar from everyday life. A car that is moving toward us sounds different from one that is moving away. In this respect, we recognize the stars by their frequency language and receive a lot of information about them.

Helpers on four wheels

Telepresence robots, such as Double and AMY, will support the care of people with dementia in the future. Researchers headed by Helma M. Bleses (Fulda University of Applied Sciences) and Erwin Prassler (Hochschule Bonn-Rhein-Sieg – University of Applied Sciences) are investigating the possibilities. They develop the robots and test their use with patients at home. This robotic assistance is particularly important in rural areas, where fewer and fewer caregivers are facing a steadily growing number of people in need of care. The Federal Ministry of Education and Research (BMBF) is funding the RoboLand project with around 800,000 euros.

Good morning! I’m Double!

I support people in need of care or suffering from dementia by assisting in their daily life. Via the iPad attached to the top of my rod, these people can hold a video conversation with their loved ones and continue to participate in the lives of their family members and friends from the comfort of their own home. I am also a big help to the nursing staff. They can control me from a distance and check via webcam to make sure that everything is okay. A built-in microphone allows patients to request help and nursing staff to provide support instructions.

Hello! My name is AMY!

Like Double, I help people communicate through video telephony via my built-in screen. But I do a lot more, such as play music and answer questions. When I speak, I not only move my mouth but also blink my eyes and move my head and trunk. This body language makes communicating with me even easier and more pleasant. Thanks to my many sensors, I can follow people independently and never need remote control, so I am always close to the patient.

www.h-brs.de/roboland
At H-BRS, men and women from a variety of nations and religions meet: people with and without disabilities, from academic and working-class families, young and slightly older people with different sexual orientations. One of the goals of the workshop day “Between Guiding Culture and Multi-Culture: On what Kind of Campus do We Want to Live?” was to make people aware of this diversity and promote tolerance as part of the initiative “Respect! Time for Diversity, Time for Sustainability.”

Students, professors and other university staff discussed values, religion, sexism and other forms of discrimination at the university in an atmosphere of trust.

Prof. Dr Annette Menke, Commissioner for Diversity

“An event like Diversity Day reminds us how important it is to treat each other with respect. I’m glad that the university is very tolerant. The diversity of religion and nationality enriches daily student life.”

Enes Dogan, AStA Chair

“Our university is diverse – a quick glance into our lecture halls or around the campus is enough to see this. “It’s good that way”, we say. Sometimes, however, we’re approached with concerns and worries and hear of situations in which heterogeneity, otherness or strangeness have given rise to misunderstandings and anger. We took up such concerns at the workshop. Becoming acquainted and communicating is the best measure against alienation and insecurity!”

Dr Isabell Lisberg-Haag, Diversity Auditor of Stifterverband

“Diversity exists on campus – it’s enriching, exhausting and constantly challenging everyone’s habits. Hochschule Bonn-Rhein-Sieg – University of Applied Sciences addresses this task creatively and self-confidently. The discussions are serious, respectful, and do not cover issues up with political correctness. Good teaching and excellent research are only possible through diversity.”

Enes Dogan, AStA Chair
Alumni Webtalks
Alumni keep in touch with their alma mater via career chat

Even after graduation, many alumni remain in close contact with H-BRS. This is easier than ever in Webtalk, where alumni can tune in via chat and participate in a video discussion. The new online format offers a discussion forum for and with alumni on the subject of “leadership and communication.” Graduates Andreas Hahn and Markus Steffens, who are working in management positions and teaching at H-BRS, launched the platform in May 2017. They were supported by Eva Mahler-Behr, who teaches personal development topics at H-BRS as a Lecturer with Special Responsibilities.

Sub-topics of the three alumni Webtalks in 2017 were “Self-Management”, “Lateral Leadership” and “Changing Perspectives.” More than 90 alumni and current students took part in the web conferences and actively participated in the discussion. “These Webtalks help us reach the alumni,” says alumni coordinator Barbara Wieners-Horst. “Our graduates don’t expect a ‘light lecture’ on topics they’ve already covered during their studies. But the topic of ‘leadership and communication’ is something that is relevant to many in their careers.”

Link
www.h-brs.de/alumni-webtalks-x2017-fuhrung
Alumni Webtalks on the H-BRS YouTube channel
www.youtube.com/user/hbonnrheinsieg

Growing together
“Cohesion, language and communicating” are the principles for successful cooperation in companies as well as in universities. Only through defining common goals, intensive exchange and discussion can a university continue to develop successfully. This applies to H-BRS as a whole, in its various divisions and specialised areas, and in the administration.

The new buildings on the Sankt Augustin and Rheinbach campuses are an extremely visible example of successful cooperation. They were built under the university’s own supervision (“Bauherreigenschaft”) and opened for operation last autumn. Thanks to the successful work of all those involved, the next step in the university’s growth, supplemented by leasing at both locations, was realised within both the projected costs and timeframe. This is the cornerstone for the university’s further development, for the Centre for Applied Research in particular, but also for the university’s range of activities within the Innovation Campus.

But inside the buildings too, constant development of administration and support for teaching and research is taking place. Thanks to the new spatial possibilities, the Student Service at the Rheinbach Campus will be further expanded to offer students even more intensive support during their studies.

By bundling the central IT in the Institute for IT Services, the cornerstone for successful further development of the university’s IT infrastructure was laid. The task in the coming years will also be to harness the full potential of digitalisation for administration and university development. Examples include the introduction of a campus management system and the planned implementation of the e-file. In these projects, too, a participatory process guarantees successful implementation.

Barbara Schubert,
Vice Chancellor
Achim Rehahn already knew during his business administration studies at H-BRS that he wanted to be his own boss someday. But he did not want to take this step without any work experience and started his professional career at the Tchibo retail group. When the company dismissed all sales managers under 30 years of age in 2007/2008, he ventured into self-employment with 100,000 euros start-up capital. Rehahn established a company for decoration articles under the name “8 Seasons design”. He benefited from the contacts of his parents, who as florist wholesalers had been dealing with traders in Asia. From that point on, Rehahn imported decorative articles for garden centres.

Obstacles at the start

But success evaded him, and the start-up capital shrank quickly. By chance Rehahn discovered a little decorative, shining tree in Asia, which inspired him and gave him the brilliant idea that saved his business: high-quality, weatherproof illuminated objects for the German market. He patented the first light, in the form of a star, as a European and American design and tested the product at a trade fair. “We generated 99 per cent of our trade fair turnover with the illuminated stars, everything else was left in the dust”, recalls Rehahn. The business manager re-launched, but then a new problem arose with the lighting. He was worried about the low quality of Asian goods. “But the books were full of orders and the goods had to be delivered”, says the founder. During this time he worked 19 hours a day, right through a bout of influenza, and ended up in intensive care. “I was almost dead, and my wife was trying to keep the company afloat while caring for our newborn daughter in her arms.” As he was on the verge of giving up, a German company was found that could produce higher quality illuminated stars for him.

“It was important for us to give journalists from Syria, Afghanistan and Lebanon theoretical insight into the German media landscape”, says Viehof. Due to the positive response of all participants, the workshop has already been offered again.

ALUMNUS OF THE YEAR

Founder and investor Achim Rehahn advises students not to become self-employed immediately after graduation but to gain experience in a company first.

Reach for the stars
Alumnus Achim Rehahn and his company are market leaders for weather-resistant illuminated objects.

