



CAE - Chinese Academy of Engineering

## 4<sup>th</sup> Sino-German iCity Symposium

# iCity and Intelligent Logistics

September 21-22, 2015

Haus der Wissenschaft, Sandstrasse 4-5, Bremen

### Program – Abstracts – CVs

Co-sponsored by

University of Bremen



LogDynamics Research Cluster



BIBA- Bremer Institut für Produktion und Logistik

**BIBA**

Jacobs University Bremen



Bremen Chamber of Commerce



Konfuzius Institut Bremen



Konfuzius-Institut Bremen  
不来梅孔子学院

## Symposium on iCity and Intelligent Logistics

21-22 September 2015, in Bremen, Germany

### Hosted by:

German National Academy of Science and Technology (acatech)  
Chinese Academy of Engineering (CAE)

### Symposium Chairs:

Prof. Otthein Herzog  
Prof. Pan Yunhe  
Prof. Klaus-Dieter Thoben

### Co-sponsored by:

University of Bremen, LogDynamics Research Cluster, and BIBA Bremen  
Jacobs University of Bremen  
Bremen Chamber of Commerce  
Konfuzius Institut Bremen

### 20 September 2015

Arrival of the Chinese Delegation at the Airport Bremen  
Pick-up and transfer to the Radisson Blu Hotel, Boettcherstrasse 2, Bremen

### 21 September 2015

**Venue:** Haus der Wissenschaft, Sandstrasse 4/5, Bremen

### Plenary Session

#### Chaired by:

**German: Prof. Encarnacao**  
**Chinese: Prof. Wu Cheng**

9:00-9:30	Welcome addresses by acatech, Bremen University, Konfuzius Institute	
9:30-10:00	Keynote: China's Urban Infrastructure Challenges	Prof. Pan Yunhe
10:00-10:30	Keynote: From Smart Cities to Intelligent City Logistics	Prof. Wietfeld
10:30-11:00	Tea/coffee break	

### Session 1: iCity Logistics

#### Chaired by:

**German: Prof. Thoben**  
**Chinese: Prof. Wu Zhiqiang**

11:00-11:30	Intelligent City Logistics - Future Challenges and Solution Approaches	Prof. Freitag
11:30-12:15	Logistics+Internet+Finance - Construction of Operation System of China Road Logistics Network	Mr. Xu Guanju
12:15-13:30	Lunch	

<b>Session2 : iCity Industry development</b>		
<b>Chaired by:</b>		
<b>German: Prof. Eberspächer</b>		
<b>Chinese: Prof. Li Renhan</b>		
13:30-14:00	Industries in the City	Prof. Sachsenmeier
14:00-14:30	Intelligent Economy/Industry Promote the Development of Intelligent Cities	Prof. Wu Cheng
14:30-15:00	Tea/coffee break	
<b>Session 3: iCity Criteria</b>		
<b>Chaired by:</b>		
<b>German: Prof. Dowling</b>		
<b>Chinese: Prof. Wu Cheng</b>		
15:00-15:30	Urban Infrastructure Intelligence: Efficient and Resilient Cities	Dr. Schwingenschlögl
15:30-16:00	BiCiDa (Big Cities Data) supported Intelligent Cities Evaluation and Planning	Prof. Wu Zhiqiang
16:00-17:00	Wrap-up/discussion	
18:00	Symposium Dinner, Ratskeller, Am Markt, Bremen	
	Dinner speech: China in Bremen	Mr. Hempel
<b>22 September 2015</b>		
<b>Venue:</b> Haus der Wissenschaft, Sandstrasse 4/5, Bremen		
<b>Session 4: Industrial Roundtable</b>		
<b>Chaired by:</b>		
<b>German: Mr. Eirich</b>		
<b>Chinese: Prof. Wu Cheng</b>		
9:00-9:30	Autonomous Driving in the iCity – HD Maps as a Key Challenge of the Automotive Industry	Prof. Seif
9:30-10:00	Aspects of an integrative IT-platform to support Smart Maintenance concepts in the iCity	Mr. Merkel
10:00-10:30	Tea/coffee break	
10:30-11:30	Symposium Panel/Roundtable discussion	Speakers/all
11:30-11:45	German Symposium summary	Prof. Herzog
11:45-12:00	Chinese Symposium Summary	Chinese Rapporteur
12:00-12:10	Walk to Bremen Chamber of Commerce, Am Markt 13	
12:10-14:00	Reception at the Bremen Chamber of Commerce Welcome address by the Managing Director	Mr. Volkmar Herr
	<b>End of Symposium</b>	
14:30-16:30	Technical visits	
<b>23 September 2015</b>		
Hotel Checkout and Departure/some members remain to visit logistics company		

## Participants

### Chinese delegation:

1. Prof. Pan Yunhe, Former Vice President, Chinese Academy of Engineering
2. Mr. Li Renhan, Director-General, Department 3, Chinese Academy of Engineering
3. Mr. Tian Qi, Division Director, International Cooperation Department, Chinese Academy of Engineering
4. Mr. Zhang Song, Secretary for Prof. Pan Yunhe
5. Prof. Wu Cheng, Tsinghua University
6. Mr. Xu Guanju, Vice Chairman, National Federation of Industry and Commerce and Chairman Transfar Group
7. Mr. Xu Xun, Personal Assistant to Chairman, Transfar Group
8. Mr Jiang Zhangke, Deputy Chief, Office of Governing Board, Transfar Group
9. Mr. Sun Lei, Transfar Goup Deputy President
10. Mr. Zhou Shengxue, Transfar Logistics Group Deputy President
11. Ms. Mary Qu, Transfar Group
12. Prof. Wu Zhiqiang, Vice President, Tongji University

