“Innovations occur at the interfaces of diverse networks.”

An interview with RWTH alumna Deepa Gautam-Nigge, Senior Director of Corporate Development, M&A at SAP
Wir haben den Raum für Ihre Ideen


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Dear Alumni,

For two years, the coronavirus made sure that we had to constantly adjust our everyday lives to meet the new requirements. Now, after four digital semesters, this summer semester it has at last become the norm once again for classes to be held face-to-face. Since we no longer have a legal basis to compel everyone to wear masks, maintain minimum distances, or comply with the 3G rule, the Rectorate and AStA have agreed to launch a campaign: “We are still wearing our masks.” This concerted action highlights the fact that common wellbeing among the different groups within RWTH continues to have the highest priority.

We also need to be a strong community currently in regard to the Russian army’s war of aggression against Ukraine, which fills us all with horror, concern, and compassion. RWTH condemns all violence and violations of international law. We are committed to helping students and researchers in the Ukrainian war zone and those who are fleeing to the greatest extent possible. For this purpose we have started a joint relief operation with Uniklinik RWTH Aachen on the initiative of Professor Andrij Pich that is enabling us to provide very specific aid to hospitals in L’viv and other war zones. You can find a detailed article on this relief operation in this issue.

Since February, our offers of aid for potential students, students, doctoral candidates and researchers coming from a refugee background have been taken up many times over. By early May a total of 385 potential students from Ukraine had registered with our central academic refugee help point with regard to studying in the coming winter semester. Additionally, 28 researchers from Ukraine and four researchers from Russia who were employed at Ukrainian research institutions have contacted the university.

In line with the position of the German federal government and the German scientific organizations, the administration of RWTH has further decided to suspend cooperation with the Russian Federation until further notice. In practical terms this means that contracts with organizations that have direct connections to Russia will not be continued and no new contracts will be concluded. This also applies for mutual exchange visits for students and university staff with Russian institutions. Russian students and scholars already at RWTH are and will remain a part of the university community. Like everybody, we all hope for a rapid end to this horrendous war of aggression and that, in the spirit of science diplomacy, we will soon be able to reestablish the channels of communication between us.

Finally, international cooperation is necessary for us to be able to address the global social challenges we are facing. At RWTH, as elsewhere, we have meanwhile set up processes that will enable us to tackle issues such as climate change and sustainability in a focused manner on different levels. As an example, we are playing a leading role in exploring the potentials and risks of Industry 4.0 and are pursuing the objective of making production more sustainable and more resilient. Its future lies in its becoming compatible, across all industry sectors, with the circular economy. You can also find out more about our new Center for Circular Economy in this issue.

Enjoy reading, and stay healthy!

Kind regards from Aachen

Univ.-Prof. Dr. rer. nat. Dr. h. c. mult. Ulrich Rüdiger

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Relief operation for Ukraine organized by RWTH and Uniklinik gets into gear quickly

Trucks take medicines, medical equipment, and dressing materials to the war zone.
It was one of these snapshots that those present would never forget. No sooner than the aid convoy had delivered the supplies from Aachen to the Ukrainian doctors than news came through that the Russians had attacked the military base at Yavoriv, near Lviv. Just as they were setting out on the return journey, Professor Andrij Pich and those accompanying him were informed that the dressing materials and medication they had provided, such as morphine and antibiotics, could also be used for the wounded from this Russian attack.

Ukrainian-born Pich, a professor at the RWTH Institute of Technical and Macromolecular Chemistry and at DWI Leibniz Institute for Interactive Materials, is the initiator of the “RWTH and Uniklinik RWTH Aachen Help Ukraine” relief operation. He has family and friends there, many of whom work in the medical sector and therefore know what is needed. The pharmacy of Uniklinik RWTH Aachen obtains the items most urgently needed in the Ukrainian clinics thanks to the donations for which appeals have been made for many weeks. As of April 22, 2022, more than 710,000 euros had been received as a result of the initiative, including many private donations but also the proceeds of fundraising activities by schools and church groups, or through benefit concerts and many other activities.

“This is a strong signal of solidarity with the people in Ukraine. We are delighted with this broad range of support, and our thanks go to all who have donated,” stresses Professor Ulrich Rüdiger, Rector of RWTH. “This humanitarian catastrophe has particularly touched many people in our organization. We are grateful to all involved for coordinating the aid so quickly and so purposefully – a perfect example of successful teamwork,” says Professor Thomas H. Ittel, Medical Director, Uniklinik RWTH Aachen.

RWTH condemned the Russian attack on Ukraine in a statement in early March. The Russian attack on Ukraine fills RWTH and its members with horror, concern, and
compassion. RWTH condemns all violence and violations of international law. “We are committed to helping students and researchers in the Ukrainian war zone and those who are fleeing to the greatest extent possible,” explains the University’s rectorate, and continues: “RWTH is a place of diversity, togetherness, and solidarity. We gladly offer advice and assistance to all RWTH members personally affected by war and crises, such as the people in the Ukraine.”

Now, 40-ton trucks carrying dressing material, medical equipment, and medicines set out from Aachen every week for the Polish-Ukrainian border. When RWTH professor Andrij Pich went with the first large aid convoy, the Ukrainian doctors told him that owing to lack of equipment, they were forced during operations to press wounds together with their bare hands. “It was very moving to see the doctors’ joy as they accepted the supplies,” recounts Pich. “We are very grateful to everyone who supports us in this way. It clearly shows us how much the fate of the Ukrainians who have to live in this terrible war also touches and worries the people here,” says Pich.

We are glad that we are able to obtain the exact drugs and medical devices that the hospitals in L’viv need so that they can be used there immediately after delivery,” explains Dr. Albrecht Eisert, Chief Pharmacist at Uniklinik RWTH Aachen.

Meanwhile it has been possible to establish a stable logistics chain to the Polish-Ukrainian border. The goods are normally transferred there to smaller vehicles to protect them from the attacks that are often made on larger convoys. Provisional hospitals are also being built on the Polish side to care for the wounded and for sick refugees. Among other equipment, 22 special ventilators are stationed there, which can then be taken to L’viv quickly, for example, if there is a specific need. The risk that a complete delivery of valuable equipment of this kind could be destroyed in an attack during transportation is too great, which is why it is being taken to the hospitals little by little.

Continuing financial support
The Russian war of aggression continues with unabated ferocity and this is also exacerbating the problems of medical care in Ukraine. “With each passing day, the number of wounded increases, and so does the need for supplies such as vascular stents. The campaign carried out by RWTH and Uniklinik provides straightforward and concrete help here,” emphasizes Pich. Nevertheless, the need is growing with every further day of war and the growing numbers of war victims. In addition, to provide medical care for the war wounded, special facilities are often necessary. This campaign therefore still urgently needs financial support.

Reports that get in close
The war was only a few days old when the relief operation was begun. Pich, 46, spent half of his life in Ukraine. “When I see what is happening to my people at the moment, I am devastated,” he says. He quickly succeeded in recruiting comrades-in-arms at RWTH and Uniklinik and an account was opened for donations. The newspapers reported the initiative and broadcaster WDR invited the professor for a studio interview. When Pich recounted what he saw during his visit with the aid convoy and retold the stories he had heard from his Ukrainian friends and relatives, many of the listeners gulped more than once. These were reports that did not avoid the facts.

“When with each passing day, the number of wounded increases, and so does the need for supplies such as vascular stents. The campaign carried out by RWTH and Uniklinik provides straightforward and concrete help here.”

Account for donations
Commerzbank Aachen
Account holder: RWTH Aachen
IBAN: DE52 3904 0013 0122 6059 00
BIC: COBADEFFXXX
In the Reference (“Verwendungszweck”) field, please state “Spende Ukraine”.

Donations can also be made in cash (anonymously if desired) at the RWTH Shop in the main building, Templergraben 55. The donations will be forwarded from there to the RWTH donations account.

For inquiries and information: spende@rwth-aachen.de
www.rwth-aachen.de/donate
Aachen-based Professor Matthias Wessling has been accepted into the German National Academy of Sciences, known as Leopoldina. Wessling, who holds the Chair of Chemical Process Engineering, and is the RWTH Vice-Rector for Research and Structure and a member of the Scientific Board of the DWI Leibniz Institute for Interactive Materials, is now the 13th RWTH member of the Leopoldina, which was founded in 1652.

Since being appointed to an Alexander von Humboldt professorship in 2010, he has held the Chair of Chemical Process Engineering at RWTH. In 2019, he was awarded the Gottfried Wilhelm Leibniz Prize. Wessling and his working group are researching the synthesis of biomimetic interactive material systems. Here, complex interactive structures are developed using existing and novel materials and their structure-function behavior when subject to stable or transient forces are analyzed and described. In recent years, fundamental research work within his ERC Advanced Investigator grant have focused on the monitoring of complex physical-chemical flow phenomena at the membrane-fluid interface. Examples of applications of his work include the development of sustainable chemical processes, water treatment technology, and artificial organs.

“It is a great honor to be accepted into the Leopoldina. However, it is also a recognition of the creative contributions of my staff, doctoral candidates, and students over many years. This honor will continue to motivate me and our team to explore the physicochemical fundamentals and applications of synthetic membranes in the areas of artificial organs, energy storage, hydrogen technologies, CO₂ capture and utilization, biomass utilization, and water desalination,” says Wessling.

The Leopoldina is one of the oldest scholarly societies in the world. Since 2008, it has represented German science in international committees as the German National Academy of Sciences. Economically and politically independent, the Academy is dedicated to advising government, parliament and the public about socially relevant scientific issues.

Thorsten Karbach

The National Academy of Sciences Leopoldina, based in Halle (Saale).
The Education Fund invites you to join in the Matching Challenge

Take part and make a difference for the RWTH Education Fund!

Thanks to the participation of numerous companies, foundations, and private individuals, the RWTH Education Fund supports highly educated and committed students with a monthly scholarship of 300 euros for at least two semesters. Half of this funding is raised by the University, while the other half is provided by the Federal Ministry of Education and Research.

The Matching Challenge
To further increase the effectiveness of these scholarship funds, Dr. Georg Greitemann, Frankfurt-based partner of the Poellath law firm approached the Education Fund and encouraged the alumni of RWTH to be particularly generous in their sponsorship amounts by launching the Matching Challenge. The challenge is to raise a total of 18,000 euros in donations from the alumni. If this amount is reached, Poellath and another matching partner will top this up with up to another 18,000 euros overall. Combined with the donations from the alumni, we will therefore have a total of 36,000 euros, which the Federal Ministry of Education and Research will then double again to 72,000 euros.

Interview with Dr. Greitemann
We caught up with Dr. Greitemann to find out his motivation for launching this challenge and to ask him to outline the process and shed light on the long-term goals of the fundraising campaign.

How did you come up with the idea of launching the Challenge?
I myself have been a Deutschlandstipendium scholarship provider since 2015. The University of Freiburg, my alma mater, approached me about becoming a scholarship provider – since then I have been awarding Deutschlandstipendium scholarships in Freiburg. Since 2021, I have also been doing this at other universities.

This resulted in ten scholarships coming into existence. As I had already launched a Matching Challenge in 2012, I quickly realized that this was a very good way to acquire donations. They always led to the amount of donations being multiplied. Personally, I would like to increase my level of impact. My goal is to donate a certain percentage of my gross income each year. With the help of the “Matching Challenge” system, it is therefore possible for me to acquire large donations with a lower capital investment, since the money invested is multiplied by the contribution from the second Matching Partner, the alumni, and the federal government.