Journalists meet prospective journalists
Students and refugees deepen intercultural competence and media knowledge. They are photographers, journalists or radio presenters from Syria, Afghanistan or Lebanon and have fled to Germany because they could no longer live and work in safety in their home countries. A unique encounter project brought together eleven journalists from war and crisis regions with 14 students, from the degree courses Technical Journalism and PR and Technology and Innovation Communications at Hochschule Bonn-Rhein-Sieg – University of Applied Sciences, in a workshop.

In small, mixed groups, they worked on topics of concern to the refugees. To this end, the course participants interviewed each other, researched and wrote contributions. Andreas Viehof, project manager and research associate in the Department of Electrical Engineering, Mechanical Engineering and Technical Journalism, describes the range of topics: “The focus was on the living conditions of refugees in Germany and the opportunities and challenges they face, but also on journalism in Germany in comparison to other countries”. The texts are published on their own special website.

Fellow journalists: The mutual interviews create trust and understanding.

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Finished! Just over one and a half years after construction began, the new buildings in Sankt Augustin and Rheinbach are open for use. Now sufficient space is available to accommodate the enormously increased number of students (9,000) and employees (around 1,000). “This structural development reflects the dynamics of change in science, the economy and the labour market. Adapting to this is part of the university’s development strategy”, says University President Professor Hartmut Ihne.

Sustainably built – more space for teaching and research

For the construction of the new spaces for teaching and research – a total of around 5,600 square metres – H-BRS invested 36 million euros. This sum includes 24 million euros in funding from the Federal State of North Rhine-Westphalia (NRW). In Sankt Augustin alone, construction cost 15 million euros, in Rheinbach 11 million. Collections were also expanded: renovation provided the University and District Library with more space.

With a view of the lake: The new building at the Rheinbach Campus houses state-of-the-art research laboratories for the Department of Natural Sciences as well as seminar rooms for the Department of Management Sciences. The Centre for Applied Research (ZAF), the Equal Opportunities Office, Facility Management and the AnNa Student Council are also located here.

Bright and linear: In Sankt Augustin, part of the Department of Management Sciences and the Centre for Applied Research (ZAF) have moved into the new building. In addition, the central service facilities of Human Resources, Finance and Facility Management are now located here.
On a Thursday toward the end of the summer semester, students and lecturers of the Department of Management Sciences turn into football players. This has been a tradition for 20 years. Professor Dirk Schreiber has been participating enthusiastically for a long time. “We lost bitterly the first few years”, he admits. “The ravages of time have left their mark on us professors, while year after year the students remain constantly young.” With this factor in mind, only half of the field is played on the pitch of the local football club ASV Sankt Augustin. “If we don’t have to run quite as much, our inferiority isn’t quite as noticeable”, Schreiber laughs.

A year of fame and glory

But then something happened that Dirk Schreiber had no longer dared to hope for: a draw in 2016 and a 1-0 victory against the students in Anniversary Year 2017. Schreiber believes he knows why. “In recent years, we’ve recruited many research assistants in best football age”, he smiles. In addition to fame and glory, the winning team basks in victory for an entire year and can tease their opponents. “Carefully though. We know that our opponents may take their revenge after the next tournament”, says Schreiber.

Fair play and team spirit – on the pitch and in the department

This match between students and professors is not just about victory or defeat. “None of us plays football regularly”, says Janny Saraceno, Vice Chair of the Student Council for the Department of Management Sciences. “The focus is on fun and relaxed contact between students and profs.” Dirk Schreiber agrees with her. He appreciates sitting together with sausages, Kölsch beer and cola after the game. “This tradition makes the atmosphere in our department even better than it already is.” Team captain Professor Norbert Seeger likes to draw an analogy between departmental organisation and football: “Nothing in either field works without fair play and team spirit.”
“When I was ten years old, my family moved to Norway. Since I attended a German school, I never really learned Norwegian well. I had many German and English-speaking friends but few Norwegian friends because I couldn’t speak their language. I realised very early on that I’m not really present in a country and culture if I don’t speak the language.

I’d like to share this experience with the students at H-BRS. Sufficient language skills are necessary for surviving in everyday university life and qualifying for the labour market. Most importantly, they help to cope with a new environment and participate in social life – be it a semester abroad in Spain, China, Ghana or while studying in Germany.”

Jeannette Bergmann

is Head of the HBR-S Language Centre. She believes that language skills and intercultural competence are prerequisites for equitable communication and social participation.
"One world – many languages" was the motto of the Rhein-Sieg Children’s University 2017/2018. For five years now the format has been inspiring eight to twelve-year-olds with exciting lectures and hands-on activities, often from surprising perspectives. In 2017, for example, the series of events focused on more than national languages. The children explored forensics as the language of crime or tried to communicate through dance. In addition, the lecturers shared “How humans learn language” and “How we speak and think in different languages”. The children were amazed at how different language and communication can be in other cultures – that Hebrew is written and read from right to left, for instance, or how shaking the head can express agreement in other cultures.

“It’s a successful mixture”, says Caroline Pesch, Event Manager and Coordinator of the Children’s University at H-BRS. “We combine our focus on science and economics with the variety of topics from our cooperation partners, the Philosophical-Theological College SVD Sankt Augustin and the Alanus University of Arts and Social Sciences in Alfter.”

Fun with science

In 2013, the Children’s University at H-BRS opened with a lecture by Professor Reiner Clement, initiator of the Children’s University and former Vice President for Regional Development, Transfer and Innovation, on the question “Can you buy happiness?” Since this first lecture, interest among children and parents has grown steadily. Now, around 500 children take part in workshops and lectures each year – more are on the waiting list. The number of participants at H-BRS is generally limited so that the children can work and experiment hands-on. “Otherwise, an interactive workshop, such as teaching the children to write Chinese characters, would be difficult to supervise”, says Pesch.

Fun with science is a top priority for everyone involved – including professors and research assistants at H-BRS. The voluntary commitment of the lecturers makes the events possible, and the Children’s University is a wonderful experience for everyone involved. Caroline Pesch explains, “Children are less inhibited and aren’t afraid to ask questions or contribute their knowledge – a great experience for the teachers as well. We look forward to the next five years”.

10 Years BRS Motorsport

“It’s basically a second full-time job alongside your studies”, says Gülsen Güldal. The technical journalism student is one of around 80 students on the BRS motorsport team who construct racing cars for Formula Student Electric in their spare time. About ten students founded the club in 2007. Combustion engines were replaced in 2013 with electric drive, which fits in with the university’s focus on sustainability. The team celebrated its most successful season to date in 2016: the third electric racing car carried the team to 8th place in the world rankings. In 2017, the students developed a four-wheel drive racing car to take curves faster. The new racing season can begin.

Link www.brsmotorsport.de
First Ethical Research Conference
Students and scientists discuss technical autonomy

“Good or bad? Technical Autonomy in Discourse”: this hot topic brought 250 scientists, entrepreneurs and students to the international and interdisciplinary Ethical Research Conference at Hochschule Bonn-Rhein-Sieg – University of Applied Sciences. “The conference was a first for the Institute for Technology, Renewables and Energy-efficient Engineering – TREE”, reports journalism professor Katharina Seuser, who restructured the lecture series on technology and environmental ethics into a conference. Seventy students from the seminar “Technology and Environmental Ethics” were actively involved. They provided support for the conference from applications to documentation and evaluation.

