

CONTACT

Chair of Building Realization and Robotics
Prof. Prof. h. c./SRSTU Dr.-Ing./Univ. Tokio T. Bock
Technische Universität München
Arcisstrasse 21
80333 München
Germany
Tel: +49 89 289 22100
Fax: +49 89 289 22102
thomas.bock@br2.ar.tum.de
www.br2.ar.tum.de

Office Management:

Rebekka Schienker
Tel. +49 89 289 22100
Fax: +49 89 289 22102
info@br2.ar.tum.de

Assistants

Dr.-Ing. Thomas Linner
Architecture and Construction Automation & Robotics
Tel. + 49 89 289 22178
thomas.linner@br2.ar.tum.de

Dr.-Ing. Christos Georgoulas
Electrical and Computer Engineering, Real-time Embedded
Systems, Machine Vision
Tel. + 49 89 289 28650
christos.georgoulas@br2.ar.tum.de

M. Sc.-BIS Albrecht Bernhard Heyer
Electrical Engineering and Telepresence Technologies
Tel. + 49 89 289 22170
bernhard.heyer@br2.ar.tum.de

M. Eng. Jörg Güttler
Medical Technology and Ambient Sensing Systems
Tel. + 49 89 289 22176
Jörg.Güttler@br2.ar.tum.de

Technician

Andreas Bittner
Mechatronics
Tel. + 49 89 289 22482
Christos.Georgoulas@br2.ar.tum.de

Associates

Prof. Dr. Kazuyoshi Endo
Construction Economics
kazu_endo_0805@ac.cyberhome.ne.jp

Dr. Isaac Shabtai
Automation in Off-site Production and Prefabrication
isaacsh@bgu.ac.il

Dipl.-Ing. Architect Kepa Iturralde
Refurbishing Automation
kepa@iturralde.coavn.org

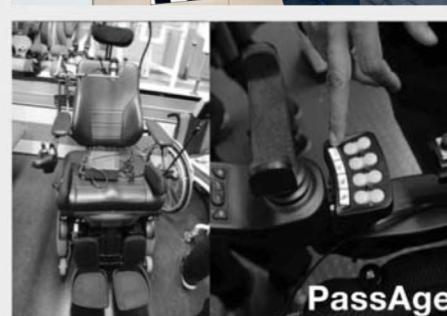
Prof. Dr. Soonwook Kwon
Ubiquitous-City Design and Engineering
soonwook@gmail.com

Prof. Dr. techn. Peter Eduard Mayer
Construction Management
Pe.mayer@br2.ar.tum.de

Prof. Dr. Alexej Bulgakow
Electrical Engineering & Automation in Construction
info@br2.ar.tum.de

Ministerialrat Friedrich Amann
RA Thomas Richter
Ministerialrat Prof. Herbert Kallmayer
Legal Aspects in Construction, Building and Planning Codes
info@br2.ar.tum.de

www.br2.ar.tum.de
info@br2.ar.tum.de



Research Projects

GEWOS

GEWOS is a BMBF-funded R&D-project in the field of Ambient Assisted Living, with a total cost volume of nearly 3.6 Million €. Besides the Chair for Building Realization and Robotics, other research and industry partners participate the consortium: EnOcean GmbH, Fraunhofer IIS, ISA Informationssysteme GmbH, Innovationsmanufaktur, SOPHIA GmbH and another TUM Chair of TUM's Sports Faculty. The project's duration is 3 years (April 2010 – April 2013) and the two TUM Chairs build the scientific back-bone of the Consortium. The main objective of the consortium is to develop a chair (seat) that is equipped with invisible, but sophisticated sensor technology that measures a multitude of user vital signs. By encouraging movement and supporting further constitutional methods, this system serves as a health promotion, embedded in the physical and emotional surrounding of the user.

Mechatronic Wall (LISA)

LISA is comprised of a 2 year research project (July 2010- July 2012) with a total cost volume of nearly 1 Million €, financed by the Italian government and the city of Bolzano. The consortium consists mainly of industry partners with TUM as leader of the consortium, both in terms of strategy and technology development. Daily living becomes an important quality factor especially in the ageing society. Elderly people are facing limitations in most of their daily living activities. Novel approaches need to be followed when trying to service the ageing society's needs. Various research fields deal with Activities of Daily Living (ADLs), fusing different technologies, to enable mechanisms that could efficiently assist, enhancing the everyday living quality in the ageing society. Through LISA's mechatronic service wall, an Ambient Intelligence Environment (Aml) can be created within a house or flat.

PASSAge

PASSAge is a BMBF-funded R&D-project in the field of Ambient Assisted Living (AAL) with a total cost volume of 3.9 Million €. In addition to the Chair of Building Realization and Robotics, 9 other research and industry partners form the consortium: SOPHIA mit P.S. Südbayern GmbH, City Sax GmbH, Sunrise Medical GmbH, Haag-Rehatechnik GmbH & Co. KG, metaio GmbH, Heidelberg Medical Marketing GmbH, Humanwissenschaftliches Zentrum (LMU), Chair for Media Technology (TUM), Chair for Sports Medicine (TUM). The project's duration is 3 years (June 2012 – June 2015). The three TUM Chairs build the scientific back-bone of the consortium.



Technische Universität München
Facultät für Architektur
Baurealisierung und Baurobotik

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Chair of Building Realization and Robotics



Master of Science (M. Sc.)

