AI and Digital Twin Strategies to Implement Sustainable Development Goals within Asset Management

This presentation will elaborate on a 12-step strategy that the author created/presented in the newly published CIOB AI Playbook 2024. It will describe in great elucidation how to implement AI tools/algorithms, with special focus on Machine Learning, and Digital Twins in construction projects and asset management of existing and new builds. Furthermore, benefits/methodologies/procedures will also be explicated on how to use these innovative technologies to align with the UN Sustainable Development Goals (SDGs), and Key Performance Indicator metrics to assess that alignment, which the author developed based on the UN Tier Classification System. Practical emphasis and clarification will be showcased using a case-study international project achieving all 17 UN SDGs, published on the EAUC UN SDG Accord website as an impact case-study of exemplar alignment to all UN SDGs, for which the author is finalist for Green Gown 2024 Sustainability Champion Award, and receiver of Hong Kong Institute of BIM (HKIBIM) award for Best Performance award 2024.

The proposed strategy aims to support construction companies and assets of all sizes in use of AI technology for better performance and achieving UN Sustainable Development Goals beyond the traditional unmeasured alignment to just SDGs 3,6,7,11,12,13. Approaches will be advocated for 4 types of building resilience:

 1) **Climate Change**: including affordable/reduced energy, carbon emissions, improved biodiversity on land/below water with better education/knowledge

2) **People**: including more sustainable communities and better indoor microclimate, health, safety, wellbeing, water, sanitation while also reducing hunger/poverty/inequalities

3) **Economies**: including decent work, innovation and responsible consumption

4) **Governance**: including strong partnerships and inclusive regulations

Biography:
Dr. Noha Saleeb is Associate Professor in Creative Digital Technologies & Construction at Middlesex University, and Programme Leader for its MSc Building Information Modelling Management programmes, providing consultation for both industry projects and organisations in sustainable design, construction, digital transformation, BIM, Digital Twins, AI and onsite project management.

Dr. Saleeb is Director of African BIM Report 2024 and Business Development Lead- BIMAfrica, Editor-in-Chief of Smart Infrastructure and Construction International Journal, and advisory board member of several Professional Body steering committees e.g. London Digital Twin Research Centre, BIM4Heritage, CIOB Innovation SIG, National Institute of Building Services USA. As well as delivering many contributions as Keynote and Plenary Speaker, >100 journal, conference, industry and book chapter publications in the area of Sustainable Construction technologies.

She is co-author of the industry standards "Artificial Intelligence Playbook" by the Chartered Institute of Building (CIOB) UK, and "Digital Twins Position Paper for AECO" by the National Institute of Building Sciences, USA. Dr.Saleeb has led several industrial and council funded grant projects, and achieved national/international awards for her expert work in the area of Sustainability, Digital Twins,

Heritage, BIM and Construction Innovation:

- Finalist Green Gown Awards – Sustainability Champion 2024
- Hong Kong Institute of BIM Award for Highest Standard in BIM Performance– 2020 / 2024
- Academic Staff of the Year Award – 2018
- Best European Women in Construction Award - 2016
- International Business Excellence Award for Best Programme- 2015