International Conference on Innovative Technologies in Construction

ITC 2014

The Conference Guide

July 3–5, 2014
Shenyang, China
# Contents

1 Conference Notice.......................................................................................... 3  
    (会议须知)......................................................................................... 4

2 Conference Committees.................................................................................. 5

3 ITC 2014 Program......................................................................................... 7

4 Transport....................................................................................................... 15  
    (交通方案)......................................................................................... 16
1 Conference Notice

Dear distinguished guests and delegates,

On behalf of Huazhong University of Science Technology, Curtin University and Northeastern University, we warmly welcome you to attend ITC 2014 held in Northeastern University. In order to ensure that the conference runs smoothly and orderly, please pay attention to the following notices:

1. All guests and delegates please wear your badge to enter the symposium.

2. Please use your breakfast vouchers for breakfast in hotels, wear your badge for lunch and dinner provided in NEU International Hotel on both days. Shuttle buses will be operated between other hotels and the conference venue.

3. If you are not feeling well, please notify the Conference Organizing Committee for help.

4. We have receptionists in the lobby of NEU International Hotel who will help you check in your room. Accommodation and registration fee are payable when you register. Please check out before 2:00PM.

5. Please contact the business centre of hotel, if you need to book return flight or railway tickets.

6. Tour fees are payable to the travel agency set in NEU International Hotel during registration. Please arrange your return trip by your own.

7. Please set your mobile phones to mute during the presentation.

8. Please read the conference guide carefully. If you have any queries during your stay in Shenyang, please contact us:

   NEU:    Mr. Jiaopeng JIA 18202437531 (Transport)
          Mr. Zhen ZHAO 18641876651 (Accommodation)
          Dr. Shengang LI 13504992170 (Coordination)

   HUST:   Dr. Sheng Xu 18995600507 (Inquiry)
          Ms. Dan WANG 18607123297 (Registration)
          Mr. Yongcheng ZHANG 18086481753 (Presentation support)

Local in charge: Professor Wen ZHAO Mobile: 13700028971

Wish you have a great time in Shenyang!

ITC 2014 Organising Committee
2 July, 2014
1 会议须知

尊敬的各位与会嘉宾和代表:

欢迎您参加在东北大学召开的 2014 建筑创新技术国际会议！为保证会议正常有序进行，请您注意如下事项:

1. 参加会议的嘉宾和代表请佩戴代表证进入会场。

2. 早餐由所住酒店提供，午餐和晚餐请参会代表佩戴代表证就餐。会议期间，其他酒店与会场之间，早上 8:10 有专车接送。

3. 若有身体不适，请即去医院就诊并通知会务组。

4. 请各位参会代表在酒店办理入住，房费需您自己支付。酒店退房手续须在下午 2 点前办理，超过时间按酒店规定收费。

5. 需要预定回程机票或火车票的代表，请直接与酒店商务中心联系。

6. 会后欲参加旅游的代表请直接在注册时与旅行社联系，并安排好自己的行程。

7. 会场内请将手机置于静音状态。

8. 请您认真参阅会议指南，以便全面了解本次会议的相关安排。会议期间，如有需要，请联系我们:

东北大学： 贾鹏蛟 18202437531 （交通）
            赵 朕 18641876651 （餐饮、住宿）
            李慎刚 13504992170 （协调）

华中科技大学： 徐 晟 18995600507 （问询）
                 王 丹 18607123297 （注册）
                 张永成 18086481753 （后勤）

东北大学组委会负责人：赵文 教授      联系方式：13700028971

祝您在沈阳期间，身体健康！万事如意！

ITC2014 组委会
2014 年 7 月 2 日
2 Conference Committees

Conference Chairman:

Professor Lieyun Ding, Huazhong University of Science and Technology
Professor Xiangyu Wang, Curtin Univ., Co-Director of Australasian BIM Research Centre

Conference Co-Chairs:

Professor Hanbin Luo, Huazhong University of Science and Technology, Co-Director, Australasian BIM Research Centre
Professor Majella Franzmann, Pro-Vice Chancellor, Humanities, Curtin University
Mr. Charlie Thorn, Director of Office of Research and Development, Curtin University
Professor Wen Zhao, Northeastern University

Conference Secretariat:

Dr Sheng Xu, Huazhong University of Science and Technology, China

Local Organizing Committee:

Dr Ying Zhou, Huazhong University of Science and Technology
Professor Wen Zhao, Northeastern University
Professor Heng Li, Hong Kong Polytechnic University
Professor Shih-Chung Kang, National Taiwan University
Professor Chansik Park, Chung An University
Professor Nobuyoshi Yabuki, Osaka University
Dr. Mi Jeong Kim, Kyung Hee University
A/Professor Ping Yung, Curtin University
Mr. Martijn Truijens, Wooside Energy Ltd.
Mr Yi Jiao, Fudan University

ITC2014 International Scientific Technical Committee

Professor Peter Davis, Curtin University
A/Professor Rafael Sacks, Technion - Israel Institute of Technology
Professor Shang-Hsien Hsieh, National Taiwan University
Dr. Leonhard E. Bernold, University of New South Wales
Professor Mohamed Al-Hussein, University of Alberta
Professor, Ghang Lee, Younsei University
Professor Jin Kook Lee, Hanyang University
Professor Inhan Kim, Korea Kyung Hee University
Professor Shizhao Ding, Tongji University
Professor Qiming Li, Southeast University
Professor Dongping Fang, Tsinghua University
Professor Hongping Zhu, Huazhong University of Science and Technology
Professor Robert Amor, University of Auckland
Professor Chiu-Shui Chan, Iowa State University
Dr. Tomohiro Fukuda, Osaka University
Professor Shiro Matsushima, Toyohashi University of Technology
Professor Chui-Te Chiu, Chung Hua University
Professor Nashwan Dawood, Teesside University
Professor Carrie Sturts Dossick, University of Washington
Professor Nuria Forcada, Universitat Politècnica de Catalunya
Dr. Guillermo Aranda-Mena, RMIT
Dr. Ning Gu, University of Newcastle
Dr. Sangwon Han, University of New South Wales
Dr. Cynthia Wang, University of New South Wales
Dr. David Heesom, University of Wolverhampton
Professor Zahir Irani, Brunel University
Professor Rivka Oxman, Technion Haifa
Professor Jim Smith, Bond University
Chris Allen, Nelson Mandela Metropolitan University
Professor Hyungkwan Kim, Younsei University
Professor Rahinah Ibrahim Universiti Putra Malaysia
Dr. B Harimurti W Hadikusumo, Asian Institute Technology
Dr Lei Hou, Curtin University
Dr. Mani Golparvar Fard, University of Illinois, Urbana-Champion
Professor Thomas Bock, Technical University of Munich
Dr Changzhi Wu, Curtin University
Professor Chimay Anumba, The Pennsylvania State University
Professor Raymond Issa, University of Florida
Professor Miroslaw J. Skibniewski, University of Maryland
Professor Chan-Sik Park, Chung-Ang University
Professor Shuzo Furusaka, Kyoto University
# 3 ITC 2014 Program

## DAY 0  | Wednesday  | 2 July 2014

**9:00-18:00**

**REGISTRATION**, the Lobby of NEU International Hotel

*会议注册，东北大学国际交流中心大厅*

## DAY 1  | Thursday  | 3 July 2014

**8:00**

**REGISTRATION**  
Xiang Yue Xuan (香悦轩), NEU International Hotel

**8:30-9:00**

**CONFERENCE OPENING CEREMONY**  
Session Chair: Professor Xiangyu Wang

"Welcome message”, from Northeastern University  
东北大学领导致辞

"Welcome message” from Professor Majella Franzmann, Pro-Vice Chancellor, Humanities, Curtin University, Australia  
Curtin大学校长 Majella Franzmann 教授致辞

**9:00-9:40**

**KEYNOTE SPEECH 1**  
Mrs. Nathalie Jacobs, Senior Publishing Editor/Engineering, Springer  
(Session Chair: Mr. Charlie Thorn)

**9:40-10:00**  
Group Photographing at Conference Hall  
集体合影留念

**10:00-10:15**  
**COFFEE BREAK**  
茶歇

**10:15-12:15**  
**SESSION I: Cloud BIM and Sustainability**
International Conference on Innovative Technologies in Construction

15 min. for each presentation

Session Chair: Dr. Heap-Yih Chong

1. **Web-based Virtual Reality for Supporting Game-like Cloud BIM Platform for Integrated AEC Projects:** Jack Goulding, Farzad Pour Rahimian and Xiangyu Wang (University of Central Lancashire)