Research and discourse
At the opening of the conference, scientists discussed autonomous driving systems and who is responsible in the event of an accident. Does the government have to decide, or does the user also carry some responsibility? Even if this question could not be answered clearly, it does show how important the discussion surrounding this issue is. “Raising awareness among the engineers and scientists involved about the repercussion of their actions helps”, says Professor Dirk Reith, founding director of TREE. Agreement was reached that autonomous driving can help to prevent accidents, as most car accidents are due to human error. The problem with autonomous systems is the need for analysis of continually incoming data in a very short time, this is crucial for safe driving. The first part of the conference concluded that further interdisciplinary research and public discourse were needed. Dirk Reith is positive overall: “The feedback shows that we’re still at the beginning of development in terms of autonomy and its acceptance, but that we’ve struck a chord with this topic. I’m very glad that TREE included a megawatt of the future in its research portfolio at such an early stage”.

Other topics at the Ethical Research Conference included technology for nature, the connection between high-tech and big data, and technological research and development. Technology and environmental ethics into a conference. Seventy students from the seminar “Technology and Environmental Ethics” were actively involved. They provided support for the conference from applications to documentation and evaluation.

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Other topics at the Ethical Research Conference included technology for nature, the connection between high-tech and big data, and technological research and development.
Dr. Agnieszka Derjanecz, Project Director

More than 1,400 foreign citizens are currently studying at Hochschule Bonn-Rhein-Sieg – University of Applied Sciences. In times when skilled employees are scarce, this represents a great potential for the Bonn-Rhein-Sieg region. However, foreign students and graduates are often unaware that they can score points with very specific skills that their fellow German students may lack when applying for an internship or a job. “Knowledge of foreign languages and a different way of thinking based on their respective cultures make foreign graduates an asset to companies,” says Dr. Agnieszka Derjanecz from the Centre for Science and Technology Transfer (ZWT). She leads the STARK (“STRONG”) project, which launched in 2017 and is aimed at H-BRS students with foreign passports. The project provides personalised counseling and coaching in order to develop individual strengths for future applications. STARK was founded by the Vice President for International Affairs and Diversity, Professor Jürgen Bode.

“Not only do I check the application portfolio, I also support career decisions”, explains counsellor Derjanecz, “such as whether an unsure graduate should pursue a master’s degree in order to develop individual strengths for future applications. STARK also relies on the buddy principle – students of Business Psychology, led by Professor Patrizia Ianiro-Dahm, coach foreign students about the rules of the German labour market and how to apply for an internship or a job. “Knowledge of foreign languages and a different way of thinking based on their respective cultures make foreign graduates an asset to companies”, says Dr. Agnieszka Derjanecz from the Centre for Science and Technology Transfer (ZWT). She leads the STARK (“STRONG”) project, which launched in 2017 and is aimed at H-BRS students with foreign passports. The project provides personalised counseling and coaching in order to develop individual strengths for future applications. STARK was founded by the Vice President for International Affairs and Diversity, Professor Jürgen Bode.

In order to increase the chances for success of foreign graduates’ applications, H-BRS brings regional companies on board. They can get actively involved – with a stand at the international job fair planned at H-BRS, by offering internships or providing lectures and training. Through STARK, H-BRS is also contributing to the economic competitiveness of the region by establishing a network of actors from administration, business and civil society. “Together we want to ensure that foreign experts find attractive jobs here at the universities. In each test project, application-oriented teaching is being tested throughout the university. As part of the testing at Cape Coast Technical University, an ecologically sustainable guesthouse is to be built – planned, constructed and operated by the university and the students. “Tourism students are involved in the business plan and engineers will help with the construction”, says the project director. In addition, company partners are involved to strengthen the regional business network of the university. Once the eco-guesthouse is completed, students in marketing, as managers and as tailors or hairdressers will be able to offer their services to the guests. “They’ll have the chance to learn about business during their studies.” In a similar vein, a Green Campus will be set up at Kumasi Technical University to introduce students to environmentally-friendly management and renewable energies.

Links

www.h-brs.de/en/STARK_English

www.h-brs.de/en/STARK_English

www.h-brs.de/en/STARK_English

www.h-brs.de/en/STARK_English
Making IT secure

H-BRS and Fraunhofer offer professionals excellent further education

An encrypted connection is cracked or a web server is broken into. This is a daily experience for many companies. In order to learn how such attacks can be prevented, the Cyber Security Learning Lab was established at Hochschule Bonn-Rhein-Sieg – University of Applied Sciences in 2017. The university operates it together with the Fraunhofer Institute for Communication, Information Processing and Ergonomics (FKIE). The learning lab offers modules for working professionals on various topics involving IT security. It is aimed at company network administrators or developers of secure software and hardware, among others. “We want to bring the awareness of high level IT security as well as the necessary competencies to SMEs”, explains Professor Karl Jonas, director of the FKIE learning lab.

Part of the Fraunhofer Academy

Through the Cyber Security Learning Lab, the university is a partner of the Fraunhofer Academy, the further education institution of the Fraunhofer Society. In six learning labs, partner of the Fraunhofer Academy, the further education in terms of quality. The positive feedback from the participants confirms that we’ve succeeded”, says Karl Jonas. The contents of the modules are drawn from the university’s own research findings. “In the future we’d like to conduct research together with the FKIE and bring our joint know-how to the learning lab”. A move to the newly established Centre for Applied Research (ZAF) at the H-BRS Santt Augustin Campus is planned for 2018.

Combining German and science

Eastern Europeans come to H-BRS via the Goethe-Institut

They are enthusiastic about STEM and have good German language skills – the graduates of the Goethe-Institut’s programme “Studienbrücke Deutschland” (“Study Bridges to Germany”) come from Russia, Ukraine, Kazakhstan and Georgia. They can apply for a place at seven German universities. H-BRS participates through a Bachelor’s degree programme in Chemistry with Materials Science.

“We cooperate with the Goethe-Institut because it brings us into contact with talented young people from Eastern Europe who are enthusiastic about studying science in Germany”, explains chemistry professor Steffen Wittkeben. Through the programme “Studienbrücke Deutschland”, ninth-grades in the above-mentioned countries not only learn German, but also continue their education in a STEM subject and are prepared for a possible degree course in Germany.

H-BRS prevails over other universities

The seven German universities introduced themselves personally to the scholarship holders at information events organised by the Goethe-Institut in Moscow, Kiev, Tbilisi and Astana. In addition to H-BRS, the TU Dortmund and the Ruhr University Bochum are among the partners of the programme. H-BRS left a lasting impression on Mikhail Rybkin from Moscow. "I love working in the ultra-modern laboratories. “Integration outside the university was also smooth. “I even found a part-time job in a restaurant, so I can live here without the financial support of my parents”, says the student. Steffen Wittkeben hopes that many graduates of the “Studienbrücke Deutschland” programme will follow in Rybkin’s footsteps in the next few years. “We can offer ten places per year in our degree programme.”
“It’s good that “my” Chinese students will have already learned German by the time they arrive. During the first phase of their studies in China they take intensive German language courses. This makes communication with them much easier for us. When the students arrive in Germany, many things are very foreign to them – the people, the culture, the food. They can cope better with the transition if they understand what’s being said. It’s helpful that the lecturers in the Department of Management Sciences speak particularly slowly and clearly. Chinese students are thus able to follow the seminars well.

