Festrede zum

Leonhard Obermeyer Center Day

30. Oktober 2021

Prof. Dr. Thomas F. Hofmann
Präsident der TU München

Es gilt das gesprochene Wort

Dear guests and colleagues,

It is my pleasure to welcome all of you to Leonard Obermeyer Center Day 2020, different in its setting, but special circumstances require special measures.

My special thanks go to Gertrud Obermeyer, one of the co-founders of the TUM University foundation and the LOC and long-standing supporter as LOC premium member. She is represented by her nephew Maximilian Grauvogl (Obermeyer Planen + Beraten GmbH).

I want to welcome Prof. Georg Nemetschek – TUM Alumnus, cooperation partner, generous donor, LOC founding partner and premium member.

A very warm welcome goes to all national and international partners joining this event today, all LOC Professors and LOC Premium Members.

Digitalization has started to revolutionize the architecture, engineering, and construction industry. And this is one of the most exciting fields of innovation, not only the construction sector is according to its value-added contribution and workforce one of the most important branches in Bavaria and Germany, but because it will lead to completely re-designed processes and affects the entire life cycle through which buildings are designed, constructed, and operated. And it will lead to new forms of organization through which professionals work and interact.

Civil Engineering and, in particular, structural engineering has always been a prominent field of application of computational methods and has been a driver for the development of new digital technologies. Konrad Zuse, civil engineer and father of computer sciences invented the first digital computer to automatically perform engineering computations.

Today architecture, engineering and construction industry can benefit from the next technological stepping stones: Machine Learning and Artificial Intelligence. And this will not only affect processes in the existing construction industry, but will lead to fundamentally new professional profiles in a time of rapidly changing global labor markets.

The Leonard Obermeyer Center is one of the driving forces in making structural engineering fit for the future! It was founded by our TUM Alumnus Leonhard Obermeyer, who was truly a visionary engineer. He pioneered the use of computers in civil engineering! Since 2013, the Leonard Obermeyer Center has been bridging the competences of the Department of Architecture and the Department of Civil, Geo and Environmental Engineering, today even extended by the recently founded Department of Aerospace and Geodesy.

Six professors and about 70 scientists combine the broad expertise of TUM in the field of digital methods for the built environment and combine entrepreneurial spirit

and the art of engineering, closely following Leonard Obermeyer's philosophy that "*Nothing is impossible*".

The Center members advise political stakeholders in the areas of digitalization, smart cities and regions and digital planning and construction. And besides establishing a master program on „Digital Methods for the Built Environment", the Leonard Obermeyer Center is providing Professional Education programs jointly with our recently launched TUM Institute for Life Long Learning. This institute is a cornerstone of TUM's institutional strategy awarded in the Germany's Excellence Initiative and one example showing how TUM is systematically transforming to better tackle the ever changing challenges of our world: Disruptive scientific advances, structural economic changes, rapidly changing labor markets and societal paradigm shifts present new historical challenges to innovation processes, products and services across the various technology sectors: energy – mobility – communication – health – infrastructure & built enviroment etc.

To increase your academic performance and global impact in particular in the area of digitally enabled innovtions, we have appointed 14 new professors in 2020, primarily from US and UK, to strengthen our capabilities of the Departments of Informatics as well as Electrical and Computer Engineering.

One of the highlights is Prof. Daniel Rückert, formerly Imperial College London. He has been awarded a prestigious Alexander von Humboldt-Professorship and is a highly renowned expert on artificial intelligence in medical imaging. Since then, he is an active bridge builder between informatics and medicine.

And supported by the Hightech Agenda Bavaria, TUM's faculty will undergo another historic expansion: within the next 2 years, we will recruit 83 new professorships, only 16 of them in the field of artificial intelligence and machine intelligence at the intersection to medicine & healthcare, material science and robotics. This will help to further strengthen of our computer sciences, which were ranked in the THE World Universities Ranking on place 14 worldwide and will help to infuse this expertise into other scientific domains such as the engineering disciplines.