2. **Development of a construction quality supervision collaboration system based on a SaaS private cloud:** Yuping Cheng, Yan Chen, Ran Wei and Hanbin Luo (Huazhong University of Science and Technology)

3. **Cloud-based Deep Immersive Game for Human Egress Data Collection:** Rui Liu, Jing Du and Raja R. A. Issa (University of Texas at San Antonio)

4. **Carbon Emission Assessment for Steel Structure Based on Lean Construction Process:** Feifei Fu, Jun Sun, Christine Pasquire (Huazhong University of Science and Technology)

5. **A Framework of Health Smart Home Services with a Case Study on Energy Consumption Awareness:** Mi Jeong Kim, Ju Hyun Lee, Xiangyu Wang and Jeong Tai Kim (Kyung Hee University)

6. **Integration of BIM and Generative Design to Exploit AEC Conceptual Design Innovation:** Sepehr Abrishami Shokooh, Jack Goulding, Farzad Pour Rahimian and Abdulkadir Ganah (University of Central Lancashire)

7. **From Building Information Modeling to City Information Modeling:** Xun Xu, Hanbin Luo, Ling Ma (Huazhong University of Science and Technology)

12:15-13:30  **LUNCH**  午餐  **COFFEE HALL (1ST FLOOR)**  Springer Sponsored VIE Editorial Meeting

13:30-14:10  **KEYNOTE SPEECH 2: Two Dilemmas on Construction**  
Prof. Chan-Sik Park, School of Architecture and Building Science, Chung-Ang University  
(Session Chair: Prof. Moses Tade)

14:10-14:50  **KEYNOTE SPEECH 3: Construction Health and Safety Training: The Utilisation 4D Enabled Serious Game Engines**  
Prof. Nashwan Dawood, Director of Technology Futures Institute, University of Teesside  
(Session Chair: Prof. Moses Tade)
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
<th>Chair(s)</th>
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<tbody>
<tr>
<td>14:50-15:05</td>
<td><strong>COFFEE BREAK</strong></td>
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<td>15:05-16:35</td>
<td><strong>SESSION II:</strong> <em>Safety, Risk Management and Construction Optimisation</em></td>
<td>Session Chair: Prof. Kok Lay Teo</td>
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<tr>
<td></td>
<td>1. <strong>A Dynamic Decision Approach for Risk Analysis in Complex Projects:</strong> Limao Zhang, Xianguo Wu, Lieyun Ding,</td>
<td>(Huazhong University of Science and Technology)</td>
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<td></td>
<td>Miroslaw J. Skibniewski and Jingbing Zhong (Huazhong University of Science and Technology)</td>
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<td>2. <strong>An ontological approach for construction risk knowledge formalization and semantic inferring:</strong> Botao</td>
<td>(Huazhong University of Science and Technology)</td>
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<td>Zhong and Hanbin Luo (Huazhong University of Science and Technology)</td>
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<td>3. <strong>A Social Virtual Reality Based Construction Safety Education System for Experiential Learning:</strong> Quang</td>
<td>(Chung-ang University)</td>
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<td>Tuan Le, Akeem Pedro and Chan Sik Park (Chung-ang University)</td>
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<td>4. <strong>Construction Schedule Optimization for High Arch Dams Based on Real-time Interactive Simulation:</strong> Tao</td>
<td>(Tianjin University)</td>
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<td>Guan, Denghua Zhong, Bingyu Ren and Pu Cheng (Tianjin University)</td>
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<td>5. <strong>Two Typical Legends Automatic Recognition in Geological Section Map of Metro Project:</strong> Hongliang Yu,</td>
<td>(Wuhan University of Science and Technology)</td>
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<td>Lieyun Ding and Penghui Li (Wuhan University of Science and Technology)</td>
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<td>6. <strong>The Interaction between BIM’s Promotion and Interest Game under Information Asymmetry:</strong> Sun Jide and</td>
<td>(Tongji University)</td>
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<td>Wang Lili (Tongji University)</td>
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<td>16:45-18:45</td>
<td><strong>SESSION III:</strong> <em>Construction Visualization and Information System</em></td>
<td>Session Chair: Prof. Ping Yung</td>
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<td></td>
<td>1. <strong>Photogrammetric error sources and impacts on modeling and surveying in construction engineering applications:</strong> Fei Dai, Youyi Feng and Ryan Hough (West Virginia University)</td>
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<td>2. <strong>Successful education for AEC professionals: case study of applying immersive game-like virtual reality interfaces:</strong> Farzad Pour Rahimian, Tomasz Arciszewski and Jack Steven Goulding (University of Central Lancashire)</td>
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<td>3. <strong>A visual tool for accessibility study of pipeline maintenance during design:</strong> Chu-Hsuan Lee, Meng-Han Tsai and Shih-Chung Kang</td>
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</tbody>
</table>
4. Grouping and Linking Line Segments for Automation of Photogrammetric Surveying in Civil Infrastructure Applications: Fei Dai and Zhenhua Zhu (West Virginia University)