Study buddies help them become accustomed to everyday life. These are German students who undertake activities with their fellow students from abroad in their free time. The bonding works well. Sometimes true friendships grow, sometimes even more. Last year a German-Chinese couple resulted.”

Karsten Heinrich is a research assistant in the Department of Management Sciences in Rheinbach and supervises about 25 Chinese students each year in the cooperation programme of the degree course in Business Management.
IT training in Sankt Augustin on open-source tools and programming languages

Open-source software has long established itself at H-BRS – the programs are often free of charge and the code is visible to everyone so that security gaps and errors are quickly recognised and eliminated within the programming community. The Department of Computer Science also supports the establishment of open-source at other universities, with a focus on the Arab region. The OSSCOM and OPEN projects modernise learning methods and technologies at universities in Jordan, Lebanon and Morocco without making them dependent on large IT companies.

“Corporations like Microsoft are also checking user licenses in these countries. These licenses are basically unaffordable for students,” explains project director Professor Rainer Herpers. “Open-source software is also attractive for the local economy.”

From 2014 to 2017, H-BRS supported the establishment of Technology Centres at the German Jordanian University, Lebanese University and Notre Dame University in Lebanon through the OSSCOM project. European partners were Brunel University in West London and the Spanish University of Castilla-La Mancha, as well as several IT companies.

“Projects like this open the door to new research ideas and projects for us. Our students also benefit. OSSCOM has initiated two joint research projects, for instance, which are now being carried out by doctoral students at H-BRS,” says Rainer Herpers.

Open brings Moroccans to Sankt Augustin
H-BRS pursues a different approach with the DAAD-funded exchange project OPEN. In training courses in Morocco and Sankt Augustin, Moroccan students, doctoral candidates, university lecturers and other staff continued their education in open-source tools and programming languages or learned how to handle open-source tools professionally during an exchange semester or a research stay at H-BRS. The successful project was extended for 2018.

Personal contacts are of particular benefit to H-BRS. “Projects like this open the door to new research ideas and projects for us. Our students also benefit. OSSCOM has initiated two joint research projects, for instance, which are now being carried out by doctoral students at H-BRS,” says Rainer Herpers.

Modern and independent
H-BRS supports the use of open-source software in the Arab world

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Link
www.osscom.org

Sylvie Hambloch-Gesinn
new Chair of the University Council

“On the University Council, I’d like to contribute to ensuring the long-term quality of the teaching and research on offer. H-BRS should look to the future with the goal ‘Simply the best’,” says Sylvie Hambloch-Gesinn. The lawyer has been Chair of HBR-S University Council since September 2017.

For more about the new university council see p. 65

Rainer Herpers as visiting professor in Canada

Virtual entities that depart from expected behaviour depending on the situation – this is what Professor Rainer Herpers is working on at the Institute of Visual Computing. These cognitive agents improve serious game scenarios in Virtual Reality environments. In 2017, the director of the institute shared his knowledge as visiting professor at the University of New Brunswick in Canada. Together with his colleagues from the fields of gaming technology, modelling and human-machine interaction, he developed strategies on how virtual entities can be better used in simulations.

It training in Sankt Augustin on open-source tools and programming languages
“Innovation Mall” is the keyword in the “Campus to World” concept with which H-BRS was able to excel in the federal state funding initiative “Innovative Universities”. This makes it one of only three state institutions of higher education in NRW to have been conferred the title since mid-2017, 29 nationwide. The Innovation Mall is a virtual and real marketplace, which H-BRS uses to open up to its environment. It reacts to the needs of the regional economy and society and develops joint solutions.

“With this award, we belong among the group of excellent institutes of higher education that take the so-called third mission seriously, that is work specifically in society beyond teaching and research”, says Dr Udo Scheuer, director of the funded project and the Centre for Science and Technology Transfer (ZWT). Over the next five years, H-BRS will receive around nine million euros from the BMBF to advance not only technological topics such as security research and visual computing, but also sustainability, scientific ethics and regional impact. “Now we can strategically expand the transfer structures and implement plans for which we previously lacked the funds.”

Boost interaction with business and society

Six sub-projects of “Campus to World” launch in 2018, two more will be added in 2019. The sub-projects are diverse. The Centre for Ethics and Responsibility offers space to reflect on the social responsibility of science; a biometrics lab and a visualisation showroom will drive technological transfer forward, especially in big-data visualisation and the defence against cybercrime. In addition, H-BRS devotes itself to regional problems through municipal innovation partnerships and involves citizens in scientific issues with the Citizen Lab. The ZWT, which will develop into a centre for transfer and research management, is the hub of all activities. Several departments of the university worked together effectively to fill the majority of the 17 new positions on time. This also shows how central “Campus to World” is for H-BRS. According to Udo Scheuer, “The university will become more open and transparent and interact with business and society to a greater extent than ever before”.

Link
www.digitalhub.de

In the company of excellent universities

The Federal Ministry of Education and Research (BMBF) honours H-BRS as an “Innovative University”
### Facts and figures

#### Number of students

<table>
<thead>
<tr>
<th>Winter Semester 2017/18</th>
<th>Female</th>
<th>Male</th>
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</thead>
<tbody>
<tr>
<td>First-semester students</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Graduates</td>
<td>15%</td>
<td>85%</td>
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</tbody>
</table>

#### Students by department and gender

### Bachelor’s programmes

- Applied Biology
- Business Management
- Business Information Systems
- Business Psychology
- Chemistry with Materials Science
- Computer Science
- Electrical Engineering (+cooperative study)
- Forensic Sciences
- International Business
- Mechanical Engineering (+cooperative study)
- Social Security Management – Accident Insurance
- Sustainable Engineering (+cooperative study)
- Sustainable Social Policy
- Technical Journalism/PR
- Visual Technical Communication

### Master’s programmes

- Analysis and Design of Social Protection Systems
- Analytic Chemistry and Quality Assurance
- Autonomous Systems
- Biomedical Sciences
- Business Psychology
- Computer Science
- Electrical Engineering
- Innovation and Information Management
- International Media Studies
- Management Accounting and Management Control
- Marketing
- Materials Science and Sustainability Methods
- Mechanical Engineering
- CSR & NGO Management
- Technology and Innovation Communications
- Visual Computing and Games Technology

### Doctorates

- PhD programme at the H-BRS Graduate Institute:
  - 81 doctoral candidates

- Doctorates awarded 2017:
  - Thorsten Merten
  - Timo Barkewitz
  - Nico Hochgeschwender
  - Andreas Krämer
  - Konstantin Konstantynov

### Graduates to Academic Year 2016/17

<table>
<thead>
<tr>
<th>Year</th>
<th>Female %</th>
<th>Male %</th>
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<tbody>
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<td>65%</td>
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<tr>
<td>2015</td>
<td>36%</td>
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<tr>
<td>2016</td>
<td>65%</td>
<td>35%</td>
</tr>
<tr>
<td>2017</td>
<td>37%</td>
<td>63%</td>
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### Graduates to Academic Year 2017/18

<table>
<thead>
<tr>
<th>Year</th>
<th>Female %</th>
<th>Male %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>37%</td>
<td>63%</td>
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<tr>
<td>2015</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>2016</td>
<td>38%</td>
<td>62%</td>
</tr>
<tr>
<td>2017</td>
<td>62%</td>
<td>38%</td>
</tr>
</tbody>
</table>