### German delegation:

1. Prof. Dr. Michael Dowling, University of Regensburg and Chairman of the Board, Münchner Kreis - Association for Communications Research
2. Prof. Dr.-Ing. Jörg Eberspächer, TU München, Münchner Kreis, acatech
3. Mr. Hans Dieter Eirich, Member oft the Board, speedikon FM AG
4. Prof. Dr. J. Encarnacao, Technical University of Darmstadt and Fraunhofer IGD, acatech
5. Prof. Dr.-Ing. Michael Freitag, University of Bremen and BIBA
6. Prof. Dr. Otthein Herzog, University of Bremen and Jacobs University Bremen, acatech
7. Mr. Adrian Merkel, Managing Director, WiriTec GmbH
8. Dr. Ingrid Rügge, University of Bremen, International Graduate School of Dynamics in Logistics
9. Prof. Peter Sachsenmeier, IMAG, acatech
10. Dr. Christian Schwingenschlögl, Siemens AG
11. Mr. Balthas Seibold, GIZ - Industry 4.0 and Open Innovation in the international Cooperation
12. Prof. Dr. Heiko Seif, Senior Manager, Unity AG
13. Prof. Dr.-Ing. Klaus-Dieter Thoben, University of Bremen and BIBA
14. Prof. Dr.-Ing. Christian Wietfeld, Technical University of Dortmund

### Junior Participants:

15. PhD students of the International Graduate School of Dynamics in Logistics, University of Bremen

## CVs and ABSTRACTS Chairpersons

**Prof. Pan Yunhe** was born on 4 November, 1946 in Hangzhou, Zhejiang Province. He graduated for his Bachelor from the Department of Architecture, Tongji University, Shanghai in 1970. After graduation for Master of Computer Science in Zhejiang University, he served there as a Professor, later on Chairman of Computer Science & Engineering Department, and Director of Artificial Intelligence Institute and Industrial Design Institute of Zhejiang University. From May 1995 to August 2006, he served as the President of Zhejiang University. From June 2006 to June 2014, he served as the Executive Vice President of Chinese Academy of Engineering (ministerial level). He is also a member of the Academic Degrees Committee of China's State Council, the Consultant of the China Association for Science and Technology, and the Honorary Director-General of China Image and Graphics Association.



Prof. Pan Yunhe is one of the pioneers in the field of intelligent CAD and computer arts. He has been engaged in computer graphics, computer-aided design, artificial intelligence and industrial design research for a long time. He has undertaken many important research projects, and achieved serious important research results in the fields of computer art, intelligent CAD, digital heritage preservation, and digital libraries, which had won several national, provincial and ministerial level scientific and technological awards. He has published many articles.

Prof. Pan Yunhe was elected as the member of the Chinese Academy of Engineering in 1997.

### China's Urban Infrastructure Challenges

#### Pan Yunhe

China faces multifaceted challenges in urban infrastructure. The report focuses on the following three issues:

#### **(I) Urban Transport**

Analyze the problems and challenges facing urban transport and offer countermeasures including improving urban road network and developing intelligent logistics and intelligent traffic management.

#### **(II) Urban Environmental Pollution**

Analyze main challenges facing urban environment and offer countermeasures based on sensor network and big data specifically for PM2.5.

#### **(III) Urban Employment**

Argue that urban economic development is the foundation of urban employment and that the four exemplary cases shed important light on China's urban economic development, and analyze human resources evolution in China's urbanization.

**Prof. Otthein Herzog** received his MSc (Diploma) in Mathematics from the University of Bonn, Germany in 1972, and his PhD in Computer Science from the University of Dortmund, Germany, in 1976.

From 1977 to 1993, he worked for IBM Germany in various technical and managerial positions in software development where he was responsible for the development of software products and for the development of advanced knowledge-based systems while he directed the IBM Institute for Knowledge-based Systems in the IBM Scientific Center.

From 1993-2009 he held the position of the chaired professor of Artificial Intelligence at the University of Bremen, Germany, where he



was the founder and director of the research and technology transfer institute TZI – Center for Information and Communication Technologies from 1995 to 2009 with more than 160 fulltime researchers. In 2004, he also founded the Mobile Solution Center with 120 fulltime researchers as a transfer institution for wearable and mobile technologies at work places.

He was the Co-PI and director (together with Prof. Scholz-Reiter) of the DFG-funded Collaborative Research Center (SFB) 637 on “Autonomous Cooperating Logistic Processes” from 2004-2014.

He continues to work as a research professor at the University of Bremen. Since 2010 he also holds the Wisdom Professorship of Visual Information Technologies at Jacobs University Bremen.

In 1998, he became affiliate professor in the Machine Learning and Inference Laboratory of George Mason University, Fairfax, VA, USA, and since 2015, he holds a honorary professorship at CIUC, Tongji University, Shanghai, as National Senior Expert.

From 2000-2002 he was granted leave of absence from the University of Bremen and joined Lenze AG as the CTO, where he directed the product development of gear boxes, electric motors, converter drives, servos and automation engineering software.

His current research interests include Knowledge Management and coordination through Multi-Agent Systems for Industry 4.0 and Logistics 4.0, ICT for Smart Cities, Wearable Computing for work processes and health as well as AAL applications, and the semantic analysis of images and videos. In these research fields he has (co-)authored more than 260 refereed scientific publications.

