



Artificial Intelligence in Design and Construction: Opportunities and Concerns

As design and construction professionals consider the potential use of artificial intelligence (AI) in their businesses, Berkley Design Professional offers the following for your consideration.

Vision and Intended Use

Design and construction technology has evolved continuously over the past 40+ years. In addition to the advent of CAD, BIM, and other 3D-visualization applications in building and infrastructure design, a variety of software applications are used for predictive modeling and automation of planning, engineering, energy modeling, scheduling, logistics, and estimating.

AI represents another advancement of technology application, which may have significant impact on your business.

We recommend that your company establish a vision for use of AI asking the following questions:

- How can we use AI?
- How should we use AI?
- What can AI do well? What can't AI do well?
- Can AI improve efficiency in our business through automation of certain (repetitive) tasks?
- Can AI augment design and construction technologies currently used in our company?
- Can AI promote innovation in our business?
- How can we use AI in a purposeful, thoughtful, and quality manner?



Professional Practice, Policy, and Procedures

After you have crafted an AI vision for your firm, you should establish a company policy on its development and use. It's also important to identify an executive leader (e.g., CIO) of your company's AI initiative and a team of staff members to facilitate its development and provide "bottom-up" input and advice. Moreover, we recommend that you proceed thoughtfully and cautiously based on research and knowledge-gathering applicable to your business.

Establish Written AI Practice Standards

Elements of an AI policy manual include the following:

- Definition of intended use and allowable use of AI
- Explanation of the process of oversight and review that will occur as usage evolves
- Determination of specific and appropriate application of AI in conjunction with other technologies used in professional practice

Keep in mind that you will need to apply robust Quality Management (QA/QC) techniques in the use of AI, including research and vetting of AI content to confirm validity, integrity, and accuracy of source data and control of your company's output.

Do Not Compromise Professional Responsibility

When using AI, it is critical to maintain the human, professional responsibility for oversight, "responsible control," and the standard of care.

- Be cautious about over-reliance on technology and automated processes without application of foundational (A/E/CM) experience and expertise.
- Provide training about this advanced technology and an environment of ongoing and continuous learning and education.
- Establish a process and communication system within your organization share ideas, thoughts, and experience to promote better quality and efficiencies.

Understand Legal, Regulatory, Compliance, and Ethical Requirements

When contemplating the use of AI and creating your policy manual, you also need to recognize legal, regulatory, compliance, ethical, and other requirements governing professional practice and supervisory duties. Consider these questions:

- Do you understand the source, ownership/copyright and usage restrictions of material and data that may be identified, used, and relied upon in an AI search?
- Do you have the right to use data and information derived from AI search?
- Can you/should you create and establish your own models or data sets used for design, engineering, and analysis of construction elements, systems, and processes?
- Will potentially inaccurate AI-produced content expose you to liability?
- Should you disclose use of AI to your clients?

In any event, you should understand and adhere to professional and contractual obligations for data privacy and security in the use of electronic data, systems, and tools.

Conclusion

Artificial Intelligence has the potential to impact design and construction in profound ways. Architecture, engineering, and construction firms and their leaders must understand both the benefits and risks of using AI, establish strategy and vision for its potential use, and carefully plan and manage AI implementation. Bottom line: the use of AI does not relieve you of professional responsibility and presents additional risks that have to be managed.



Additional Resources

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ACEC Risk Management Committee Guidelines on the Use of AI by Design Professional Firms

<https://www.acec.org/resource/guidelines-on-the-use-of-ai-by-design-professional-firms/>

Powerful AI Still Needs Quality Checks

<https://www.enr.com/articles/57931-powerful-ai-still-needs-quality-checks>

The Benefits of AI In Construction

<https://www.trimble.com/blog/construction/en-US/article/the-benefits-of-ai-in-construction>

Managing the Risks of Adopting AI Engineering

<https://insights.sei.cmu.edu/blog/managing-the-risks-of-adopting-ai-engineering/>

What Is the Real Threat of Artificial Intelligence to the Architecture Profession?

<https://archinect.com/features/article/150258718/what-is-the-real-threat-of-artificial-intelligence-to-the-architecture-profession>

AI as an Enhancer for the Architect, Not a Replacement

<https://www.ncarb.org/blog/ai-enhancer-the-architect-not-a-replacement>

Let's chat about AI: How design and construction firms are using ChatGPT

<https://www.bdcnetwork.com/lets-chat-about-ai-how-design-and-construction-firms-are-using-chatgpt>

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