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**Cardiff, United Kingdom
16-18 July 2014**

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Programme of EG-ICE 2014, Cardiff, UK (15-18, July, 2014)

DAY 0: 15th, July, 2014

19:00 **Icebreaker** -- Venue (Room: - 1.62, Glamorgan Building, Cardiff University)
Registration

DAY 1: 16th, July, 2014 **Conference Venue: Council Chamber, Glamorgan Building**

8:00 **Registration**

9:15 **Opening:** Yaqub Rafiq; Pieter De Wilde; Haijiang Li (organizing Chair)
André Borrmann (EG-ICE Chair)

9:30 **Keynote 1:** Prof. Julie A. McCann (Imperial College London, UK)
Understanding real-time control of water networks, edge analytics, and the computing technologies that have potential impacts on future smart water systems N/A

10:15 – 10:30 **Break**

Session 1 **Machine Learning and Data Mining** **Chair: André Borrmann**

10:30 Gaudenz Moser, Stephanie German Paal and Ian F.C. Smith:
Performance comparison of reduced network models for leak region detection in water distribution networks 1

10:45 Christian Schwöbel, Uwe Rüppel:
Modelling Energy Consumption Profiles with Data Mining Methods based on Smart Meter Survey Data with Additional User Characteristics 13

11:00 Philipp Geyer, Arno Schlüter, Sasha Cisar:
A Performance-Based Clustering Method for Retrofit Management of Building Stocks 23

11:15 Barbara Strug, Grazyna Slusarczyk:
Using Graph Representation of Information Extracted from IFC in Building Evacuation 33

11:30 – 12:00 **Break**

Session 2 **Knowledge based Processing** **Chair: Ivan Mutis**

12:00 Shangjie Hou, Haijiang Li, Yacine Rezgui:
Ontology-Based Semantic Modelling of Reinforced Concrete Structural Design for Building Sustainability 43

12:15 Roos K, Benevolenskiy A, Scherer R J:
Towards knowledge-based Process Configuration in Construction 52

12:30 Chi Zhang, Jakob Beetz, Bauke de Vries:
An Ontological Approach for Semantic Validation of IFC Models 62

12:45 – 14:00 **Lunch Break (Aberdare Hall)**

Programme of EG-ICE 2014, Cardiff, UK (16-18, July, 2014) Cardiff University

Afternoon Sessions:

- 14:15 Keynote 2: Prof. Xiangyu Wang
(Curtin University, Australia)
How to utilize computational intelligence improves the project design, planning as well as improves the integrated system's performance N/A

15:00 – 15:15 Break

Session 3	BIM and Cloud Computing	Chair: HaiJiang Li
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- 15:15 Yi Jiao, Baoming Yang, Liwu Wang, Yinghui Wang:

FCL2-CloudBIM: Framework and Applications for BIM-Based Collaboration Platform under Cloud Environments 70
- 15:30 Mohamed E. Hassan, Sadegh Ashgari, Amr Kandil, Ibrahim Odeh:

A System-of-Systems Framework for Modeling the Impact of Construction Spending on the Economy: An Agent-based Modeling Approach 80
- 15:45 Min-Koo Kim, Qian Wang, Jack C.P. Cheng, Hoon Sohn, Chih-Chen Chang:

Cloud-BIM based Dimensional Quality Assessment of Full-scale Precast Concrete Elements 90

16:15 sharp Bus leaves for boat tour outside the main entrance of conference venue

17:00 Boat tour starts from Cardiff Bay

17:30 Boat stops at Bute Park (very close to the main conference venue)

END OF DAY 1

**18:00 – 19:20 (invited only) Venue: Council Chamber, Glamorgan Building
Candidate Presentations for EG-ICE 2015**

19:30 Internal EG-ICE Committee Meeting

DAY 2: 17th, July, 2014 **Conference Venue: Council Chamber, Glamorgan Building**

9:30 Keynote 3: Dr. Alain Zarli
Head of the “Innovation Numérique pour la Construction” division,
CSTB (Sophia-Antipolis - FRANCE)
***Speeding up the transformation of European Cities into "Smart cities": a view on
supportive innovative digital technologies N/A***

10:15 – 10:30 Break

Session 4 Artificial Intelligence Chair: Ian Smith

10:30 Bernd Domer, Raja Benzaitar, Jérôme Rossi:

Applicable Stochastic Techniques for Engineering Challenges 100

10:45 Shen Wei, Yaqub Rafiq, Pieter de Wilde:

*Using Artificial Neural Networks to Assess Reduction in Residential Energy Demand by
Changing Occupant Behaviour 110*

11:00 Wojciech Palacz, Iwona Ryszka, Ewa Grabska:

Graphs with layers – a visual tool for conceptual design and graph generation 119

11:15 Li Wang, Fernanda Leite:

Impacting Novice Design Coordination Performance through Problem-Based Learning 130

11:30 – 12:00 Break

Session 5 Augmented Reality and BIM Chair: Philipp Geyer

12:00 Christian Koch, Matthias Neges, Markus König, Michael Abramovici:

*Online calibration of an IMU based step counter for AR based indoor navigation using visual
natural markers 140*

12:15 Bin Wang, Haijiang Li, Yacine Rezgui, Alex Bradley:

*Towards BIM based Virtual Environment for Building Performance Visualization and
Management 150*

12:30 Stefania Christina Radopoulou, Ioannis Brilakis:

Improving Patch Defect Detection using Vision Tracking on Video Data 161

12:45 – 14:00 Lunch Break (Aberdare Hall)

Afternoon Sessions:

14:15 **Speech from the former Vice Chair of EG-ICE: Prof. John Miles**

15:00 – 15:15 Break

Session 6 Monitoring and Intelligent Management Chair: Ioannis Brilakis

15:15 Uwe Rüppel, Robert Irmeler:

Comparison between support vector regression and grey system theory based models for adaptive load forecasting of building thermal energy consumption 170

15:30 Jia Niu, Raja R.A. Issa:

Ontology-based Semantic Interpretation Framework for Legal Analysis in Construction Claims 180

15:45 Shaohua Jiang, Jie He, Liang Ren:

Real-time monitoring and Management System for Green Construction 191

16:00 Bejay Jayan, Haijiang Li, Yacine Rezgui, Jean Hippolyte, Baris Yuce, Chunfung Yang, Ioan Petri:

An ontological approach to intelligent energy management in building 201

16:15 – 16:45 Break

Session 7 Optimization and Decision Making Chair: William J. O'Brien

16:45 Hofmeyer H, Davila Delgado, J.M.:

3D Topology Optimisation including a movable void 212

17:00 Carl Schultz, Mehul Bhatt, André Borrmann:

Towards Bridging Semantic Spatial Constraints and Parametric Design 222

17:15 Maximilian Bügler, Gbolabo Ogunmakin, Jochen Teizer, Patricio A. Vela, André Borrmann

A Comprehensive Methodology for Vision-Based Progress and Activity Estimation of Excavation Processes for Productivity Assessment 233

17:30 Arash Bahrehmand, Alun Evans and Josep Blat:

Recommendation of Floor Plan Layouts Based on Binary Trees 243

17:45 – 18:30 EG-ICE GENERAL ASSEMBLY

END OF DAY 2

19:00 - 20:00 Cardiff Castle Tour; 20:00 - 23:00 Conference Dinner -- Cardiff Castle

Programme of EG-ICE 2014, Cardiff, UK (16-18, July, 2014) Cardiff University

DAY 3: **18th, July, 2014** **Conference Venue: Glamorgan Building, Council Chamber**

9:30 Keynote 4: **Mr. Nick Tune**, (BRE Wales Director)
 BIM in UK – How to get industry on board?

10:15 – 10:30 **Break**

Session 8 **Optimization and Decision Making** **Chair: Pieter de Wilde**

10:30 S.G. Paal, Z. Zhu, I. Brilakis, R. DesRoches:

Automated Crack Pattern Measurements for Rapid Post-Earthquake Safety Assessment 253

10:45 Hofmeyer, H., Davila Delgado, J.M:

Generation of Structure Concepts via 3D Topology Optimisation 261

11:00 T. Kasim, Haijiang Li, Y. Rezgui, T.Beach, S Hou:

A comparative study between traditional sustainability assessment methods, rules-based automated approach and the application of engineering ontologies 271

11:15 Kamil Hawdziejuk, Ewa Grabska:

Petri Net-based Management of Smart Environments Supported by Agent System 283

11:30 – 12:00 **Break**

Session 9 **Design and Modelling** **Chair: Georg Suter**

12:00 Bernold Kraft, Wolfgang Huhnt:

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12:15 Alex Bradley, Haijiang Li, Robert Lark, Simon Dunn:

Infrastructure Information Modelling (IIM): A UK Contractor's Perspective 304

12:30 Hassaan Siddiqui, Faridaddin Vahdatikhaki, Amin Hammad:

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12:45 – 14:00 **Lunch Break (Aberdare Hall)**

Afternoon Sessions:

Session 10 Design and Modelling Chair: Timo Hartmann

Chair: Timo Hartmann

15:30 Keyu Chen, Haijiang Li:
A BIM management model using Delphi approach 336

15:45 Kristian Schatz
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16:00 Al-Farttoosi M., Rafiq M. Y., Summerscales J. and Williams C.:
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16:15 – 16:30 Break

Session 11 Modelling & Assessment Chairs: Yaqub Rafiq

Chairs: Yaqub Rafiq

16:30 Raed Ameen, Haijiang Li, Monjur Mourshed:
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16:45 Xue Yang, Semiha Ergan:
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17:00 Ge Gao, Yu-Shen Liu, Meng Wang, Xiao-Guang Han:
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17:15 Georg Suter:
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17:30 Yang Liu, Alan Kwan, Yacine Rezgui, Haijiang Li:
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Closing of EG-ICE 2014