What is your reason for doing all this?
I would like to support the universities in making even better use of their fundraising opportunities among scholarship holders and alumni. By successfully implementing the Matching Challenge, I would like to create long-term, self-running structures at the universities so that more students can benefit from the scholarship funds.

Were you able to benefit from a scholarship yourself during your studies?
Indeed. I received various scholarships throughout the course of my studies. During my studies, I received what is referred to as a book allowance from the Konrad Adenauer Foundation, which is...
today’s equivalent of the Deutschlandstipendium. I also financed my stays abroad in England and the USA as well as part of my doctoral studies with scholarships.

The TU Dresden was very successful with the Matching Challenge last year, acquiring twelve additional scholarships. How many more universities have you been able to motivate so far?

So far, I am in talks with a handful of universities across Germany about carrying out such a challenge. In addition to RWTH, the University of Freiburg and TU Dresden are planning to hold a Matching Challenge in 2022. There are probably two to three more universities to come. That’s an increase from one university implementing my idea in 2021 to five universities this year.

Incidentally, the University of Freiburg was even able to acquire around 1,000 euros from among current scholarship holders during the current funding period. This shows that it really is never too early to donate. We are even teaching our children to donate with their pocket money: a certain percentage should be passed on. That way, they learn early on that donating is a good thing.

What is your goal for the whole of Germany?

My goal is for the Matching Challenge to become a regular feature at as many universities as possible in the future. If five universities can be motivated to hold a Matching Challenge this year and this format runs as well there as it does in Dresden, there may be ten universities by 2023 and 20 universities by 2024. I plan to be available as a sponsor for this myself over the next few years. Over time, however, the idea will have to become independent of me. To achieve this, the universities that use this format must find suitable sponsors and build up self-supporting structures.

Summarized in your own words, how does the Challenge work?

The two Matching Partners are offering a total of up to 18,000 euros. The alumni are also required to collectively come up with a donation total of 18,000 euros. The total amount of 36,000 euros will then be doubled again by the federal government.

However, if the amount is not reached by the alumni against all expectations, the Matching Partners do not participate. This is meant to be an extra incentive, because we want the alumni to win the challenge!

How do you wish to encourage alumni to participate in the Challenge?

That’s easy. Donating makes you happy.

In one of your areas of expertise, “venture capital,” you do a lot of work with investors. Do you see yourself as an investor in the future of students with this Challenge?

I tend to think of it more as volunteer work.

We’d like to thank Dr. Greitemann for his initiative and for taking the time out to give us this exciting interview.
RWTH Chemist Sonja Herres-Pawlis Awarded Honor
Sonja Herres-Pawlis, Chair of Bioinorganic Chemistry at RWTH, has been inducted into the Chemistry Europe Fellows Program. Herres-Pawlis studied chemistry at Paderborn University and Ecole de Chimie de Montpellier. She received her doctorate in bioinorganic chemistry from Paderborn University and her habilitation (post-doctoral lecturing qualification) in sustainable polymerization catalysis from TU Dortmund University. Several research stays at Stanford University in the USA and at the Ecole de Chimie de Montpellier in France shaped her career. Before becoming head of the Chair of Bioinorganic Chemistry at RWTH in January 2015, she was Professor of Coordination Chemistry at Ludwig Maximilian University in Munich. Chemistry Europe is an association of 16 chemical companies from 15 different European countries. The Chemistry Europe Fellow Program honors outstanding members who have made a significant contribution through their support, research, creativity, and innovation.

RWTH Achieves Excellent Scores in the Ranking
RWTH Aachen University has achieved very good scores in the current QS Ranking by subjects: in mechanical engineering, materials science, and mineral and mining engineering, RWTH is in the lead among German universities. In architecture, civil engineering, chemistry, chemical engineering, computer science and electrical engineering, RWTH Aachen University is among the top three German universities. RWTH is also doing well when compared with other universities around the world. In ten subjects it is among the 100 best universities worldwide, with mechanical engineering in 19th place and mineral and mining engineering in 16th place. The British information service provider Quacquarelli Symonds published the annual global university ranking on April 6, 2022.

In addition, the WirtschaftsWoche university ranking once again attests to RWTH Aachen University’s very good reputation in the business world. Human resources managers from more than 500 companies were asked which universities best prepare their students for professional life. RWTH achieved first place for the subjects of electrical engineering and industrial engineering, whilst mechanical engineering and...
natural sciences again achieved second place as in the previous year. What’s more, computer science improved its position to second place. A good one in four respondents said they preferred graduates from RWTH Aachen University when recruiting.

Rolf Bracke Appointed Adjunct Professor at RWTH
RWTH alumnus Professor Rolf Bracke, director of the Fraunhofer Research Institution for Energy Infrastructures and Geothermal Systems IEG and Chair for Geothermal Energy Systems at Ruhr Universität Bochum, has now been awarded the title of Adjunct Professor at RWTH Aachen University. A key focus of Bracke’s work is the transformation of mining-related technologies in the development of climate-neutral energy systems. Due to the phase-out of coal, oil, and natural gas combustion, the heating market is in need of new energy sources. Geothermal energy, especially heat from geothermal waters from deep rock strata, could supply heating and industrial processes with sustainable, local energy capable of meeting base-load requirements. The regions strongly affected by structural change, including the Rhine-land, central Germany, and Lusatia, can benefit in particular from the transition from coal mining to heat mining. “Heat is key to implementing the energy transition.” says Rolf Bracke. “As a new adjunct professor at RWTH, I’m looking forward to working with the Faculty of Georesources and Materials Engineering and others to develop solutions that will contribute to making heat in Germany green and sustainable by 2045.”

RWTH Innovation Award Presented
By presenting the Innovation Award, RWTH Aachen University aims to support ideas from research that could be particularly suitable for strengthening the innovative power of the Aachen region. The award has been presented annually since 2014. In 2021, IonKraft from the Institute of Plastics Processing took first place, with the Compression Guys project at the Institute of Communications Engineering and InCirTals from the Chair of High Frequency Electronics coming in second. The call for entries for the award is supported by RWTH Innovation GmbH. The ideas submitted are evaluated according to technology orientation, innovation potential, customer benefits, planned further development, commercial potential, and overall impression.

Using Hydrogen as a Fuel in the Steel Industry: RWTH Involved in a Joint Project – FlexHeat2Anneal
How can using hydrogen as a fuel reduce CO₂ emissions in the steel industry? In the joint project FlexHeat2Anneal, the Department for Industrial Furnaces and Heat Engineering at RWTH is conducting research headed by Professor Herbert Pfeifer on the sub-project “Investigation and Optimization of the Radiant Tube System, Operational Measurements, and Life Cycle Assessments.” Thyssenkrupp Rasselstein GmbH and WS Wärme prozesstecchnik GmbH are the project partners. The German Federal Ministry of Economic Affairs and Climate Action is funding this research work with around 380,000 euros until March 2025.

A New Association in Peace Research
The global political situation is increasingly uncertain and unmanageable; this is being demonstrated by the Ukraine crisis, among other things. The situation is characterized by increasing multipolarity, great power rivalry, rapid change, and mistrust between states. At the same time, the threat posed by nuclear weapons is still present, with over 13,000 nuclear weapons existing worldwide. With this in mind, RWTH has launched the new research network “Verification in a Complex and Unpredictable World: Social, Political, and Technical Processes” (VeSPoTec). The aim is to establish a new regional center for interdisciplinary peace research. The project is being funded by the Federal Ministry of Education and Research (BMBF) with a total of 3.2 million euros and is being coordinated by the RWTH research group “Nuclear Verification and Disarmament”, which is headed up by Professor Malte Göttzsche.

Research on Structural Change – in Podcast and Film
With the phase-out of coal-fired power generation, the Rhenish mining area is facing a large-scale transformation process. This structural change poses a huge challenge and impacts all areas of life. RWTH Aachen University is devoting two new communication formats to this topic. In the podcast “Tell Me About It, RWTH!” researchers talk about the region and its future. They give insights into their research and shed light on the transformation process from different perspectives. In the talks, they answer questions such as “What makes the region attractive for young companies?”, “What are the opportunities offered by structural change?”, and “What can RWTH contribute?”

The new film series “A Piece of the Future” shows RWTH’s cutting-edge research and the meaning that it has for society at large. In the first part of this series, WDR moderators Ralph Caspers and Shary Reeves look at the fields of RWTH’s research that offer opportunities for structural change in the Rhenish mining area. They find out how the work being carried out at RWTH can shape the lives of people in the region and they experience first-hand new types of hardware, autonomous mobility, specially designed molecules, and much more.

https://www.youtube.com/user/RWTHAachenUniversity
“Innovations occur at the interfaces of diverse networks.”

An interview with RWTH alumna Deepa Gautam-Nigge, Senior Director of Corporate Development, M&A at SAP
Deepa Gautam-Nigge still enjoys recalling her student days in Aachen in the 1990s, even if her civil engineering studies at Aachen University of Applied Sciences didn’t quite live up to expectations. Eventually, she switched to business administration studies at RWTH, specializing in technology and innovation management (TIM), operations research, and industrial logistics. Back then, the TIM lectures were attended by just ten other people taking it as their main course. A particularly strong impression for her was her time as an undergraduate assistant at the Institute for Industrial Management (FIR): “That was the start of what became my entire professional career,” says Gautam-Nigge. This followed on directly from her studies and was her first job in a startup, Trovarit AG, which was a spin-off from FIR.

But Deepa Gautam-Nigge had also developed a particular interest during her student years in the Aachen cultural scene. During her initial business administration studies she worked in the ticket office of the former Diana cinema. She was thus attracted to film in particular, but she also liked to attend operas at the Stadttheater and techno parties in the Frankenberg district. ‘I got to know all kinds of interesting people and thus made live contacts – and still do today – in the arts and cultural scene in Aachen. And I enjoyed all this to the maximum.’

A position at SAP followed in 2006, then another at Microsoft, before she returned to SAP in 2017 and set up the SAP Next-Gen Innovation Network in Munich. The purpose of this network of universities, startups, corporations, and investors is to create ideas and to develop innovative technologies and business models, but it is also about the next generation of entrepreneurs. Currently, she works for SAP as Senior Director of M&A in corporate development, where she continues to strategically develop the network concept at a higher level.

As a “Rheinlander from Nepal”, as she put it herself, Deepa Gautam-Nigge feels very much at home in Munich. Meanwhile she maintains many links with Aachen, in particular with FIR and RWTH, and as a result she is often present at the ERP Days in Aachen as an expert. And when time permits, she can sometimes be seen at the FIR alumni Christmas party. Currently she is also publishing a book, co-authored by RWTH professors Günter Schuh and Malte Brettel. In her interview, she talks particularly about innovation – something that she has been studying for 25 years “from the bottom up” since her course at RWTH.

Ms. Gautam-Nigge, in the last few years you have been setting up the SAP Next-Gen Innovation Network. Can you tell us a little about what this is?