Advanced Construction and Building- Technology- Automation, Robotics, Services

The TUM offers its newly established Master Course focusing on automation and robotics in construction and building technologies. The course looks towards professionals of the construction and building industry, architects and civil engineers, computer scientists, managers and health professionals. Future students can increase their competitiveness not just by improving efficiency but also by developing new market opportunities. The course makes you a professional in automation and robotics in construction, services by building technologies and the adaptability of buildings throughout their entire lifespan. Our design philosophy shows you how to design for rationalization by automation and robotics, how to design for closed up components circulation in order to increase building components' performance, how to design and redesign real estate for providing services to its tenants and users focusing on assistive geronto-technologies.



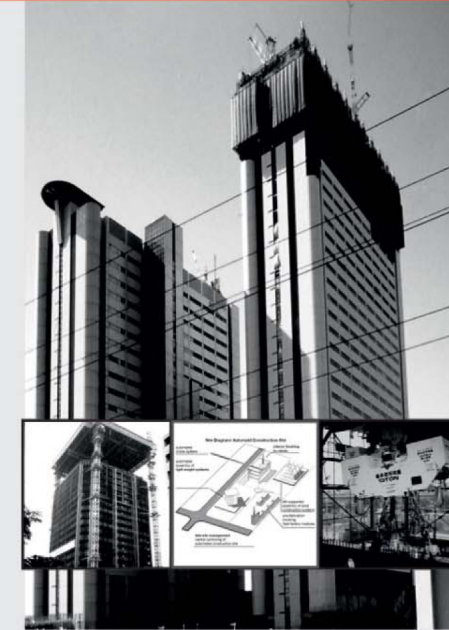
Construction Robotics Laboratory (CRL)

The Chair of Building Realization and Robotics is involved in more than 10 flexible prefabrication systems, 50 individual construction robot systems, 30 automated building construction and deconstruction (urban mining) sites, predominantly in Japan, Singapore, USA, France, Germany, Netherlands and Scandinavia. Since 1990, a multitude of automated high-rise sites have been operated by various Japanese companies in Asia. Also in European construction firms, flexible site-automation systems have been adopted nowadays. Most of these achievements were obtained by highly experimental research approaches. Therefore, the Construction Robotics Laboratory and the Tele-construction Site in Garching are designed as an experimenting laboratory, i.e. an „Incubator“. The incubators are used in innovation science and the R&D-industry to specifically generate inventions or to systemize the invention process.



Ubiquitous Life Support Systems Lab (uli's²-lab)

Together with the Chair for Philosophy and Theory of Science the Chair for Building Realization and Robotics founded the Ubiquitous Live Support Systems – Lab (uli's²-Lab). It is hosted at the Chair's Robotics Laboratory, at the Faculty of Architecture. The laboratory deals with applications, strategies and basic philosophies, related to the upcoming challenges associated with the integration of advanced technologies (production technology, ICT, microsystems technology, mechatronics, automation, robotics, personal assistance technology), in daily human living.



Tele Construction Site

Tele Construction Experimenting Site is an experimenting site located at Garching Campus, used for multiple purposes. This real site related approach enables technologies and sub-components embedded in the final products of those sub system or component manufacturing industries. Sometimes, advanced industries are even able to transfer process technologies and management strategies between each other. The site is open for students and researchers to implement mock ups, experimental shelters/ buildings, tele-construction experiments, distinguish and apply various demonstrator/prototype evaluation methods, use evaluation feedbacks for further development of the project in subsequent evaluation-development cycles. The Tele-construction site is closely linked to the chair's research on Innovation Deployment Strategies in Construction (IDS).

Mission Statement

Mission of the chair for Building Realization and Robotics is to extend the traditional core competences of design and build, broadening the activity area of future graduates, professionals and creating new employment opportunities. Located at TUM within the Bavarian high tech cluster -in which the chair is well connected - the chair functions as an incubator for the development and socio-technically integrated and building related technologies. In the Master Course Advanced Construction and Building Technology which the chair is coordinating since 2011 the chair has achieved to concentrate students coming from 8 different professional backgrounds (Architecture, Industrial Engineering, Electrical Engineering, Civil Engineering, Business Science, Interior Design, Informatics, Mechanical Engineering). The Chair

for Building Realization and Robotics merges management competency (construction management, technology management, innovation management) with competency in advanced technologies (production technology, ICT, Microsystems technology, mechatronics, automation, robotics, personal assistance technology) and applies it to solve future demographic challenges of our society by considering all phases of building's lifecycle (development, planning, construction, use/performance, de-construction/end-of-life). The chair defines architecture as a service to society and construction as a production process which assists demographic transformations by advanced building performance. The chair believes that the delivery of future high-tech environments/buildings to reasonable cost is dependent upon highly efficient production

methods. Thus the chair follows and promotes the philosophy that frontier engineering sciences breed innovations. These innovations are driven and amplified by globalization, closed loop resource utilization, transformation of technological potentials, environmental and demographic challenges. Global competition brought inflationary labour capacities resulting in decreasing labour costs. But to achieve welfare and culture any society needs sufficient income. To provide sufficient income for creating wealth and culture one has to be efficient. "One has to be good to be expensive": High income is based on high tech, if you can't just sell natural resources. The demographic change requires even more efficient socio-economical and socio-technical processes to be affordable. The notion of "Made in Germany" is internationally famous for its cars, machines, industrial facilities, and medical and

medical and environmental technologies. Its success is based on research and innovation, stressing that future wealth can only be generated by innovation leaps and radically new types of value design and engineering. Half of total investment is allocated in built environment, infrastructure, and facilities, signifying the strategic importance of the construction sector. The future construction sector will expand to new business fields by absorbing advanced technologies from various disciplines. Its success will depend on its innovation leap ability of the complete value chain of the artefactual engineering and built environment by embedding ICT, automation, robotics and services. This approach will create new markets, qualifications, skills and professions.