Since 2006, Dr. Herzog is Fellow of acatech – German National Academy of Science and Engineering, Fellow of GI – German National Computer Society since 2008, and member of the ACM and DAGM. He also serves on various boards of German research institutions.

**Prof. Dr. Klaus-Dieter Thoben** studied mechanical engineering with a focus on product development at the TU Braunschweig, Germany. After finalising his studies, he moved to the University of Bremen where he received his Doctor of Engineering degree in the field of CAD/PDM applications. In 1989, he joined BIBA (Bremer Institut für Produktion und Logistik GmbH) as Head of the Department of Computer Aided Design, Planning and Manufacturing. In 2001, he received a state doctorate (Habilitation) including a *venia legendi* for the domain “Production Systems”. He was appointed a full professor at the University of Bremen in 2002 for “ICT Applications in Production”. In the same year he became director of BIBA. Since 2008 he is head of the ‘Institute of integrated Product Development’ at the Faculty of Production Engineering. Since 2012 he is the spokesman of the Research cluster of Dynamics in Logistics (LogDynamics) at the University of Bremen as well as member of the board of ForWind, a joint research cluster of the Universities of Oldenburg, Hannover and Bremen on Wind Energy. He is Honorary Professor at the University of Nottingham (UK).



His main research activities include but are not limited to the application of information and communication technologies to support co-operative processes and environments with a specific focus on product development (smart/intelligent products engineering), product and systems lifecycle management, collaborative process chains and enterprise networks. He has more than 25 years of experience in co-ordination and management of European and national funded research projects including EU funded Networks of Excellence and large IPs (Integrated Projects).

He is Founding Member and Member of the Board of directors of the European Society of Concurrent Enterprising (ESoCE-Net). He is co-founder of the ICE (International Conference on Engineering, Technology and Innovation) conference series, which addresses especially multidisciplinary approaches on product and service engineering in inter-organisational environments.

Klaus-Dieter Thoben is author, co-author, editor and co-editor of some 30 monographs, collections and proceedings. Author and co-author of some 300 contributions in scientific journals, proceedings and collections. He is a member of various advisory boards of international conferences such as ICE (International Conference on Concurrent Enterprising), APMS (Advanced Production Management Systems, ProVE (Working Conference on Virtual Enterprises), ISL (International Seminar on Logistics). For more than 20 years Klaus-Dieter Thoben is reviewer (evaluator, opponent) in PhD processes in various European countries (incl. Finland, UK, Ireland, Italy, Switzerland, The Netherlands). He acts as evaluator and reviewer for national research programmes in various countries (incl. Germany, Austria, Norway) as well as for EU Programmes. He is Member of editorial boards and/or reviewer of various scientific journals such as IJoL (International Journal of Logistics), CiI (Computers in Industry), PPC (Production Planning and Control), IJPLM (International Journal of Product Life-Cycle Management). He is active in various scientific as well as professional communities such as IFIP TC5 (International Federation of Information Processing, Technical Committee 5), WiGeP (Wissenschaftliche Gesellschaft für Produktentwicklung), VDI (Verein Deutscher Ingenieure).

## CVs and ABSTRACTS Speakers and Session Chairs

**Prof. Michael Dowling** was named to the Professorship for Innovation and Technology Management at the University of Regensburg effective July 1, 1996. Previously he had been an Assistant Professor and Associate Professor with tenure at the University of Georgia, USA. Prof. Dowling was born in 1958 in New York, USA. He graduated from Clear Lake High School in Houston, Texas as Salutatorian of the Class of 1976. He then studied at the University of Texas in Austin (Bachelor of Arts in Chemistry with High Honors), Harvard University (Master of Science in Management and Public Policy) and University of Texas at Austin (Doctor of Philosophy in Business Administration). As an exchange student he also spent two years at the University of München. He has worked at the International Institute for Applied Systems Analysis in Laxenburg, Austria and with McKinsey & Company in Düsseldorf Germany. He is the Chairman of the Board and a member of the Research Committee of the MÜNCHNER KREIS, a non-profit international association dedicated to communications research. <http://www.muenchner-kreis.de/>



He has published over 50 academic articles in Die Betriebswirtschaft, Strategic Management Journal, Management Science, California Management Review, Research Policy, Business Horizons, Columbia Journal of World Business, and Telecommunications Policy.

His research interests include the strategic management of technology, high technology entrepreneurship, and the relationships between technology, public policy and economic development.

**Prof. Jörg Eberspächer**, Professor Emeritus, Technische Universität München, member, acatech and MÜNCHNER KREIS, graduated in Electrical Engineering at the University of Stuttgart, Germany, where he earned the Dr.-Ing. degree in 1976. From 1977 to 1990 he was with Siemens AG, Germany, where he was responsible for switching and broadband network research. In 1990 he was appointed full professor for communication networks at the Technische Universität München; he retired in 2012. 2000 - 2002 he was member of the board of VDE. He is guest professor at the Tongji University in Shanghai and member of the German scientific academies Leopoldina and acatech. He is chairman and member of several advisory boards of German research institutes. Until 2014 he was member of the board of the MÜNCHNER KREIS. His research fields are broadband, mobile and intelligent networks and services, and applications for the digital world.



**Mr. Hans-Werner Eirich** was born in Darmstadt in 1959. He studied at the universities of Mainz, Paris, Dijon, Würzburg and Birmingham International Studies and graduated at Mainz University. His professional engagements were in the AEC and Facility Management software market and he held international management positions in various software companies. His focus of responsibility was always on international management as well as strategic business development.