In general terms, the Next Gen Innovation Network started as an initiative. It is concerned, ‘on the one hand, with the next generation of users and decision-makers whom we reach through SAP offerings in education, but it’s also about the next generation of business leaders, who are reached and trained by the associated business incubators, and the next generation of employees as well, of course. And in this way, we work together on the next generation of innovations, for and with clients. Meanwhile, the whole initiative has to be reliably financed. That was the basic idea.

What is the significance of universities in the three-way configuration of this initiative, along with startups and corporations?

Universities play an important role in this arrangement in two aspects: firstly in respect of training for the new digital skills, but also with regard to entrepreneurship education. I would add that this is not insignificant for the matter of innovation and for the ongoing development of our society. Everything that can be commercialized from applied research is important in order that Germany can assert and go on building its leading position as a driver of innovation in particular sectors. We are running into danger, however, of losing this pioneering role. The challenge that we face in Germany is that of bringing fresh training to our own DNA. What I mean is, wherever there is engineering, or manufacturing-based B2B or highly complex processes, we’ve got the know-how for that and we’re global leaders. But what we need to do is to move this into the digital era, to get involved at the forefront of innovations in the B2B context and to make our mark on the standards.

So what is still missing in Germany as regards this digital transformation?

Essentially, we’ve got everything in Germany that we need. In my view there are various factors to consider here. We need to become more integrated and to look beyond our own noses, as can be seen for example in the industry clusters at Campus Melaten. I examine an industry from various different sides and see not just a factory but the entire ecosystem around about it. But how do I manage to bring the players together in such a way as to make 1+1=3? And as far as “looking beyond the end of our noses” is concerned, we need to improve on that.

The second point is to strengthen the bridge between science and business. We are brilliant at discovering innovations from applied research and at developing them and being creative. As regards bringing them to market, though, we tend to stand in our own way. We don’t seem able to commercialize good innovations.

And the third aspect: there is a lack of systematic financing. Here it is the bureaucratic hurdles that in particular need to be dismantled. We need to find a way of making it easier to create spin-off companies from the universities and to commercialize innovations gained from the applied research environment. We already have the first seedlings and are trying to nurture them more intensively, such as the UNI-X venture capital fund and the initiatives deliberately
established by Professor Brettel and Professor Schuh at these interfaces. It can be clearly seen that these have taken root at the #neuland and ATEC conferences over the last few years and elsewhere.

A fourth factor for me, finally, is cooperation between established industry and the young founders. We need to improve here as well and bring these together systematically and at an early stage. Many innovations happen in the startup crowd, after all.

The keyword is innovation. That was, if you like, how your career began – in an RWTH startup. What was that?

I was working at FIR more than 20 years ago and the startup was a spin-off from FIR. We have a product – a service – for which FIR has been well-known for many years, and that is software selection. Ever since Professor Hackstein defined the Aachen production and planning control (PPC) model in 1989, this has become the domain expertise of FIR. Back then, with the arrival of the internet, we digitalized this process using a cloud platform. Those words trip easily off the tongue today, but in those days, the terms “cloud platform” and “digitalization” were not part of our vocabulary. Trovarit AG, which is still based on the campus today, has maintained its good reputation with large company groups and medium-sized businesses for 22 years in the field of software selection. It was an exciting experience to be involved with setting up a company from scratch.

Are there particular criteria or conditions that must be in met in order for innovations to arise?

If you are trying to create innovations, you need certain spaces. You need a cultural space that allows mistakes – in other words, a space for trying things out – a space for openness, that encourages thinking out of the box, or beyond our own noses. I am often working at interfaces between the corporate world, the startup world, and financing ecosystems. And we need the legal space. When I engage with others in “co-creation”, or, in other words, when we work together to develop new things, I need to come up with a legal framework first, so that I’m not always having to think: can I talk about this with them or not? We work out in good time how we will deal with an outcome that is not yet defined.

And then, ideally, you need a physical space where people can meet to exchange ideas, such as the Collective Incubator at the Jahrhunderthalle in Aachen. I create this space, where people can come together from their different perspectives precisely because innovation needs different perspectives! Innovations always arise under a pressure of change or from recognition of the possibilities at interfaces. Innovations are always readily found at the interfaces of diverse networks.

Many people are afraid of anything new, of innovations, particularly when they relate to highly complex matters such as the new COVID vaccines. How, in your view, can people face up to these anxieties? With plenty of communication. We are of course technology-sceptical. We are known to have the tendency toward being cautious, perhaps overcautious. Only once we have got something 120% right do we accept it. In my view, a bit more courage to go on in the face of unknowns would be a good thing. And I always say: education starts with examples. We need to simply put our idea into practice, we need to just try it out. If it doesn’t work, I change the approach or I do something else. The digitalization and force of innovation that is currently happening in the market thanks to democratization through technology is giving young people in particular all the opportunities they need to try things out. Of course, I could gladly go to Siemens, Daimler, or BMW and get a secure job. But why don’t we think in a more focused way about trying out an idea for a startup first? When you’re young, the world is your oyster. And if things don’t work out, well, it’s not a problem. In a time when there is a shortage of qualified people, I’ll find a permanent position a year later. What we need to do is to internalize the mindset, just to be courageous, not to be afraid of mistakes. After all, you learn something whatever happens. And if you go on later to a career with Siemens, SAP, or BMW, you bring all this experience with you and are thus better qualified. I can only encourage this approach. For myself, I’ve never regretted jumping straight from university into cold water, into a startup. Or, later on, feeling at ease in the corporate world in a completely different way, thanks to the experience I gained.

You are no longer in charge of the Information Network but now have a new role in Corporate Development at SAP. Because I had the pleasure of learning about the financing aspect of innovations from a startup perspective, and because I could bring all the different levels together in the network concept, I am now doing this at a higher level for the Corporate Development division at SAP. I look closely at how people can use new innovations or new technologies for further strategic development with the aid of innovative financing instruments. I work very closely alongside the venture capitalists and – this is something I took in a sense from my previous activities with the Innovation Network – also very closely with the startups. We look at how the matter of innovations can be further developed at the interface between the corporate and the startups. I’m also on the advisory council for digitalization at Schmitz Cargobull, a medium-sized enterprise with “Hidden Champion” status, where I’m simply trying to build a bridge between the old economy and the new.

So: how can I help the established German industries with digitalization and with developing digital business models? Interestingly, I learnt right back with Trovarit how to support businesses on their digitalization journey, which in those days focused on ERP solutions.

Your credo is: “Driving innovation in the era of ecosystems”. So does the “eco” stand for ecology or for economy – or for both? How do you define “ecosystems”?

In essence it stands for both. I don’t think that we will be able to solve the major ecological problems and social challenges of our time without the aid of technology. I think that we can take that as a basic hypothesis. But what I also mean by “ecosys-
term” is the notion that, given the incredible rate of innovation that we are witnessing, we have absolutely no other option but to think together in strategic networks and ecosystems, because no individual can develop the innovations that are required any more. The boundaries between sectors are blurring, digitalization is an integral element in every area of life and in every industry. We, therefore, need to regard the idea of the ecosystem much more comprehensively; if we make the link with ecology, we could say: Ecosystem, as a new living space, is formed of collaboration, symbiosis, and competition. Regarding symbiosis precisely as “coopetition” and co-creation ensures that we are competitive. The power to draw on the collective and cognitive intelligence of a diverse ecosystem will help us to continue to develop our key industries.

You just mentioned the word “diverse’. What role does “diversity” play here? There are of course various ways of looking at the notion of diversity. First is the diversity of viewpoints and experience. The notion extends from gender diversity out to questions of education, generations, experience, and place of origin. The more diverse the view of the subject of innovation, the better. You can only achieve better results through interaction, which has also been proved in studies, and again we’re back with the keyword: the merging together of different sectors.

Last December you participated in an online talk for our female graduates and students that was held by the Career Center as part of our digital Alumni Day. How can we succeed in further promoting women in businesses and institutions?

I mentioned this earlier: our education starts with examples. It is very important that the women who are available as role models are made as visible as possible. I was a student in Aachen in the nineties at a university of applied sciences, and I can tell you that there weren’t many role models in those days. “If you can see it, you can be it.” This is an important point and we need to pay attention to it. Women, people with a different skin color – and that includes me again, young people who are starting out – need to be encouraged to talk to role models and to go up to people actively. So, here’s a little tip: Never have lunch alone. You should make a deliberate point, at least once per week, of having a conversation with somebody who is perhaps already where you would like to be. Or take a look in another discipline or sector, just try to learn from one another. We shouldn’t be shy about talking to people. That’s really important.

Earlier on, you mentioned digitalization as a major challenge for our society. In fact, the pandemic has acted as a major driving force in this respect. How do you see this? It was perhaps the best catalyst for driving digitalization in Germany. Almost everyone is now used to working digitally, working from anywhere. The idea of a face-to-face culture is now talked about quite differently in German business circles. I was interested in what people can do digitally with online tools, for example half-day workshops at the whiteboard, although we weren’t in the same room. But I do miss the white heat of creativity when we’re in the room together. That can’t always be simulated, although we can come close. We have once again look beyond our noses and see what is possible under new considerations. And all manner of exciting new formats, contacts, and platforms have been developed that make me hopeful about continued digitalization in Germany.

Thank you Ms. Gautam-Nigge for talking to us.

Dietrich Hunold
From a very early stage, in the third semester of his bachelor’s studies in textile engineering in Mumbai, Mohit Raina had already made the decision to continue his academic education in Germany. One of his Indian professors, who had previously worked in a German textile machine company, recommended to his students that they should go to Germany if they wished to make progress in mechanical engineering and innovation. To amuse himself, Raina then took a three-month course in German at the local Goethe-Institut. To complete his master’s, he eventually switched to IIT Delhi, the only Indian IIT with a textile engineering faculty. During his first year at IIT Delhi, he managed to complete the course and examinations that are usually completed in two years. During his second year, Mohit Raina was awarded the coveted DAAD scholarship for Germany.

And out of that scholarship he developed a successful academic and business career. Following his doctorate at the ITA Institut für Textiltechnik at RWTH, Dr. Mohit Raina has been director of the ITA spin-off company Raina Industries Private Limited in Mumbai, India, since 2014. Last year, the company won the renowned Indian founder’s prize in category 1, the National Technology Awards for commercialization of innovative native technologies. Raina Industries produces and markets textile-reinforced precast concrete parts for the construction industry. These are highly economical of resources since they reduce concrete consumption, energy for manufacturing the parts, and the end-of-life waste by more than 80 percent. The Technology Development Board (TDB), a statutory body of the Department of Science & Technology (DST) awards a number of prizes to industrial enterprises in India each year on the occasion of National Technology Day, May 11. Winners each receive prize money of about 28,000 euros, plus a trophy handed to them by the Indian President.
To Germany – in blind faith
Mohit Raina landed in Germany on September 1, 2005. He chose RWTH because it was located close to Mönchengladbach, which he knew as a center for textile engineering and research. In addition, RWTH also had a cooperation with IIT Delhi, with regular exchanges of researchers. His first impression of Germany was his reception at Frankfurt airport by an employee of the International Office, who met and collected all the DAAD scholars for RWTH in a large car. After they arrived in Aachen, the DAAD scholars underwent intensive orientation courses. The cultural barriers were overcome by the young scholars quite quickly.

