EU BIM TASKGROUP

WORKSHOP V

RESPONSIBLE DIGITALIZATION FOR BUILDINGS AND CITIES

Nice/Sophia-Antipolis, 25 April 2024

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THE WORKSHOP

WHY?

A response to the needs of our members to share their knowledge, experiences, concerns, and challenges related to implementing responsible digitalization in buildings and cities.

WHAT?

Practical experience, insights, case studies, concerns and challenges on the responsible digitalization for buildings and cities.

GOAL:

The workshop was designed to encourage participants to reflect on various aspects of digital responsibility in the construction sector, assess the necessary requirements, and develop suggestions for implementing an effective strategy.

WHO?

The workshop participants were representatives of EU policymakers and 12 participants from 9 countries (Czech republic, France, Germany, Greece, Hungary, Ireland, Italy, Latvia and Spain).

THE OUTPUT IS INTENDED FOR THE ACHIEVEMENT OF COMMON GOALS

- Minimize the environmental impact of IT in the construction sector (Green IT)
- Use IT as a lever to decarbonize the construction industry (IT for Green)
- Bridge the digital divide, promote social acceptance, and ensure the inclusion of all stakeholders

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FINDINGS

1. Responsible IT is a challenge for society as a whole, particularly **in the context of an environmental crisis context and digital divide**. The construction sector, which is just beginning its digital transition, bears a major responsibility to make strategic and informed choices throughout its various phases and in collaboration with its diverse stakeholders.

2. Beyond the environmental factor, **the human factor** (acceptance, transparency, education, training) **is key to foster social commitment** and **secure the necessary behaviour change in the deployment of IT in the construction sector**, especially regarding data privacy, surveillance, AI biases... This approach must also aim to avoid exacerbating existing social inequalities while contributing to their resolution.

3. Responsible IT principles should be **implemented through an ethical and sovereign framework at a European scale**, linking the global IT impact (both green and social) to its benefits for the environment, people and tangible improvements in usage. In the construction sector, this should empower stakeholders and incorporate responsible IT practices into procurement processes.

4. Given that **digital devices account for a large portion of the digital carbon footprint**, the construction sector **must ensure these devices are used appropriately** and for their intended purposes, particularly in light of upcoming regulations that will require evidence of reduced environmental footprints.

5. IT provides an **excellent way to optimize the construction lifecycle** (from programming, design to deconstruction) by connecting phases, monitoring, optimizing, controlling the costs, material, waste, logistics, human behaviours... Simulation, Artificial Intelligence and robotics offer real opportunities to move towards greener construction.

6. A decisive factor lies in the **proper use of qualified**, **reliable** and **managed data within the construction processes and usages**. This includes avoiding redundancy and local storage while promoting continuity, interoperability and the adoption of open standards.

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FINDINGS	SUGGESTIONS
1	1
Reduce / optimize the IT devices & services used in the construction sector.	• Characterize green IT criteria for these devices / services: certification, traceability and origins (benefits could be effective for one country but negative effects could affect another country, example: raw materials, mines), environmental impacts, obsolescence, energy and material consumption, upgrade, repairability, utility for uses… • For each project, describe precisely the existing IT devices / services used within the different construction phases. • Anticipate the future needs of the sector, linked with regulation (ex: sensors to measure energy consumption). • Choose greenest devices and not cheapest on the criteria above, notably for public procurement. • Use already existing generic devices (smartphones or computers) to reduce the need of other specific devices.
2	2
Greener works with **simulation, automation and robotics.**	• Physical simulation to optimize material and energy consumption, reduce carbon through multicriteria analysis (Life Cycle Cost, Life Cycle Assessment)… • Reduce local environmental impact, optimize transport footprint, avoid defects that lead to the use of more materials and energy (prefabrication, additive manufacturing…).
3	3
New opportunities based on **AI and IoT for greener construction.**	• Improve efficiency and foresight within building operations: anticipate maintenance needs within the building operations, to avoid more costly repairs overall. • Use IoT/AI to optimize energy, water consumption, leak detection. • Enhance waste management within a circular economy. • Employ Generative Design and Modelling to help converge toward the best sustainable design. • Optimise the logistics, carbon footprint associated with transport and storage by using IoT, robotics, tracking devices…
4	4
A (big) **need of qualified, reliable, integrated and managed data**.	• To make these IT opportunities really effective, these new tools need large amounts of well qualified and reliable data, especially labelled data by (rare) experts to train or fine-tune AI for each use cases. • The digitalization of buildings is becoming more widespread and less expensive, but this leads to a growing need for data storage, raising concerns about the environmental impact. • Develop reference, reliable and certified datasets for construction, at the EU or national scale, compliant with open standards (for example on API, on semantics and models like Linked Data or BIM models, …) • Use these datasets to reduce the use of raw, redundant data. • Develop data governance and management within stakeholders of the construction sector to increase accessibility and interoperability

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FINDINGS	SUGGESTIONS
5	5
Change **education and training**.	• Do not force, but always allow upskilling. • Develop practice communities to share experience, especially from first adopters. • Empower policy makers, experts, communities, giving knowledge in order to move towards responsible IT. • Train all those involved in the construction industry. • Develop an inclusive and accessible approach for IT: for example, sovereign AI chatbots, robotics. • Develop new “hybrid” professionals with dual skills (data / construction expertise).
6	2
Public **regulation & promotion**.	• Move towards a mandatory and responsible IT in the construction sector. • Gradually introduce digital requirements with a reward system. • Encourage public debate to raise awareness among all, with more communication and transparency about impacts, effects. • Promote beneficial sharing between the private and public sectors. • Define EU / National data strategies and governance specific to construction, aiming to enhance accessibility, shareability, reliability, in compliance with GDPR, intellectual property, privacy regulations…
7	3
Develop a **SROI** (Social Return On Investment) on responsible IT for construction.	• Develop a European framework to enhance the understanding of SROI, encompassing the social, health, environmental, and economic values generated by each IT approach. • Implement a beneficiary-led approach that utilizes financial values defined by stakeholders to represent, compare, and evaluate outcomes.
8	4
Facilitate deployment within construction companies, VSEs/SMEs.	• Implement a trust environment, based on honesty and transparency, to enable progressive upskilling, and acceptance of failures during initial stages. • Identify the right pilot project, to foster collective motivation.