What is it that makes an apple a healthy snack? What makes a nursing robot the ultimate caregiver? And what makes a passenger capsule a trustworthy means of transportation? Today’s engineers are considering people’s needs and the benefits for society as early as the development stage of their innovations. In this issue, you can find out why this is so important.

At the Round Table on the topic, TUM President Thomas F. Hofmann discussed with four TUM Alumni how responsibility can be instilled in young engineers. Additionally, we will introduce you to a TUM team that is developing a transport pod that travels at just under the speed of sound. In the second part of the issue, you will find, as usual, TUM events to which we would like to extend a warm welcome to you as alumni.

We look forward to catching up with you and wish you an inspiring read.
As many events had to be postponed or cancelled at short notice due to the coronavirus pandemic, this KontakTUM issue does not provide an index of events and offers. Updated information can always be found here:

Alumni & Career events and online services: www.community.tum.de/en/events

TUM calendar of events: www.tum.de/en/about-tum/news/events

University operations at TUM during the pandemic: www.tum.de/en/about-tum/news/coronavirus

CONTENTS

03 Editorial
KontakTUM editors Sabrina Eisele and Verena Schmöller on the responsibility of engineers

06 KontakTUM Round Table
The President discusses with four experts what an engineer of the future ought to bring to the table.

20 At a Glance
How TUM implements responsibility across disciplines

30 Students Changing the World
In the Hyperloop program, students, doctoral candidates and researchers are developing the transportation system of the future.

36 KontakTUM Program

38 Learning From Each Other
The TUM Network promotes a lively exchange between disciplines and generations – get involved!

44 Successful Doctorate
TUM supports doctoral students on their way to both research and industry careers – benefit from the experience of successful TUM Alumni

48 Internationally Connected
TUM is collaborating with universities all around the world – you too can expand your international network!

52 Women of TUM
The Women of TUM Network connects, encourages and creates space for the exchange of experiences – let them inspire you!

56 Dialogues
TUM considers itself a trading hub of knowledge and a servant to society – lifelong learning with TUM!

64 Alumni Ticker

66 Imprint

in English and German www.community.tum.de/en/kontaktum

KontakTUM online
HOSTED BY TUM PRESIDENT THOMAS F. HOFMANN

THE KONTAKTUM ROUND TABLE

Engineers are shaping the future
The Round Table is set for the beginning of March 2021. The COVID-19 pandemic and its restrictions still have a firm grip on Germany. By now, we have all become used to all the rescheduling and spontaneous decision-making. Therefore, it comes as no surprise to any of the participants that in the end our meeting has to take place online. TUM President Thomas F. Hofmann is the first to login.

Good afternoon Mr. President, nice to have you here. Where have you just been?

Prof. Dr. Thomas F. Hofmann: In another Zoom meeting (laughs). At the moment, one online meeting is chasing the next. The digital daily schedule is intense and exhausting. I miss the personal exchange face to face. That’s why it was nice to see my Vice Presidents in person again recently. In the process, we realized that for weeks we had only been exchanging information digitally.

For the Round Table on Engineers for the Future, TUM President Thomas F. Hofmann invited four alumni who are deeply involved with this issue on a daily basis – whether it is as a globally recognized researcher in Robotics, as an entrepreneur, as President of VDI – The Association of German Engineers, or as a doctoral student in the Hyperloop research program. They talk about how they personally experience social responsibility as engineers, how creative thinking can be promoted and why diversity plays a key role here.

A n ultra-fast transport pod that nobody wants to get into. A power plant whose electricity nobody buys. A robot nurse that nobody trusts. Nowadays, our engineers are able to develop the most exciting of innovations, but if no one wants them, they are pretty much useless. That is why it is important to think about whether or not – and how – each new technology can be introduced in a socially acceptable way.

During your inaugural speech in October 2019, you emphasized the importance you place on engaging directly with all university members.

Hofmann: Yes, that is something I now really miss. But I’m trying to cover a lot digitally – for example, by holding the TUM Presidential Student Lunch as a virtual event. This is a format in which I meet with our students at lunchtime to discuss their individual visions for the future and their expectations of “their TUM”. Or a meeting like this one, at which I get together with our alumni. This is a source of inspiration, new strength and motivation for me, and is very important to me personally.

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In the development process, you are working closely with the future users. What does that look like exactly?

Haddadin: Pretty straightforward. We let them interact with the robot. In the beginning, the seniors often approach it with a rather negative attitude, but once they have interacted with the robot assistant for a while, it clicks and we get very good feedback from them. They tell us what they like, what they don’t like so much; and which of their problems we developers may not have thought of at all. As a result, we know exactly what our next step needs to be. In the process, we have gained much more than we initially had expected.

Why is this exchange so important for you?

Hofmann: It is the people who make our university successful. This applies to university management just as much as to research, teaching and innovation at TUM. And we have now incorporated this into our mission statement. In line with our missions Responsible Research and Innovation, our research and innovation processes are aligned with the values, needs and expectations of society. We don’t develop innovations just for the sake of technology, but for the benefit of the people and their environment. Human-Centered Engineering is therefore our guiding principle.

How does this impact on the education of engineers in practical terms?

Hofmann: On the way to becoming resourceful engineers, our students will of course still need in-depth specialist knowledge, but they will increasingly need to combine their expertise with that of other disciplines. That’s why we are designing our teaching in a way that allows students to explore how their subject might interact with other disciplines, and to take advantage of exciting opportunities at the interfaces with, for example, Informatics and Medicine.

Professor Dr. Sami Haddadin is joining us. The alumni is one of the world’s leading experts in Robotics and Director of the Munich School of Robotics and Machine Intelligence at TUM, and holds the Chair of Robotics and System Intelligence.

Hofmann: Good afternoon, Professor Haddadin. We were just talking about research at the interface of disciplines. You are currently developing a robot assistant for the elderly, which is also able to perform ultrasounds, for example.

Prof. Dr. Sami Haddadin: Yes, its name is GARMI, it has two arms and can assist elderly people in their everyday activities. It uses artificial senses to learn, for example, how to help them stand up, make meals or clear the table. Also, doctors can communicate with it, connect via video call, make a remote diagnosis and even carry out sensitive rehabilitation interventions using Teletouch.

Prior to that, he held various positions as a research associate at DLR. Prof. Haddadin is the founder of Franka Emika GmbH. During his time as a DLR employee, he played a key role in the development of the lightweight robot technology, which became the KUKA LBR iiwa in the technology transfer. He has published more than 200 scientific articles in international journals and conferences. He has received numerous awards for his scientific work, including the German Future Prize of the President of Germany (2017) and the Leibniz Prize (2019) – Germany’s most prestigious research funding award.
How do you train your research team in order for them to handle this multifaceted input?

Haddadin: The starting point of our innovations is a shared vision, which is the first thing we develop. We use tangible visual storyboards, which we create with the stakeholders, to try to show by way of examples what the benefits of a development will be in the end. When it comes to the actual implementation of the project, we then first need hard-core technical input and progress. This means we need robot developers, electrical engineers, informatics experts, AI experts and programmers. After that, the non-technical specifications come in: Early on and again and again, the vision is calibrated with the future users. In Geriatronics, we also often work with design prototypes to do this, or even more unconventional methods, such as trying out and testing human-robot interaction in scenarios with people and people in cardboard robot costumes.

Putting engineers in cardboard boxes: isn’t that taking things a bit too far?

Haddadin: Perhaps we should first take a step back and look at what an engineer actually is. The term derives from the Latin ingenium, which means creative talent or the ability to invent something meaningful. In my understanding, engineers are the ones shaping the future. And here I include computer scientists, so all scientists involved in developing technology. After all, it’s not as if someone shows up with an idea of what the future should look like, and then we engineers simply make it happen. On the contrary, we are the ones who influence this future, and so in order to be able to do this in the most positive sense of all and for the benefit of people, we need a broad education that includes technical content as well as, for example, philosophical-ethical content.

A philosophical engineer?

Hadjri: Why not? If we are to secure our future as a center of innovation in Germany, it is not enough to tread the well-trodden paths of recent decades over and over again. In the future, engineers will need sociopolitical intuition as well as the ability to invent something meaningful. In my understanding, we need hard-core technical input and progress. This means we need robot developers, electrical engineers, informatics experts, AI experts and programmers. After that, the non-technical specifications come in: Early on and again and again, the vision is calibrated with the future users. In Geriatronics, we also often work with design prototypes to do this, or even more unconventional methods, such as trying out and testing human-robot interaction in scenarios with people and people in cardboard robot costumes.

What exactly would this entail at TUM?

Hadjri: For example: We will replace some of the numerous classroom formats with team projects in which students from different disciplines work together on technological challenges. However, these will not only include their own community of engineers and natural scientists, but will also integrate other disciplines, such as the Humanities and Social Sciences. After all, ethical implications can be better understood by looking at actual research objects in interdisciplinary teams than in theoretical lectures.

Sofía Ramírez is joining the online discussion from Costa Rica. She is visiting family in her home country. The doctoral student is conducting research in TUM’s Hyperloop project: This transport system involves a high-speed train traveling just under the speed of sound in partially evacuated tubes. Sofía Ramírez is in charge of developing the passenger cabin.

Ms. Ramírez, the President has just reported how important team projects are when it comes to training engineers. How did you experience collaboration in the Hyperloop team?

Ramírez: Our team is the bedrock of our success. Four times in a row, we have built the world’s fastest pod and were able to claim victory in the international competition in California. Before the project, I wouldn’t have guessed what is possible – even within a limited period of time – if everyone pulls together. We love the project and give everything. Let’s not forget, it’s also a lot of fun. Meanwhile, what was once a student project has become a real research program funded by Hightech Agenda Bayern.