Raina really wanted to go straight back to India after finishing his master’s at ITA in order to start a business. The nine months of the scholarship term in Aachen came to an end, but he stayed on for a few days to take part in an excursion to Dresden with his fellow students. “You could say that those ten days led to another ten years,” Raina observes with amusement in retrospect. After all, he gained many impressions and had many conversations during this excursion that gave him his first ideas of pursuing a doctorate. And a conversation with Professor Thomas Gries, head of ITA, was encouraging: “Mr. Raina, one day we’ll have you back here.”

He nevertheless returned first to India in June 2006 to defend his master’s dissertation that he had written at RWTH at IIT Delhi. Having heard nothing more from Aachen for several weeks, he took up a position at one of India’s largest worsted yarn manufacturers. But then on September 23 there was a call from Professor Gries: “Doctoral studies start on October 1.” Within a week Raina had obtained his visa and travel documents and flew back to Germany – still without a valid employment contract with the Institute and in blind faith. Even his new employer in India had supported him: “Off you go to Germany!” Mohit Raina is still in touch with him today.

In order to begin his doctoral studies, Mohit Raina still had to study a number of subjects and take examinations in them. He had not understood this at first, but looking back, he said that this was very helpful to him and indeed important, in particular that it had taught him to learn and think in a structured way. Today, Raina tries to pass this on to his employees in India. “In India we do everything and we do it fast. But we lack structured thinking.” He still clearly remembers some important advice from Professor Gries: “First, take a blank sheet of paper and try to write down what you want to do. And then you can start to make plans.” He also quickly understood how important the German language was for integration and identification and started attending undergraduate lectures in German again. “At RWTH I saw how to do a doctorate, which is primarily about transfer into the industry. It’s totally different in India, where doctoral studies are limited to basic research. Here in Germany, a doctoral student has more freedom, responsibility, trust, and competence – in short, more scope for input.” And one other thing fascinated Raina during his research work at ITA: “In Germany, so much is practical and application-related. It’s amazing that I could be displaying something at a trade fair in 2019 that I was researching in 2008 or 2009.”

Many RWTH initiatives and activities with India
For Mohit Raina, the small scholarship has provided not only outstanding research and entrepreneurial skills and many personal connections, but also – as a result – it has given him a strong connection to Germany, to RWTH and above all with ITA. Today, Raina is on the research council of the Institute and its Indian representative, and consequently spends a few days in Aachen at least once each year. In addition, large numbers of applications to ITA are landing on Mohit Raina’s desk from Indian students. “For ITA I carry out a little assessment. The first question I ask is: Why, as a young person, do you want to travel 8,000 miles from India to Germany and to study there? Some 90 percent of the applicants can’t answer this. But there are the other ten percent, who know exactly what they want – which institute and indeed which professor.”

RWTH is well-known in India in the automotive sector and has recently become more so in the textiles industry. In other industries and research disciplines, RWTH alumni are more scattered. Thus, according to Raina, there are varying levels of familiarity with RWTH within the Indian business world. He nevertheless sees major opportunities to remedy this. “There are a lot of initiatives and activities held by RWTH with Indian partners, be this the Indo-German Center for Sustainability (IGCS), the Indian student association, the German-Indian Society in Aachen and above all, the RWTH liaison office in Delhi, not to mention the German Indian Round Table (GIRT) with many businesses affiliated.” Just recently, another liaison office opened, this time in Pune, specifically for RWTH International Academy. In addition to his duties as company director and his consultancy work for ITA, Mohit Raina also lectures on textile engineering and international business at two institutes in Mumbai. “For me, talking with students is like meditation.” But it is family life that brings this RWTH alumnus true relaxation. His three-year-old daughter is already showing promise as a scientist: every Sunday she looks forward to conducting a “scientific experiment” – simple experiments in everyday situations – with her father.

Dietrich Hunold
Kautex Textron GmbH & Co. KG is a global market leader in fuel tank systems. The close cooperation with RWTH and the expertise of RWTH alumni with which the company has engaged in the last decade have contributed significantly to this development. Under the leadership of alumnus Carsten Elsasser and with the support of alumnus Dr. Roman Bouffier, the Innovation and Strategy department has evolved into the Technology Center, the heart of Kautex Textron.

Carsten Elsasser studied mechanical engineering at RWTH between 1988 and 1994, with a specialization in process engineering. He began his professional career as a business consultant in the TÜV Rhineland Group, which included spending two years in Japan. In June 1999, he took the role of global project manager at Kautex Textron and has subsequently held positions as program manager, director of product development, and director of operations for the production facility in Bonn, in the course of which he has contributed substantially to the growth and success of the company. With the aim of enabling Kautex to develop further towards future challenges, Elsasser took the post of director of the Innovation and Strategy department in 2014. Since then, he has worked in this role with the objective of implementing the Kautex Vision 2025, which is to develop groundbreaking solutions for the new mobility era with products for hybrid, electric, and autonomous vehicles.

Dr. Roman Bouffier studied mechanical engineering at RWTH from 2001 to 2007, obtained a doctorate there in 2012 and then from 2012 to 2015, was chief engineer and deputy head of the Institute for Plastics Processing (IKV) at RWTH. After a year of cooperation between IKV Aachen and Kautex Textron, Roman Bouffier decided in 2015 to take a position as a senior research manager in the Innovations department at Kautex Textron. He has been director of research there since fall 2016 and since then has made decisive contributions to the success of the Innovation and Strategy department.

For our magazine, the two alumni look back together over the paths that led them both to Kautex Textron and also talk about the current challenges being faced by their company.
Roman Bouffier: You graduated from RWTH in 1994, but where did the idea come from to study mechanical engineering, and why at RWTH in particular?

Carsten Elsasser: RWTH has an excellent reputation, is well-known at the national level and has a great network, thanks to its network of institutes and its many faculties. So the decision about where to study wasn’t hard for me. Why mechanical engineering? Well, there was nothing I could imagine more attractive than being able to work in a technological environment. What brought me to mechanical engineering in particular was my interest in technological solutions and innovation.

Roman Bouffier: It was similar for me. I’d always had a particular penchant for chemistry and was very interested in plastics as a material, and so that’s why I opted for plastics technology as my specialization. And because plastics technology is so open to so many industries and because plastics are found in every area of life, there’s a wide scope of possibilities both technically and in terms of a career.

Carsten Elsasser: After you graduated, why did you go to work at an institute and not straight into business?

Roman Bouffier: While I was still studying, I had the desire to work in a team of early-career researchers and to be able to work more intensively and for longer on a particular topic. At IKV, I was given a lot of scope for determining my actions and quickly also responsibility for my own budget, my own work group and the freedom to influence the direction of research.

And I don’t need to ask how you came to Kautex Textron, but perhaps we should go into this a little more for the sake of our readership.

Carsten Elsasser: After a few years in Aachen, my main desire was to be able to apply my knowledge in an exciting new environment and to deepen it there. Initially, I was able to work in a business consultancy for process optimization and management systems. This enabled me to work across sectors and companies and to pick up a lot of experience in a short time. My consulting work also allowed me to go to Japan for a number of years, set up an appropriate consultancy business there, and gather exciting international experiences.

And looking back over your career with Kautex, what were your personal milestones?

Carsten Elsasser: I had the opportunity of playing a decisive role in the successful market launches of various technologies and products. In 2009, for example, the first two customer programs with our NGFS® twin-sheet technology were launched. For several years, my team has also been working on completely new products for autonomous driving and e-mobility. Successful technological developments were and are extremely important in enabling us to meet technological requirements, to offer new functionalities within a product and to provide our customers with future-oriented solutions.

And what have you been able to put into motion, to experience, to design during your time as research director?

Roman Bouffier: Absolutely! There has been close contact between Kautex Textron and IKV for a long time in terms of shared research activity and projects. The working atmosphere was always very pleasant – and stimulating. Finally, the strategic orientation of Kautex led me to switch to the free market. The innovation topics, the numerous technological developments, and also the change in the automotive industry to which the product and technological innovations are linked attracted me strongly to finding work in this field.

Roman Bouffier: The relevance of our department has grown sharply in a very short time. With its additional new products in its portfolio, Kautex has gone from an almost 100-percent focus on fuel tanks to being a driver of innovations in the industry. I have helped to create new topic areas and teams and been involved in bringing the necessary competences on board – for example by setting up the Composite
Training series, a global training program for our employees in which over 200 of our colleagues have taken part so far. Apart from this, I played a significant role in setting up the new Tech Center at Kautex and equipping it with the latest systems technology to enable the development of our new product innovations.

Carsten Elsasser: The shifts in the automotive industry have given us the opportunity to break into new growth areas, address new markets, and also to grow sustainably, in the sense of sustainable mobility.

Roman Bouffier: Yes, it makes it clear who is sufficiently flexible and agile to succeed in the market. Kautex is a highly dynamic company that is capable of developing appropriate strategies and products. The change was initiated, to a significant extent, by the Vision 2025 that you created in 2018. How were you involved in planning Vision 2025?

Carsten Elsasser: Because of the big changes in the market, the senior leadership team at Kautex saw the need to analyze the direction in which the automotive industry was moving and what role we wanted to play in terms of new mobility. We determined the topic areas in which we wanted to invest on the basis of market developments and our own core competences in the automotive sector. An example of this is our Pentatonic battery system.

Roman Bouffier: And what has impressed me in particular about this change is that we don’t just stop with our own ideas for development. Right now we are putting the first mass production plant for battery systems in China into operation. It’s remarkable to see how this strategy is now becoming the new reality. You mentioned sustainability just now. What is the role of sustainability for the future of Kautex Textron, in your view?

Carsten Elsasser: I think that every company should take its responsibility seriously and act in a sustainable way and offer sustainable products on the market. We are also constantly looking for ways to reduce our CO₂ footprint – and have defined our “sustainability roadmap” for this purpose, for example, which sets out the milestones for us to reach CO₂ neutrality.

How do you regard this topic as a former IKV man? Plastic hardly has a sustainable image, after all.

“The chance to gain experience abroad early on in my career, to work and communicate with other cultures, was the most enriching thing of all for me.”

Roman Bouffier: True enough, but plastics can be immensely sustainable if they are used cleverly and if we take care of the end of the product lifecycle properly. Plastics are not only recyclable and have a considerably lower CO₂ footprint than the metals that are otherwise normally used. They can also enable energy savings during their service life thanks to their potential as lightweight materials, particularly in transport – in cars, trains, aircraft, and so on. A carefully used plastic can thus reduce the CO₂ footprint of a vehicle.

Looking back to your days as a student, what make a particular impression on you for your professional career?

Carsten Elsasser: The chance to gain experience abroad early on in my career, to work and communicate with other cultures, was the most enriching thing of all for me, but on top of this, the large network of institutions and alumni was very helpful to me after I graduated.

Roman Bouffier: Yes, I feel that the theoretical training provided by RWTH is perfectly complemented by the environment of the Institute. The links to industry, the many opportunities for coming into contact with different technologies and companies have also opened many doors for internships and periods abroad – and that goes on in my everyday professional life up to now.

What advice would you give to students today?

Carsten Elsasser: Seize the opportunity for internships and subsequent jobs in industrial companies alongside your studies so as to build up experience. And make use of any possibilities that arise for international exchanges.

Roman Bouffier: I agree with you completely. Other than this, I can only recommend to all prospective students to choose a subject that interests you and gives you joy, and not just to go on the basis of the current job market and salaries. If you enjoy the subjects, then both studying and the daily grind of going to work are made a lot easier.

