



CENTRE OF  
EXCELLENCE IN  
SMART CONSTRUCTION



LEEDS  
BECKETT  
UNIVERSITY

# CIB INTERNATIONAL CONFERENCE ON SMART BUILT ENVIRONMENT

*Virtual Conference: 14 - 15 December 2021*



**International Council  
for Research and Innovation  
in Building and Construction**

## Day One 14 December 2021

9.30am	Welcome from Chairs	
9.45am	Welcome by <b>Professor Akintola Akintoye</b> , Dean School of Built Environment, Engineering and Computing, Leeds Beckett University.	
10.00am	Welcome from CIB- <b>Don Ward</b> , CEO CIB.	
10.15am	<b>Keynote 1:</b> <b>Mark Enzer</b> , Centre for Digital Built Britain (CDBB), OBE FREng <i>"The UK's National Digital Twin Programme"</i>	
11.00am	<b>Keynote 2:</b> <b>Dr Bilal Succar</b> (Director of Change Agents AEC, Founder of the BIME Initiative) <i>"Facilitating Digital Transformation through a Modular Language and an international Community Effort"</i>	
11.45am - 12.00noon	<b>Break</b>	
12.00noon - 1.00pm	<b>Track 1: Chair - Prof Lloyd Scott</b> <b>Moderator- Hadi Kazemi</b> <b>Smart/Intelligent Buildings and Infrastructure (A)</b> <b>Infrastructure Developments (B)</b>	<b>Track 2: Chair - Dr Georgiana Alison</b> <b>Moderator- Suhaib Arogundade</b> <b>Cost Benefit Analysis and Value Added (A)</b> <b>Asset Maintenance and Operation (B)</b>
	<b>31 – Lingxi Wang (Guopeng Li, Yvtong Li) (A)</b> <i>Research on the Adaptability Design of Smart House Based on Residential Demand</i>	<b>76 – Bashar Taha (Andrew Allan) (A)</b> <i>Smart and Sustainable CAPEX Planning to Develop New Infrastructure. Case Study: Hosting Mega Event - Dubai EXPO 2020</i>
	<b>67 – Mohamed Salama (Sharon Bhorkar) (A)</b> <i>Smart Cities in Developing Countries with an Emphasis on GCC Countries, and its Impact on Expatriates amidst the COVID-19 Pandemic – A Systematic Literature Review</i>	<b>66 – Raphael Mahundi (Matiko Mturi, Dillip Das) (A)</b> <i>Critical Success Factors towards Collaborative Road Infrastructure Projects Delivery in Tanzania</i>
	<b>70 – Ahmed Fadhil Dulaimi (Mahmoud Mawed, Rachid Hamida, Mazin Naser) (A)</b> <i>Creating Smart Cities: Case Study of Energy Hub for Effective Energy Management</i>	<b>62 – Nikunj Dhanani (Senthilkumar Venkatachalam) (B)</b> <i>Terrestrial Laser Scanner Analytical Modelling towards Effective Scan Area Planning for Damage Detection on Structural Members</i>
	<b>47 – Ebrahim Karan (Hooman Hooshmand, Atefeh Mohammadpour, Ali Khodabandelu, Sadegh Asgari, Vehideh Mansoob) (A)</b> <i>Optimal Collaborative Energy Model among Vehicle-to-Home (V2H) and Solar Systems</i>	<b>52 – Nkeleme Ifeanyichukwu (WMW Shakantu, Nkeleme Obinna) (B)</b> <i>Assessment of the Variation in the Maintenance of HVAC Component Units and its Energy Consumption Implication</i>
	<b>16 – Jeremy Gibberd (B)</b> <i>Net-Positive Water Systems for Schools in Drought-Stricken Areas</i>	<b>77 – Reem Alyagoub (Rod Green) (B)</b> <i>Management of Recovered Wastewater for Passive Irrigation of Buildings Green Landscaped Areas: Blue/Green Roof Subterranean Water Management System</i>
1.00pm-2.00pm	<b>Lunch break</b>	
2.00pm - 3.15pm	<b>Chair: Dr Taha Elhag</b> <b>Keynote 3:</b> <b>Dr Ali Al-Azzawi</b> (City Experience Advisor, Dubai Digital Authority) <i>"Digitalising life in Dubai: Digital technology working for people"</i>	
	<b>Keynote 4:</b> <b>Professor Ghassan Aouad</b> <i>"The Construction Sector Post COVID 19: A Leadership Perspective"</i>	