Since 2001, Hans Werner Eirich is Vice-President at speedikon Facility Management AG in Bensheim, Germany, having built up international business in now 14 countries. He has spoken on many international events on IT, FM and Corporate Real Estate Management themes. He also published articles in various research and scientific magazines and reports.

Since 2012, Mr. Eirich is also part of the management board of WiriTec GmbH, a German software company specialised in future-oriented Energy Management IT solutions for the industry and other important market segments.

From 1991 to 1993, he had a leading role in a Pan European Research Project of the EU under the title “ESPRIT 7280” focussing on architecture, methodology and tools for large-scale engineering.

His current responsibilities include also the Data Center Management solutions in the international field.

He is fluent in English, French, Spanish and Italian.

**Prof. Jose Luis Encarnacao** was born in Portugal, passed there the school "Escola Salesiana do Estoril", and lives in Germany since 1959. Since 1975 he was a full professor of Computer Science at the Technische Universitaet Darmstadt and the head of the Interactive Graphics Research Group (TUD-GRIS). Since October 2009 he is Professor Emeritus. In 1986 he founded the Fraunhofer Institute for Computer Graphics (IGD) in Darmstadt and was its founding director from 1987 – 2006.

He founded in 1999 the INI-GraphicsNet (International Network of Institutions for Computer Graphics), today a network of legally independent but closely cooperating research entities in Germany, Italy, Panama, Portugal and Spain, that signs since 2010 under the new name GraphicsMedia.net.

Professor Encarnacao was one of the founders of EUROGRAPHICS, the European Association for Computer Graphics; from 1980 to 1984 he was its chairman. From 1985 to 1991 he was chairman of its Professional Board.

Professor Encarnacao holds a diploma (Dipl.-Ing.) and a Dr.-Ing. in Electrical Engineering from the Technical University of Berlin, where he completed his studies as a holder of a scholarship of the Gulbenkian Foundation. In 1967, he started his career in Computer Graphics at the Technical University of Berlin. Before coming to Darmstadt, he held research and academic positions at the Heinrich-Hertz-Institute in Berlin (1968-1972) and at the University of Saarbruecken (1972-1975).

From 1995 to 2001 he was an elected member of the Senate of the Fraunhofer-Gesellschaft in Munich and from 2002 to 2006 he was a member of the Advisory Board (Praesidium) of this German Association for Applied Research. From July 2001 to October 2006 he was the chairman of the Fraunhofer ICT Group (Information and Communication Technology Group) consisting of 17 institutes with about 3,000 employees and a total budget of about 190M€ in 2005. From 2001 to 2007, Professor Encarnacao was a member of the EU advisory board of the EU 6th and 7th Framework Programme for the information technology area (ISTAG). He was chairman of this board from 2002 to 2004 and vice-chairman from 2005 to 2007.

Besides several honors, he was awarded the German Federal Service Cross in 1983, with the German Federal Service Cross First Class in 1995 and with the Big Cross of the Order of Merit of the Federal Republic of Germany in 2006. The country of Portugal honored him with the »Ordem Militar de Santiago de Espada« in 2001. The German Federal State of Hesse awarded to him the »Hessischer Kulturpreis« in 2000 in recognition of his scientific achievements. In 2001 he was elected full academy member of the »Berlin-Brandenburgische Akademie der Wissenschaften« (BBAW, the former Leibniz Academy) and in 2002, he became a full academy member of the German National Academy of Science and Technology (acatech). For outstanding technical and scientific achievements he received, among other awards, the Karl-Heinz-Beckurts Award in 1989. He was the recipient of the Steven A. Coons Award from ACM-SIGGRAPH (USA) in 1995 and the recipient of the Konrad-Zuse-Medal by the German Computer Society (GI) in 1997.

Professor Encarnacao is today active as a Senior Technology and Innovation Advisor to Governments, multinational companies, research institutions and foundations. He is also strongly involved in the development of Research Agendas and Innovation Strategies for Socio-Economic Development in the BRICS countries and other emerging economies.



**Prof. Michael Freitag** is Professor of Planning and Control of Production and Logistics Systems in the Faculty of Production Engineering of the University of Bremen and Director of BIBA – Bremer Institut für Produktion und Logistik. His research is focused on modelling, simulation and optimization of complex production and logistics systems, on the development of planning and control methods for logistic processes and on the automation of physical material flows through robots and flexible transport systems.

Michael Freitag studied Electrical Engineering at the Brandenburg Technical University Cottbus, specializing in automation and communication technology. He then completed his PhD at the Bremen University, focusing on the nonlinear dynamics of production systems. In 2004, he became

Managing Director of the Bremen Collaborative Research Centre “Autonomous Cooperating Logistic Processes” (SFB 637), funded by the German Research Foundation (DFG). In 2008, he left the university and led projects with the steel manufacturer ArcelorMittal on the optimization of logistic processes. Beside his industry involvement, he was also guest lecturer at the Jacobs University in Bremen. In 2014, he was appointed full professor at the University of Bremen.



### **Intelligent City Logistics - Future Challenges and Solution Approaches**

#### **Michael Freitag**

Around 50 % of the world population lives in cities. In the next years, a growing world population and the continuing trend of urbanization will raise multiple challenges for logistic processes. Especially in cities, the infrastructure has to ensure mobility for people and industrial goods at the same time.

This talk highlights future logistics challenges and discusses solution approaches for the implementation of intelligent concepts to support mobility and sustainability in urban areas. Finally, a link to current digitalization in production is drawn in order to emphasize the importance of integrating production and logistic processes in order to cope with the various challenges.