Dietrich Hunold
proRwTH is closely affiliated to RWTH Aachen

Members of our friendship association include companies of industry and commerce sectors, students and alumni of RWTH Aachen as well as private citizens from the region.

They all assist proRwTH in maintaining teaching and research quality, the variety in student projects and in increasing the number of newly established companies in the region.

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Science and Business

Circular Economy
Made in Aachen

In the Center for Circular Economy (CCE), RWTH brings together its expertise in the field of the circular economy.
Everyone is talking about the circular economy. Public discussions on the subject tend to focus on recycling and sustainability. Yet the transformation of our linear structures into a circular system calls for much more than just the environmentally friendly treatment of waste. In fact, it demands a rethink of our entire notions of value creation and our society! To provide practical embodiment for this vision, RWTH set up the Center for Circular Economy in late 2020. The Center seeks to bring together expertise from all faculties and to provide a network of industry, society, and academia to enable the transformation to a circular economy. At present, we have 26 institutes working across faculties and other central RWTH bodies involved in CCE.

While the concept of a circular economy is widespread in public discourse, there are few practical approaches to a solution at present. Popular notions such as zero waste give the impression of a potentially waste-free society, but there are no measures available at present to implement this at a global level. Rather, the objective of a circular economy (CE) is value creation from long-lasting products together with the sustainable use and recycling of resources. The value of a material, product, or raw material should be maintained for as long as possible. Along the value chain, that is, from extraction of the primary resources through the use phase to disposal and recycling as a secondary raw material, ideally only very small amounts of waste should be generated. Along the value chain, that is, from extraction of the primary resources through the use phase to disposal and recycling as a secondary raw material, ideally only very small amounts of waste should be generated. Accordingly, a conscious use of resources and goods can result in immense ecological and economic potential. The actions implied here are represented by the principle of the “5 Rs”: Refuse, Reduce, Reuse, Repair, Recycle.

At present, meanwhile, a functioning circular economy is only a vision. Given the rapidly growing middle class around the world and its striving for Western consumer standards, our linear economy is reaching its limits owing to the scarcity of resources. The squandering of resources in the form of waste is increasingly becoming a luxury. So how can a transformation to a circular economy be effected? What hurdles must our society overcome in order to close the materials cycle? And what role can the Center for Circular Economy (CCE) at RWTH play in this?

**Interactive core areas**

As a transdisciplinary platform, the Center is intended to provide innovative solutions for circular value creation. In addition to closing materials cycles, this also prioritizes the rethinking of resource use, the prolonging of product lifecycles, reuse/recycling, processing, and repairing. Parallel to the “5 Rs”, the activities of the Center for Circular Economy are divided into the interactive core areas of “Material Recirculation”, “Product Sustainability”, and “Circular Business Models”.

Image left: Professor Karl Bernhard Friedrich of the Institute for Metallurgy and Electrometallurgy and initiator and co-founder of CCE.

Graphic: ANTS/CCE at RWTH Aachen
The Material Recirculation area includes all activities related to the recirculation of materials, for example the recycling of waste streams into processing and reuse. Complex, technical materials, and products are making the production of high-quality recyclates increasingly difficult. Sustainability must therefore begin at the production and product design stages if linear processes are to be converted to circular ones.

Responsibility must therefore be borne not only by the raw materials producer but above all by the manufacturer. These aspects are addressed in the Product Sustainability area. As well as sustainability in the supply of materials, it is necessary to design products to be durable and high in quality, and capable to an appropriate degree of being dismantled or repaired. This ensures that in addition to good usability, the product can be passed on into a second product lifecycle. The objective is to keep materials circulating for as long as possible and thus to reduce the consumption of raw materials and to replace linear “end-of-pipe” approaches. To make the longevity of products economically viable, in turn, the required framework conditions are necessary. What is required are circular business models – that is, models that foster this sustainability and indeed make it possible in the first place.

On average we replace our smartphone with a newer model every 18 to 24 months. The old phone often ends up in a drawer, rather than being disposed of correctly. As a consequence, the recycling system is deprived of up to 56 different raw materials.”

To achieve such a transformation of our value creation system and society, the expertise and cross-disciplinary cooperation of all research departments is necessary. The CCE network is therefore made up of all the faculties of RWTH. In this, the Center serves the function of a beacon and a mediator. As a contact point for themes linked to the circular economy, the Center welcomes players from science, industry, policy-making, and society and makes the combined expertise of the different professorships and institutes available in a large knowledge pool. Core competences in the field of circular economy are thus developed in interdisciplinary projects. As a transfer element, CCE returns the insights gained back into the pool and into teaching. One of the aims here is also, as an institute, to offer a master’s degree in circular economy in the future.

Raw materials potential of smartphones
As a “beacon” project of the Circular Electronics work group at CCE, the “100 Smartphones” sensitization campaign was created. The Faculty of Georesources and Materials Engineering at RWTH asked its employees to hand in their old smartphones, no longer used and consigned to a drawer, as a means of sensitizing people to the quantity of hoarded devices and the quantity of raw materials potential thus lost. “On average, we replace our smartphone with a newer model every 18 to 24 months. The old phone often ends up in a drawer, rather than being disposed of correctly. As a consequence, the recycling system is deprived of up to 56 different raw materials – which include not only the familiar base metals but also precious metals such as gold and palladium, and critical metals such as indium, gallium, and tantalum. The collected smartphones now serve as a basis for testing out recycling processes or process chains in line with the circular economy framework that open up the overall raw materials potential of the smartphones as much as possible,” says Professor Karl Bernhard Friedrich of the Institute for Metallurgy and Electrometallurgy and the initiator and a co-founder of CCE. In addition to interfaces within the recycling
open up the overall raw materials potential of the smartphones as much as possible," says professor Karl Bernhard Friedrich of the Institute for Metallurgy and Electrometallurgy and initiator and co-founder of CCE. In addition to interfaces within the recycling process chain and approaches to materials recycling, the application of digitalization approaches, and also the use and collection situations need to be investigated.

Within the framework of the sensitization campaign, initial (technical) approaches should thus be developed that indicate and harness the circulation potential of a smartphone. From the outcomes obtained here, specific requirements can be formulated for the development, production, and use of smartphones and the political framework conditions that will enable the circular economy to be moved from a conceptual to an application-oriented level. Beginning from the Circular Cities Declaration of the City of Aachen, a scaling of the “100 Smartphones” project conducted internally at RWTH up to city scale is being discussed in order to sensitize the inhabitants of Aachen on this issue.

As an interface for research, industry, policy-making, and society, CCE has already built up a substantial network since its inception in 2021. Working closely with the City of Aachen, partner universities and independent research institutes, CCE has already established itself as a regional contact point on the subject of circular economy. In a cooperation project with industry and RWTH, on April 5, the Center launched a large-scale consortium benchmarking initiative in which best-practice examples for an adequate implementation of a functioning circular economy will be chosen from more than 5,000 companies. The study is expected to produce its first findings by late 2022. The Center also publishes articles on an ongoing basis in specialist magazines and represented RWTH at the signing of the Circular City Declaration on the part of the City of Aachen. In the near future, as a center of competence for circular economy, CCE is expected to become the hub of a regional cluster and to provide innovative circular economy solutions on the national and international levels.

Mohammad Chehadé, Maximilian Rummel
OpenGeoResearch – an app for open questions in the geosciences

A contribution by RWTH at “Science Year 2022 – Participate!”

Can you actually predict a rainbow? Why are some trees in the city painted white? And how on earth does sand from the Sahara end up in central Europe? Answers to all these questions can be found in the OpenGeoResearch app developed at RWTH, which enables anybody to ask questions of scientists while out and about.

“Who, how, what? Why, what for? If you don’t ask, you’ll never know!” What we learned early on as children, often in a fun, rhyming form, could often come unraveled if our parents couldn’t answer our questions. Today, however, we have access to all imaginable information on the smartphone in our pocket. All the same, if there isn’t a straightforward Wikipedia article to hand, our enthusiasm for searching quickly wanes. The more motivated among us may take the intention home to research more thoroughly on the computer, but where do you actually find out about the water quality of a river?

Help is now at hand with the OpenGeoResearch mobile app, developed by the Geodetic Institute and Chair for Computing in Civil Engineering & Geo Information Systems and with support from the RWTH Department of Geography. To the questions mentioned above it adds the spatial “Where?” and enables questions to be asked in connection with their associated location and for uploaded images to be added. The questions can then be answered by the community, more complex ones are forwarded to experts, who also provide detailed information. The app is part of “Science Year 2022 – Participate!”, organized by the Federal Ministry of Education and Research (BMBF). This has resulted in many projects being set up that promote dialog between scientists and citizens. This should enable, on the one hand, scientific work and findings to be communicated in an easy-to-understand way, in the classic sense of scientific communication. On the other hand, Science Year 2022 places particular focus on the opposite direction: citizens are given a voice, in the sense that they are offered contact points for their questions and ideas. Accordingly, not only is science communicated, but on the contrary, science should also be able to learn something – the interests of the app users should be located and used as initiators for future research questions.

“Citizen science’, participatory communication

Science and research pervade every area of our lives. Whether it is the growing significance of algorithms in everyday life or the effects of our way of life on the global climate, society at the start of the 21st century is facing major challenges. If we are to overcome these challenges together and to actively shape our society, our willingness to engage with research findings and to contribute our own perspectives is crucial.

OpenGeoResearch offers a possibility of this kind for interested persons to enter into an exchange with the geoscientists. Here again, both modes of communication can be pursued – the geoscientists can share their scientific knowledge with the interested public, while the questions asked of them can be starting points for regional research projects. Participation by the public in scientific processes is known as “citizen science”, or science conducted by the general public. Participation in this approach, which is highly popular at present, should however not be restricted to merely asking questions. Rather, members of the public can also serve as “generators of learning” or make their personal experience available to science – which can be highly valuable, particularly in the regional context. One example could be information provided by older residents if they are asked to describe the frequency and intensity of floods that occurred before regular measurements were made.

The OpenGeoResearch project aims to bring the “interested public” and “experts” together, while ensuring that the latter category, as described above, is not limited only to scientists. Questions can also be answered by any member of the community, so that use can be made of specific local expertise on the one hand and discussions can be enabled between the participants on the other. These discussions could also offer a highly promising approach to the development of future research perspectives.

This participatory method is intended to cover all content relating to climate, environment, and the city: the app invites questions on all geoscientific subjects such as geology, climate, vegetation, geomorphology, hydrology, but also on related areas such as city and regional planning and architecture. A person asking a question will place it in one or another subject category. This is intended to simplify the process of answering the questions and also to aid navigation through questions already asked for other users. Tags can also be added to the question so that further categorization is possible.

What is special about this app, however, is, above all, the physical location of the question. In addition to the question itself and an optional photo of the object or scene
about which the question is being asked, the geocoordinates of the smartphone are captured by GNSS. This makes a more precise answer possible. Cartographic representations of situations are a key area of the geosciences, which always also represent phenomena in their spatial dimension. First experiences with the app have shown that this approach is a success; many of the questions can be answered particularly well with the use of maps. The large number of web-based map services that are freely accessible today enables experts to give references directly to a specific section of a particular map series. This approach is particularly relevant for the aspect of environmental education, since these freely accessible map series are known to very few lay people. Giving references to the applications invites the user to “rummage” further through what is on offer and so initiates an engagement with spatial data and the surroundings, with the focus on an area of interest to the person asking.

