
# *Rapport de veille n° 53*

## BIM

**30/11/2023**

**Objectif :** *L'utilisation du BIM en phase de conception et de ses potentiels applications pour la prévention des risques*

La validation des informations fournies (exactitude, fiabilité, pertinence par rapport aux principes de prévention, etc.) est du ressort des auteurs des articles signalés dans la veille. Les informations ne sont pas le reflet de la position de l'INRS.

Les liens mentionnés dans le bulletin donnent accès aux documents sous réserve d'un abonnement à la ressource.

# Table des matières

# 1. Références anglophones

### 1.1 Articles scientifiques

**Digital technologies in construction: A systematic mapping review of evidence for improved occupational health and safety**
C Trask, HCJ Linderoth - Journal of Building Engineering, 2023
DOI : https://doi.org/10.1016/j.jobe.2023.108082
There is accelerating development of digital Occupational Health and Safety (OHS) interventions in construction, but it is not clear whether they reduce the risk of injury and illness. This systematic mapping review summarized the state of the evidence and developed recommendations for practitioners and researchers. During a keyword search of scientific databases, 392 unique records were identified and 24 (~6%) were included in the review. The review was conducted within an Evidence Maturity framework developed for public health interventions, which outlines criteria for intervention. Studies are characterized by innovative application of a wide variety of technologies throughout pre-construction planning, construction execution, and worker training. Targeted hazards primarily included falls, struck-by incidents, and location-based hazards. Most studies focused on technology development and provided low to no evidence of improved work conditions or reduced injury/illness among construction workers. More evidence is needed before the digital solutions are promoted for widespread use. In order to achieve this, more attention need to be paid on the conflicting logics between the evidence maturity framework and the project logic in the construction practice.

**Catalysing Construction Safety: A Comparative Analysis of Technological Advancements across High-Risk**
**Industries [PDF]**
A Sidani, J Poças Martins, A Soeiro - Buildings 2023, 13, 2885, 19 p.
DOI : https://doi.org/10.3390/buildings13112885
This article presents a comprehensive review of the safety status and technological development in high-risk industries, with a focus on construction, mining, agriculture, transportation, healthcare, and energy sectors. The objective is to analyse and compare the current safety practices, challenges, and advancements in these industries to identify common trends, knowledge gaps, and potential areas for improvement. The review explores the incidence of accidents, associated costs, traditional safety methods, limitations, and emerging technologies employed to enhance safety across multiple industries. This review aims to provide insights and lessons that can be applied to enhance safety practices in the construction industry. The findings highlight the critical role of technological advancements in mitigating risks and fostering a culture of safety across diverse sectors.

### 1.2Conférence / ouvrage / thèse

BIM Technology and Impact on Safety KPIs in Construction Projects in Slovakia, Slovenia, and Croatia
T Mandičák, M Spišáková - In: Blikharskyy, Z., Koszelnik, P., Lichołai, L., Nazarko, P., Katunský, D. (eds) Proceedings of CEE 2023. CEE 2023. Lecture Notes in Civil Engineering, vol 438. Springer, Cham, pp. 242-250
DOI : https://doi.org/10.1007/978-3-031-44955-0_25
Key performance indicators represent the basis for effective management. At the same time, they can also be an

indicator of the efficiency of using. BIM technologies represent a tool that increases information value in managing not only businesses, but also projects. Project management using BIM technology can bring benefits in several areas. The area of health and safety is also a much-discussed topic in the construction industry. Monitoring and increasing security includes search for suitable construction materials and technological procedures that consider a high degree of protection and safety of workers but also simulations and scenarios of eventual accidents. Another point of view is to aim at malfunctions caused by inadvertence, error rate, and human damage. The costs of occupational safety and health administration (OSHA) and average solution time as safety-related indicators cannot be neglected. The research aims to analyze the use level of BIM technology and the impact on the so-called Safety KPI in construction projects designed and implemented in Slovakia, Croatia and Slovenia. The research results show the increasing trend of using BIM technology in construction projects. BIM technology's use rate for risk and risk purposes is relatively low. However, measurement indicators show that it has a positive impact on safety and reduction of occupational safety and health administration costs in construction projects.