The project team is very interdisciplinary in nature.

Ramírez: Our 85 members are from 29 different countries and a wide range of faculties. We have computer scientists, physicists, electrical engineers, mechanical engineers, people from Business Administration and we need all this expertise to build our pod. We need hardware, software, electronics, mechanical engineering. Add to that the people who support us to run the business. All the events, the sponsorship and so on.

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Catharina van Delden is CEO and founder of innosabi, one of the leading providers of software for Agile Innovation. In 2020, she received the TUM Entrepreneur of Excellence award from TUM President Thomas F. Hofmann. The award honors significant and committed entrepreneurs who serve as role models.

Catharina van Delden: I can only agree to how important an interdisciplinary team can be for a business. My three co-founders and I are all from different faculties, even though we are all from TUM. We have four very different personalities, different perspectives, contrasting approaches. That was often challenging, but today I would say that this interdisciplinarity was the cornerstone of our success.

How so?
van Delden: For any kind of innovation and unconventional thinking, it is pivotal to be willing to look beyond your own nose, to be open, to make space for new things and to remain curious. Only then can we be truly visionary. I personally get the best ideas when interacting with other people. I love meeting new people, getting to know other people’s perspectives and different ways of life. This helps me to develop my own new ideas. In the same way, our software is helping companies to look beyond their own walls and find people in their environment with whom they have not previously had a business relationship when developing their products and services.

You are supporting companies in incorporating user opinions into product development at an early stage. Why is that important?
van Delden: A product has to be technically flawless, but above all it should be tailored to the user. If it doesn’t match, people won’t buy it. That’s how the market works. That’s why you need a holistic approach when developing new products, one that doesn’t only consider the technical aspects. You should be asking yourself the question: Why am I doing what I’m doing? For whom am I developing this product?

Hofmann: We are trying to implement something similar in research. In the future, we will need formats along the lines of an expanded process of co-creation. This means integrating the expertise of people outside our university – including that of our alumni – directly into the design process of new technologies, for example, to make them more intuitive and easier to use. This is an outstanding opportunity to let the public participate in processes of innovation. Furthermore, we already have numerous formats for dialogue at TUM that aim to bring scientific research into discourse with society. These events are held, for example, at the TUM Institute for Advanced Study or the Munich Center for Technology in Society.

Our fifth guest is Dr. Volker Kefer. The TUM Alumni holds a doctorate in Mechanical Engineering and has been President of VDI – Association of German Engineers since 2019. Previously, he served as a member of the Board of Management at Deutsche Bahn for several years.

Hello, Dr. Kefer. We were just talking to Ms. van Delden about the fact that a product is actually only any good if it meets someone’s need. What do you think that means with regard to the skills of an engineer?
Dr. Kefer: I believe that the technical content of an engineer’s education is key and extremely important. He or she simply has to know what they are doing. Beyond that, however, I see a few additional requirements for engineers that have become much more important recently. I’m talking about a whole range of skills that are necessary to perform certain jobs. For example, jobs that require convincing people, communicating on a large scale, or participating in decision-making processes.

Could you give us an example?
Kefer: I believe that engineers, i.e. people with a technical education, should be on the management boards of large or important companies. But they will only be able to do this job properly if they have an understanding of how to run large companies. In other words, leadership, the communication involved and the ability to develop sound decision-making within a team are just as important as personal integrity, the ability to work under pressure, dealing with stress and so on.

And outside the executive level?
Kefer: If you intend to be a member of any social, public or political body today, you need a lot more than knowledge of technology, because otherwise you won’t be heard. In this context, I always remember the saying: “Not everything that is technically possible is worth striving for or socially desirable.” There are some projects that forced us to realize that social and political acceptance are indeed strong influencing factors. An example here is nuclear power. Society’s rejection of nuclear power and the commitment of engineers have led to the emergence of many alternative approaches to generating power. Time will tell whether these will prevail. In any case, we must ensure that the public is involved in the discussion as early as possible. Only then can we truly be visionary.”
DR. VOLKER KEFER

Volker Kefer is the President of VDI – The Association of German Engineers. From 1975 to 1977, he studied Electrical Engineering at Technical University of Erlangen, then went on to study Mechanical Engineering at TUM. Following his diploma in Engineering, he began his professional career as a design engineer at Siemens in Erlangen. In 1989, he earned his doctorate as part of a research project at the Institute for Thermal Power Plants at TUM. Until 2006, Volker Kefer worked for Siemens AG in Erlangen in various management positions in Germany and abroad. Most recently as Division Manager for Sales, Engineering, and Manufacturing of Regional Rail Vehicles worldwide. From 2006 to 2016, he worked for Deutsche Bahn AG, including as Group Board Member for Infrastructure, Services and Technology from 2013 to 2016 and additionally as Deputy Chairman of the Management Board of DB AG from 2015 onwards. Many remember him as a formative figure in the large-scale project Stuttgart 21, in which he was involved in the conciliation talks. Volker Kefer has been President of VDI since 2019. About a year after leaving DB, he started to support young entrepreneurs. Since 2018, he has been mentoring, among others, the TUM start-up KONUX founded by TUM Alumni and CEO Andreas Kunze.

Haddadin: This is true. When I was a student at the Center for Digital Technology and Management, we had seminars on presentation technique. Our lecturer gave us a topic that was not part of our field of study and asked us to give a short ad hoc presentation on it. I had been given an offhoring topic and, as a technologist, of course had no idea. I thought very carefully about what I wanted to say, but to be honest felt that I was superficial and that a lot of half-knowledge was involved. However, after the presentation and to my great incomprehension, the course instructor said to me, “Dear Sami, when you speak, we all feel like fools in comparison.” I found that very hard to believe, because I perceived myself to be utterly uninformed. At the same time, I realized that I obviously had to work on my way of communicating. In the meantime, I have to and am also lucky to have many opportunities to communicate a lot, but it’s still not easy for me. I often try to get feedback from my children and my wife beforehand on whether what I am saying can be understood.

Ms. Ramirez, have you experienced challenges like this too when presenting the Hyperloop project to the public?

Ramírez: It is completely new technology and there is indeed some apprehension. Many people think that humans cannot tolerate the speed. There is this anecdote that in the past people were warned against traveling by train because it was believed that the rapid movements would cause mental unrest in passengers. At that time, the speed was 60 kilometers per hour at best. The TUM Hyperloop does more than 460 kilometers per hour (laughs). We actually have to deal with the fact that we as engineers ourselves don’t yet know everything about the implications of the technology. That’s why it’s only natural for us to look at aspects of feasibility, sustainability, cost-effectiveness and, of course, health compatibility as early as in the development stage. If we make this clear, we are able to meet most people where they are.

How was it that TUM’s Hyperloop project was so successful? After all, numerous teams from all over the world have participated in the competitions.

Ramírez: We benefited tremendously from the knowledge that was available at TUM and had massive support from professors and industry partners. But I think that our freedom in the development stage was also a particularly crucial factor. Nobody told us what to do. We always had the freedom to decide for ourselves. A lot of things we didn’t know, a lot of things were new to us, but we always had this freedom to try everything ourselves. That was pretty nice and gave us self-confidence in our own abilities.

Do you think there should be more freedom like this for students at the university?

Ramírez: Comparing TUM with other universities, for example, in the U.S., we’re doing pretty well. Universities in the U.S. are very expensive and students can’t afford to take a semester off and devote themselves fully to
a student project, like we did. But what would be even better, would be if the project was recognized as course credit. Then no one would have to take a semester off. But it was definitely worth it. I would recommend every one to have this experience.

Haddadin: I would support recognizing such projects as course work. We are now setting up a new international master’s program in Robotics and Artificial Intelligence, which will be largely project-based. Let me illustrate this by using the Cybathlon as an example. This is a competition for people wearing prostheses who, supported by state-of-the-art technical assistance systems, compete against each other in solving everyday tasks. Project teams are challenged to develop their own completely novel prostheses and equip the competitors. This is relatively complex and also costs a lot of money. We have now decided to cover those costs so that our students have the opportunity to participate. And we have made it possible at TUM for the project to be officially recognized as course work.

Ramírez: That is so cool.

Haddadin: I know, right? (laughs).

van Delden: I have to say that I have always found TUM to be very progressive in this regard – especially when it came to the development of our business idea and the support we received during the start-up process. We got a lot of practical help in setting up our company, but the most important thing for me was that we had the freedom to develop our ideas and continuously received positive encouragement. When I started studying, I didn’t have any intention of starting a business, but at TUM I was shown that entrepreneurship was a realistic path to take.

Hofmann: This is a core aspect of the entire topic we have been discussing today. We need to encourage our young talent to go their own way and implement their individual visions. As a university, we can and should lend them a helping hand. We can do this by encouraging free thinking across disciplinary divides and by not just letting students memorize what’s in the standard textbooks. We need to point out where there are exciting interfaces between disciplines. And we need to take away their fear of failure and also encourage them, for example, to start their own business if that’s where their path takes them. I believe that this kind of promoting creativity, new ways of thinking, and entrepreneurial spirit, is a key element of the ability to innovate.

We would like to thank you very much for the interesting conversation.

The online meeting is over. One by one, the participants say goodbye to the panel.

DIn the wake of the meeting, the fascinating discussion and the wide range of opinions stimulate further reflection. The participants agreed on how important it is for them personally to take social responsibility and that technology should not be developed just for its own sake. TUM is taking a forward-looking approach to this issue. Many new projects will be launched in the coming months and weeks. TUM wants to transcend boundaries – between disciplines as well as between science and society.

