

MCX



Member Communication Experience

Any views and opinions expressed in this article may or may not reflect the

Evolving Artificial Intelligence (AI) Challenges and Risks in Construction

Key Points

The roll out of artificial intelligence (AI) will bring many challenges, risks, and opportunities to the architecture, design, engineering, and construction industry. For the industry, AI is not just a tool, but a paradigm shift, already suggesting impacts more profound than the smart phone or even those of the Industrial Revolution.

re of the work

they paradigm shift, already suggests impacts more profound than the smart phone or even those of the Industrial Revolution

societal

do. This inflection point, a

Agencies have between 45 and 365 days to complete most directives, and stakeholder engagement will be critical to most actions.

Like any broad-based societal change or new technology roll out, AI is bringing challenges and risks. These challenges must be kept front of mind, not to dissuade or discourage, but to ensure all **Americans**

The table below is intended to raise the AI challenges/risks visibility. It also highlights why these challenges/risks should be of concern to the construction industry. Some risks may fit into more than one category. The six categories are:

1. AI General – affects more than the construction industry.
2. Ethics – a multi-dimensional challenge.
3. Industry/Corporate – real risks to both industry and individual companies, but more broadly to the construction industry. This is an area where increased leadership by industry organizations such as the National Academy of Construction is required.
4. Regulation and Legal – includes some risks that derive from the White House Executive Order of October 30, 2023.
5. Data.
6. AI Models and Algorithms.

These last two areas pose special challenges for engineering and construction, but also represent significant opportunities if they can be systemically addressed in the industry.

AI Challenges and Risks in Construction	
AI General	Data
Emergent behavior in large language models	Quality and limits of training data
Sentience of AI models	Validation and verification
Application of multimodality	Access to sufficient data, including relevant dark data
	Data integrity
Ethics	Use of "data exhaust" from daily activities
	Human feedback in training process
Completeness of AI ethical considerations	
Hidden Biases	AI Models and Algorithms
Thoroughness and quality of due diligence and impact assessment of AI ethical issues	
Privacy erosion	Confirmation of appropriateness of use for selected AI
Data manipulation	Diagnosis vs Design
AI agent misuse by people	Safety of AI algorithms
	Veracity and quality of results
Industry/Corporate	Lack of verifiability
	Diagnosis of errors
Access to required AI skills	Adequacy of interoperability
Disruption to the construction industry	Assumption tracking and linkage to AI use cases
Job automation labor issues	Constraint awareness and tracking as it relates to the AI deployed

AI Challenges and Risks in Construction

For Further Reading