	<b>Track 3: Chair Dr Jeremy Gibberd</b> <b>Moderator: Ali Saad</b> <b>Internet of Things (IoT) Applications (A)</b> <b>Real-time Monitoring and Control (B)</b> <b>Sustainability and the Environment (C)</b> <b>Design for Smart BE (D)</b>	<b>Track 4: Chair Professor Anita Ceric</b> <b>Moderator: Dr Sam Zulu</b> <b>Digital Engineering and BIM (A)</b> <b>Integration of Data and Information (B)</b>
3.15pm - 4.15pm	<b>17 – Cairo Ribeiro (Júlio Estrella, Júlio Bueno, Bruno Trazzi, João Torrezan, Beatriz Fialho) (A)</b> <i>Computational Infrastructure Design to Support Applications in Intelligent Building Environments – Case Study Focused on Intelligent Laboratories</i>	<b>8 – Mark Swallow (Sam Zulu, Shariful Shikder) (A)</b> <i>Investigating the Drivers &amp; Challenges of Implementing Immersive Sensory Technology within Construction Site Safety</i>
	<b>78 – Guillermo Aranda-Mena (A)</b> <i>Live VR: Realtime Virtual Reality is Architecture Practice on Air</i>	<b>49 – Kudirat Ayinla (Zulfikar Adamu, Abdullahi Saka) (A)</b> <i>Towards a Hybrid Approach to BIM Implementation – A Critical Discourse</i>
	<b>25 – Ahmet Anil Sezer (Martin Rudberg) (B)</b> <i>Developing Bluetooth Communication Technologies for Safer Construction Sites: Experiences and Learnings</i>	<b>60 – Mohamed Salama (A)</b> <i>BIM in Facilities Management. Has COVID-19 Widened the Gap between Academia and Practice? A Case Study from Dubai</i>
	<b>15 – Jeremy Gibberd (C)</b> <i>Urban Sustainability Transformation through Building Adaptive Pathways</i>	<b>26 – Sam Zulu (A)</b> <i>Barriers to Effective Digital Leadership Enactment in the Construction Industry</i>
	<b>65 – Zohreh Shaghaghina (Fatemeh Shahsavari, Elham Delzende) (D)</b> <i>Studying Buildings Outlines to Assess and Predict Energy Performance in Buildings: A Probabilistic Approach</i>	<b>3 – Ceric Anita (Ivic Ivona) (B)</b> <i>Communication Challenges in Building Energy Efficiency Retrofits: Croatia Case</i>
4.15pm - 5.00pm	CIB TG 96: Accelerating innovation research agenda and possible future activities	

## Day Two 15 December 2021

9.30am	Welcome and Announcements <b>Chair: Dr Taha Elhag</b>	
9.45am	<b>Keynote 5:</b> <b>Dr Bilal Succar</b> (Director of Change Agents, AEC; Founder of the BIME Initiative) <i>"The LITE approach for managing information across an asset's lifecycle".</i>	
	<b>Keynote 6:</b> <b>Professor Roger Flanagan</b> <i>"A Smart Built Environment is Reliant upon Design and Construction Companies being Smarter"</i>	
11.15am - 11.30am	<b>Break</b>	
11.30am – 12.45pm	<b>Track 5: Chair Dr Saheed Ajayi</b> <b>Moderator: Ali Saad</b> <b>Sustainability and the Environment (A)</b> <b>Economics and Management of Smart BE (B)</b> <b>Accelerating Innovation Process (C)</b>	<b>Track 6: Chair Dr Taha Elhag</b> <b>Moderator: Mohammed Dulaimi</b> <b>Performance Measurement</b>
	<b>6 – Yuan Chen (Yuan Fang) (A)</b> <i>A Review on Embodied Carbon Reduction Strategies of Iron and Steel Building Products</i>	<b>12 – Nan Zhang (Bon-Gang Hwang, Yujie Lu)</b> <i>Accelerating Building Decarbonization: Houseowner's Adoption Behaviours Analysis towards Residential Photovoltaic (RPV) Systems in Singapore</i>
	<b>9 – Suhaib Arogundade (Mohammed Dulaimi, Saheed Ajayi) (A)</b> <i>Carbon Reduction during Building Construction Projects – Trend Mapping from Construction Journals</i>	<b>61 – H. K. Lai (D. D. Li, Y. K. Lam, M. F. Siu, P. C. Chan, C. H. Yam, X. J. Jing, C. K. Lau, C. W. Lau)</b> <i>Productivity of Robotic Excavators for Caisson Construction</i>
	<b>39 – Dima AlKawadri (Yasemin Nielsen, Bilge Erdogan) (A)</b> <i>Integrating Users Satisfaction to Support Decisions in Sustainable Developments</i>	<b>59 – Jasmine Ngo (Bon-Gang Hwang, Jeremy Teo)</b> <i>Assessing the Impact of Smart Technologies on Project Management: The Case of Singapore</i>
	<b>58 – Jeet Trivedi (Jyoti Trivedi) (A)</b> <i>Towards Automation of Sustainable Green Building Materials in India</i>	<b>64 – Aashley Bachani (Maged El Hawary, Yasemin Nielsen)</b> <i>Assessing Implementation of Planning and Scheduling in Construction Projects Across India</i>
	<b>53 – Mahmoud Shehata (Karima Hamani) (B)</b> <i>Developing an Early Prediction Model of Bankruptcy in the UAE Construction Industry</i>	<b>32 – Petter Haglund</b> <i>Logistics Strategy, Structure, and Performance: A Typology of Logistics Configurations in Construction</i>
	<b>68 – Ali Saad (Mohammed Dulaimi, Chris Gorse) (C)</b> <i>An Investigation of the Influence of Public Clients on Contractors' Behaviour towards the Modern Methods of Construction</i>	<b>71 – Theo Haupt (Mariam Akinlolu)</b> <i>Client Involvement and Construction Project Healthy and Safety Performance</i>
12.45pm – 1.45pm	<b>Lunch break</b>	
1.45pm - 3.15pm	<b>Chair: Professor Mohammed Dulaimi</b> <b>Keynote 7:</b> <b>Prof Chris Gorse</b> (Director, Leeds Sustainability Institute) <i>"Leading the transition beyond Zero Carbon: A Smart and Sustainable Built Environment"</i>	
	<b>Keynote 8:</b> <b>Don Ward</b> (CEO, CIB) <i>"Innovation and Improving the Impact of Global Collaborative Research"</i>	