Hofmann has been President of the Technical University of Munich since October 2019. The food chemist studied Food Chemistry at Friedrich-Alexander Universität Erlangen-Nürnberg and received his doctorate in 1995 from the TUM Chair of Food Chemistry under Professor Peter Schieberle. In 1998 he completed his habilitation at the same department. Until 2002, he taught as a private lecturer in Food Chemistry at TUM and was also Assistant Director of the German Research Center for Food Chemistry. From 2002 to 2006, he was Professor and Managing Director of the Institute for Food Chemistry at Münster University, before being called back to TUM by President Emeritus Wolfgang A. Herrmann. From 2007 on, he held the Chair of Food Chemistry and Molecular Sensory Science at TUM at the Wissenschaftszentrum Weihenstephan (now TUM School of Life Sciences). There he also headed the Bioanalytics unit of ZIEL – Institute for Food & Health until 2014. Between 2017 and 2019, he was Director of the Leibniz-Institute for Food Systems Biology at TUM. From 2009 to 2019, Thomas F. Hofmann was TUM’s Executive Vice President for Research and Innovation.
This is how TUM implements responsibility

Autonomous driving systems, sustainable solutions for urban energy and robots that support us in our everyday lives: At TUM, research on important issues of the future is being conducted at all levels. People, with their thoughts and behaviors, always take center stage here.

Find out more about TUM’s Mission Statement in the latest brochure at mediatum.ub.tum.de/1584084
Rethinking Research

How do pedestrians behave when it comes to autonomous vehicles? How should a nursing robot be designed in order for people to appreciate it as a caregiver? Nowadays, there are many questions that can no longer be answered by just one field of research. This is why TUM is relying on strong interdisciplinary cooperation. The TUM.Mobility platform with more than 40 professors conducting research on sustainable mobility, for example, pools the university’s expertise in the field of Mobility. TUM’s great strength here is the close collaboration among disciplines from Engineering, Natural Sciences, Economics and Social Sciences.

**EXAMPLE 1**
**Robotics – Ethically Appropriate**

The use of innovations such as surgical and nursing robots will be accompanied by a large number of ethical, social, political and legal challenges. These need to be addressed early in the research and development processes. The Responsible Robotics project led by TUM Professor Dr. Klaus Bengler’s Chair of Ergonomics. The project is dedicated to investigate interdisciplinary methods that allow for the users of such vehicles interact with them and utilize them in their everyday lives. This is what the EU project SHAPE-IT is dedicated to investigate. A total of fifteen doctoral students in Engineering, Natural Sciences, Economics and Social Sciences.

**EXAMPLE 2**
**Enabling Autonomous Driving**

Vehicle automation has been identified as a game-changer in transportation, promising to significantly reduce traffic fatalities while improving mobility. To achieve this goal, it is vital to understand how the users of such vehicles interact with them and utilize them in their everyday lives. This is what the EU project SHAPE-IT is dedicated to investigate. A total of fifteen doctoral students in Engineering, Natural Sciences, Economics and Social Sciences.

**EXAMPLE 3**
**Lighthouse Research Initiative Geriatronics**

The trailblazing initiative Geriatronics, under the leadership of TUM Professor Dr. Sami Haddadin, is based at the Munich School of Robotics and Machine Intelligence (MSRM). The MSRM scientists have developed a two-armed robotic assistant called GARMI to help elderly people in everyday situations. Its tasks range from communicating with relatives to clearing the table. Furthermore, doctors can perform examinations and make diagnoses remotely using GARMI. But GARMI is also designed to relieve caregivers by taking over tedious tasks, thereby leaving more time for the carers to have human interaction with those they care for. This will enable seniors to live a more self-determined life within their own homes.

**A FUTURE-ORIENTED MODEL FOR SUSTAINABLE MOBILITY**

“Mobility is a paramount factor for the prosperity, quality of life and sustainability of our society,” says Prof. Dr. Sebastian Pfotenhauer, Co-Director of the Munich Center for Technology in Society (MCTS) at TUM. “Right now, we are facing tremendous challenges here, such as overburdened infrastructures, climate change, urbanization and, last but not least, social justice.” At the same time, technologies such as high-performance electric drive systems and the advancement of Artificial Intelligence, complemented by new digital business models such as Mobility-as-a-Service and ride-sharing, are profoundly changing the mobility sector. New forms of mobility, however, need to be integrated into existing infrastructures and into the design of livable spaces.

**Much More Than Just Technological Developments**

The Munich Cluster for the Future of Mobility in Metropolitan Regions (M Cube), under the leadership of TUM, will pursue this goal. It will be launched in October 2021 and will receive up to 45 million euros in funding over a nine-year period. The regional network brings together an interdisciplinary research team and partners from business and society to work on solutions to the major challenges facing the mobility sector. “We cover a broad spectrum of players – from NGOs and the City of Munich to high-tech start-ups and three DAX-listed companies. Our approach therefore covers much more than just technological developments,” Sebastian Pfotenhauer, one of the heads of the M Cube strategy team, says.
TUM has made it its mission to educate its students in such a way that they are equipped to apply their skills in the best possible way in future fields relevant to society. To this end, the degree programs are designed to include opportunities and prompts for interdisciplinary teaching and research. TUM also attaches great importance to innovative and compelling teaching concepts. In 2020, it was awarded the Genius Loci Award for Excellence in Teaching. TUM impressed the jury in particular with a well-structured teaching concept and the corresponding practical measures.

EXAMPLE 1
Interdisciplinary Degree Programs

Interdisciplinary degree programs at TUM combine several subjects in order to study, for example, sustainable technologies or the relationship of technology and the Natural Sciences to society. The master’s program Responsibility in Science, Engineering and Technology, for instance, inquires how social, ethical and environmental consequences of scientific and technological change can be regulated or how expert knowledge and technological development could be democratized. Graduates of the master’s program in Renewable Resources are not only familiar with the central aspects of the value-added process of renewable resources, but also acquire knowledge of consumer behavior and the political and economic framework, to name just a few.

EXAMPLE 2
Interdisciplinary Project X

The module Interdisciplinary Project X of the TUM Chair of Ergonomics offers a new format bringing together students from different disciplines in interdisciplinary project teams. The open scope of the task, the human-centered way of working, and the individual skill sets of the team members result in a wide variety of solutions: a product service system that supports real board games with participants in different locations, a mobile doctor’s office with contact-free diagnostic possibilities, a transparent air filter mask, all the way to a visual and acoustic distance meter for customers in retail stores – all solutions for acute social problems that were designed, constructed, and evaluated by students in close exchange with the users and by using creative methods.

EXAMPLE 3
Module Course of Philosophy

What do we want the relationship between man and machine to look like? What is a fair economic order? What are the ethical limits of Medicine? Whoever is attending university today will sooner or later also have to deal with the ethical dimensions of their actions. As of winter semester 2019, TUM students can attend courses offered by the Munich School of Philosophy (HFPH). TUM students are free to choose from the range of topics offered by HFPH – ranging from basic introductions to the big questions of human existence to concrete ethical problems in their field of study. The volume of module courses can also be chosen flexibly, starting with a lecture and ending with the supplementary academic certificate “Philosophicum”.

“Breaking down the historical departmental structure is tantamount to a revolution in the German university system. Together the TUM Family is now setting out on an exciting journey into the future.”

TUM President Thomas F. Hofmann
TUM is one of the most successful start-up universities in Europe and in this way wants to contribute to bringing innovations to society – especially those that sustainably improve people’s lives and coexistence. To this end, TUM is supporting start-ups primarily in four future-oriented fields: Information and Communication Technology, Medical Engineering, Cleantech and Life Sciences. They offer added value for society and potential for economic growth.

**EXAMPLE 1**

**Robots for Scaffolding**

TUM Alumni Leonidas Pozikidis and Artem Kuchukov (both Master Advanced Construction and Building Technology 2017) have successfully launched their start-up KEWAZO. Developed by the co-founders in collaboration with TUM Alumni Sebastian Weitzel (Master Informatics 2017), Ekaterina Grib (Master Consumer Affairs 2017), Eirini Psalidou (Master Informatics 2017) and Alimzhan Rakhmatulin (Master ESPACE 2018), the intelligent robotic system improves work on construction sites and in industrial facilities. In scaffolding, transporting materials with their robotic elevators saves up to 44 percent of labor costs and improves the safety of construction sites.

**EXAMPLE 2**

**Surgical Navigation System**

Stella Medical has developed a surgical navigation system for spine stabilization operations. The system uses computer vision technology to enable precise placement of pedicle screws in vertebrae and provides a user-friendly, manageable and cost-effective alternative to existing solutions. The idea for Stella Medical emerged in the context of the MedInnovate Graduate Program, an interactive laboratory course at TUM’s Chair of Computer Aided Medical Procedures & Augmented Reality. The interdisciplinary team is composed of alumni and students from the fields Informatics, Industrial Design and Finance and Information Management and is accompanied by a surgeon on staff at the university hospital TUM Klinikum rechts der Isar.

**EXAMPLE 3**

**Electric Air Taxi**

Their all-electric air taxi is intended to make its mark on the future of mobility: it is quiet, zero-emission, fast. The start-up Lilium was founded in 2015 by TUM Alumni Daniel Wiegand (Master Energy and Process Engineering 2015) and Patrick Nathen (Master Energy and Process Engineering 2012, Doctorate 2019), Sebastian Born (Master Product Development and Engineering Design 2012) and Matthias Meiner (Diploma Mechatronics and Information Technology 2014). With its vertical take-off and landing jet, Lilium caused quite a stir right from the start. A total of 36 propellers mounted on the wings power the jet. Rechargeable batteries supply the energy. Based on its technology and the success of the latest round of financing, the company has now been valued at over one billion US dollars.