Cooperation with geoparks and schools
A particular form of application of local expertise is enabling the cooperation now being set up between the OpenGeoResearch app and the UNESCO Global Geoparks in Germany. The geoparks cover special areas of landscape value, such as the Felsenmeer (“sea of rocks”) in the Geopark Bergstrasse-Odenwald. For a number of Business areas are ideal locations for the use of the OpenGeoResearch app. For one, the special and often remarkable landscapes often give rise to questions. Additionally, the geoparks are deliberately designed to act as tourism magnets that promote regional development – and this means a large number of people with little or no prior knowledge about the region. The concept is completed by the geopark employees, who act not only as local guides but also serve as experts in the app. Visitors to the geoparks thus profit from a digital, participatory educational service in which they can ask questions that go beyond the information already available to them. On the other hand, the geoparks can find out more about what their visitors are interested in and can thus gradually build up tailored information offerings, for example, in the form of display boards positioned exactly where a particular theme is asked about very frequently. Particularly when it comes to sensitizing children and young people to environmental and nature protection themes, the app should be able to make a useful contribution.

With this aim in mind, schools can also be included in the project – the app can be used, say, in geography classes and on excursions, both by the pupils and also as an additional resource for the teachers. It could thus perform the mapping and capture questions asked during a school excursion that can then be integrated into a subsequent classroom session and discussed there.

Anybody who is now curious and would like to try the OpenGeoResearch app during their next stroll across town or their next nature hike for themselves can install it free of charge from Google Play or the App Store. Questions can be asked by pressing “+” on the home screen. Creating a user profile is optional. To obtain the best possible answer to the question, the location should be captured as well, otherwise the answers can only be vague. The scope of functions is being continually developed further, together with the community, and feedback is therefore always welcomed.

Larissa Böhrkircher

First experiences with the app have shown that many of the questions can be answered particularly well with the use of maps.
The Institute of Structural Mechanics and Lightweight Design (SLA) at RWTH has developed a connector which will soon be deployed on the ISS in an in-orbit test. This marks a breakthrough on the path to a more sustainable aerospace future.

Like Lego bricks, the satellites of the future should be capable of assembled, dismantled, reconfigured, and reassembled over and over again. There is a general consensus about this vision in international spaceflight because it is the only way of tackling the problem of space debris and the hazards it presents to spacecraft. Such a new generation of modular satellites would be capable of being repaired in space. The Institute of Structural Mechanics and Lightweight Design at RWTH performed pioneering research for the next generation of modular satellites within the iBOSS project (Intelligent building blocks for on-orbit satellite servicing and assembly). In addition to the primary structure of the satellite modules, the interface that links these together was researched in particular. Put simply, the Aachen researchers developed a suitable connector system, called iSSI (Intelligent Space System Interface) – a sort of USB system for space.

RWTH filed for a patent in 2014, and the idea was brought to market in Europe, the USA, and other spacefaring countries through the formation of a spinoff company, iBOSS GmbH. The system is now being tested in space for the first time. On February 19, the iSSI modules were launched on a U.S. space mission to the International Space Station (ISS). There, in the Japanese section of the ISS, they were connected together and disconnected for the first time in an experimental setup outside of the space station. When connected, data and power can be transmitted via the interface of the connector system in addition to the mechanical loads.

A Pioneering Approach
For SLA director Kai-Uwe Schröder and his team, this is a milestone: Satellite modules can be reconfigured anywhere, including in space, any number of times thanks...
Flight model of the compact iSSI satellite interface

to the simple handling that the concept provides. “Our approach is revolutionary; our system has the potential to set a standard like that of the USB connector. A successful demonstration in space, under vacuum and cosmic radiation conditions, would be the great breakthrough,” says Schröder. “We have the chance to finally make space travel more sustainable.”

In the future, defective components could be replaced to significantly increase the service life and functionality of a satellite. For example, satellites use what are known as swirl wheels to control their position in space. If the swirl wheels stop working, the satellite can no longer be properly aligned – and is therefore only available to a limited extent or not at all. Reaction wheels integrated in a modular component can be replaced if they become defective. Finally, satellites can even be expanded to include further components and functionality thanks to this possibility of on-orbit servicing.

Since 2010, the RWTH-based Institute has been involved in a research project on modular satellites conducted by the German aerospace agency DLR. Twelve years later, the idea of creating the building blocks of satellites on Earth and assembling them in space is becoming a reality. The RWTH spinoff iBOSS recently received the Innovation in Space award for its iSSI concept.

The Aachen research team has already successfully deployed the iSSI system on the ground. The connector is already being used in the upBUS project, for example – a hybrid mobility concept in which a vehicle switches between operating as an aerial tramway and an autonomous bus. The changeover requires coupling and decoupling the vehicle and the aerial tramway system.

Successful tests
According to Thomas A. Schervan, director of iBOSS GmbH, the iSSI interface has now been operational on the Japanese Kibo experiment platform since mid-March 2022. So far the data and power transfer functions have been successfully tested. These tests were conducted in an endurance test designed to show that the technology is capable of maintaining the desired data connection and power over an extended time, in this case several weeks at a time. In the future, the system is intended to couple satellite modules together, and in such situations will have to be capable of functioning reliably in space for ten years at a time or more. Testing of the mechanical decoupling and recoupling function of the interface, mirroring the releasing and recoupling of a satellite module, will begin soon. If these tests are successful, the main milestones of the in-orbit demonstration (IOD) will have been successfully tested – data transmission, power transmission, and mechanical coupling. Further tests will follow to evaluate the robustness and load capacity of the iSSI system.

The next stage of the ISS mission will soon begin. Meanwhile RWTH is also involved in the AMS project, with its alumnus Matthias Maurer until recently an astronaut on the station. The vision is for an extraterrestrial application, such as for the installation of stations on distant planets.

https://www.iboss.space/

Thorsten Karbach
Construction on the Campus West Site commences

A consortium of RWTH chairs and partners is seeking to improve adherence to schedules and construction quality with their Internet of Construction project.

The aim of the Internet of Construction project – IoC for short – is to create a networked construction site. The project is a special collaboration between RWTH and its partners. The German Ministry of Education and Research (BMBF) is providing 3.2 million euros of the total 5.8 million euros for the project. The funding is provided as part of the Innovations for the Production, Services, and Work of Tomorrow research program and is supervised by the Project Management Agency Karlsruhe (PTKA). The first construction activities have now started on the site that is set to become RWTH Aachen Campus West. This research area is intended to develop into a benchmark project for an innovative, sustainable quarter.

Headed by RWTH Professor Dr. Sigrid Brell-Cokcan, Chair for Individualized Production in Architecture, ten companies and research institutions are conducting research on information networks for cross-value chain collaboration in the construction industry in the IoC. “We share the objective of optimizing cross-company collaboration through integral IoC systematics together with our project partners from the construction industry, automation, and mechanical engineering. In this way, we want to improve adherence to schedules and quality in the construction industry,” says construction production expert Brell-Cokcan.

**Under real conditions**

The first construction activities on Campus West were carried out together with the company LEONHARD WEISS. “We are testing the implementation and application of the developments with the help of the real-scale IoC demonstrator,” explains Brell-Cokcan. The demonstrator is a real section of one of her building designs. It has been designed to reflect the manufacturing requirements of the different sectors of reinforced concrete, timber construction, and steel construction. This allows the developments of the project to be tested under real conditions. Construction company LEONHARD WEISS is active in engineering and turnkey construction all over Europe and, as a general contractor, places high demands on the communication and safeguarding of construction processes. Together with experts from the field, RWTH is investigating the integration of cyber-physical systems and communication technologies in the reinforced concrete trade in order to increase digital data collection and improve construction processes.

The IoC demonstrator is being realized on the Campus West construction site and is provided by the Center for Construction Robotics in cooperation with RWTH. The “reference” construction site is the first living lab for construction processes in Germany. It enables new technologies in construction to be integrated and investigated under real-life conditions, which supports their application and practical transfer.

The Chair of Individualized Production in Architecture and the Chair of Production Metrology and Quality Management of the Laboratory for Machine Tools and Production Engineering (WZL) represent RWTH in the consortium. LEONHARD WEISS GmbH & Co. KG, Annen GmbH & Co. KG, KUKA Deutschland GmbH, Lamparter GmbH & Co. KG, Liebherr-Werk Biberach GmbH, Robots in Architecture Research UG, WURST Stahlbau GmbH, and the International Performance Research Institute gGmbH are also partners in the consortium. In addition, Autodesk, Cementa, and the German Steel Construction Association are involved as associated partners.

› Renate Kinny
NRW startup triumphs in USA final round
Lidrotec takes first place in the 22nd Rice Business Plan Competition (RBPC)

A four-member founding team from RWTH and Ruhr Universität Bochum (RUB) was awarded first place in the 22nd Rice Business Plan Competition (RBPC), the largest and most generously rewarded startup competition for university teams in the world.

In the initial selection, the Lidrotec team from North Rhine-Westphalia faced down more than 400 fellow competitors from all over the world. It is one of only two international teams that have made it into the final round alongside prestigious institutions such as Harvard University, Boston University, and John Hopkins University. Along with Lidrotec, the “Invitris” team from the Technical University of Munich (TUM) also reached the final and took 3rd place. As the winner, Lidrotec was awarded the main prize – an investment prize of US$350,000 from GOOSE Capital. Other awards received by the company at RBPC included the Softeq Venture Studio prize of US$125,000, the TIE Houston Angels prize of US$100,000, the RBPC Alumnus, Thomas Healy prize of US$50,000, the Eagle Investors prize of US$5000, the Best Hard Tech Elevator Pitch prize of US$500 and the RG Advisors CFO Consulting prize. The team convinced the jury with its patent-pending technology and so won a total of almost US$630,000 in investments and grants.

**Producing microchips with almost no losses**
Lidrotec GmbH builds and markets laser machines for cutting microchips in the semiconductors industry. Microchips are produced in batches of thousands on what is known as a “wafer”. Before the chips can be used in a smartphone or a computer, they must first be cut out of the wafer. By using the Lidrotec technology, the rejection rate during this cutting process, which can currently be up to 10 percent, can be reduced almost to zero. Semiconductor manufacturers can thereby save significant costs and increase productivity. The unique innovations are based on the use of liquids during the laser cutting process. This cools the wafer as it is cut, while the cutting residues that arise are efficiently rinsed away.

The founders of the startup, Jan Hoppius, Alexander Igelmann, Alexander Kanitz, and Jannis Köhler studied at RUB and RWTH and in some cases achieved a doctorate, and the company was founded in April 2021. Co-founder and RWTH alumnus Alexander Igelmann is currently working on a doctorate with Professor Malte Brettel at the Chair of Economics for Engineers and Natural Scientists. The team receives support with its technology, developed at RUB, from the startup centers of both universities – RWTH Innovation and the WORLDFACTORY startup center at RUB – as part of the Excellence Start-up Center (ESC) initiative of the Ministry of Economic Affairs, Innovation, Digitalization and Energy for North Rhine-Westphalia.