	<p><b>Track 7: Chair Prof Mohammed Dulaimi</b> Moderator: Suhaib Arogundade</p> <p><b>Integration of Data and Information (A)</b> <b>Business Models for Smart BE (B)</b> <b>Automation and Robotics (C)</b> <b>The impact on Culture of Smart BE (D)</b></p>	<p><b>Track 8: Chair Dr Sam Zulu</b> Moderator: Ali Saad</p> <p><b>Agile and Lean Thinking (A)</b> <b>Resilience Engineering (B)</b> <b>Policies and Regulations (C)</b></p>
	<p><b>75 – Farzad Jalaei (Geoffrey Guest) (A)</b> <i>BIM-based LCA Integration by Evaluating the Environmental Impacts of Whole Building at the Early Design Stage</i></p>	<p><b>69 – Nouredin Omar (Taha Elhag) (A)</b> <i>Development of Integrated Framework Based on Agile Principles and BIM Functionalities</i></p>
3.15pm - 4.15pm	<p><b>63 – Premkumar K. (Rashid Al Balushi, Taha Elhag) (B)</b> <i>Perspective of Public-Private Partnership (PPP) in Various Economies</i></p>	<p><b>73 – Joseph Ofori-Kuragu (Reece Hill) (A)</b> <i>An Exploration of the Potential for Using Modular Housing Solutions to Address the UK's Housing Shortage</i></p>
	<p><b>46 - Ebrahim Karan (Vehideh Mansoob, Ali Khodabandelu, Sadegh Asgari, Atefeh Mohammadpour, Somayeh Asadi) (C)</b> <i>Using Artificial Intelligence to Automate the Quantity Take-off Process</i></p>	<p><b>51- Ahmed Abas (Jelena Janjusevic) (B)</b> <i>Efficient Utilization of Public-Private Partnerships (PPPs) to Develop Resilient And Sustainable Public Infrastructure</i></p>
	<p><b>50 – S. Narayan (H. C. Tan, L. B. Jack) (C)</b> <i>Paradigm Shift of Claims Management to Digital Space</i></p>	<p><b>14 - Angélica Fabíola Rodrigues Prado (Elaine Pinto Valera Alberte, Andréa Cardoso Ventura) (B)</b> <i>Strategies of Urban Resilience Related to the Built Environment: An Overview of the Literature</i></p>
	<p><b>38 – Farah Shahrin (Zerafinas Abu Hassan) (D)</b> <i>Construction and its Delivery of Social Capital: An Investigation of the Impact on Culture, Heritage and Wellbeing of Minority Ethnic Communities in Malaysia</i></p>	<p><b>72 – Theo Haupt (Mariam Akinlolu, Narain Upsana) (C)</b> <i>Challenges to the Adoption of Strategies and Regulations for Energy Efficiency Initiatives in the Retrofitting of Retail Centers</i></p>
4.15pm - 5.00pm	Discussion and conclusion	