**Mr. Matthias Hепен**, Diplom-Kaufmann, is the Director Asia with Bremen invest (WFB Wirtschaftsförderung Bremen GmbH).

Bremen invest is the international arm of the Economic Development Corporation of the German State of Bremen. Mr. Hепен is responsible for the international marketing and sales in Asia. He acts as consultant to international companies which have an interest to invest in or to set up new businesses in Germany.

Mr. Hепен studied economics and commerce at the University in Osnabrück before he worked as product manager for specialty chemicals within the Japanese trading company Mitsubishi Corporation.

Mr. Hепен will give the Conference Dinner Speech on the subject of “China in Bremen”.

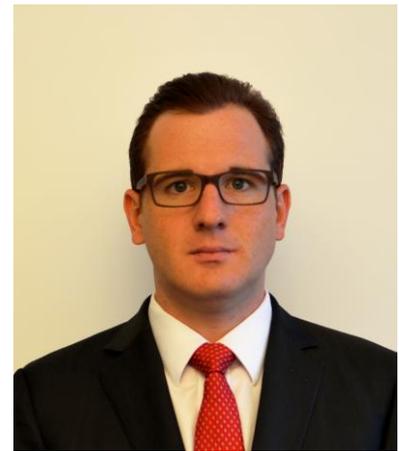


**Mr. Adrian Merkel** was born in Darmstadt in 1983. He studied at the University of Aberdeen, Scotland and graduated in 2005 with a Master's Degree in Political Economy and Management Studies.

From 2005 until 2008 Adrian Merkel was research associate at the institute of building informatics at Graz University of Technology. His field of research was the impact of environmental legislation on the values of industrial and commercial buildings and installations.

In early 2009 Adrian Merkel founded WiriTec GmbH, an innovative software company specializing in the development of efficient energy management and energy data management solutions. These solutions span from data collection at field level to energy consumptions analyses, consumption forecasts and energy cost accounting.

Today WiriTec GmbH employs around 20 staff and has numerous customers in various different industry sectors such as automotive, chemicals and pharmaceuticals.



### **Aspects of an integrative IT-platform to support Smart Maintenance concepts in the iCity Adrian Merkel**

IoT has gained significant importance in the discussion during the past years. This discussion is turning around 2 positions: Industry 4.0 as a major paradigm shift paving the way for the industry into a digital future or disregarding it as a temporary hype.

The presentation will focus on clarifying the importance of digitalization especially in the field of Smart Maintenance in production and manufacturing in the iCity. It will point out how companies will benefit from the so-called 4<sup>th</sup> industrial revolution and which success factors are indispensable with regard to consistency of operation and user friendliness of solutions. In particular, respecting a few key standards is essential for the strategic maintenance IT-platform such that it can easily be adapted to changing conditions and upcoming challenges in the industry. In this context, scalability and flexibility are key criteria. Huge amounts of data originating from machinery and technical installations can seamlessly be incorporated as well as highly adaptive maintenance strategies.

Based on a self-learning back-end system, maintenance activities can thus be planned more precisely. The objective is to move from a predictive maintenance approach to an event-based maintenance which is only possible via IoT-enabled solutions.

Event-based maintenance will enable corporations-also medium size companies-to benefit from consistent future oriented portal technology and subsequently implement and operate a corporate maintenance strategy targeting an overall corporate benefit.

Adrian Merkel's presentation illustrates how industry 4.0 Smart Maintenance concepts can bring value to companies in the iCity of the future.

**Prof. Peter Sachsenmeier** is a strategist, expert in complex technology management, industrial innovator and visionary; also, CEO of Switzerland based management consultancy IMAG Information Management AG. As an entrepreneur, he is also President, or CEO, or board member of several technology start-ups, and in active financing communities supporting young, innovative technology firms.

At the same time, Prof. Peter Sachsenmeier continues to teach information management and large programme management at major universities in the UK, Germany, and Asia. He has worked for the UN and several of its agencies, including the World Bank, UNESCO, WHO, and UNEP. He is the President of the Swiss accreditation organization for business analysts, IBAE.

He is co-author of the book *Challenges between Competition and Collaboration: The Future of the European Manufacturing Industry*.

He is a member of industrial think tanks which seek to identify future technology trends and transform them into goods and services. He has also founded institutions for innovation, entrepreneurship and technology transfer.

A polyglot and at home in Oxford England where he started to teach at the eponymous university right at the beginning of his professional career, Prof Peter Sachsenmeier was elected a member of the national German Academy of Science and Engineering in 2006. He has a unique international network of contacts, access to investment projects and advanced technology research.

His recent work deals with smart city technologies in an increasingly urban world, and with the business processes needed to manage sensory environments, e.g. in advanced manufacturing *Industry 4.0, modern logistics* and the *Internet of Things & Services*.

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### **Industries in the City Peter Sachsenmeier**

The new international standard for smart cities, ISO 37120, finds disappointingly few core indicators and similarly few supporting indicators under the theme „economy“. Other major areas of responsibility in the standard (built environment, energy, health and human services, payments, public safety and security, telecommunications, transport, waste management, water) and also the „enablers“, (analytics, citizen engagement, computer resources, connectivity, data management, finance and procurement, instrumentation and control, interoperability, policy and leadership, security and privacy) all fall painfully short of the real challenges: how to unleash innovation in the cities in the face of unprecedented changes in the world economic landscape, how to attract talent and jobs, how to maintain agility in the face of ever-changing competition, how to support industrial diversity or focus as the case may be, how to propel local economies and local industries forward.