And as the historical structure of universities, fragmented in disciplinary silos, can no longer cope with the highly complex, dynamic and interlinked challenges of our time, our TUM AGENDA 2030 foresees to further converge our disciplinary competences into transdisciplinary teams, following the founding principle of the LOC.

To increase your agility, academic performance and global impact, we initiated a fundamental restructuring process aimed at dynamizing scientific interactivity and collaboration. Therefore, our isolated departments will be transformed into an innovation-friendly matrix structure of schools and transdisciplinary integrative research centers cutting across these schools.

Examples are the new TUM School of Engineering and Design: we will join forces of the Departments of Civil, Geo and Environmental Engineering • Aerospace and Geodesy, parts of Electrical and Computer Engineering and Architecture to add the design expertise.

Informatics, mathematics and electrical & information technology will merge to become the new TUM School of Computation, Information and Technology: This school will unite the most important scientific, methodological and technological core competencies for an integrated software and hardware engineering.

The new TUM School of Social Sciences will comprise the expertise of Politics and Governance, Science and Technology Studies, as well as Educational Sciences to ensure that technological advancement meets societal acceptance. Through this school and the TUM School of Management, we will better integrate societal, ethical, political, economic and ecological aspects into our innovation processes which will be aligned to the values, needs and expectations of society. As part of this school, the TUM Institute of Ethics in Artificial Intelligence focuses on the implementation of ethical principals in technology.

These Schools are connected through interdisciplinary Integrative Research Centers, to follow transdisziplinary approaches in research and innovation:

The Munich School of Robotics and Machine Intelligence (MSRM), in which TUM has bundled competencies in the field of robotics, AI perception with the aim of developing innovative and sustainable technologies and solutions for the central challenges of our time in the sectors of health, work and mobility.

Most recent is the Munich Data Science Institute (MDSI) with its guiding theme "Computational Science & Engineering across Scales". The MDSI integrates the competences of TUM in the fields of data sciences, machine learning and artificial intelligence in transdisciplinary application contexts: personalized medicine, additive manufacturing, materials, astro and climate research as well as the build environment.

And with our new TUM Campus in Heilbronn, 22 Professor, funded by the Dieter Schwarz Foundation, perform research and teaching on how to manage the digital transformation of tech-based family businesses – right in the force-field of Germany’s family businesses in the Heilbronn-Franconia region with many "hidden champions".

As new digital technologies are opening up new ways for companies to capture, network and analyze information, we focus on Information Engineering. We study entire chains, from the sensor to the IT system through to the business model and, thus, we address an important building block in the digital transformation.

And finally, we put our own capabilities in synergy with those of other strong partners globally in order to jointly take leadership in one or the other field. Therefore, we

entered into flagship partnerships with Imperial College London in 2018 and 3 weeks ago with Tsinghua University. Within the recent ICL-TUM Academy of Doctorial Studies, graduate education and research focuses on AI-Healthcare-Robotics at international top-level.

In comparison, our collaboration with Tsinghua brings together complementary strength in machine intelligence, aerospace and intelligent manufacturing and joint entrepreneurship activities in Shenzhen and Munich.

Therefore, we build on our success in bringing start-ups to life (with 80 tech startups per year). We just introduced a new initiative: the TUM Venture Labs. These new entrepreneurial innovation hubs support entrepreneurial talents and re-enforce tech-based business translation from research by offering an entire ecosystem with the necessary development environments. Our aim is to create deeptech startup families around core technology fields such as Machine Intelligence, Quantum technologies, Additive Manufacturing, Future Materials, Sustainability and Built Environment.

The mission of the planned TUM Venture Lab Built Environment is to become Europe’s top platform for ventures developing innovative approaches, technologies and solutions for urban futures, the construction & operation of buildings and infrastructure as well as socio-technical systems in the context of design and architecture.

Through this approach of self-transformation, we want to make TUM fit for the future and agile enough to adapt to the ever-changing challenges waiting for us.

I want to thank all the speakers for giving this conference a vital impetus!

Let’s do our best to make this LOC Day sustaining an intellectual touch point of international friends in science.

Then, I am confident that we are looking forward into an exciting future!

Thank you!