**Rethinking Innovation**

TUM Venture Lab Built Environment’s mission is to support start-up ideas that relate to the “built environment”. These can be about technologies and solutions for the urban environments of the future, the construction and maintenance of buildings and infrastructure, and socio-technical systems in the context of Design and Architecture. This image depicts a collaborative design platform that enables interactive design planning.

**TUM VENTURE LABS**

As entrepreneurial innovation hubs, the new TUM Venture Labs drive technology-based spin-offs at the interface of Engineering, Natural and Life Sciences, AI/IT and Medicine in a unique way. They support entrepreneurial talent in tech-based business translation around promising key areas of innovation – and offer entrepreneurs an entire ecosystem providing the necessary environment for their development.

**TUM INNOVATION NETWORKS**

Transdisciplinary teams, collective creativity, new ideas – and the freedom to chase them: The new TUM Innovation Networks bring together top researchers and young talent spanning disciplines and subjects. They establish new connections between schools and departments and open up trend-setting research questions in high-potential fields of innovation. With the TUM Innovation Networks, TUM promotes innovative “High Risk – High Gain” research projects with a transdisciplinary profile.
Engineers for Europe’s Future

TUM embraces its responsibility to develop innovations for the benefit of the people and society, also on an international level. As a core member of an alliance of leading European technical universities, it has therefore initiated the establishment of the EuroTeQ Engineering University. Not only will the program be open to students from the partnering universities, it will also enable lifelong learning for engineers and the skilled crafts and trades, and will foster mutual understanding of sustainable value creation and systems in a holistic manner.

Who?
The initiative has emerged from the EuroTech Universities Alliance: Technical University of Denmark (DTU), École Polytechnique (L’X), Eindhoven University of Technology (TU/e) and TUM have brought two more strong partners on board: Tallinn University of Technology (TalTech) and the Technical University in Prague (CTU). As part of its European Universities program, the EU will be funding the project over the next three years with around five million euros. The project will also integrate two EuroTech members that are not located in the EU, the École polytechnique fédérale de Lausanne (EPFL) and the Technion – Israel Institute of Technology.

What?
The partners will establish a joint Engineering Science study program across different disciplines as well as across national and institutional boundaries, reaching well beyond the scope of individual technologies. Within the program, all target groups will be taught on the basis of individually designed curricula and new digital formats, and will undergo continuous training in the spirit of lifelong learning. Through a EuroTeQ Teaching Fund tender starting in spring 2021, new teaching formats are to be developed and tested in a bottom-up approach. Specific project weeks have been scheduled for as early as fall: Here, students and professionals will work on issues and challenges they have identified themselves.

Why?
Purpose of the alliance is to look at technology developments in a new, holistic way. “Today, it is impossible to think about mobility without considering its impact on the climate, and Robotics and Artificial Intelligence cannot be successful without the trust of the people,” says TUM President Thomas F. Hofmann. “In addition to technical depth, a modern education in Engineering has to provide students with a broader educational horizon, an entrepreneurial mindset and socio-political sensibility.”

For whom?
To promote this approach throughout Europe, the degree programs will not only be offered to students enrolled in the partnering universities but will also be open to interested parties who do not yet have an academic degree but play important roles in value creation and communication processes. In addition, the alliance will bring its students together with trainees from technical professions as well as with a wide range of stakeholders from industry, associations and various sectors of society in order to investigate the challenges of the 21st century and to develop projects for potential solutions. Already, the project has the support of 45 partners. In the ecosystem Munich, these include BMW, Siemens, In neon, the Bavarian Chamber of Civil Engineers and VDI – The Association of German Engineers.

EUROTECH UNIVERSITIES ALLIANCE

In 2006, TUM founded the EuroTech Universities Alliance together with the Technical University of Denmark (DTU). Today, the alliance is a strategic partnership between six of the best technical universities. Together, they have set themselves the goal of finding technical solutions to the major challenges of modern societies. With its cross-cooperation, the alliance contributes to achieving the goal of smart, sustainable and inclusive growth in Europe. The alliance combines the complementary strengths of its partner universities to jointly drive initiatives of high impact for society and industry in an international context. From left to right: Danmarks Tekniske Universitet (DTU, since 2006), Technische Universität Eindhoven (TU/e, since 2008), École polytechnique fédérale de Lausanne (EPFL, since 2011), École Polytechnique (L’X, since 2018), Technion – Israel Institute of Technology (since 2019) and TUM (since 2006).
It is probably one of the most high-profile projects currently underway at TUM. Nine doctoral candidates and around 80 students are collaborating with TUM scientists to develop their vision of a passenger cabin that will travel almost at the speed of sound. But it’s not just about speed: The team of inventors is also investigating how the Hyperloop can become a safe, affordable and sustainable means of transport for the future.
The Hyperloop is the concept of a transport system in which an ultra-high-speed train travels in a partially evacuated tube almost at the speed of sound. Based on this idea, SpaceX founder Elon Musk announced a competition, the SpaceX Hyperloop Pod Competition. Student teams from all over the world were called upon to compete with their own designed and built pods – the capsules carrying passengers through the tube. A student initiative at TUM took up the challenge and was able to leave the competing teams trailing in its wake in every single one of the four races. With a speed of 482 kilometers per hour, the pod from Munich set the current record at the last competition in July 2019.

... and the call for a challenge.

Increasing speed was not the only goal for the students. “We want to develop a means of transport that has a future and is socially acceptable. In short, we don’t just want to build a fast tin can. We also want it to be comfortable and appealing, safe, affordable and sustainable,” says TUM Alumni Gabriele Semino (Bachelor Physics 2016, Master 2019), who has been involved almost from the beginning. The students’ dedication was convincing: In 2020, the TUM Hyperloop research program was launched at TUM’s Department of Aerospace and Geodesy.

The program is being funded by the Bavarian government’s Hightech Agenda Bayern. In an initial phase, concept analyses will be carried out to evaluate the feasibility and potential of the concept for Germany. To this end, a 24-meter test tube and a prototype capsule will be built on a 1:1 scale. This will incorporate expertise from various disciplines, such as Materials Science, Civil Engineering and Propulsion Systems.

...to develop a means of transportation for the future.

The goal of the TUM Hyperloop research program is to develop a carbon-neutral, ground-based transportation system that meets the need for ultra-fast connections between mobility hubs.

An Interdisciplinary Success

“Our 85 members are from 29 different countries and many different faculties. If we are to be truly innovative in our development, we need the expertise of each and every one discipline,” Gabriele Semino says, “and we also need to keep our focus on the benefits for society and the people.”
The Hyperloop team is creating computational tools and models to evaluate the system holistically, providing input for decisions in the development process.

The Hyperloop team is building a scalable, 24-meter-long, full-scale demonstrator to validate the design and collect data for models and future iterations.

The Hyperloop team is analyzing the system’s potential, taking into account financial, market, environmental and safety aspects.

Following the success of the past Hyperloop competitions, the next research project involving TUM students is now underway. In his “Not-a-Boring Competition,” SpaceX founder Elon Musk is challenging teams from all over the world to bore a 30-meter-long and 50-centimeter-wide tunnel as quickly and precisely as possible.

A team of TUM students has now joined forces with the aim of once again succeeding in this competition by building the world’s fastest tunnel-boring machine. A major motivation here is the students’ desire to work on a sustainable future in which less time is wasted in traffic. “We believe that building tunnels is a forward-thinking technology and we want to help shape it with our innovation. Tunnels enable us to become better connected and increase the quality of urban life,” says Jona Roßmann of the team TUM Boring – Innovation in Tunneling.

The team has already qualified for the finals of the competition to be held in California in the summer of 2021. The TUM Boring – Innovation in Tunneling initiative consists of a team of over 60 highly motivated students from 16 different departments of TUM, LMU and the Munich University of Applied Sciences. It is sponsored by Bund der Freunde der TUM.

More info at go.tum.de/083653
Due to the coronavirus pandemic, many of the following events are scheduled as online events. In the case of in-class events, these may have to be postponed or cancelled at short notice. We kindly ask you to check the respective website in advance to see if there are any changes to the event.
THIRTY CLEVER MINDS

In the fall of 2019, students and doctoral candidates at TUM have formed the HORYZN group. Some of them are from the Department of Aerospace Engineering, others from Chemistry, Physics, Mechanical Engineering, Informatics or Business Administration. Their common goal: to build a vertical take-off and landing aircraft. They have spent an entire year developing the prototype. The result is impressive: Silencio Gamma is the largest vertical take-off and landing aircraft ever built at TUM that is capable of flying. What makes HORYZN special is the fact that its drone has wings: four hover motors are mounted on the wings, and two more on the wingtips. This makes it easier to control and thus safer. The drone is intended for use in the medical sector, for example to transport blood products, medicines or defibrillators.

A video on the project is available at: go.tum.de/813823

TUM students and alumni have an opportunity for mutual learning at the regular Career Lounges, at webinars, or at TUM Mentoring events, where they can seek advice on career issues from experienced TUM Alumni. Share your own experience or benefit from the insights of others. No matter in which phase of your life you find yourself, you are cordially invited.

TUM STUDENTS ARE INVOLVED IN NUMEROUS PROJECTS, INITIATIVES AND ASSOCIATIONS – FROM STUDENT BUSINESS CONSULTING TO INTERNATIONAL AID. IN DOING SO, THEY RECEIVE THE BEST POSSIBLE SUPPORT FROM THE TUM NETWORK. THE STUDENTS EXCHANGE IDEAS WITH ALUMNI, APPLY WHAT THEY HAVE LEARNED DURING THEIR STUDIES AND HONE THEIR ENTREPRENEURIAL THINKING AND SKILLS.
KontakTUM Program LEARNING FROM EACH OTHER

Precious Insider Knowledge
Insider knowledge is always worth its weight in gold. This is what the TUM Network thrives on. At the Career Lounges during the TUM Career Days, experienced TUM Alumni share their knowledge and insights. They open the panel on a certain topic, talk about their professional and personal life and invite you to exchange experiences. Why not take the opportunity to get to know different career paths and expand your network?