5. Research of the Transformation Methods of IFC Structural Model: Xuan Wang, Huizhu Yang and Qilin Zhang (Tongji University)

6. The potentials of and barriers to the utilization of advanced computer systems in remote construction projects: case of the Kingdom of Saudi Arabia: Bhzad Sidawi and Abdulsalam Alsudairi (University of Dammam)

7. Developing a Knowledge Based Information System (KISCCES) for Construction Cost Estimating and Scheduling: Seonghoon Kim (Singapore Management University)

8. A multidimensional information model for managing construction information: Rui Wang, Denghua Zhong, Yuankun Zhang, Jia Yu and Mingchao Li (Tianjin University)

19:00 DINNER 晚餐 COFFEE HALL (1ST FLOOR)
DAY 2 | Friday | 4 July 2014

8:00 REGISTRATION (Xiang Yue Xuan (香悦轩), NEU International Hotel)

8:30 - 9:10 KEYNOTE SPEECH 4 BIM for Infrastructure
Prof. Raymond Issa, Holland Professor and Director Center for Advanced Construction Information Modeling, University of Florida
(Session Chair: Prof. Monty Sutrisna)

9:10 - 9:50 KEYNOTE SPEECH 5 Thinking about Japanese “Monodzukuri” in Construction Industry
Prof. Shuzo Furusaka, Kyoto University, Japan
(Session Chair: Prof. Monty Sutrisna)

9:50 - 10:10 COFFEE BREAK

10:10 - 12:00 SESSION IV: Benefits and Future Trend of BIM
Session Chair: Prof. Jack Goulding
(Each presentation lasts for 15 minutes)


3. Formulating BIM Benefits Evaluation Framework by Analyzing Relevant Literatures: Lieyun Ding, Ying Zhou and Yang Rao (Huazhong University of Science and Technology)

4. An Integration Framework of Advanced Technologies for Productivity Improvement for LNG Mega-projects: Lei Hou, Xiangyu Wang, Jun Wang and Martijn Truijens (Curtin University)
5. A BIM-based Code Compliance Checking Process of Deep Foundation Construction Plans: Hanbin Luo, Peisong Gong (Huazhong University of Science and Technology)


12:00-13:30 LUNCH COFFEE HALL (1ST FLOOR)

13:30-14:10
KEYNOTE SPEECH 6: Construction Technology Evolution: from Ancient Times to Modern Robotics
Prof. Mirosław J. Skibniewski, A.J. Clark Chair Professor of Construction Engineering & Project Management, University of Maryland
(Session Chair: Prof. Shang-Hsien Hsieh)

14:10-14:50
KEYNOTE SPEECH 7: Innovation by Automation and Robotics from Robot Oriented Design for Off- and On-Site Construction to Ambient Integrated Robotics for Demographic Change
Prof. Thomas Bock, Chair for Building Realisation and Robotics Technische Universität München
(Session Chair: Prof. Shang-Hsien Hsieh)

14:50-15:10 COFFEE BREAK

15:10-17:10
SESSION V: Automation, Robotics and Advance Construction Operations
Session Chair: Prof. Shih-Chung Kang
(Each presentation lasts for 15 minutes)

1. Modified internal model control scheme for the drive part with elastic joints in robotic system: Yan Xiong and Yesong Li (Huazhong University of Science and Technology)

2. Virtual Laser Target Board for Alignment Control and Machine Guidance in Tunnel-Boring Operations: Sheng Mao, Ming Lu and Xuesong Shen (University of Alberta)

