

**Keywords:**

#standardisation, #circulareconomy,  
#construction, #building, #IoT, #AI, #BIM,  
#CloudComputing, #assessment

# Materialising the Digitalisation Benefits for the Construction Industry through Standardisation.

## Background

Digitalisation for lean construction is a stepping stone to achieve the industrialisation of the construction sector. The construction industry has traditionally been known for its inefficiencies, complex processes, and high costs. Optimise project management, minimise waste, and improve productivity in the construction process through digitalisation is not only possible, but also needed. This process involves leveraging cutting-edge technologies, such as, Building Information Modelling (BIM), IoT, Cloud Computing and Artificial Intelligence. This set of technologies can enable real-time data collection from various sensors and devices, providing valuable insights for decision-making, and analyse vast amounts of data, leading to better resource allocation and reduced waste.

## The Challenges

The digitalisation journey in the construction industry is not without its challenges. One significant hurdle is the lack of commonly agreed standards and low interoperability among the vast amount of collected data. This poses a major drawback to enterprises' digital transformation efforts, even for large construction companies equipped with state-of-the-art digital reality capture tools. Without standardised frameworks and seamless data integration, the potential benefits of digitalisation remain fragmented, hindering the industry's ability to fully harness the power of emerging technologies. As the industry strives to embrace Digital Twins and leverage IoT, Cloud Computing, and AI, addressing these interoperability issues becomes a pressing necessity for ushering in a new era of efficiency and productivity in construction projects.

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## The project

**COGITO** introduces a real-time digital 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 is a project funded under the European Union's Horizon 2020 Research and Innovation Programme. It 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. COGITO targets 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 and 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.



COGITO REPRESENTATIVE

**Raúl  
García-Castro**

COGITO's Standardisation Task Leader

*"Standardisation is a cornerstone in COGITO and thanks to the HSbooster.eu services we have had the opportunity of strengthening it."*

## The Project Standardisation Needs

COGITO project focuses on advancing standardisation in construction, data modelling, and linked open data. It plans to engage with key industry bodies to gather feedback and garner interest in its standardisation initiatives. Consortium partners have been active in standardisation activities and contributed to the EUOS Landscape of Digital Twin Standards. They also submitted a use case for the upcoming ISO/IEC 30172 standardisation effort. COGITO sought HSbooster.eu open call support to elevate its standardisation efforts, aiming to submit results to at least four standards.

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## The HSbooster.eu Expert

**René Lindner** is a PhD candidate at Tecnun - University of Navarra, focusing on the integration of standardisation in research projects related to smart and resilient cities. René holds a diploma in industrial engineering from the Technical University of Berlin, with expertise in technology and innovation management, project management, marketing, and multimedia systems. In his professional career, René Lindner serves as a Senior Project Manager at DIN German Institute for Standardisation. He also leads the Smart City Standards Forum at DIN and DKE. René actively participates in EU research projects related to city resilience, climate change, and smart cities, taking charge of standardisation activities. Notably, he took on the standardisation activities in the Horizon2020 projects **ARCH** and **SMR**, among others.

## The HSbooster.eu Consultancy service

The COGITO partners and the HSbooster.eu expert focused on harnessing the results coming from the development of a Digital Twin model for the construction phase over a set of meetings, when the standardisation activities and potential contributions were discussed. COGITO partners are already participating in 14 standardization activities at different levels. René supported COGITO in identifying possible contributions to standardisation in more detail. Throughout the initial meeting different paths for contributing to standardisation were discussed. Furthermore, the expert provided initial insights on further standardisation options, best practices of conducting standardisation activities in research projects as well as other related national standardisation initiatives. The expert received a table with a set of standardisation proposals that COGITO could deliver to the different standards committees or other working groups, where its partners are involved. René gave advice on the standardisation activities for the project's remaining duration. The project aimed to promote its results to several standardisation bodies and contribute to four standards. The expert advised the project when to conduct the standardisation workshop to present the COGITO's potential contributions to standardisation properly.



THE HSBOOSTER.EU EXPERT

### René Lindner

Freelance consultant for standardisation in research projects. (Formerly: Tecnun - University of Navarra, DIN German Institute for Standardisation)

*"For projects like COGITO, multiple paths to standardization are possible – but only by understanding the benefits of each can high impact be achieved."*

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## Benefits & Impact

COGITO benefits from the expert's consultancy in various ways. The expert provided insights into standardisation options, including CWAs and Liaisons, enhancing COGITO's understanding of contribution routes.

Best practices shared by the expert aided COGITO's standardisation planning. Suggestions to engage with new standardisation bodies expanded COGITO's reach. This expert's information is vital for COGITO's standardisation activities, aiding workshop development and report preparation.

The expert's consultancy greatly contributes to COGITO's success in standardisation, facilitating engagement with standardisation bodies, promoting outcomes, and making impactful contributions to the construction industry's standardisation community.

## Useful material

- [Report on COGITO standardisation outcomes promotion efforts](#)

## Future Plans

Based on the insights and recommendations provided by René, COGITO has defined a clear strategy for the future.

The project highly appreciated the support received from the HSbooster.eu expert, finding it valuable and timely, leading to more options for standardisation activities and the preparation of the related report for the European Commission.

COGITO plans to establish contact with relevant technical committees where the project partners were not previously involved to foster collaboration and knowledge sharing.

The project team will engage in discussions and expert meetings to contribute to the ongoing development of methodologies and solutions for advanced Digital Twins in the construction industry.