In the general discussion, cities are rightly seen as producers of innovation, as generators of ideas and wealth. Yet, current evaluations seem to reflect the concerns of bureaucracies, academics and technology companies more than those of business, industry and the man and woman in the street.

The public discussion needs to be re-focused squarely on entrepreneurship (both existing and future) rather than on mere technologies, on innovation of goods and services, and on the continuing quest of communities to survive into the digitally enabled industries and services of the future, remaining globally competitive, as well as maintaining or achieving outstanding quality of life for citizens with sufficient livelihoods. That, btw, will include massive upskilling and upgrading of workforces.

In cities, there is an ever greater need bring to goods and services closer to consumers, including production capabilities. In countries with a strong urban / rural, divide, the same challenge exists with reference to rural consumers (and rural entrepreneurship). Sustainability and environmental care are key elements in this drive. Existing and future examples of these approaches will be demonstrated.

**Dr. Christian Schwingenschlögl** received his master degree in Information Science from the Munich University of Technology in 1999 and his PhD from the Department of Electrical Engineering and Information Technology, Munich University of Technology in 2005.

In the same year, he joined Siemens AG where he started to work as research scientist in the field of self-organizing wireless networks. In 2010 he took over responsibility for a research team at Siemens Corporate Technology with a focus on Internet of Things. Research areas included Software-Defined Radio, Radio Localization and application-oriented topics in the field of urban infrastructure like intelligent lightning, building automation, smart water grids and intelligent traffic solutions.

In 2012, he joined the New Technology Field Sustainable Cities where he is now responsible for topics in the area of infrastructure intelligence and the development of the City Intelligence Platform. Recent topics in this area include adaptation to climate change and resilience criteria for urban infrastructure.



### **Urban Infrastructure Intelligence: Efficient and Resilient Cities Christian Schwingenschlögl**

Urbanization has become a global trend. Large cities are growing continuously, creating new challenges for infrastructure and operation in the process. Swelling city populations are giving rise to new patterns of demand for energy, water, building space and material resources too, making it increasingly important to fashion a sustainable urban environment in which quality of life for citizens is high and energy and material resources are used efficiently. The cost of energy and resources and the importance of tackling increasing emissions have created a pressing need for sustainable urban infrastructure. Sustainability is the key to achieving high quality of life backed by a healthy economy and strong society without jeopardizing the natural environment.

The City Intelligence Platform (CIP) is all about the efficiency of urban infrastructure. Examining efficiency in this context requires a proper understanding of how infrastructure is used in different domains, the interdependencies between different elements of infrastructure and the effects of external drivers as diverse as public policy, major events and weather patterns and precipitation. Pilot deployments with partners are already operational and the platform has been opened to enable external contributors („App-store“) to add their own applications and modules. Furthermore, it is possible to smoothly integrate platform functionality into existing application environments within the cities. The open platform approach supports the generation of an ecosystem of development partners, strengthens network effects and encourages the participation and engagement of citizens. Concepts and architectural blueprints have been developed to facilitate easy replication in different cities. A practical evaluation of those concepts is ongoing with encouraging results e.g. within the European project “STREETLIFE” ([www.streetlife-project.eu/](http://www.streetlife-project.eu/)).

As data pours into the CIP, specially designed data analytics algorithms assess how systems throughout a city behave in real time. But the vision behind the platform goes even further: the CIP as a kind of data ecosystem in which, as with natural ecosystems, everything has a feedback loop such that the system – ultimately an entire city – regulates itself within its natural energy and resource limits.

**Prof. Dr. Heiko Seif** is Senior Manager at UNITY AG since 2012. He is in the leadership team of the Competence Center IT Management and responsible for Industry 4.0 initiatives. Especially the development of new business models based on technologies for connectivity and process improvements enabled by Industry 4.0 approaches for customers out of the manufacturing sector are his main focus. With UNITY Prof. Dr. Seif is involved in national and international research projects like it's OWL, INBENZHAP and GEMINI. Furthermore he has deep insights in research projects of different industries.



Prof. Dr. Heiko Seif studied mechanical engineering at the Karlsruhe Institute of Technology with focus on production automation. He started his career in the simultaneous engineering team at Daimler where he was responsible for the automation of production facilities. He continued his profession at the BMW Group where he was consultant in the field of technology management and innovation.

Since 2010 he is lecturer at the Munich Business School and holds a professorship for international management, research & innovation.

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### **“Autonomous Driving in the iCity – HD Maps as a Key Challenge of the Automotive Industry”**

**Heiko Seif**

Autonomous Driving is on its way to reality. Advanced Driver Assistance Systems (ADAS) of the latest premium car generation already allow self-driving experience on highways for a few seconds. This kind of feature is based on optical and radar sensors that are able to scan the near car environment. The results are input for steering, accelerating and breaking actuators that allows self-driving in situations with low complexity. It is the first step towards Autonomous Driving. Transferred into urban traffic situations the information of these sensors is not sufficient in order to enable fully Autonomous Driving. Additional input like the exact location, speed and direction of the car as well as the current traffic situation and the behaviour of other traffic participants is required. The basic references for this multi-dimensional information are High Density (HD) Maps with an accuracy of +/- 10cm enhanced by real time status of the wider car environment (~1 km). This underpins that HD Maps are a Key Challenge for the Automotive Industry especially because that topic is not known as a core competence of car manufacturers until now.

The presentation of Prof. Seif reveals some background information about the current state of research and an outlook on future scenarios.