### Degree courses at H-BRS

- Bachelor’s programmes
  - Applied Biology
  - Business Management
  - Business Information Systems
  - Business Psychology
  - Chemistry with Materials Science
  - Computer Science
  - Electrical Engineering (+cooperative study)
  - Forensic Sciences
  - International Business
  - Mechanical Engineering (+cooperative study)
  - Social Security Management – Accident Insurance
  - Sustainable Engineering (+cooperative study)
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  - Technical Journalism/PR
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  - Analysis and Design of Social Protection Systems
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  - Autonomous Systems
  - Biomedical Sciences
  - Business Psychology
  - Computer Science
  - Electrical Engineering
  - Innovation and Information Management
  - International Media Studies
  - Management Accounting and Management Control
  - Marketing
  - Materials Science and Sustainability Methods
  - Mechanical Engineering
  - CSR & NGO Management
  - Technology and Innovation Communications
  - Visual Computing and Games Technology

- Doctorates
  - 81 doctoral candidates
  - Doctorates awarded 2017:
    - Thorsten Merten
    - Timo Barkewitz
    - Nico Hochgeschwender
    - Andreas Krämer
    - Konstantin Konstantynov

### Percentage of international students by department

- Management Sciences
  - Female: 52%
  - Male: 48%
- Computer Science
  - Female: 15%
  - Male: 85%
- Electrical Engineering, Mechanical Engineering and Technical Journalism
  - Female: 22%
  - Male: 78%
- Natural Sciences
  - Female: 61%
  - Male: 39%
- Social Policy and Social Protection Studies
  - Female: 58%
  - Male: 42%
In September 2017, the newly-composed University Council commenced duties for H-BRS. It is made up of four external members and four members of the university. The University Council is responsible for all strategic matters relating to the university. It advises the President’s Office and monitors the way business is conducted. Furthermore, it appoints the President of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences and acts as a supervisory body. The eight members of the University Council are:

- **Sylvie Hambloch-Gesinn**, Solicitor (Chair)
- **Prof. Dr. Jakob Rhyner**, Vice Rector in Europe of the United Nations University (UNU) and Director of the Institute for Environment and Human Security (UNU-EHS) (Vice Chair)
- **Prof. Dr. Simone Bürsner**, Hochschule Bonn-Rhein-Sieg
- **Prof. Dr. Klaus Deimel**, Hochschule Bonn-Rhein-Sieg
- **Prof. Dr. Karin Hummel**, Hochschule Bonn-Rhein-Sieg
- **Prof. Dr. Peter Kaul**, Hochschule Bonn-Rhein-Sieg
- **Dr. Andrea Niehaus**, Director of the Deutsches Museum Bonn
- **Rainer Otto**, Kfm. Managing Director WIRTGEN GROUP Holding GmbH

The University Council

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- Dr. Andrea Niehaus, Director of the Deutsches Museum Bonn
- Rainer Otto, Kfm. Managing Director WIRTGEN GROUP Holding GmbH

Status: 30 April 2018
Prizes and awards 2017

DAAD Prize (German Academic Exchange Service)
- Adi Dancov, Bachelor programme Applied Biology

DAAD Scholarship “Research in Science and Engineering Programme” (RISE)
- Adithya Karun, Sarah Webster, Michael Larkins, all Department of Natural Sciences (AnNa)

NRW Scholarship Programme Middle East (Israel, Palestine, Jordan)
- Motala Borg, Shefa Aljabal, Shein Shahravan, all Department of Natural Sciences (AnNa)

Prize for Responsibility and Sustainable Development 2017 from the International Centre for Sustainable Development (IZNE)
- Aba Azzam, Dissertation in the Department of Natural Sciences (AnNa), Magdalena Schulte, Bachelor programme Business Management, Fabian Schulte, Bachelor’s programme Business Management

IHK Award, Best of 2017
- Amrita Lait, Biology Lab Assistant

AFCEA Student Award
- 2nd Platz for Alexander Hagg, Department Computer Science, and Olaf Lambert, Department Electrical Engineering, Mechanical Engineering, Technical Journalism (EMT)

Advancement Award from H-BRS Donors
- Lisa Stahl, Management Sciences
- Shu Wang, Management Sciences
- Rebecca Komsy, Management Sciences
- Miriam Pfeiffer, Management Sciences
- Jennifer Bach, Management Sciences
- Lisa Hahn, Management Sciences
- Ahmad Dalk, Computer Science
- Dirk Rüsche, Computer Science
- Alexander Kieß, Computer Science
- Simon Welke, Electrical Engineering, Mechanical Engineering, Technical Journalism
- Matthias Fischer, Electrical Engineering, Mechanical Engineering, Technical Journalism
- Delilah Johanna Michely, Electrical Engineering, Mechanical Engineering, Technical Journalism
- Estefania Olivia Romero Sosa, Electrical Engineering, Mechanical Engineering, Technical Journalism
- Philipp Constantin Gilmore, Natural Sciences
- Katrin Schicki, Natural Sciences
- Lukas Klein, Natural Sciences
- Thomas Hettle, Natural Sciences
- Theresa Langferrmann, Social Policy and Social Protection Studies

Butcher Prize 2017 at the SciCADE Conference
- Tim Jia, Department of Electrical Engineering, Mechanical Engineering, Technical Journalism (EMT)

Silvia Coradeschi RoboCup Award
- Padmaja Kulkarni, Department of Computer Science

European Robotics League Award 2017
- 1st Place RoboCup team h-rl-bots in the category Navigation Functionality with their “@ Work-Team”: Prof. Dr. Paul Plöger and Prof. Gerhard K. Kraetzschmar, the team leaders Desbul Hour and Sanzesh Thoduka

Best Paper Award at the IEEE International Conference on Multimedia and Expo 2017 in Hong Kong
- Jens Mauero, Der Ernst Krüll, Prof. Dr. André Hinneberg, all Department of Computer Science

Best Paper Award (Complex Systems) at the Genetic and Evolutionary Computation Conference (GECCO) 2017
- Adam Gaier, Department of Computer Science

Multidisciplinary Analysis and Optimization (MDO) Student Paper Competition at the AIAA Aviation Forum 2017 in Atlanta, 1st Place
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- Adam Gaier, Department of Computer Science
Staff announcements 2017

New Appointments

- Prof. Dr. Martin Sieber
  Department of Natural Sciences, Professorship of Biology, especially clinical research
- Prof. Dr. Remi Maino-Rigaud
  Department of Social Policy and Social Protection Studies, Professorship of Social Policy
- Prof. Dr. Sandra Rohleder
  Department of Management Sciences, Professorship of Private Law and Economic Law
- Prof. Dr. Patrizia Maria Janino-Dahm
  Department of Management Sciences, Professorship of Business Psychology, especially occupational, organisational and health psychology

Honorary Professors

- Sebastian Cremel
  Honorary Professor in the Department of Natural Sciences
- Michaela Schmitz
  Honorary Professor in the Department of Natural Sciences
- Michael Bäcker
  Honorary Professor in the Department of Natural Sciences

Congratulations

- Prof. Dr. Katja Bender
  Department of Management Sciences will become Vice President of the European Association for Development Research and Training Institutes (EADI). In her new role, she will establish an international task force for dialogue between research and practice.
- Prof. Dr. Winfried Polte
  Honorary Professor of International Relations and Global Economy will become President of CAME Germany-Luxembourg

25th Anniversary

- James Chamberlain
- Karsten Heinrich
- Sigrid McCaskill
- Kerstin Wilhelm
- Wolfgang Heiden
- Erika Leischnner
- Edeltraud Teupler
- Elke Kitzelmann