WEBINAR Gehalt verhandeln

WEBINAR Netzwerken mit Social Media
Networking and zielgerichtetes Selbstmarketing sind die Basis für einen guten Start und die erfolgreiche Positionierung im Job. Wichtig dabei ist es, sich auf unterschiedliche Menschen einzustellen, um mit diesen eine Beziehung aufzubauen und erfolgreich zusammenzuarbeiten. Die Portale XING und LinkedIn sind hilfreiche Tools, die Sie für Ihre Karrierewanderung nutzen können. In diesem Webinar erfahren Sie, wie Sie eine gute Sichtbarkeit im beruflichen Kontext erreichen und für ein zielgerichtetes Personal Branding sorgen können.

WEBINAR Rechte und Pflichten im Job
Wenn Sie einen Arbeitsvertrag unterschrieben haben, sollten Sie sich im Klaren darüber sein, welche Rechte und Pflichten sowohl Ihnen als auch Ihrem Arbeitgeber zustehen. Der Arbeitsvertrag sollte als relevante Bausteine enthalten, die Ihnen wichtig sind und die Sie bereits im Vorfeld beantworten können. Für jedes Arbeitsverhältnis ist heute ein Arbeitszeugnis von großer Bedeutung. Sie erfahren in diesem Webinar auch, wie ein gutes Zeugnis aussehen sollte und welche Tücken der Zeugniscode hat.

WEBINAR Career Prospects for the Consulting Industry
Career prospects for the consulting industry are deemed to be promising. But how can you make a successful entry? TUM Alumni share their insights into the job market and talk about the current challenges. Thu. 05.06.2021, 6 pm – 7:30 pm
REGISTRATION / INFO: www.community.tum.de/en/events

WEBINAR Doctorate – and then what? (in German)
A wide range of career opportunities are available to you after your doctorate. However, we recommend that you already set the course for your further career during the first phase of your doctorate. Alumni from academia and industry who have completed their doctorates offer tips as to how to launch your individual career. Thu. 17.06.2021, 6 pm – 7:30 pm

WEBINAR Mutual Growth
The first 100 days on the job, the challenges of everyday work life, and considerations on further career planning – when starting out in professional life, many things are new and unfamiliar. We are inviting young alumni in their first year of work to exchange ideas and experiences with other young professionals. The group offers a safe space to discuss problems with like-minded people, to pass on experiences and to develop possible solutions.

WEBINAR Mutual Support
Are you looking for a career that suits you? Do you have questions about a specific industry? Are you interested in changing jobs? The Career Assistance Network of the TUM Family aims to connect alumni and students. Career-related questions can be clarified, or industry and business contacts can be established in a mutual exchange. This protected TUM Community group offers space for confidential exchange and the opportunity to get in touch with each other and discuss career-related topics.

WEBINAR TUM CAREER DAYS
This summer semester, the TUM Career Days will once again take place in the virtual space. Webinars and other online formats will provide you with comprehensive information on topics related to careers, applications, and career entry.

WEBINAR Networking with Social Media
Networking and zielgerichtetes Selbstmarketing are the basis for a good start and a successful positioning in the job. It is important to be able to present oneself in a targeted manner and to establish business contacts in a mutual exchange. This protected TUM Community group offers space for confidential exchange and the opportunity to get in touch with each other and discuss career-related topics.

WEBINAR Career Prospects for the Consulting Industry
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Alumni Group Stuttgart
Since fall 2020, the greater Stuttgart area has had its own group for alumni and students. The local network was initiated by two highly committed TUM Alumni. With their initiative, Dr. Viktoria Leonhard (Diploma Management & Technology 2008, Doktorarbeit 2013) and Kai-Olaf Dammehain (Diploma Mechanical Engineering 1989) want to make a contribution to the TUM spirit. “Our goal is to support each other, learn from each other, spend time together and grow together.” Viktoria Leonhard explains.

To get to the Alumni Group Stuttgart: go.tum.de/900002

BEST PRACTICE
Meet-up for Entrepreneurs
The Meet-up brings together aspiring and experienced entrepreneurs in order to meet online, exchange best practices, discuss and collaborate. It is aimed at TUM members who have already set up a company and generated initial sales. Initiated by TUM Alumni Vincent Hommel (Master Industrial Engineering 2018), the event will take place every last Wednesday of the month in small groups. Share your topics and get feedback on any ideas relating to your business!

DATE
Wed. 28.04.2021 i. a.
6 pm – 8 pm
PLACE
Online
REGISTRATION/INFO
www.community.tum.de/en/events

MEET TUM STARTUPS
Insights From Felix Haas
The new event series of TUM Mentoring and TUMEntrepreneurship offers insights into the personal stories of TUM start-ups in a casual atmosphere, facilitating the exchange of ideas on the topic of start-ups and allowing participants to be inspired by the start-up spirit of the founding teams. TUM Alumni and mentor Felix Haas, co-founder of the start-up IDnow, will kick things off. IDnow is a platform for identity verification in the digital sector.

DATE
Mid-July 2021
6 pm – 7 pm
PLACE
Munich, if necessary online
REGISTRATION/INFO
www.community.tum.de/en/events

TUM Alumni Felix Haas (Diploma Electrical and Computer Engineering 2006) is a successful entrepreneur. In 2019, he was awarded the title “TUM Entrepreneur of Excellence” by TUM President Thomas F. Hofmann. Further reading at www.150.alumni.tum.de/en/felix-haas-en

MUTUAL GROWTH
MENTORING
Finally it’s Back!
The TUM Mentoring Stammtisch is back! TUM mentor Sayedweid Weinert (Diploma Electrical and Computer Engineering 1983) is reviving the long-standing tradition and is looking forward to the first online Stammtisch. There he will provide insights into the theory of inventive problem solving (TRIZ): how does a structured approach help to overcome mental blocks, how to find ideas in a systematic manner, and how to solve even the most complex problems with the help of contradictions. In the future, the regulars’ table will take place four times a year and bring together active and former mentees and mentors.

DATE
Thur. 20.05.2021
6.30 pm – 8 pm
PLACE
Online
REGISTRATION/INFO
Exclusively for members of TUM Mentoring
www.community.tum.de/en/events

MEETING ONLINE STAMMTISCH
Mein Tag im Homeoffice
Rückenschmerzen, Nackensteife, ein taubes Handgelenk und das Gefühl „ständig zu arbeiten“. Kennen Sie das? Bei der Online-Veranstaltung geben die beiden TUM Alumni Niao Wu (Diplom Architektur 2014) and Alexander Mederer (Diplom Sportwissenschaften 2000) Hinweise und Tipps, wie Sie Ihr Arbeitsverhalten und Ihren Arbeitsplatz im Homeoffice aktiv gesünder gestalten können. Neben der Theorie werden wir zusammen ein paar einfache Übungen machen, die Sie im Alltag umgehend anwenden können. Im Anschluss laden wir Sie ein, zu diskutieren, Fragen zu stellen und sich auszutauschen.

DATE
Tue. 11.05.2021
7 pm – 8 pm
PLACE
Online
REGISTRATION/INFO
www.community.tum.de/en/events

MEETING ONLINE NETWORKING EVENT
FUTURE SKILLS

DATE
Tue. 08.05.2021
6 pm – 7 pm
PLACE
Online
REGISTRATION/INFO
www.community.tum.de/en/events

EXCLUSIVE FOR MEMBERS OF TUM MENTORING
MEET TUM STARTUPS
Insights From Felix Haas
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DATE
Mid-July 2021
6 pm – 7 pm
PLACE
Munich, if necessary online
REGISTRATION/INFO
www.community.tum.de/en/events

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Further reading at www.150.alumni.tum.de/en/felix-haas-en
DOCTORATE STUDENTS AT TUM BENEFIT FROM A FIRST-CLASS RESEARCH ENVIRONMENT: EXCITING RESEARCH PROJECTS IN-STEP WITH THE TIMES, THE OPPORTUNITY TO COLLABORATE WITH RENOWNED RESEARCHERS FROM ALL OVER THE WORLD AND THE SUPPORT OF THE TUM GRADUATE SCHOOL ENSURE A HIGH STANDARD IN SCIENTIFIC EDUCATION.

After their doctorate, about half of the young scientists work in industry, often with staff responsibility. In many cases, TUM doctorates are in demand in industry precisely because they have already carried out applied research or worked with the industry during their doctorates. TUM is supporting doctoral students on this path with tailor-made events and contacts with experienced alumni.

**WEBINAR**

**Convincing CVs**

Rarely do the career paths of doctorate students and postdocs fit into standard CV templates. Doctorate, research work – all this needs to be included in a concise manner on a few pages. In this webinar you will learn how to convincingly present your extra skills and experience. The webinar is available in German and English.

**WEBINAR**

**Insights on Industry-Based Doctorates**

In her webinar “Promovieren mit Industriebezug” on Wednesday, April 28, 2021, Susanne Großkurth will talk about her industry-based doctorate and explain what is needed to complete one successfully.

Why does she want to get involved in the TUM Community? “There are many different approaches to life – and there are no right or wrong ones! Everyone has to decide for themselves what they need to be happy in life. But one thing it does take: people who ask the right questions, who pass on their own experiences, people who encourage you to go your own way!”

**WEBINAR**

**Efficient Job Hunting for Doctorates and Postdocs**

Finding an industry job after having completed a doctorate can be challenging – especially for candidates with an interdisciplinary background. This webinar will provide you with valuable advice on how to go about finding possible careers, labor markets and companies. We will also look at how to use keywords effectively for job hunting. The webinar is available in both English and German.