**Prof. Christian Wietfeld** received his diploma degree and PhD from RWTH Aachen in 1992 and 1997, respectively. After holding various positions in industry (Siemens, 1997-2005), he joined TU Dortmund University in 2005 as a full professor and head of the Communication Networks Institute. He has initiated numerous research projects on the design and performance evaluation of future communication networks, leading to team of currently 16 full-time researchers. Prof. Wietfeld's research has been published in around 175 peer-reviewed publications. He has received 8 Best Paper awards and an "Outstanding Contribution Award" of ITU-T. He is a senior member of the IEEE, an editor for the Transactions on Emerging Telecommunications Technologies and head of the committee on "Communication Networks and Systems" in the German sister organization of IEEE, ITG. He co-founded the international Wi-UAV workshop on wireless networking of autonomous vehicles. He holds several patents and is co-founder of the start-up comnovo.



### **From Smart Cities to Intelligent City Logistics Christian Wietfeld**

Future City Logistics need to find a balance between highest efficiency from a logistics point of view and the impact on the inner-city traffic and environment from the city's point of view. With the advent of Smart Cities, new tools will become available to manage this trade-off in an optimized way. Sensors and communication networks will make available detailed data about inner-city traffic flow, logistic process characteristics and environmental conditions. In order to leverage these large data volumes for meaningful services, such as the prediction of traffic congestion and the optimization of logistics processes, the data needs to be analyzed with state-of-the-art Big Data analytics methods. Finally, Intelligent City Logistics will also provide new tools and services to interconnect various aspects of logistics (intra, transport and traffic) to make city logistics as efficient and environmentally acceptable as possible. The key note will illustrate these aspects with various case studies from on-going research, for example from the DFG Collaborative Research Centre "Providing Information by Resource-Constrained Data Analysis" at TU Dortmund University and the EffizienzCluster LogistikRuhr.

**Prof. WU Cheng** graduated from Electrical Engineering Department of Tsinghua University in 1962 and Tsinghua graduate school in 1966 respectively. He is a professor of Department of Automation, Tsinghua University, a member of Chinese Academy of Engineering, the director of CI MS National Engineering Research Center. Since 1986, he participated in China Hi-Tech Program (863 Program) as a chairman in CIMS Expert committee and Chief Scientist of Automation Technology Area. Also, he was a Chief Scientist of National 973 Project “Theory and Algorithm of Real-time Intelligent Control and Optimization for Complex Manufacturing and Process industry”. He got many Awards from government, foundations and international society. He was elected as a member of Chinese Academy of Engineering in 1995.



### **Intelligent Economy/Industry Promote the Development of Intelligent Cities** **Wu Cheng**

In this talk, the Interactions between Economy/industry and City development are pointed at first. Economy, mostly also industry is the engine of city progress at any time. On the other hand, City, by means of its governance (policy and investment guidance etc.), can change and push forward industry progress (structure, management...)

Second, we will introduce a general strategy of industrialization and Informationization in China. China emphasis “fusion” of ICT and industry in recent 30 years. Actually, this kind of fusion is a large Cyber-Physical System (CPS).

Then, some progress in new ICT applications of fusion are given. As examples, we will introduce applications in “Networked Coordinative Manufacturing”; “Cloud Manufacturing”; “Equipment Monitoring and Diagnosis based on Big Data”.

**Prof. WU Zhiqiang**, Vice President , Tongji University Shanghai, Academician, Royal Swedish Academy of Engineering Science, Hon. FAIA, is devoted to sustainable urban design, combining the field with urban architectural planning practices and urban technology innovation.

As a pioneer in this field in Chinese architectural profession and one of the key leading persons in the professional organizations (vice president and founding member of China Green Building Council and Chinese Building Energy Efficiency Council, the chief coordinator assigned by the State Council for the principle of urban planning), he has shaped the new urban design discipline in China.

Prof. Wu is Chief Planner of World EXPO Shanghai 2010, the Chief Planner of the Earthquake Placement Plan in Sichuan and Chief Planer or

Consultant Planner of more than 11 major cities all over China. He is responsible for more than 80 urban architectural design and planning projects, including the Plan of Word EXPO 2010 Shanghai, Planning and Design of New Town Baltic Pearl for Saint Petersburg; and in charge of significant eco-city plans and green building complex designs in more than 19 Chinese cities.

Wu has conducted around 40 methodology researches on eco-city, green building design and planning, intelligent urbanization and urban innovation, sponsored by the National Science Foundation, municipal authorities as well as international institutions, generating a systematic inter-relationship between urban morphology and its impact on energy consumption and sustainability assessment. Wu's emphasis on green technical innovation in practice in turn facilitates the implementation of his research results in practice.

Prof. Wu has published 185 articles on international and national journals and compiled more than 21 books. He is the editor in chief, editor, or Special Guest Editor of 15 national architectural planning journals; he chairs or is on boards of 17 international and national academic committees. With his commitment to enhance the collaboration between architects and planners from China and their international counterparts, Prof. Wu has initiated and organized more than 30 international academic conferences, seminars and forums. He has also made more than 120 keynote speeches and presentations in other international conferences he attended. Prof. WU has one patent for invention and 5 software patents. He has supervised 6 post-docs, 26 PhDs and 72 masters.

Prof. Wu's design and planning works earned him 31 significant awards and his researchers 14. He is granted 8 honorary titles domestically and internationally for his contribution to the transformation of the speed-oriented urban development in China to a sustainable oriented one.