Retirement

- Prof. Dr. Michael Krzeminski
  Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- Prof. Dr. Irene Fahrenhorst
  Department of Management Sciences
- Johannes Willms
  (will continue to work after retirement)
- Wolfgang Koch
  (will continue to work after retirement)

Employees (number) as of 31/12/2017

<table>
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<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tr>
<td>Professors</td>
<td>150</td>
<td>150</td>
<td>151</td>
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<tr>
<td>of these Substitutes Professors</td>
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<td>6</td>
<td>5</td>
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<td>of these Endowed and Third-Party Funded Professors</td>
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<td>19</td>
<td>18</td>
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<tr>
<td>Honorary Professors</td>
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<td>31</td>
<td>35</td>
</tr>
<tr>
<td>Lecturers with Special Responsibilities</td>
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<tr>
<td>Research Assistants</td>
<td>244</td>
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<td>264</td>
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<tr>
<td>Employees in Technology and Administration</td>
<td>185</td>
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<td>207</td>
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<tr>
<td>Apprentices</td>
<td>14</td>
<td>13</td>
<td>14</td>
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<tr>
<td>New Number Lecturers</td>
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<td>316</td>
<td>337</td>
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<tr>
<td>TOTAL</td>
<td>951</td>
<td>969</td>
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</table>

Employees (Full-Time Equivalent) as of 31/12/2017

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tbody>
<tr>
<td>Professors</td>
<td>139.89</td>
<td>138.42</td>
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<tr>
<td>of these Substitutes Professors</td>
<td>3.72</td>
<td>3.72</td>
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<tr>
<td>of these Endowed and Third-Party Funded Professors</td>
<td>13.33</td>
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<td>2.11</td>
<td>2.33</td>
<td>3.89</td>
</tr>
<tr>
<td>Lecturers with Special Responsibilities</td>
<td>30.57</td>
<td>30.75</td>
<td>33.59</td>
</tr>
<tr>
<td>Research Assistants</td>
<td>166.79</td>
<td>175.13</td>
<td>200.03</td>
</tr>
<tr>
<td>Employees in Technology and Administration</td>
<td>144.83</td>
<td>154.09</td>
<td>169.42</td>
</tr>
<tr>
<td>Apprentices</td>
<td>15.00</td>
<td>14.00</td>
<td>14.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>499.19</td>
<td>514.73</td>
<td>563.51</td>
</tr>
</tbody>
</table>

Third-Party Funded Staff (Full-Time Equivalent) as of 31/12/2017

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Departments</td>
<td>67.97</td>
<td>63.77</td>
<td>65.43</td>
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<tr>
<td>Administration</td>
<td>6.53</td>
<td>5.01</td>
<td>5.11</td>
</tr>
<tr>
<td>Central Facilities</td>
<td>19.68</td>
<td>24.79</td>
<td>27.54</td>
</tr>
<tr>
<td>Other</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>TOTAL</td>
<td>94.08</td>
<td>94.08</td>
<td>98.58</td>
</tr>
</tbody>
</table>
## Partner universities around the world

### Current information

www.h-brs.de/files/partnerhochschulen_dtsch.pdf

<table>
<thead>
<tr>
<th>Country</th>
<th>Partner University</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>National University of San Luis</td>
<td>EMT</td>
</tr>
<tr>
<td></td>
<td>National Technological University, Buenos Aires</td>
<td>EMT</td>
</tr>
<tr>
<td>Australia</td>
<td>Murdoch University in Perth</td>
<td>School of Engineering</td>
</tr>
<tr>
<td></td>
<td>Victoria University in Melbourne</td>
<td>School of Engineering</td>
</tr>
<tr>
<td></td>
<td>University of Sunshine Coast in Queensland</td>
<td>EMT</td>
</tr>
<tr>
<td></td>
<td>Griffith School of Engineering in the Science, Environment, Engineering &amp; Technology Group</td>
<td>EMT</td>
</tr>
<tr>
<td></td>
<td>Queensland University of Technology Business School</td>
<td>Fü</td>
</tr>
<tr>
<td>Austria</td>
<td>FHVienna University of Applied Sciences for Management &amp; Communication</td>
<td>Fü</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>University of Economics in Yarna</td>
<td>WWI</td>
</tr>
<tr>
<td>Canada</td>
<td>York University in Toronto</td>
<td>Inf</td>
</tr>
<tr>
<td></td>
<td>Dalhousie University in Halifax</td>
<td>Inf</td>
</tr>
<tr>
<td></td>
<td>University of New Brunswick</td>
<td>Inf</td>
</tr>
<tr>
<td></td>
<td>Pacific Coast University for Work Place Sciences in Port Alberni</td>
<td>Inf</td>
</tr>
<tr>
<td>Croatia</td>
<td>University of Dubrovnik</td>
<td>Inf</td>
</tr>
<tr>
<td></td>
<td>University of Split</td>
<td>WWI</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Tomas Bata University</td>
<td>Fü</td>
</tr>
<tr>
<td>Finland</td>
<td>Helsinki Metropolitan University of Applied Sciences in Espoo, Institute of Technology</td>
<td>Inf</td>
</tr>
<tr>
<td>France</td>
<td>University of Poitiers</td>
<td>WWI</td>
</tr>
<tr>
<td></td>
<td>Paris Descartes University</td>
<td>WWI</td>
</tr>
<tr>
<td></td>
<td>Paris XI Val de Marne University</td>
<td>ArNa</td>
</tr>
<tr>
<td></td>
<td>University of Bordeaux</td>
<td>ArHa</td>
</tr>
<tr>
<td></td>
<td>The Limoges Computer Sciences Engineering School</td>
<td>Inf</td>
</tr>
<tr>
<td>Ghana</td>
<td>University of Cape Coast</td>
<td>WWI</td>
</tr>
<tr>
<td>India</td>
<td>Mudra Institute of Communication (MICA)</td>
<td>EMT</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Universitas Atma Jaya Yogyakarta in Yogyakarta</td>
<td>EMT</td>
</tr>
<tr>
<td>Ireland</td>
<td>Institute of Technology (IT)</td>
<td>WWI</td>
</tr>
<tr>
<td></td>
<td>Dublin Business School</td>
<td>Fü</td>
</tr>
<tr>
<td>Italy</td>
<td>University of Palermo</td>
<td>ArNa</td>
</tr>
<tr>
<td></td>
<td>University of Insubria in Varese</td>
<td>ArNa</td>
</tr>
<tr>
<td></td>
<td>University of Siena</td>
<td>ArHa</td>
</tr>
<tr>
<td></td>
<td>Sapienza University of Rome</td>
<td>Inf</td>
</tr>
<tr>
<td>Japan</td>
<td>Kagawa University in Takamatsu</td>
<td>Fü</td>
</tr>
<tr>
<td>Jordan</td>
<td>Nagasaki University of Technology</td>
<td>Inf</td>
</tr>
<tr>
<td>Korea</td>
<td>Yonsei University</td>
<td>WWI</td>
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<tr>
<td>Latvia</td>
<td>Riga Technical University</td>
<td>Fü</td>
</tr>
<tr>
<td>Montenegro</td>
<td>University of Montenegro in Podgorica</td>
<td>Inf</td>
</tr>
<tr>
<td>Nepal</td>
<td>Kathmandu University</td>
<td>SoCp</td>
</tr>
<tr>
<td>Netherlands</td>
<td>HAN University of Applied Sciences</td>
<td>ArNa</td>
</tr>
<tr>
<td></td>
<td>Amsterdam University of Applied Sciences</td>
<td>ArNa</td>
</tr>
<tr>
<td></td>
<td>Van Hall Larenstein University of Applied Sciences in Leusden</td>
<td>Inf</td>
</tr>
<tr>
<td></td>
<td>Radboud University Nijmegen</td>
<td>ArNa</td>
</tr>
<tr>
<td>Norway</td>
<td>Zapad University of Applied Sciences</td>
<td>WWI</td>
</tr>
<tr>
<td>People's Republic of China</td>
<td>Beijing Foreign Studies University of Science</td>
<td>Inf</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>Kyungbok National University in Danpu</td>
<td>Fü</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>ITMO University in St. Petersburg</td>
<td>EMT</td>
</tr>
<tr>
<td>Spain</td>
<td>University of Valencia</td>
<td>Fü</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Comenius University</td>
<td>WWI</td>
</tr>
<tr>
<td>South Africa</td>
<td>University of Johannesburg</td>
<td>WWI</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Zurich University of Applied Sciences (ZHAW) in Winterthur</td>
<td>WWI</td>
</tr>
<tr>
<td>Taiwan</td>
<td>National Taiwan University of Science and Technology</td>
<td>WWI</td>
</tr>
<tr>
<td>Turkey</td>
<td>University of Istanbul</td>
<td>WWI</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Chernihiv National University of Technology</td>
<td>WWI</td>
</tr>
</tbody>
</table>