“Lidrotec’s success is a fine example of cooperation between the universities in North Rhine-Westphalia and gives a strong indication of the potential being unleashed by the Excellence Start-up Center initiative in particular’, comments Marius Rosenberg, director of the ESC at RWTH, who accompanied the team to Houston and who was also himself a RBPC winner in 2014 for his RWTH startup Adhesys Medical. “Lidrotec clearly demonstrates the transfer of an idea in science into a successful startup’, adds Marc Seelbach, head of the Transfer and Entrepreneurship department at RUB.

The team of Lidrotec founders can now look forward to further strong support from the USA and is planning a financing round with an overall volume of US$3.5 million over the course of 2022 to complete the development phase and to purchase the first machines.

- Marius Rosenberg
The European Research Council supports RWTH researchers in three lines of funding

The European Research Council (ERC) funds top-level researchers to pursue basic research and visionary projects. In recent months and weeks, RWTH researchers have again been considered with this prestigious grant in its three funding lines – the ERC Starting Grant for young researchers two to seven years after gaining their doctorate, the ERC Consolidator Grant for researchers of seven to 12 years after completing their doctorate, and the ERC Advanced Grant for outstanding, already established researchers.

**ERC Advanced Grants**

RWTH professors Martin Grohe and Heinz Pitsch have received funding from the European Research Council (ERC) in the form of Advanced Grants. Pitsch is the first researcher at RWTH who has been awarded an Advanced Grant for the second time. Both professors will now be funded for five years by the ERC with some 2.5 million euros for their research and the associated equipment required.

As head of the Institute for Combustion Technology at RWTH, Heinz Pitsch is focused primarily on researching renewable energy sources in the field of thermo-chemical energy conversion. A particular role is played here by hydrogen-based fuels, since these do not produce exhaust gases harmful to the climate and are good for both storage and transport of the energy produced from solar and wind-powered sources. Combustion offers major advantages for the use of hydrogen for energy purposes, but it simultaneously gives rise to challenges that the HYDROGENATE research project aims to examine, understand and put to use. This research represents an important contribution to the energy transition.

The research topics pursued by Professor Martin Grohe relate to algorithms and complexity, logic, database theory, graph theory and machine learning. The aim of his ERC project is to develop a comprehensive theory of graph similarity and to develop its applicability for practically relevant problems. Graphs are versatile models that represent complex data, from that of chemical molecules up to that of social interactions. In analyzing graph-based data, a fundamental task is to compare graphs and to measure their similarity in a semantically meaningful and algorithmically efficient manner. A central problem here is what is known as the graph isomorphism problem. This calls for an efficient algorithm that decides whether two graphs are structurally identical.

**ERC Consolidated Grants**

At an earlier stage in their work are Professor Laura De Laporte and Professor Rafael Kramann, who have been awarded Consolidator Grants. Consolidator Grants provide funding for scholars when they are consolidating their own research team or program, according to the ERC. To be eligible for funding, scholars must demonstrate the pioneering features, ambition, and feasibility of their proposal.

Chemist Laura De Laporte is a professor...
at the Advanced Materials for Biomedicine Teaching and Research Area at RWTH, Uniklinik RWTH Aachen, and DWI-Leibniz Institute for Interactive Materials. With her HEARTBEAT research project, De Laporte and her team aim to break with conventional methods of manufacturing 3D biomaterials by assembling and crosslinking a variety of unique preprogrammed, rod-shaped, and interactive microgels instead of molecular building blocks. The goal is to achieve macroporous, aligned, activatable and, if needed, degradable constructs after automatic mixing of different microgels and stem cells, which is not possible with conventional hydrogels. In HEARTBEAT, De Laporte focuses on using bottom-up interactive microgel assemblies to generate vascularized pieces of beating heart tissue at a millimeter scale.

Professor Rafael Kramann is head of the Institute of Experimental Internal Medicine and Systems Biology at RWTH and senior physician at the Clinic for Renal and Hypertensive Diseases, Rheumatological and Immunological Diseases at Uniklinik RWTH Aachen. The aim of the TargetCKD project is to use state-of-the-art methods to decode kidney diseases and develop both diagnostic and new treatment approaches. Chronic kidney failure affects over ten percent of the population in Europe, yet there are currently no reliable biomarkers that can predict disease progression or non-invasively diagnose specific kidney diseases. In addition, there are no suitable treatment options.

**ERC Starting Grants**

To qualify for ERC Starting Grants, applicants must demonstrate outstanding preliminary investigations and must submit the application no later than seven years after completion of their doctorate. Professor Michael Schaub, junior professor for computational network science in the Department of Computer Science, Dr. Christoph Kuppe, research group leader at the Institute of Experimental Internal Medicine and Systems Biology, and Dr. Yang Shi, research group leader at the Institute for Experimental Molecular Imaging, were successful with their applications and will now each receive up to 1.5 million euros for their continued research.

Complex networks are omnipresent in our world. From both theoretical and practical perspectives, much of Professor Michael Schaub’s research investigates the interplay between structure and dynamic processes that take place in a network. To this end, his research group combines data- and model-based methods from fields such as machine learning and dynamical systems theory. Schaub’s successful proposal “HIGH-HOPeS – Higher-Order Hodge Laplacians for Processing of Multiway Signals” aims to develop efficient methods to better understand relations between multiple nodes.

Kidney disease, especially when caused by diabetes mellitus, also known as diabetic nephropathy, is a growing problem for healthcare systems worldwide. In the project “Decoding Diabetic Kidney Disease – DECODE-DKD”, Dr. Christoph Kuppe and his team are investigating new pathophysiological principles to better understand the disease mechanisms of diabetic nephropathy. The aim is to use new patient-centered methods to develop new therapies. In a first step, a “map” of regulatory gene changes will be generated for each cell of the kidney to gain a better understanding of pathophysiological changes. In addition, these data will be used to better predict a patient’s disease course.

Immunotherapy has significantly advanced the treatment of cancer. However, cancer can only be fully cured in a fraction of patients. Since 2016, Dr. Yang Shi and his research group have focused on developing polymeric therapeutic systems to make cancer immunotherapy more effective for more people with the disease. With the BeatIT project, funded by the Starting Grant, Yang’s group will use novel polymer biomaterials from the nanoscale to the macroscale to enhance cancer immunotherapy. The project aims to gain a better understanding of how B cells – which are responsible for the formation of antibodies, can be modulated and used in cancer immunotherapy.

Dr. Yang Shi, Dr. Christoph Kuppe, and Professor Michael Schaub (left to right) received Starting Grants from the ERC.

— Thorsten Karbach
In January 1858, the insurance group Generali Deutschland, trading under the name “Aachener und Münchener Feuer-Versicherungs-Gesellschaft”, donated 5,000 thaler for the purpose of setting up a polytechnical institute in the Rhine Province of Prussia. This donation became the motivation for the subsequent founding of the University of Aachen. The “AachenMünchener” was in fact the first partner to RWTH, which began its teaching activity in 1870 as the Königliche Rheinisch-Westfälische Polytechnische Schule zu Aachen. The company supported Aachen’s new educational establishment in its founding year with a guarantee fund of 1.3 million marks and a sum for building costs to the tune of one million marks. RWTH and Generali have maintained a close partnership, rich in tradition, ever since.

With these investments, the insurance group not only made a substantial contribution towards the establishment of what is now a university of worldwide renown. The creation of RWTH a little over 150 years ago also provided a defining and indispensable institution for the Aachen region. Everybody in Aachen and far beyond benefited from it, as also did Generali Deutschland and many other companies and institutions in Aachen and worldwide.

The long-standing partnership between Generali and RWTH continues to this day to take the form of joint activities, among which the funding of teaching and research and also support to students feature prominently. Examples include the Dr. Carl Arthur Pastor Foundation and the Friedrich Wilhelm Foundation, both of which are funded by Generali Deutschland AG. With payments totaling more than 350,000 euros since 2015 and well over 300 scholarship recipients in this period, Generali is one of the main sources of grant aid to students at RWTH.

The close relationship can also be seen in the fact that many former RWTH students are today employees in Generali Deutschland companies and are among the higher performers there. All these close and long-standing links were also a decisive factor for the decision by Generali to act as the main sponsor for RWTH’s 150-year anniversary celebrations in 2020 and 2021.

**Social engagement and sustainability**

The promotion of knowledge and education – as demonstrated by the partnership with RWTH – is a part of the Generali tradition. The same applies for the company’s social engagement, on the principle that being a good corporate citizen is part of a strategic sustainability policy.

Sustainability and corporate responsibility should in fact form part of a company’s DNA. In the core business area the focus is on excellence and sustainability in business processes.

Currently we are living in a time of social change in which sustainability, ecological, and social challenges such as demographics and climate change are coming ever...
sharper into focus. The Generali Group has anchored sustainability firmly in its strategy and as a result is boosting its basis for reputation and trust. Sustainability means acting responsibly towards future generations – on the economic, ecological, and social levels.

For Generali, social engagement represents greater protection and improvements in people’s lives. It does not consider its engagement as some kind of philanthropic “extra” to its business, but rather as a part of its mission. An outstanding example is its initiative “The Human Safety Net”. The Human Safety Net is a global movement of people who help other people. Its objective is to unlock the potential of people living in vulnerable circumstances, so that they can transform the lives of their families and communities. The programs of The Human Safety Net support vulnerable families with small children and integrate refugees through work in their hosting community. For this purpose The Human Safety Net works with non-governmental organizations and the private sector in Europe, Asia, and South America. Here again, partnership manifests itself in a particular way. The network is open to cooperation with companies, businesses, and foundations that share its objectives.

In this context, the RWTH Innovation Entrepreneurship Center and the RWTH Collective Incubator were also involved in supporting 50 refugees with the know-how to become independent entrepreneurs and enabling the establishment of seven new businesses. This has been financed by the Carl Arthur Pastor Foundation of Generali Deutschland.

If one were to trace a line along the social engagement and partnership activities of Generali from the founding of RWTH in 1870 to today’s The Human Safety Net, many more funding initiatives would come to light. What is common to all of them is that the close, responsible, and long-term partnership between the insurer and the recipient is always central. Here the partnership with RWTH is exemplary: over its more than 150-year history, RWTH has achieved a high international reputation with the highest levels of specialist expertise. To support it in this, to further consolidate and extend this, was and remains the funding objective of Generali and demonstrates that social engagement, the promotion of knowledge and education, and investment in human potential create security, space, and quality of life for our society.

www.generali.de

> Jörg Linder

The Generali Group is one of the largest global insurance groups and asset managers. Founded in 1831, the Group has representations in 50 countries and in 2021 achieved premium revenues of 75.8 billion euros. With over 75,000 employees who support 67 million customers, the Group has a leading position in Europe and a growing presence in Asia and Latin America. Central to Generali’s strategy is its commitment to lifetime partnership with the customer, which is achieved by means of innovative, personalized solutions, first-class customer experiences and both person-to-person and digitalized sales capacities. The Group has sustainability integrated into all its strategic decisions in order to create value for all stakeholders and at the same time to contribute to building a fair and stable society.