**WEBINAR**

**Promovieren mit Industriebezug**


**WEBINAR**

**Führungskompetenzen für Promovierende und Postdocs**

Wer nach der Promotion in den Job einsteigt, auf den wartet meist recht bald die erste Führungsaufgabe. Eine ganz neue Herausforderung, auf die man sich gut vorbereiten sollte. In diesem Webinar erzählen promovierte Alumni mit langjähriger Führungserfahrung, wie sie ihre erste Führungsrolle gemeistert haben, und geben Tipps, welche Ressourcen Berufsbeginnern nutzen können.
START-UPS WITH POTENTIAL

TUM ENTREPRENEURSHIP DAY 2021

It’s all about Entrepreneurship!

The TUM Entrepreneurship Day has existed since 2013 and it offers young businesses of TUM a platform. Even though it will take place online this year, there will be plenty of opportunity for the exchange of ideas with start-up consultants and other start-ups – something to look forward to. As an annual highlight, the TUM Presidential Entrepreneurship Award will be presented to an outstanding TUM spin-off.

DATE
Thur. 24.06.2021
All day

PLACE
Online

REGISTRATION/INFO

FOR A PERFECT START

Support for Start-ups

TUM has made it its goal to be one of the most successful start-up universities in Europe. Therefore, it offers a wide range of support such as start-up consulting, research and qualifications as well as a strong network for entrepreneurs. More at www.tum.de/en/innovation/entrepreneurship

START-UP CONSULTING
TUM supports students, alumni and scientists who want to start a business with their idea or technology – and does so in all phases of company development: from concept development and generation of the business model, to guidance on suitable funding, to the actual launch and market entry.

go.tum.de/199519

START-UP MENTORING
Start-up mentoring at TUM provides support for start-ups in the market entry phase. Young entrepreneurs can benefit from the extensive experience of senior entrepreneurs. We would like to invite TUM Alumni to share their experience with young entrepreneurs and become part of a new success story.

go.tum.de/199519

START-UP INDEX A–Z
The Start-Up Index reflects the diversity of TUM’s spin-offs. Here you will find short profiles of recent and already established TUM spin-offs. The majority of these companies have been founded by TUM Alumni, such as Celonis, Lilium and Personio, which have already been valued at over one billion US dollars.

go.tum.de/513634

TUM ONCE MORE THE BEST LAUNCHING PAD FOR START-UPS
TUM offers excellent support for the creation of start-ups. This is what Stifterverband’s “Start-up Radar” concludes. For the fourth time in a row, TUM is ranked first among the major German universities. Every year, around 80 companies are founded here.

More at go.tum.de/721089

START-UP INDEX A–Z
The Start-Up Index reflects the diversity of TUM’s spin-offs. Here you will find short profiles of recent and already established TUM spin-offs. The majority of these companies have been founded by TUM Alumni, such as Celonis, Lilium and Personio, which have already been valued at over one billion US dollars.

Home Office With Style!
The TUM Shop has your back.
You can order stationery and beverage containers, accessories, clothing and much more contact-free at www.shop.tum.de.
VALUED AROUND THE WORLD

NO UNIVERSITY, NO COUNTRY CAN SOLVE TODAY’S SCIENTIFIC CHALLENGES ON ITS OWN. TUM THEREFORE WORKS CLOSELY WITH PARTNER UNIVERSITIES AROUND THE WORLD AND IS ACTIVELY INVOLVED IN INTERNATIONAL NETWORKS.

A new standard of cooperation is being achieved with selected international partners within the framework of strategic alliances. An example is TUM’s collaboration with the high-profile partners of the European EuroTech Universities Alliance on joint research strategies addressing important topics of the future. Since 2018, there has been a flagship partnership with the renowned Imperial College in London, and since 2020 with China’s Tsinghua University.

STRATEGIC PARTNERSHIPS

Based on their long-standing cooperation, TUM and the Imperial College London (ICL) have agreed on a strategic partnership with a focus on sustainability. The ICL is one of the best technical universities in Europe and is linked to TUM through numerous research collaborations. Since 2020, TUM has now also been deepening its collaboration with China’s Tsinghua University. The two presidents Prof. Thomas F. Hofmann and Prof. Qiu Yong have agreed on a strategic partnership in research, teaching and innovation. TUM also maintains extensive exchange with other Chinese universities and has been present in Beijing with its own office since 2006.

Read more at go.tum.de/159968

Presidents Prof. Thomas F. Hofmann and Prof. Qiu Yong signed the partnership agreement during a video conference.
INTERNATIONALLY CONNECTED

TUM’s International Network

Every year the TUM Global & Alumni Office organizes the TUM Global Week, a platform for the exchange of ideas on the topics of internationalization and international experience for the entire TUM Community. In addition to numerous information and networking events for students, scientists, administrative staff, TUM alumni and TUM’s international partners, the week is the occasion for the annual meeting of the TUM Liaison Officers with the TUM Community. Look forward to a varied program and the exchange with our Liaison Officers from the five liaison offices in Beijing, Brussels, Mumbai, San Francisco and São Paulo as well as with the campus in Singapore (TUM Asia).

Registration: www.international.tum.de/tumglobalweek

EUROPEAN UNION WEEK

The Future of the European Union

As part of this year’s European Union Week, the TUM School of Management, in cooperation with the HEC Paris, is going to organize a three-day conference. Each of the conference days will address a major topic of contemporary relevance for the European continent and aims to inform alumni and students all over Europe about the state of the European Union, ultimately providing a perspective about the EU’s present and future.

Registration: www.international.tum.de/european-union-week

INTERKULTURELLE KOMPETENZEN

Global Minds Online


Registration: www.community.tum.de/en/events

TUM’S AFRICA NEWSLETTER

Connecting Experts on Africa

Four times a year, the newsletter provides updates on projects on the African continent and in particular on TUM’s partnership with the Kwanza Nkrumah University of Science and Technology (KNUST) in Ghana, one of Africa’s leading universities.

Subscribe to the newsletter here: go.tum.de/803800

The Lycée Schorge in Koudougou, Burkina Faso, was designed by TUM Professor Francz Kéré. The architect is one of the most important international representatives of socially responsible architecture. He has received several awards for combining social and ecological approaches in his designs. At TUM, he holds the Chair of Architectural Design and Participation.

TUM's International Network

EuroTech Innovation Day

Powered by the motto “Transcending Borders – Striving for Excellence” the EuroTech Innovation Day will be an online celebration of entrepreneurship and innovation to provide audiences with a unique interactive exposure. In the opening panel talk the six presidents of the EuroTech Universities will talk about, how universities support scientific spin-offs and the future directions for the development of academia-industry relations. This will be followed by presentations on topics including “Boosting Entrepreneurship” and “From Product to Market”. TUM Alumni are welcome.

Registration: www.eurotech-universities.eu

TUM GLOBAL WEEK

Strengthening European Partnerships

Since 2012, TUM has had a liaison office in the capital of the European Union and is integrated into the Brussels office of the EuroTech Universities Alliance. TUM is hereby strengthening its cooperation with the EuroTech partners and the other European institutions, its participation in EU funding programs and initiatives, and also the transfer of knowledge with key players on site. Additionally, Liaison Officer Maria-Valerie Schegk is connecting excellent researchers from all over Europe and is paving the ground for joint projects.

More information: www.international.tum.de/en/brussels

EUROPEAN UNION WEEK

Entrepreneurship Day

EuroTech Innovation Day

From 7 pm

Sat. 07.08.2021

From 7 pm

www.community.tum.de/en/events

TUM’s International Network

on Tour with our Guests

TUM welcomes many international postdocs and guest researchers and provides them with numerous services that support them in everyday life, including a special cultural program. This summer, TUM’s international guests are invited to a Nightwatchman Tour through Munich, and TUM alumni can join them for this tour. You get to know Munich via its stories and what life was like as a nightwatchman. At the same time you get to know TUM’s international guests and experience the TUM family.

Registration: www.community.tum.de/en/events

TUM AFRICA NEWSLETTER

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www.community.tum.de/en/events

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THE FUTURE OF THE EU

Global Minds Online

Interkulturelle Kompetenzen

Connecting Experts on Africa

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INSIGHTS THROUGH ROLE MODELS

In her laboratory at the Weizmann Institute of Science in Israel, TUM Ambassador Maya Schuldiner intends to close gaps in our understanding of yeast proteins—and thus save human lives.

The Women of TUM Network is also meeting online in the TUM Community. It is one of the most active among the TUM Community groups. The hashtag #womenofTUM makes the Women of TUM visible on social media. As important role models, the Women of TUM support the women of TUM for the future—both in the workplace and at home.

In her laboratory at the Weizmann Institute of Science in Israel, TUM Ambassador Maya Schuldiner intends to close gaps in our understanding of yeast proteins—and thus save human lives.

FAMILY-FRIENDLY SCIENCE—IS THAT POSSIBLE?

TUM Ambassador Maya Schuldiner is a multi-award winning molecular geneticist who researches and teaches at the Weizmann Institute of Science in Israel. For a one-year research visit, she went to Munich to work with Prof. Dr. Thomas Misgeld, Head of the Scientific Institute for Cell Biology of the Nervous System at the TUM School of Medicine. Her husband Oren Schuldiner, who is also a scientist, and her three children accompanied her. "Without my husband, I would not be able to be the scientist I want to be," the renowned researcher emphasizes. "If you are happy in your private life, it enables you to do good research." This is why she also places great importance on gender equality in her own laboratory in Israel.

At a Women of TUM afterwork event on the 9th of June, 2021, Maya Schuldiner will offer insights into the course of her outstanding career in science and will show that an active family life and international professional success are not mutually exclusive.