### Cross-Departmental Partner Universities

**WWW: Management Sciences**

**Inf: Computer Science**

**EMT: Electrical Engineering, Mechanical Engineering and Technical Journalism**

**AnNa: Natural Sciences**

**SoCp: Social Policy and Social Protection Studies**
<table>
<thead>
<tr>
<th>Country</th>
<th>Partner University</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>Robert Gordon University in Aberdeen</td>
<td>AnNa</td>
</tr>
<tr>
<td></td>
<td>University of Aberdeen in Scotland</td>
<td>AnNa</td>
</tr>
<tr>
<td></td>
<td>Abertay University in Scotland</td>
<td>AnNa</td>
</tr>
<tr>
<td></td>
<td>University of Dundee in Scotland</td>
<td>AnNa</td>
</tr>
<tr>
<td></td>
<td>Keele University in Staffordshire</td>
<td>Fu</td>
</tr>
<tr>
<td></td>
<td>Glyndŵr University in Wrexham</td>
<td>EMT</td>
</tr>
<tr>
<td></td>
<td>Brunel University London PhD Programme</td>
<td>WiWi</td>
</tr>
<tr>
<td></td>
<td>Regent’s University London</td>
<td>WiWi</td>
</tr>
<tr>
<td>Uruguay</td>
<td>University of Montevideo</td>
<td>WiWi</td>
</tr>
<tr>
<td>USA</td>
<td>Coastal Carolina University in Conway</td>
<td>WiWi</td>
</tr>
<tr>
<td></td>
<td>Pfeiffer University in Charlotte</td>
<td>WiWi</td>
</tr>
<tr>
<td></td>
<td>California State University in Sacramento</td>
<td>Inf</td>
</tr>
<tr>
<td></td>
<td>University of California in Riverside</td>
<td>Fu</td>
</tr>
<tr>
<td>Zambia</td>
<td>University of Zambia</td>
<td>SozP</td>
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</tbody>
</table>

Number of international partnerships by department

- Management Sciences (WiWi): 21
- Electrical Engineering, Mechanical Engineering and Technical Journalism (EMT): 14
- Computer Science (Inf): 15
- Natural Sciences (AnNa): 14
- Social Policy and Social Protection Studies (SozP): 3
- Cross-Departmental Partner Universities (Fu): 14
### State subsidies for running costs

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td>10,076,400.00</td>
<td>19,534,100.00</td>
</tr>
<tr>
<td>Management</td>
<td>3,050,100.00</td>
<td>3,446,600.00</td>
</tr>
<tr>
<td>Material Costs</td>
<td>1,622,700.00</td>
<td>1,410,900.00</td>
</tr>
<tr>
<td>Performance-based allocation of funds</td>
<td>639,300.00</td>
<td>939,300.00</td>
</tr>
<tr>
<td>Investments</td>
<td>611,400.00</td>
<td>417,400.00</td>
</tr>
<tr>
<td>Consistent University Pact Funds</td>
<td>0.00</td>
<td>1,447,200.00</td>
</tr>
<tr>
<td>Reduced Expenditure from Hochschulvereinbarung 2021</td>
<td>0.00</td>
<td>-70,600.00</td>
</tr>
<tr>
<td>Building/Immovable Property</td>
<td>6,903,800.00</td>
<td>6,903,800.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>31,716,700.00</td>
<td>33,369,300.00</td>
</tr>
</tbody>
</table>

### State allocations

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Education Pact II and Master</td>
<td>11,575,000.00</td>
<td>1,950,000.00</td>
</tr>
<tr>
<td>Higher Education Pact</td>
<td>8,145,776.00</td>
<td>12,013,075.00</td>
</tr>
<tr>
<td>Device Programme</td>
<td>96,124.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Other</td>
<td>175,888.92</td>
<td>531,950.37</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19,994,788.92</td>
<td>14,495,025.37</td>
</tr>
</tbody>
</table>

### Quality improvement funds

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality improvement funds</td>
<td>3,450,340.00</td>
<td>3,451,021.00</td>
</tr>
</tbody>
</table>

### Third-party funds

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>12,242,617.47</td>
<td>7,255,089.97</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12,242,617.47</td>
<td>7,255,089.97</td>
</tr>
</tbody>
</table>

### Own resources

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum of above-listed portions</td>
<td>67,671,729.25</td>
<td>58,321,525.80</td>
</tr>
</tbody>
</table>

All figures for the year 2017 on pages 74 to 78 are provisional.

The figures for 2016 differ from those mentioned in the 2016 Annual Report, as they are now available on an adjusted basis.

### Expenditures by type of cost (in euros)

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material Costs</strong></td>
<td>4,875,258.45</td>
<td>4,757,252.97</td>
</tr>
<tr>
<td><strong>Personal</strong></td>
<td>20,352,192.18</td>
<td>18,907,561.91</td>
</tr>
<tr>
<td><strong>Investments</strong></td>
<td>3,573,530.62</td>
<td>5,272,535.44</td>
</tr>
<tr>
<td><strong>Immovable Property</strong></td>
<td>106,018.90</td>
<td>267,775.97</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>28,578,888.03</td>
<td>34,077,515.15</td>
</tr>
</tbody>
</table>

**Total expenditures of H-BRS**

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st investment capital</td>
<td>180,601.33</td>
<td>236,382.05</td>
</tr>
<tr>
<td>&gt; 150 EUR and &lt; 410 EUR</td>
<td>5,538,282.18</td>
<td>12,917,789.68</td>
</tr>
<tr>
<td>2nd investment capital</td>
<td>5,043,000.00</td>
<td>5,775,133.83</td>
</tr>
<tr>
<td>&gt; 410 EUR</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,728,083.51</td>
<td>12,208,171.73</td>
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</tbody>
</table>

