

Webinar - Practical Tools for the Construction Sector in Digital Twin



Are you the Construction Project Manager, H&S Manager or QC Manager? Or maybe you are just interested in Digital Twin and current, practical solutions in that area? Join our WEBINAR and get to know ‘Practical Tools for the Construction sector in Digital Twin’ developed in [COGITO](#) project! It will reduce your costs, improve quality and create safer environment. This event will take place on the 4th October from 11.00H to 12.00H CET.

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Towards minimising **construction project** time/cost overruns and alleviate workplace accidents, [COGITO](#) targets to a semantic and pragmatic alignment between novel data capture techniques and delivery of value-adding end-user services leveraging the power of near-real-time data for the timely detection of health & safety hazards to humans, construction quality defects as well as a constantly up-to-date workflow management in order to minimise construction project time/cost overruns and alleviate workplace accidents.

To address this challenge, the **EU-funded COGITO project** introduces a real-time **digital representation (twin)** of a **construction project**, using methods to ensure interoperability among the different components and technologies constituting the **digital twin** ecosystem, following the lean construction principles. **COGITO** aims to materialise the **digitalisation** benefits for the **construction industry** by harmonising **Digital Twins** with the **Building Information Model** concept and to establish a **digital Construction 4.0 tool-box**.

Target

Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives.

Leaders

- Hypertech
- University of Edinburgh
- The Information Technologies Institute

Agenda (60 minutes)

- 11:00-11:05 Introduction - COGITO project innovations and goals
- 11:05-11:10 What is your experience with DIGITAL TWIN (short poll)?
- 11:10-11:20 Data Acquisition: **Visual Data Pre-Processing for contributing visual data (2D and 3) to the project Digital Twin(CERTH)**
- 11:20-11:30 Quality Control: **GeometricQC for automatically control geometric quality against defined specifications (UEDIN) & VisualQC for automatically detecting defects in pictures acquired on site (CERTH)**
- 11:30-11:40 Visualisation: **DigitAR for on-site Augmented Reality -based Digital Twin information visualisation and decision making (CERTH) & Digital Command Centre (DCC) for offline Digital Twin information visualisation (HYP)**
- 11:40-11:50 Q&A session
- 11:50-11:53 Will the tools answer your needs (short poll)?
- 11:53-12:00 Wrap up & conclusions

About the organizations

[Hypertech](#) is a Greek SME founded in 1997. The Energy Labs Unit of Hypertech was established in 2012 with the aim to design and prototype digital solutions that facilitate the energy transition of buildings. The solutions comprise an integrated hardware and software stack which includes: i) a building instrumentation solution to extract real-time data streams about the status and operation of building technical systems and appliances as well as occupancy and usage patterns by humans; ii) a data space infrastructure populated by these data streams that allows data exchange with service providers while preserving data control and sovereignty; iii) a building energy management system to improve energy efficiency, autonomy and enable the active integration of buildings to the energy utility networks and support the decarbonisation of the built environment and energy sectors; and iv) openBIM-based digital tools for building renovation evaluation and planning as well as building operations monitoring and optimisation.

The University of Edinburgh is one of the world's top research-intensive universities, ranked 20th in the world by the 2020 QS World University Rankings, 6th best university in Europe by the U.S. News' Best Global Universities Ranking, and 7th best in Europe by the Times Higher Education Ranking. It has 83% of our research activity classified as world leading or internationally excellent in the 2014 UK Research Excellence Framework (REF). [The CyberBuild Lab in the School of Engineering](#) has extensive combined experience in Construction Management, Reality Capture (Laser Scanning, Photogrammetry, etc.), Building Information Modelling (BIM), Scan-to-BIM, Computer Science/Vision, Visualisation, Building Surveying/ Conservation, Survey protocols, Philosophical and technical fabric repair. These core skills have been demonstrated through several previous and on-going research projects disseminated through

various publications, both academic and professional, as well as public and professional engagement events.

[The Information Technologies Institute](#) was founded in 1998 as a non-profit organisation under the auspices of the General Secretariat for Research and Technology of Greece, with its head office located in Thessaloniki, Greece. Since 10.3.2000 it is a founding member of the CERTH also supervised by the General Secretariat for Research and Technology (GSRT). CERTH/ITI is one of the leading Institutions of Greece in the fields of Informatics, Telematics and Telecommunications, with long experience in numerous European and national R&D projects. It is active in a large number of research domains such as Energy Efficiency, Security and Surveillance, Image and Signal Processing, Computer & Cognitive Vision, Human Computer Interaction, Virtual and Augmented Reality, Machine Learning & Deep Learning, Multimedia, Visual and Data Analytics, Database and Information Systems and Social Media Analysis.

About the speakers



Mr. Athanasios Tsakiris

Thanos Tsakiris is a Research Associate in the Informatics and Telematics Institute. He received the Diploma in Computer Science from the Aristotle University of Thessaloniki, Greece and the MSc in Computer Games Technology from the University of Abertay Dundee, UK in 2000 and 2001 respectively. His main research activities include 3D rendering, VR/AR/MR technologies and applications, Multimedia Authoring and Multi-modal Human-Computer Interfaces. His involvement in these research areas has led to his participation in the authoring of 2 articles in refereed journals, 2 papers in international conferences and the co-authoring of 1 book chapter. Thanos Tsakiris has been involved in more than 8 projects, 4 funded by the EC and 4 funded from Greek Secretariat of Research and Technology.

Dr Frédéric Bosché

Dr Frédéric Bosché is Reader in Construction Informatics in the School of the Engineering at the University of Edinburgh, where he leads the [CyberBuild Lab](#) whose research explores digital twinning solutions – integrating reality capture, data processing, information management, and visualisation technologies – to enhance construction project delivery and built environment monitoring.

Frédéric has published over 80 peer-reviewed papers in peer-reviewed journals and conferences, and his research has received a few international research and innovation awards, including two CIOB International Research & Innovation awards in 2016, and the IAARC Tucker-Hasegawa Award in 2018 for “distinguished contributions to the field of automation and robotics in construction”. Frédéric is the past President of the *International Association for Automation and Robotics in Construction (IAARC)*, is member and past-chair of the *EC3 Modelling & Standards Committee*, and is Associate Editor of the journal *Automation in Construction* (Elsevier).

Dr Giorgos Giannakis

Dr. Giorgos Giannakis holds a Ph.D (2015), a MSc (2011) and a Diploma (2008) in Production Engineering Management from the Technical University of Crete. From 2009 – 2018, he has worked as research assistant at the Technical University of Crete, participating in FP7 and H2020 projects (FP7-PEBBLE, FP7-BaaS, H2020- OptEEmAL) with main role the Development of Methodologies for Automatic Building Energy Performance Simulation Models Generation using Building Information Models and Model-based Control Design Methodologies for Building's Energy Performance Improvement.

From 2017 – 2019, he participated in an IBPSA research project that focus on the development of a BIM/GIS and Modelica Framework for building and community energy system design and operation (IBPSA-Project1). Dr. Giorgos Giannakis is currently working as a Project Manager at Hypertech SA (technical manager of the BIMERR project). He is an author of more than 40 papers in peer-reviewed journals and conference proceedings, his research activities focus on BIM, building energy modelling, data-driven simulation and optimization, conforming to relevant standards.

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