Further reading
www.150.alumni.tum.de/en/maya-schuldiner-en

www.community.tum.de/en/women
How to Change Career as a Physician

How does a clinically active physician come to trade in her medical specialty for a digital health start-up? TUM alums Lara Maier (State Examination in Medicine 2014, Doctorate 2018) shares her career path, which led her from Medical Studies at TUM through several clinical stations and projects to her own company. She gives tips on what matters in one’s own career and shows the benefits of listening to one’s inner voice. Afterwards, there will be time for questions and exchange.

New Digital Modes of Entrepreneurial Work

The afterwork will be opened by Dr. Katrin Hahn from the MCTS at TUM. Her research interests relate to the reorganization of industrial innovation through digital technologies and the increasing importance of addressing societal challenges in technology and policy. In the afterwork she will present her research findings and explain how the Covid-19 pandemic has affected the digitalization of companies. Afterwards, there will be time to network.

MINT-Erlebnis an der Uni

TUM SEES ITSELF AS A PLACE WHERE KNOWLEDGE IS EXCHANGED, AND AS A SERVANT TO SOCIETY. IT STRIVES TO SUPPLY PEOPLE WITH EXPERTISE, IMPROVE THEIR LIVES WITH NEW TECHNOLOGIES, EDUCATE AND INSPIRE, AND THUS PREPARE THEM FOR THE FUTURE.

As a TUM Alumni, you not only have the privilege of regularly coming back to TUM to attend lectures or participate in seminars – such as the public lecture series hosted by the Chair of Ergonomics. Additionally, you can continue your education by using online learning tools, webinars or further education programs. The newly established TUM Institute for LifeLong Learning is celebrating the TUM Learning Festival 2021, and among TUM’s Massive Open Online Courses (MOOCs) are many exciting courses for TUM Alumni.

LIFELONG LEARNING

AN EYE ON THE DRIVERS

How do drivers behave on multi-lane big city roads and what do they do on small country roads? With the help of the static driving simulator, the researchers at the Chair of Ergonomics are able to answer such questions. A BMW 6-series chassis forms the basis of the driving simulator. The SILAB software developed by the WIVW Center for Traffic Sciences in Würzburg is used as the simulation environment for displaying the scenarios.

Further reading at www.mw.tum.de/en/lfe/research/labs/static-driving-simulator
KontakTUM Program DIALOGUES

LIFELONG LEARNING

TUM Learning Festival

TUM believes in being a partner in education: not only for enrolled students, but for all members of the university community – for a lifetime. And this includes all TUM Alumni. To emphasize this mission, the TUM Institute for Lifelong Learning (TUM ILL) is hosting a series of events under the title TUM LEARNING FESTIVAL 2021. 

learningfestival.tum.de/en

LECTURE SERIES

Ergonomie aktuell

Seit mehreren Jahren bietet Prof. Dr. Klaus Bengler seinen Doktoranden die Möglichkeit, aktuelle Forschungen in Unternehmensberatung, Bildung und Gesundheit zu entwickeln, die an ergonomischen Erkenntnissen interessiert sind. Alumni der TUM sind herzlich willkommen.

www.mw.tum.de/en/lfe/about/

TUM@Freising

Die beliebte Vortragsreihe TUM@Freising geht online. Die Vorträge geben Einblick in die aktuelle Forschung an der TUM School of Life Sciences und machen Wissenschaft für alle verständlich. Eine anschließende Diskussion ist ausdrücklich erwünscht, denn Wissenschaft lebt vom Meinungsaustausch. Nach der coronabedingten Pause startet die Vortragsreihe mit der Zielsetzung, wieder mit der Publikumskommunikation zu beginnen. Die Vorträge werden online übertragen und auf der Website des Environmental Departments zu finden sein.

www.community.tum.de/en/events

LECTURE

Algen als Treibstoff

KontaktUUM Program - Dialogues

Trauma Surgery or Digitalization in Aeronautics

Massive Open Online Courses (MOOCs) are interactive online courses that are accessible worldwide and free of charge. TUM is quick to recognize their potential and was the first German university to publish its own MOOCs on reputable American platforms. The ever-growing portfolio has since added to our university’s curriculum and provides an international audience with access to top-level education. Current courses include topics such as Trauma Surgery, Digitalization in Aeronautics and Space, and Communication Acoustics.

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ONLINE COURSES

Trauma Surgery or Digitalization in Aeronautics

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ONLINE LECTURE SERIES

Mobilität in der Stadt

Das Mobilitätsumfeld der Menschen ändert sich. Diesen Wandel zu begreifen und mitzugestalten – das ist eine Herausforderung der Stadtentwicklung für die kommenden Jahre. Die Vortragsreihe, organisiert vom Lehrstuhl für Raumentwicklung der TUM, wirft einen Blick auf Bedingungen und Folgen der digitalen Transformation für die städtische Mobilität.

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EXHIBITIONS

The Role of Computers in Architecture

For the first time in the German-speaking world, the exhibition “The Architecture Machine” at Architekturmuseum der TUM in the Pinakothek der Moderne takes a comprehensive look at digital development in Architecture. From its beginnings in the 1950s to the present day, the architecture museum tells this exciting story. The fundamental question behind it: has the computer changed Architecture, and if so, how?

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TUM’S MUSEUM OF ARCHITECTURE

The history of TUM’s Museum of Architecture goes back to 1868 – at that time it was still a teaching collection for architectural education at the New Polytechnic College. In the first half of the 20th century, the field of Architecture changed and so the historical model collection was transformed into an archive, which since 1975 has gradually taken on the functions of a teaching collection for architectural education at the New Polytechnic College. In the first half of the 20th century, the field of Architecture changed and so the historical model collection was transformed into an archive, which since 1975 has gradually taken on the functions of a teaching collection for architectural education at the New Polytechnic College.

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TUM Campus Run

Ready, Set, Go!

Following last year’s virtual editions, the TUM Campus Run this summer semester will be a hybrid event – meaning virtual and in person. All TUM members with a TUM ID can take part. As usual, there will be two routes of different lengths, one of 5.5 and one of 11 kilometers. Runners will start at the same time on campus or at their homes (and then track their times with their running app); the start will be live-streamed on the TUM Junge Akademie Youtube channel.

You have forgotten your TUM ID? Contact us: alumniundcareer@tum.de

Runners all over the world

For eight years now, hundreds of TUM students, alumni and employees have been gathering at Campus Garching to participate in the TUM Campus Run. Due to the coronavirus pandemic, the run was converted into a ‘home run’ in the summer semester of 2020. The 730 participants completed the course for which they were registered independently on the 25th and 26th of June, 2020, thus making the virtual edition of the Campus Run, held in a total of 22 countries on a total of four continents, a resounding success.

University Orientation

Ran an die TUM

Auch Ihr Nachwuchs interessiert sich für ein Studium an der TUM? Dann ist die Veranstaltung „Ran an die TUM“ genau das Richtige. Wöchentlich im Sommersemester wieder online – die Studienbereiche der TUM vorgestellt. Warum macht Sport gesund und glücklich, was kann man als Ingenieur alles machen, und wie sieht eigentlich ein Studium der Chemie aus? Immer donnerstags werden die Studienbereiche der TUM vorgestellt. Sie möchten wissen, wie Sie sich bewerben? Was macht ein Ingenieur? Können Sie nicht kommen? Kein Problem – die Veranstaltung wird online übertragen.

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Scientists from TUM and other research institutions explain the impact of digitization on Aeronautics Engineering.
ANNUAL ACADEMIC CELEBRATION

Dies Academicus 2020

TUM President Prof. Thomas F. Hofmann invites you to look back on the year 2020 and will give an outlook on how TUM will maintain its successful course in the future. In order to reach as many people as possible while adhering to the required hygiene and social distancing rules, the Dies Academicus 2020 took place online for the first time in the university’s history.

INFO
Presidential speech, academic honors, round table discussion on the Bavarian University Reform, TUM Startup pitches

LECTURE SERIES

Covid-19 Lectures

The pandemic has shown how essential science is for many parts of society: researchers acquire new knowledge about the virus, they develop vaccines and possible treatments, and they advise policy-makers and industry. In this online lecture series, leading scientists from TUM and TUM’s university hospital Klinikum rechts der Isar provide insights into their current research on the pandemic – and in doing so shed light on various scientific disciplines.

All lectures can be found at wiki.tum.de/display/COVID19Lectures

INFO
Presidential speech, academic honors, round table discussion on the Bavarian University Reform, TUM Startup pitches

LECTURE SERIES

Wissenschaft für jedermann

Erfahren Sie, wie der Hyperloop funktioniert und wie Roboter unsere Welt verändern werden. Bei der Vortragsreihe, die gewöhnlich im Deutschen Museum stattfindet, waren im Wintersemester die TUM Alumni Prof. Dr. Agnes Jocher und Prof. Dr. Sami Haddadin sowie viele andere Forscher aus der TUM eingeladen, um Wissenschaft für alle zu erklären. Schauen Sie rein.

INFO
Prof. Dr. Sami Haddadin: Robotics and Artificial Intelligence and many more lectures
Available on the YouTube channel of Deutsches Museum, Playlist “Wissenschaft für jedermann”

LECTURE SERIES

Munich Talks

Under the motto of „Bringing Politics and Technology Together“, the Hochschule für Politik München / TUM School of Governance examines the interactions among politics, the economy, society, and technology, seeking a multi- and transdisciplinary social scientific understanding of these interactions. The signature event Munich Talks was established to breathe life into this approach. Amongst the guests were José Manuel Barroso, Martha Nussbaum and, most recently, Lothar Wieler, president of the RKI.

