METROPOLITAN SOLUTIONS CONFERENCE 2012 (SHANGHAI)

ROUND THE WORLD, ROUND THE CLOCK: HANOVER – SAN JOSE – SHANGHAI - HANOVER

1. RELIABLE WATER SUPPLY, WASTE WATER DISPOSAL & SEWAGE TREATMENT FOR SMART CITIES
2. EFFICIENT TRAFFIC MANAGEMENT AND RELIABLE MOBILITY CONCEPTS FOR SMART CITIES

Organizers:
Metropolitan Solutions (Hannover Messe) in cooperation with sponsors and partners and ISOCARP and UPSC

Location and date:
Shanghai International Exhibition Center Pudong, 7 November 2012

Moderators:
Stefan RAU (ISOCARP) and ***DONG Wei*** (UPSC)

Speakers:

Session 1: **Reliable water supply, waste water disposal and sewage treatment for smart cities**

Ms. Minzhen GUI, Wuhan Water Group Co., (PRC): Water supply system in Wuhan

Dr. Eckhard ROOS, Head of Process Automation Management & KAM Process Automation, Festo AG & CO. KG, Denkendorf, (DE): *Reliable and energy efficient solutions for water treatment plants. A method and case studies for comparison of life cycle costs in WTP applying alternative technology*

Mr. Chunfeng ZHAO, Automation Marketing Manager, Phoenix Contact, Nanjing, (PRC): Future-oriented System Solution for Urban Water Treatment. *Meeting the increasing demand for urban water treatment, future urban water management will focus on intelligent, distributed, network based and green energy.*

Prof. Dr. DONG Wei, Vice-Dean Architecture School at Southeast University Nanjing: *Conservation of the urban network along China's southern part of the grand canal as living heritage*

Session2: **Efficient traffic management and reliable mobility concepts for smart cities**

Mr. Adolfo GUERRERO, Head of Cities Development Initiative for Asia (CDIA) China Office, Shanghai, (PRC): *Transportation Investment Challenges in Growing Asian Cities*

Mr. Gerhard Josef KLEBER, Siemens Chief Technology Officer, Mobility and Logistics Division, Mobility and Logistics Division, IC Sector, SLC Infrastructure and Cities Sector, Siemens Limited China, (PRC): *Sustainable City Development - Efficient and Green Solution - To overcome transportation needs for cities - Complete and Green mobility: supports Chinese cities to solve Mobility challenges*

Mr. Dr.-Ing. Pinsheng DU, Vice President, Phoenix Contact R&D and Engineering Center Co. Ltd, Nanjing, (PRC): *Development infrastructure for EVC industry. Electric Vehicle Charging – Phoenix Contact Sustainable Deployment of E-Mobility*

Ms. Yuan-Hua LIU, Hamburg-Consult Country Representative, Hamburg-Consult China, Chongqing, (PRC): PLANFAHRT: counting passengers automatically to demand oriented network planning in urban public transport

Mr. Dr. Qinghao ZHENG, President, Rittal China, (PRC): Security for public services (Data Security): *A Intelligent City : Brilliant vision For IT: web of things, cloud computing, digital city Secure the key devices against hazards and hacking*

SUMMARY AND CONCLUSIONS AND OUTLOOK ON INFRASTRUCTURE TRENDS

by Stefan RAU and DONG Wei

The way we think about infrastructure changes dramatically with new developments and technological possibilities. Related to both topics water (session 1) and transport (session 2) the following strategies for future infrastructure solutions may be summarized and extrapolated from the contributions of the corporate, institutional and academic speakers:

1. **OPTIMIZATION OF SCALE FOR INFRASTRUCTURES – CENTRALIZED VERSUS DECENTRALIZED:**
   "Hub and spokes versus crowd and cloud" (S. Rau) or better both as a smart and efficient combination of centralized systems with distributed systems of infrastructure; What are more intelligent solutions case by case: centralized big-scale infrastructures or decentralized webworks of small nodes in a fine mesh. Examples from water-supply, water-treatment and transport sectors (Dr. Roos), electric mobility and energy systems (G. Kleber, P. Du);
2. **INTELLIGENT INFRASTRUCTURES:**
   What do the new possibilities for real-time, real- life data bring into the world of infrastructure solutions: we can get real-time environmental quality data such as on air, water, soil, noise, light etc. and we can increasingly obtain real life social and behavioural data from the demand side as feedback for the supply-side for infrastructure operations (G. Kleber, E. Roos, Y-H Liu, Q. Zheng, C. Zhao);
3. **INTERNET OF INFRASTRUCTURES – SELF-ORGANIZED OPERATIONS ADJUSTMENTS OF LINKED INFRASTRUCTURES:**
   further developed from the idea of digital world, digital city and internet of things. Automated systems with sensors distributed in various places for environmental quality data and social data linked on the web and automated infrastructure service provision based on real needs and with real time adaptation of infrastructure service provision (E. Roos, G. KLeber, C. Zhao);
4. **DEMAND DRIVEN INFRASTRUCTURES WITH FEEDBACK LOOPS VIA DISTRIBUTED SENSORS:**
   with real life user data and behaviour information the demand can be quantified for any given time and place and thus custom-tailored infrastructure operations can be provided at a high rate of cost and energy efficiency (Y.-H. Liu);
5. **INTELLIGENT, ECO-EFFICIENT LIFESTYLE CHOICES THROUGH MOBILE ON-DEMAND INFORMATION.**
   Social media may play a role in shaping lifestyles and maybe eco-efficient behaviour can assist optimize the use of infrastructure and promote the efficiency of future infrastructures by adding the human dimension and feedback from the infrastructure end-user (S. Rau).
6. **DECENTRALIZED, AUTOMATED AND AUTONOMOUS INFRASTRUCTURES:**
   decentralized systems for water supply and wastewater treatment that is automated and monitored through sensors, video-surveillance and remote control can be developed powered by renewable energy (E. Roos);
7. **INSTITUTIONAL CAPACITY IMPROVEMENTS NEEDED:**
   city administrations and regional and national governments need to be capacitated to develop effective legal and economic frameworks for infrastructure investments, operations and service fee structure and collection. It is crucial to set up clear structures and responsibilities and fees that support sustainable solutions (M. Gui, A. Guerrero).

8. **INFRASTRUCTURE INVESTMENTS NEED LIFECYCLE COST OPTIMIZATION:**
   public spending as well as private expenditures have to optimize cost looking at both capital investments and operation expenses over the lifetime of the infrastructure – not merely at Investment cost, but both CapEx and OpEx over the lifetime (E. Roos);
9. **INTERNATIONAL STANDARDIZATION FOR NEW ECO-EFFICIENT TECHNOLOGIES:**
   With the development of new systems i.e. Electro-mobility and others new industrial standards need to be established internationally to ensure seamless implementation and service networks of energy- and resource-efficient new technologies (P. Du).
10. **DIVERSITY OF NEW ALLIANCES TO COOPERATE ON DEVELOPMENT OF INFRASTRUCTURE SOLUTIONS:**
    As new technologies emerge as eco-efficient, climate-resilient socially inclusive solutions institutional, corporate, academic and social alliances are needed to develop comprehensive and integrated and innovative infrastructure across sectors of disciplines and governmental divisions horizontally and vertically (A. Guerrero, M. Gui).
11. **TRANSPORTATION INFRASTRUCTURE AND TECHNOLOGY SHAPES CITIES AND DEFINES ECONOMIC GEOGRAPHY THROUGHOUT THE HISTORY:**
    With the example of the Grand Canal (Dong WEI), maybe the most significant and longest serving multi-functional infrastructure worldwide witnessed the high-times of water transportation of goods and passengers and created wealth and produced urbanization. As it crossed through cities it branched out and defined the lifelines and urban patterns of the cities along its course. Even today the Grand Canal is still used for cargo transportation and more and more for tourism and as amenity of the cities and landscape (D. Wei)
12. **INFRASTRUCTURE ATOMIZED – INDIVIDUAL INVESTMENTS IN TECHNOLOGY MAY BECOME PART OF THE COLLECTIVE URBAN INFRASTRUCTURE SYSTEM:**
    Photovoltaic on buildings and vehicles, electric mobility and vehicles with batteries as renewable electricity storage, rainwater collection systems, water supply and alternative solutions to sanitation and water treatment may lead to individualized systems reducing a need for large systems, (S. Rau).

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DONG Wei, Prof. Dr.

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