His achievements being recognized worldwide, Prof. Wu is selected Academician of Royal Swedish Academy of Engineering Science, Honorary Fellow of American Institute of Architects, Permanent Member of Coordinator of Validation Group, UNESCO-UIA World Architectural Education Council and President of Asia Planning Education Association (1999-2005).



### **BiCiDa (Big Cities Data) supported Intelligent Cities Evaluation and Planning WU Zhiqiang**

The newly developed evaluation system of intelligent cities in the last three years lets us see the real quality and development steps of intelligent cities both in China and Europe. Because of the new data collection systems from the city network of different city governments as well as their services they offer on the net, the evaluation results can be almost real-time and avoid the intervention of the local governments and the a long updating period through different statistical systems in the different countries.

**Mr. Xu Guanju**, Han, born in July, 1961 in Xiaoshan, Zhejiang Province, P.R. China, master degree, a senior economist with no party affiliation. He is now currently holding the position of Vice Chairman for All China Federation of Industry & Commerce, the President of Transfar Group Co., Ltd., Vice Chairman for 9<sup>th</sup> and the 10<sup>th</sup> Chinese People's Political Consultative Conference (CPPCC) of Zhejiang Province, Member respectively for 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> CPPCC, Standing Committee Member for 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> China Federation of Industry & Commerce, with honors of National May Day Labor Metal, Outstanding Constructor for Chinese Characteristic Socialism Cause, Excellent Chinese Private Entrepreneur, National Outstanding Private Entrepreneur Caring Employees, Labor Model of Zhejiang Province, Excellent Zhejiang Merchants Award for the First Zhejiang Merchants Conference, listed among the first “Zhejiang Merchants Giants Selection” and 2010 Zhejiang Merchants Giants High Contribution Award.



### Resume

1986.10-1992.10 Established Transfar company together with his father Xu Chuanhua, assisted his father as the factory manager.

1992.11-1995.10 General Manager of Hangzhou Transfar Chemicals Co., Ltd. , P.R.China

1995.11-2001.10 President of Zhejiang Transfar Group Co., Ltd. P.R.China

2001.11-till now President of Transfar Group Co., Ltd. P.R.China

### Social Titles

#### Federation of Industry & Commerce

- 1993.06-1997.08 Vice Chairman for 6th Federation of Industry & Commerce of Xiaoshan District, Hangzhou, Zhejiang Province, P.R. China,
- 1997.09-2002.07 Chairman for 7th Federation of Industry & Commerce of Xiaoshan District, Hangzhou, Zhejiang Province, P.R. China,
- 1996.06-2001.06 Vice Chairman for 7th Federation of Industry & Commerce of Hangzhou, Zhejiang Province, P.R. China,
- 2001.07-2002.06 Vice Chairman for 10th Federation of Industry & Commerce of Hangzhou, Zhejiang Province, P.R. China,
- 1993.10-1997.07 Vice Chairman for 6th Federation of Industry & Commerce of Zhejiang Province, P.R. China,
- 1997.07-2002.02 Vice Chairman for 7th Federation of Industry & Commerce of Zhejiang Province P.R. China,
- 2002.07-2007.07 Chairman for 8th Federation of Industry & Commerce of Zhejiang Province, P.R. China,
- 2007.07-2012.06 Chairman for 9th Federation of Industry & Commerce of Zhejiang Province, P.R. China,

1997.11-2002.10	Executive Member for 8th All-China Federation of Industry & Commerce, P.R. China,
2002.11-2007.11	Standing Committee Member for 9th All-China Federation of Industry & Commerce, P.R. China,
2007.11-till now	Standing Committee Member for 10th All-China Federation of Industry & Commerce, P.R. China,
2005.10-till now	Standing Vice Chairman for All-China Federation of Industry & Commerce Chamber of Commerce of Agricultural Industry, P.R. China,
2012.12.10	elected as Vice Chairman for 11th All-China Federation of Industry & Commerce, P.R. China,

### **Chinese People's Political Consultative Conference ( CPPCC )**

1993.04-1998.02	9 <sup>th</sup> CPPCC Standing Committee Member of Xiaoshan County-level City, Zhejiang Province,
1998.03-2003.03	10 <sup>th</sup> CPPCC Chairman of Xiaoshan County-level City, Zhejiang Province
1997.03-2002.04	7 <sup>th</sup> CPPCC Standing Committee Member of Hangzhou, Xiaoshan County-level City, Zhejiang Province
1994.02-1998.01	7 <sup>th</sup> CPPCC Member of Zhejiang Province
2003.01-2008.01	9 <sup>th</sup> CPPCC Vice Chairman of Zhejiang Province
2008.01-till now	10 <sup>th</sup> CPPCC Vice Chairman of Zhejiang Province,
1998.02-2003.01	9 <sup>th</sup> CPPCC Member
2003.02-2008.02	10 <sup>th</sup> CPPCC Member
2008.02-2013.02	11 <sup>th</sup> CPPCC Member
2013.02-till now	12 <sup>th</sup> CPPCC Member

### **Logistics+Internet+Finance - Construction of Operation System of China Road Logistics Network XU Guanju**

The speech gives an in-depth analysis of the China road logistics, exploring the significance of “smart logistics” on the basis of the construction smart city and experience of China road logistics network operation.

As the fore runner of China road logistics, Transfar shares the operation model of “Logistics+Internet+Finance” based on 15 years’ smart logistics exploration and provide an example for the construction of smart city in Germany and China, calling on the co-development of the future of smart city and smart logistics with the spirit of “co-creation, sharing and win-win”.