**Total revenue of H-BRS**

<table>
<thead>
<tr>
<th>Budget Heading</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>State subsidies for running costs</td>
<td>33,369,300.00</td>
<td>33,369,300.00</td>
</tr>
<tr>
<td>State allocations</td>
<td>1,950,000.00</td>
<td>1,950,000.00</td>
</tr>
<tr>
<td>Quality improvement funds</td>
<td>5,043,556.23</td>
<td>5,775,133.83</td>
</tr>
<tr>
<td>Third-party funds</td>
<td>5,043,000.00</td>
<td>5,775,133.83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>40,364,862.15</td>
<td>40,994,566.88</td>
</tr>
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</table>
Financial statement (in euros)

<table>
<thead>
<tr>
<th>Income</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State allocations and subsidies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Basic financing</td>
<td>24,304,627.00</td>
<td>24,637,100.00</td>
</tr>
<tr>
<td>b) Housing budget</td>
<td>2,456,150.19</td>
<td>777,326.97</td>
</tr>
<tr>
<td>c) Special funds</td>
<td>3,475,734.00</td>
<td>3,493,366.00</td>
</tr>
<tr>
<td>d) Programme / project funding</td>
<td>1,162,106.16</td>
<td>1,112,193.16</td>
</tr>
<tr>
<td>Total</td>
<td>29,388,627.35</td>
<td>29,985,883.10</td>
</tr>
<tr>
<td>2. Revenue from third-party funds of other public donors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5,040,363.69</td>
<td>7,740,174.16</td>
</tr>
<tr>
<td>3. Revenue from third-party funds of non-public donors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,802,070.13</td>
<td>1,961,554.67</td>
</tr>
<tr>
<td>4. Increase or decrease in tangible assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>757,071.14</td>
<td>661,623.65</td>
</tr>
<tr>
<td>5. Other donors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Income from university activities</td>
<td>752,524.62</td>
<td>3,380,361.67</td>
</tr>
<tr>
<td>b) Fees and sanctions, dues</td>
<td>312,718.32</td>
<td>461,391.81</td>
</tr>
<tr>
<td>c) Gifts, donations, legacies</td>
<td>102,770.75</td>
<td>151,481.90</td>
</tr>
<tr>
<td>d) Other income</td>
<td>2,671,404.55</td>
<td>1,271,069.18</td>
</tr>
<tr>
<td>Total</td>
<td>3,876,842.24</td>
<td>2,719,329.97</td>
</tr>
<tr>
<td>6. Sum of ordinary income</td>
<td>43,408,530.55</td>
<td>42,468,071.14</td>
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Expenditures

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Cost of materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Costs for literature, teaching and learning aids, materials and goods purchased</td>
<td>-1,393,349.00</td>
<td>-1,483,049.40</td>
</tr>
<tr>
<td>b) Costs for energy and other general and administrative expenses</td>
<td>-1,039,392.83</td>
<td>-1,056,703.10</td>
</tr>
<tr>
<td>c) Costs for services purchased</td>
<td>-6,458,956.20</td>
<td>-6,077,889.30</td>
</tr>
<tr>
<td>Total</td>
<td>-7,991,697.03</td>
<td>-8,717,932.87</td>
</tr>
<tr>
<td>8. Personnel costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Staff salaries</td>
<td>-5,679,103.18</td>
<td>-3,615,640.95</td>
</tr>
<tr>
<td>b) Employments (civil servants)</td>
<td>-8,857,500.00</td>
<td>-11,241,276.12</td>
</tr>
<tr>
<td>c) Social contributions and expenses for pensions and support</td>
<td>-4,637,846.29</td>
<td>-3,473,755.70</td>
</tr>
<tr>
<td>d) Other personnel costs</td>
<td>-33,370,203.96</td>
<td>-36,743,753.87</td>
</tr>
<tr>
<td>Total</td>
<td>-51,277,404.54</td>
<td>-55,723,325.92</td>
</tr>
<tr>
<td>9. Depreciation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Costs for the use of rights and services</td>
<td>-872,688.00</td>
<td>-927,600.97</td>
</tr>
<tr>
<td>b) Additional costs for communication, documentation, information, travel, literature, publicity</td>
<td>-1,059,139.71</td>
<td>-1,348,947.51</td>
</tr>
<tr>
<td>c) Costs for dues and other such expenses as well as value adjustments and non-period expenses</td>
<td>-393,257.38</td>
<td>-328,346.17</td>
</tr>
<tr>
<td>d) Costs for allocations and subsidies, investment grants and reimbursements as well as from product compensation</td>
<td>-374,135.80</td>
<td>-672,835.45</td>
</tr>
<tr>
<td>e) Costs for other services to third parties</td>
<td>-1,062,963.27</td>
<td>-1,218,436.20</td>
</tr>
<tr>
<td>Total</td>
<td>-4,521,507.20</td>
<td>-5,096,164.30</td>
</tr>
<tr>
<td>11. Sum of ordinary expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Costs for salaries</td>
<td>-8,874,147.17</td>
<td>-3,600,976.25</td>
</tr>
<tr>
<td>b) Emoluments (civil servants)</td>
<td>-11,241,276.12</td>
<td>-3,473,755.70</td>
</tr>
<tr>
<td>c) Social contributions and expenses for pensions and support</td>
<td>-4,637,846.29</td>
<td>-3,473,755.70</td>
</tr>
<tr>
<td>d) Other personnel costs</td>
<td>-33,370,203.96</td>
<td>-36,743,753.87</td>
</tr>
<tr>
<td>Total</td>
<td>-51,277,404.54</td>
<td>-55,723,325.92</td>
</tr>
</tbody>
</table>

Overview of total assets of H-BRS (in euros)

<table>
<thead>
<tr>
<th>Overview of total assets of H-BRS (in euros)</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intangible assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial assets</td>
<td>16,550.00</td>
<td>46,550.00</td>
</tr>
<tr>
<td>a) Without cash and cash equivalents</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Construction activities (in euros)

#### Smaller building activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional bicycle racks and re-charging station</td>
<td>124,883.78</td>
<td>14,872</td>
<td>8,149.22</td>
</tr>
<tr>
<td>Adaptation leasing, RHb</td>
<td>18,942</td>
<td>234,901.54</td>
<td></td>
</tr>
<tr>
<td>SSC Rheinbach</td>
<td>60,146.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Renovation activities

<table>
<thead>
<tr>
<th>Area</th>
<th>Location</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrading WiFi and IT networks</td>
<td>StA/RhB</td>
<td>175,555.99</td>
<td>850,211.71</td>
<td>33,916.54</td>
<td>in progress</td>
</tr>
<tr>
<td>Glass roof renovation</td>
<td>StA</td>
<td>15,000</td>
<td>523,866.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood protection BTE</td>
<td>StA</td>
<td>21,082.56</td>
<td></td>
<td>145,899.95</td>
<td>completed</td>
</tr>
<tr>
<td>Bridges/Ditches</td>
<td>StA</td>
<td>145,899.95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Large building activities

<table>
<thead>
<tr>
<th>Activities</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion buildings both locations</td>
<td>1,718,149.55</td>
<td>8,480,654.20</td>
<td>20,892,750.39</td>
</tr>
<tr>
<td>Initial setup in expansion buildings</td>
<td>777,123.51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H-BRS supervises its own construction activities (“Bauherrenshaft”).

---

H-BRS supervises its own construction activities (“Bauherrenshaft”).

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