3. Integrating BIM and LiDAR for Real-Time Construction Quality Control: Jun Wang, Wenchi Shou, Changzhi Wu, Xiangyu Wang, Weizhuo Sun and Heap Yih Chong (Curtin University)

### Plant Construction: Hung-Lin Chi, Jun Wang, Xiangyu Wang, Martijn Truijens and Ping Yung (Curtin University)

5. **A Dynamic Erection Simulation Model of Column-beam Structures using Composite Precast Concrete Components:** Sung Ho Lee, Chaeyeon Lim, Won-Kee Hong and Sunkuk Kim (Kyung Hee University)

6. **Automatic Design Algorithms for Securing the Ground Contact Stability of Mobile Cranes:** Donghoon Lee, Jun Young Park, Jongkwan Ho and Sunkuk Kim (Kyung Hee University)

7. **Researches on the Influence on neighboring buildings by Concave and Convex Location Effect of Excavations in Soft Soil Area:** Wen Zhao, Chen Chen, Shengang Li and Yubin Pang (Northeastern University)

8. **A web-based system for interface management of metro equipment engineering:** Qianqian Ju and Lieyun Ding (Huazhong University of Science and Technology)

| 17:20-18:20 | Ideas Exchange: Curtin University  
Session Chair: Prof. Xiangyu Wang |
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<tbody>
<tr>
<td>1. <strong>Proactive Supply Chain Management in LNG Projects:</strong> Heap-Yih Chong and Xiangyu Wang (Curtin University)</td>
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<td>2. <strong>An Integrated Approach of Inventory Management in LNG Projects:</strong> Heap-Yih Chong and Xiangyu Wang (Curtin University)</td>
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<td>3. <strong>Spatial Analysis in Public Health, Coastal Management and Construction Management:</strong> Xin Liu (Curtin University)</td>
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<td>4. <strong>System Dynamics in Climatic Heat Stress Risk Management in Construction Project:</strong> Yunyan Andrea Jia (Curtin University)</td>
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19:00 **CONFERENCE BANQUET**

### DAY 3  
**| Saturday |  
5 July 2014**

| 10:00-19:00 | Tour |
## 4 Transport

<table>
<thead>
<tr>
<th>Destination</th>
<th>Mode of Transport</th>
<th>Approx. Time</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Shenyang Taoxian International Airport to NEU International Hotel (80 Wenti West Road, Heping District)</td>
<td>Taxi</td>
<td>Approx. 23 Min., 50 RMB</td>
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<td></td>
<td>Airport Bus to Exhibition Hall, transfer to Bus 244 to Stop Jiaotong Anquan Jiaoyu Xuexiao, walk to NEU International Hotel.</td>
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<tr>
<td>Shenyang North Railway Station to NEU International Hotel (80 Wenti West Road, Heping District)</td>
<td>Taxi</td>
<td>Approx. 22 Min., 18-22 RMB</td>
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<td>Bus 244 to Stop Jiaotong Anquan Jiaoyu Xuexiao, walk to NEU International Hotel.</td>
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<tr>
<td>Shenyang Railway Station to NEU International Hotel (80 Wenti West Road, Heping District)</td>
<td>Taxi</td>
<td>Approx. 10 Min., 13-16 RMB</td>
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## 4 交通指南

<table>
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<tr>
<th>地点</th>
<th>交通方式</th>
<th>费用</th>
<th>时间</th>
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<tr>
<td>沈阳桃仙国际机场到东北大学国际学术交流中心（市档案局斜对面，和平区文体西路80号）</td>
<td>方案一：打车费用约50元，用时约23分钟</td>
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<td>方案二：乘机场巴士到展览馆下车，转乘244路公交车到交通安全教育学校站下车，步行至东北大学国际学术交流中心</td>
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<td>沈阳北站到东北大学国际学术交流中心（市档案局斜对面，和平区文体西路80号）</td>
<td>方案一：打车费用约22元，用时约22分钟</td>
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<td>方案二：乘244路公交车到交通安全教育学校站下车，步行至东北大学国际学术交流中心</td>
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<td>沈阳站到东北大学国际学术交流中心（市档案局斜对面，和平区文体西路80号）</td>
<td>方案一：打车费用约16元，用时约10分钟</td>
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<td>方案二：步行至沈阳站西（兴工街北三路）站，乘预备役号专线到交通安全教育学校站下车，步行至东北大学国际学术交流中心</td>
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