



# BIM Working Group Report

Alfredo Soeiro  
VP 13Mar25 Edinburgh

1



[BuildingSMART](#) is committed to delivering improvement by the creation and adoption of open, international standards and solutions for infrastructure and buildings.

[Award in 2024, Marrakesh](#)

2



ISSA-C Project: Smart technologies in the construction industry  
(24-26) - online meeting 77<sup>2</sup> 1w<sup>7</sup>579

Six person WG (P. Gelder, H. Akalp, P. Jackisch, B. Memarian, B. Merz, M. Trabelsi, W. Yeung)

12 digital technologies: AI, BIM, Digital Building Logbooks, Digital Building Permit, Digital Twins, Drones, IoT, Robotics, Sensors, VR-AR, 3D printing and 3D scanning.

3

### Project Goals:

- The ISSA-C Project focuses on using **smart technologies** to improve **health and safety** in construction and reduce workplace accidents.
- It aims to **exchange knowledge** and **network internationally** to identify emerging trends.
- Project partners include **BG BAU, ISSA Construction, and international experts** from multiple countries.

### Project Implementation:

- **2024–2026** timeline, with milestones including **status reports, lessons learned, and final assessments**.
- Combination of **online & in-person meetings** for international collaboration.
- Each project partner **bears their own costs** for participation.

### Expected Outcomes:

- **Identification of successful technologies** that improve construction **safety and efficiency**.
- **Compilation of international best practices** and lessons learned.
- **Guidance for industry adoption** and implementation of smart technologies.

4

## Technology-Specific Insights:

- **AI in Construction:** Predicts safety risks, automates inspections, optimizes project costs/timelines.
- **IoT & Sensors:** Improve site monitoring, waste management, and predictive maintenance.
- **BIM & Digital Twins:** Enhance planning, reduce errors, and provide real-time project updates.
- **Drones & 3D Scanning:** Support surveying, safety monitoring, and construction progress tracking.
- **Robotics & 3D Printing:** Help automate construction tasks and reduce manual labor risks.

## Challenges & Considerations:

- **Limited data availability** and inconsistent adoption across countries.
- **Regulatory & cost barriers** affecting digital transformation.
- Need for **greater awareness, investment, and skill development** in the sector.

5



# ENCORD (online)

## AI & H&S in Construction

Alfredo Soeiro

ISHCCO – Vice President, 20Mar24

# Artificial Intelligence?

What is it?

Magic or algorithms?

CHATGPT

One asks anything

One obtains an answer

LLM - Large Linguistic Model



## LLM and AI

[Article on The Guardian](#)

[PhD Thesis](#) (1989) - pg. 126

[120 AI programs](#) (Jul23)

[Book](#)

[The Master Algorithm](#) (YouTube)

[Families of Algorithms](#)

[AI and emotions](#)

# CHATGPT - AI and Construction

Artificial Intelligence (AI) has the potential to revolutionize the construction industry by streamlining processes, improving safety, reducing costs, and enhancing productivity. Here are some ways AI can be utilized in construction:

1. **Predictive Analytics**: AI can analyze historical data to predict project timelines, costs, and potential risks. This helps project managers in planning and decision-making.
2. **Building Information Modeling (BIM)**: BIM coupled with AI enables better collaboration and coordination among stakeholders by creating a digital representation of the project. AI algorithms can analyze this data to identify clashes, optimize designs, and simulate construction processes.
3. **Construction Monitoring and Quality Control**: AI-powered drones and cameras can monitor construction sites in real-time, detecting safety hazards, tracking progress, and ensuring adherence to quality standards. Computer vision algorithms can analyze images to identify defects or deviations from the plan.
4. **Autonomous Equipment and Robotics**: AI-driven robots and autonomous vehicles can perform repetitive tasks such as bricklaying, excavation, or material transportation with higher precision and efficiency than human labor, leading to increased productivity.
5. **Predictive Maintenance**: AI algorithms can analyze sensor data from construction equipment to predict maintenance needs, preventing costly breakdowns and optimizing equipment utilization.

9

## CHATGPT (cont.)

6. **Safety Management**: AI can analyze data from wearable sensors to monitor workers' health and safety in real-time, alerting supervisors to potential risks and improving overall job site safety.
7. **Supply Chain Optimization**: AI algorithms can optimize the supply chain by predicting material requirements, identifying alternative suppliers, and optimizing delivery schedules, reducing delays and costs.
8. **Energy Efficiency and Sustainability**: AI can optimize building designs for energy efficiency and sustainability by analyzing factors such as sunlight exposure, airflow, and material properties. It can also suggest eco-friendly construction materials and methods.
9. **Natural Language Processing (NLP) for Documentation**: NLP algorithms can analyze and interpret construction documents, contracts, and regulations, helping project managers in decision-making and risk management.
10. **Virtual Assistants and Chatbots**: AI-powered virtual assistants can provide 24/7 support to construction teams, answering questions, providing guidance, and facilitating communication among stakeholders.

To integrate AI into construction effectively, companies need to invest in data collection infrastructure, train employees in AI technologies, and collaborate with AI experts and solution providers to tailor AI solutions to their specific needs. Additionally, addressing concerns related to data privacy, cybersecurity, and job displacement is crucial for successful AI adoption in the construction industry.

10

# AI, Construction and H&S

---

---

AI to avoid in conceptual design and in preparation phases using analysis 2000 accidents is **62%** (current PhD)

---

[AI and Trimble](#)

---

[AI and construction trends](#)

---

[Crows and AI](#)

---

---

ENCORD 20Mar24 Online



11

## Acknowledgment

**Thank you for your attention.**

ENCORD 20Mar24 Online

12