INFO
Available at www.munich-talks.de
Munich Talk with RKI President Lothar H. Wieler: go.tum.de/865564

LECTURE SERIES

TUM Speakers Series

Bill Gates, Tony Blair, Ban-ki Moon or Kofi Annan: prominent public figures share first-hand information and discuss current issues as well. They give often valuable insights. All lectures were recorded and are now also available online.

INFO
TUM Speakers Series’ YouTube Channel via speakersseries.de

You missed the Covid-19 Lectures or the Munich Talks with RKI President Prof. Lothar Wieler? No problem. Due to the pandemic, many events at TUM have switched from face-to-face to online mode – with the advantage that many lectures were recorded and are now also available afterwards.
Dr. Hans-Jörg Bauer (Diploma Mathematics 1995, Doctorate 1999) ist der neue Direktor an Zentrum für Informations- und Medienerarbeit an der Bergische Universität Wuppertal. Er ist ehemaliger Direktor des Regionalen Computing Zentrums (RCZK) an der University of Cologne. Alina Boldt (Bachelor Health and Care Science 2011, Master 2016) ist der neue Professor für „Elektrische Meßtechnik und Elektronik“ an der Fakultät für Elektrotechnik an der Hochschule Darmstadt. Sie ist ehemalige Wissenschaftlerin der Siemens Digital Logistics GmbH. Bad Emms seit Oktober 2020. Sie ist die neue Direktorin des HumanaKlinikums Nürnberg-Süd. Since November 2020, she has been the new Director of the Clinic for Oral and Maxillofacial Surgery at Universitätsmedizin Greifswald since January 2021. She is the new Dean of the Faculty of Electrical and Industrial Engineering at Hochschule Landshut. Previously, she worked as a development manager for medical LED products at Schott. Thomas Pitzl (Diploma Biology 1968, Doctorate 1999) ist Chief Executive Officer of Chirurgische Klinik. The new President of TUM Alumni, Dr. Christian Strahberger (Doctorate Physics 2002) has been a member of the Executive Board of MVV Umwelt GmbH as of October 2020. Since January 2021, he has been heading the unit for Village Renewal. Since January 2021, he has taken over the management of Siemens Digital Logistics GmbH in March 2021. As Senior Vice President at SAP, he was most recently responsible for the areas of Marketing and Sales. Since January 2021, he has been a member of the Executive Board/Chief Operating Officer at Singulus Technologies AG since 2019. Since January 2021, he has been responsible for the asset management of Eulenburg Family Office. Previously, he was the new Director of the Clinic and Polyclinic for Oral and Maxillofacial Surgery at Universitätsmedizin Greifswald since January 2021. He is the new Dean of the Faculty of Electrical and Industrial Engineering at Hochschule Landshut. Previously, he worked as a development engineer for medical LED products at Schott. Thomas Pitzl (Diploma Biology 1968, Doctorate 1999) is Chief Executive Officer of Chirurgische Klinik. Minzlaff (State Examination Medicine 2005, Doctorate 2007) has been in charge of the new Sports Orthopedics Department at Krankenhaus Agatharied since October 2020. Previously, he was the Leading Senior Physician and Deputy Chief Physician of the Department of Sports Orthopedics at Chirurgisches Klinikum München-Süd. Since March 2021, he has been the new Professor for „Elektrische Meßtechnik und Elektronik“ an der Fakultät für Elektrotechnik und Informationstechnik an der Hochschule Landshut. Previously, he worked as a development manager for medical LED products at Schott. Thomas Pitzl (Diploma Biology 1968, Doctorate 1999) is Chief Executive Officer of Chirurgische Klinik.
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1 stock.adobe.com/reazaveda (file)
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3 Magdalena Jooß/TUM (Schmücker, TUM)
4 VDI/Catrin Moritz (Keller), Magdalena Jooß (van Delden, Ramírez, Haddadin), TUM Hyperloop Team (Kapsel), Astrid Eckert/TUM (Garmi)
5 Ota Herches, Weizmann Institute of Science (Schuldiner), Astrid Eckert/TUM (President), Andreas Heideggter/TUM (HORZ/ST), Astrid Eckert und Andreas Heideggter/TUM (simulator)
6/7 Magdalena Jooß/TUM
8 Magdalena Jooß/TUM
9 Magdalena Jooß/TUM (Remice, Haddadin)
10 VDI/Catrin Moritz (Keller)
11 Magdalena Jooß/TUM
12/13 Magdalena Jooß/TUM
15 Magdalena Jooß (van Delden, President), VDI/Catrin Moritz (Keller)
16 VDI /Catrin Moritz (Keller), Magdalena Jooß/TUM
19 Magdalena Jooß/TUM
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22 stockphoto/photo4remites/diener (robot assistant), Lil Bera/TUM (Müller, Bengtler, stock.adobe.com/cherie (autonomous driving), Astrid Eckert/TUM (Giants, Haddadin)
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24 Andreas Battermann/TUM
25 stock.adobe.com/PreCreativ studio (puzzle pieces), stock.adobe.com/Goudo (team), stock.adobe.com/Butflur (student)
26 stock.adobe.com/wereing_tao (scaffolding), stock.adobe.com/Milos Tasic (sneakers)
27 Gerhard Schubert/TUM (Built Environment), Astrid Eckert/TUM (workshop, students)
28 Astrid Eckert/TUM
29 Andreas Heideggter/TUM (female engineer), Vibeke Hempler (EFIL), Bart van Overbeeke Photography (TUM), Alain Herzog (EFIL), J. Batena (Escole Polytchnique, Technion - Israel Institute for Technology, Albert Scherge/TUM
30 Fabian Vogli/TUM (Hyperloop-group photo)
31 TUM Hyperloop Team (pod)
32 TUM Hyperloop Team (workshop, Hyperloop train)
33 Fabian Vogli/TUM (slide)
34 TUM Hyperloop Team (kernel with pod)
35 Andreas Heideggter/TUM (group), TUM Hyperloop Team (Musk), TUM Boring Company
36/37 Astrid Eckert/TUM
38/39 Astrid Eckert und Andreas Heideggter/TUM
41 stock.adobe.com/Blackpool (train), stock.adobe.com/metamorworks (women)
43 Stuttgart Marketing GmbH, Werner Dietrich (Stuttgart), Privat (Kleinhändler, Dammann), Lil Bera/TUM (Fahri Hoxa)
44 Prost (Grobrott), stock.adobe.com/wealthy30 (diploma)
46 stock.adobe.com/decisions (video)
47 TUM-Shop
48/49 Astrid Eckert/TUM
50 Johannes Stöll
51 Daniel Schwarz, Architekturmuseum der TUM
52/53 Ota Herches, Weizmann Institute of Science (lab), Privat (Heiss)
55 stock.adobe.com/Reapaaal (women), Privat (Borodina), Astrid Eckert/TUM (TUM)
56/57 Astrid Eckert und Andreas Heideggter/TUM
58 stock.adobe.com/fotografiekeber (wooden cubes)
59 stock.adobe.com/highend (turbine)
60 Andreas Heideggter/TUM (Musk)
61 stock.adobe.com/Nora Tans (president)
62 Kurt Stover/TUM (Photez)
63 stock.adobe.com/Beck Lund (men), Andreas Heideggter/TUM (TUM (men, 20)
67 Andreas Heideggter/TUM

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Pursuant to Article 3 (2) of Germany’s Basic Law, men and women have equal rights. All persons and descriptions of functions in KontakTUM refer in equal measure to men and women. The use of the masculine form alone in some places only serves the text’s readability.

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“The Deutschlandstipendium enabled me to study free of financial constraints. This allowed me to work on the TUM Hyperloop project and thus on the future of mobility alongside my studies.”

GABRIELE SEMINO
RECIPIENT OF ‘DEUTSCHLANDSTIPENDIUM’ SCHOLARSHIP, MASTER PHYSICS 2019

Find out more about the TUM Hyperloop project in this issue starting on page 30.
Amadeus, moving travel forward

Travel broadens horizons, creates connections and builds economies. Travel powers progress. And Amadeus powers travel.

As a travel technology company, we build the critical solutions that help airlines and airports, hotels and railways, search engines, travel agencies, tour operators and other travel players to run their operations and improve the travel experience, billions of times a year, all over the world.

We’ve been doing it for more than 30 years, and we’re just getting started. Innovating. Moving fast. Working with customers and partners to power better, more rewarding journeys. Leading the industry forward to shape a better future of travel.

At Amadeus you’ll find:
• Opportunities to innovate: Help us develop the IT solutions that drive global travel.
• Challenging environment: Work to solve complex challenges in one of the world’s most dynamic industries.
• Global impact: Join a global network of colleagues across more than 190 countries to deliver IT solutions that enrich how people travel.

What our employees say

“My adventure started almost 10 years ago as a Software Development Intern. At the time, I knew little about the travel industry, except that I loved to travel. What makes a career at Amadeus really special is the diversity. In every team, you’ll find great, committed and fun people from all over the world. I’ve also had the chance to work in a variety of areas, working in London and Sydney to my current role in Munich.”

Pierre-Luc Noel,
Service Reliability Engineer - Senior Manager, Germany

“It’s thrilling to work at Amadeus. There are so many exciting projects to work on, so many interesting people meet. You’re constantly learning.”

Celine Giorla,
Technical Solution Management - Director, Dallas

“It’s wonderful to work for Amadeus. I’m an avid traveller, so interacting with people all over the globe and working in a domain that’s so close to my heart is really rewarding”.

Garima Jain,
Associate Product Manager, India

“People, because I’m constantly surrounded by talented people from all around the world with fantastic backgrounds and stories. Trust because every leader I’ve worked with has given me opportunities to make a difference and contribute to critical projects from Day 1.”

Antoine Ligier,
Air Content Sourcing Strategy Management, USA