Generali is one of the leading primary insurance groups in the German market, with income from contributions of 14.9 billion euro, some 10 million customers and 9,200 employees. The company is in a unique partnership with Germany’s largest independent financial consultancy, Deutsche Vermögensberatung, which acts as the exclusive outlet for Generali’s products. As a part of the international Generali Group, in Germany, Generali operates under the brand names Generali, CosmosDirekt, and Dialog in the life insurance, health insurance, and accident/indemnity insurance segments.
Demolition of bridge on Turmstrasse

Major construction site on Turmstrasse with far-reaching consequences for road users and RWTH members
The Turmstraße Bridge, as part of Bundesstraße 1a, has now been demolished, and a new bridge will be built. A replacement is expected to be in place by late 2023. According to an expert opinion and an economic feasibility study (carried out by the City of Aachen), it was, unfortunately, no longer possible to renovate the bridge erected in 1971. The resulting change in traffic flow is set to significantly affect RWTH Aachen University in many different ways – with consequences for motorists, public transportation users, cyclists, and pedestrians.

Since 2013, the condition of the Turmstraße bridge has steadily deteriorated, with the damage apparent in various different places. Among other factors, the concrete was defective on the external superstructure, on the base structures, and in the internal areas of the box girders. Problems of concrete spalling and efflorescence were starting to occur. It also became apparent that the curvature of the floor plate had not been correctly formed. There were damp patches, standing water in the box girders and a faulty water drainage system.

The Council’s mobility committee gave its consent to the recommendations of the city’s technical administration regarding the necessary traffic diversion in a meeting on February 17, 2022. Since May 2, 2022, Turmstraße has been fully closed in both directions between Professor-Pirlet-Straße and Claßenstraße. In addition, Geschwister-Scholl-Straße will remain completely closed from May 2 until June 30, 2022, and will, after this time, be reopened exclusively for pedestrian and bicycle traffic. Rail transport between Westbahnhof and Bahnhof Schanz has been interrupted for two weeks in May owing to the demolition works. Deutsche Bahn AG states that trains from Düsseldorf/Mönchengladbach towards Aachen will terminate at Herzogenrath. Rail replacement buses will be provided from there to Aachen. All building operations are scheduled to be completed in December 2023.

**Major disruption to traffic flow**
The City has planned for traffic to be routed around the construction site. For Alleenring, the immediate bypass goes via Claßenstraße, Seffenter Weg, Mies-van-der-Rohe-Straße, and Professor-Pirlet-Straße and is signposted in both directions. Templergraben is initially not part of the traffic rerouting concept and thus remains closed as part of the Living Lab project. It is possible that it will be opened at a later stage.

Traffic will be adversely affected. Also, building access will be limited at times, and you should plan extra time to move between buildings on campus or travel to RWTH – on foot, by bike, by car, or by public transportation. RWTH is not involved in this construction project but is in close contact with the City of Aachen to keep these restrictions as low as possible and communicate them quickly and transparently.

The old bridge had a width of 19.9 meters. The future bridge will be widened to 22.2 meters. This change will mostly affect the pedestrian walkways. The walkway towards Schanz will be widened to 2.5 meters and that towards Ponttor will be widened from its current 2.2 meters to 3.5 meters. The former box girder bridge will be replaced by a steel composite bridge. Among other factors, this method will allow rapid construction progress. Prefabricated slabs will be mounted onto steel supports, and finally a concrete supplement will be added. The overall building operation is scheduled to be completed in December 2023.

The City of Aachen has created a website providing up-to-date information on the project. The City of Aachen will also answer questions before and during the construction works via the following dedicated email address: turmstrasse-stadtbetrieb@mail.aachen.de.

[https://www.aachen.de/DE/stadt_buerger/verkehr_strasse/strassenplanung_bau/turmstrasse/](https://www.aachen.de/DE/stadt_buerger/verkehr_strasse/strassenplanung_bau/turmstrasse/)

[https://www.rwth-aachen.de/go/id/tjuum](https://www.rwth-aachen.de/go/id/tjuum)

Image left:
The demolition and rebuilding of the Turmstraße bridge as part of Bundesstraße 1a will result in many restrictions to all traffic in the central area of RWTH until late 2023.
How hydrogen is moving the region
The Hydrogen Hub Aachen gets into gear

The Düren, Euskirchen, and Heinsberg districts plus Aachen city and its wider conurbation combine forces on the matter of hydrogen. Supported by the Chamber of Industry and Commerce (IHK) for Aachen, the shared Hydrogen Hub Aachen network has been initiated. “We want to make our region a pioneer in the hydrogen industry’, says Michael F. Bayer, managing director of IHK Aachen. “The conditions for doing this are ideal – there are brilliant minds here who make hydrogen usable as an energy source. Innovative industrial companies are working on bringing hydrogen-based applications and products to market. The Hydrogen Hub Aachen aims to create jobs and generate job opportunities and boost value creation in this futuristic sector.”

The background: At both national and European levels, the use of hydrogen technology is expected to be a central pillar of the energy transition. The initiators of the Hydrogen Hub Aachen – the mayor of Aachen, Sibylle Keupen, city region council member Dr. Tim Grüttemeier, district commissioners Wolfgang Speltthahn (Düren), Stephan Pusch (Heinsberg), and Markus Ramers (Euskirchen) and IHK managing director Michael F. Bayer – are certain that hydrogen as an energy source is an important element for structural change.

Network of partners from business and science
To coordinate the activities, the Hydrogen Hub Aachen is supported by a joint project office, located on the premises of IHK Aachen. Since the Hydrogen Hub was launched, it has succeeded in building a partner network of more than 300 players in the business and scientific sectors.

A first milestone that has already been reached: The Federal Ministry for Digital and Transport (BMVI) is supporting the initiative by creating an overall concept for the hydrogen economy in the region with a grant of up to 400,000 euros. This was preceded by the competition “HyLand – Hydrogen regions in Germany” organized by the Federal Ministry for Digital and Transport (BMVI), in which the Hydrogen Hub Aachen reached the second round. Solutions for a successful energy and mobility transition will come from the Aachen region; this was the key message of representatives from business, policy-making and society who were present for the “Hydrogen mobility in the Aachen border region” event organized by the Hydrogen Hub Aachen in Jülich. During the event, Pedro Guedes de Campos, deputy director of the Clean Hydrogen Joint Undertaking, gave a presentation of the European Union’s hydrogen strategy. Next, Dr. Martin Robinus from umlaut SE in Aachen, Anne Schüssler representing the district of Düren and Armin Offermann from Toyota and others demonstrated how hydrogen can be used efficiently and practically in the mobility sector, for example in fuel cells. Examples shown included vehicles with emissions-free drive systems.

The event was a great success, as could also be gleaned from the statements of the protagonists: Dr. Tim Grüttemeier, Aachen city region council member, said: “21,000 people work in energy-intensive industries in the Aachen economic area. To maintain these jobs for the long term and to remain attractive as a location for industry, we as the Aachen region are setting out to become the model region for generating, storing, and distributing sustainable green energy. This demands courage, as has been demonstrated by the Saint Gobain company in Herzogenrath. In the first climate-neutral glass production facility in Europe, the use of hydrogen should allow 100,000 tonnes of CO₂ to be saved each year in future. Normally, to compensate for emissions this large, some 8 million trees would have to be planted.”

Stephan Pusch, district commissioner for Heinsberg, emphasized: “The importance of hydrogen technology for sustainable energy production in the future is exceptionally high. I am therefore delighted that we have such strongly-positioned medium-sized enterprises here in the Heinsberg district that have come together in this consortium and in effect can cover the entire hydrogen value creation chain.”

Achim Blindert, representing structural and business development in the Euskirchen district, said: “With the Hydrogen Hub we positioned ourselves last year in the hydrogen sector. The event in Jülich, with such a full and prestigious program, shows that we are now becoming well recognized as a regional network. Hydrogen mobility in public transport and commercial transport will form a central element of our public transportation strategy in the coming years.”

Anne Schüssler, head of the district development and mobility section of the Düren district, stressed: “By converting all our road and rail-based public transport to hydrogen power, we want to make the use of hydrogen technology visible while making a significant contribution to CO₂ reduction.”
Sibylle Keupen, mayor of the City of Aachen, said: “Aachen has already established itself throughout Germany as a research hotspot for hydrogen. We owe this to the outstanding researchers who have joined forces here, including as part of the Clusters4Future Hydrogen. And now, as municipalities of the Hydrogen Hub, we are urged to move forward bravely, setting an example, in becoming an application hotspot and in implementing the solutions right here. As the City of Aachen we are already engaged, actively converting the urban mobility and promoting hydrogen production in the urban area. Additionally we would like to engage in the hydrogen theme in cooperation with our neighboring countries in the “EMR (Meuse-Rhine Euroregion) Hydrogen Booster” project.’

“Green hydrogen in the Meuse-Rhine Euroregion
The keyword is Euroregion. In an alliance of nine German, Dutch, and Belgian partners, the Aachen Chamber for Industry and Commerce (IHK) is accelerating the development of green hydrogen in the Meuse-Rhine Euroregion. Using the designation “EMR H₂ Booster” the initiators have set themselves the objective of establishing a sustainable hydrogen economy together with businesses located in the border triangle region.

The hydrogen initiative is devoted to a number of tasks. One of these is to create an online platform in which the research and development activities and the competences of the various companies in the hydrogen economy can be displayed, among other information. These companies should be networked to enable hydrogen projects and applications to be progressed. The network is open for companies that wish to engage in the hydrogen sector but are still at an early stage of development. In this way a strong, innovative and competitive hydrogen economy is expected to form in the Meuse-Rhine Euroregion.

“Hydrogen offers an immense potential for our regional businesses. Companies can make their products increasingly CO₂-neu-
The following have joined to form the Hydrogen Hub Aachen and wish to jointly promote the theme of hydrogen in the region: Dr. Tim Grütemeier (Aachen city region council member), Dr. Stephan Kranz (director, Saint-Gobain Glass in Germany, Herzogenrath), Stefanie Peters (managing director, Neuman & Esser Group, Übach-Palenberg, and member of the National Hydrogen Council of the German Government), Wolfgang Spelthahn (district commissioner for the Düren district), Sibylle Keupen (mayor of the City of Aachen), Markus Ramers (district commissioner for the Euskirchen district), Michael F. Bayer (managing director IHK Aachen), Stephan Pusch (district commissioner for Heinsberg district), Georg Schmiedel (director, F&S solar concept GmbH, Euskirchen), and Prof. Dr. Ing. Stefan Pischinger (director, Institute for Thermodynamics and head of the Chair for Internal Combustion Machines at RWTH, director of the FEV Group GmbH and spokesman for the “Clusters4Future Hydrogen,” Aachen).

“Hydrogen offers our regional companies an immense potential: companies can make their products increasingly CO₂-neutrally and at the same time generate more sustainable value creation locally.’

From the viewpoint of IHK Aachen, the establishment of a sustainable hydrogen economy is of key importance so that we can master the structural transformation and the associated energy transformation. Additionally, it offers the possibility for us to become independent of Russian natural gas in the medium term.

The hydrogen initiative now started is complementary to the activities of the Hydrogen Hub Aachen at the Euroregion level. “EMR H₂ Booster” is financed with funding from the European Interreg program for the Meuse-Rhine Euroregion, the North Rhine-Westphalia federal region, and regional governments, including those of the Dutch provinces of Limburg and Nordbrabant, the Dutch Ministry of Economic Affairs and Climate Policy, and the Government of Wallonia.

https://hydrogenhubaachen.de

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