Generative AI in FM & AM

David Reynolds, RCFM

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AI | Training | Built Environment

Models, curation, controls

In a Siemens sponsored webinar this morning[i] on the topic of training electricians in construction and FM, panelist Maddie Everhardt noted that data preparation – curating - for generative AI in PNEUMA, a principal part of Siemens' training initiative, had taken 16 months of staff work. This gives an idea of the heft of implementing and maintaining data models that cannot afford to be wrong, or worse, hallucinate.

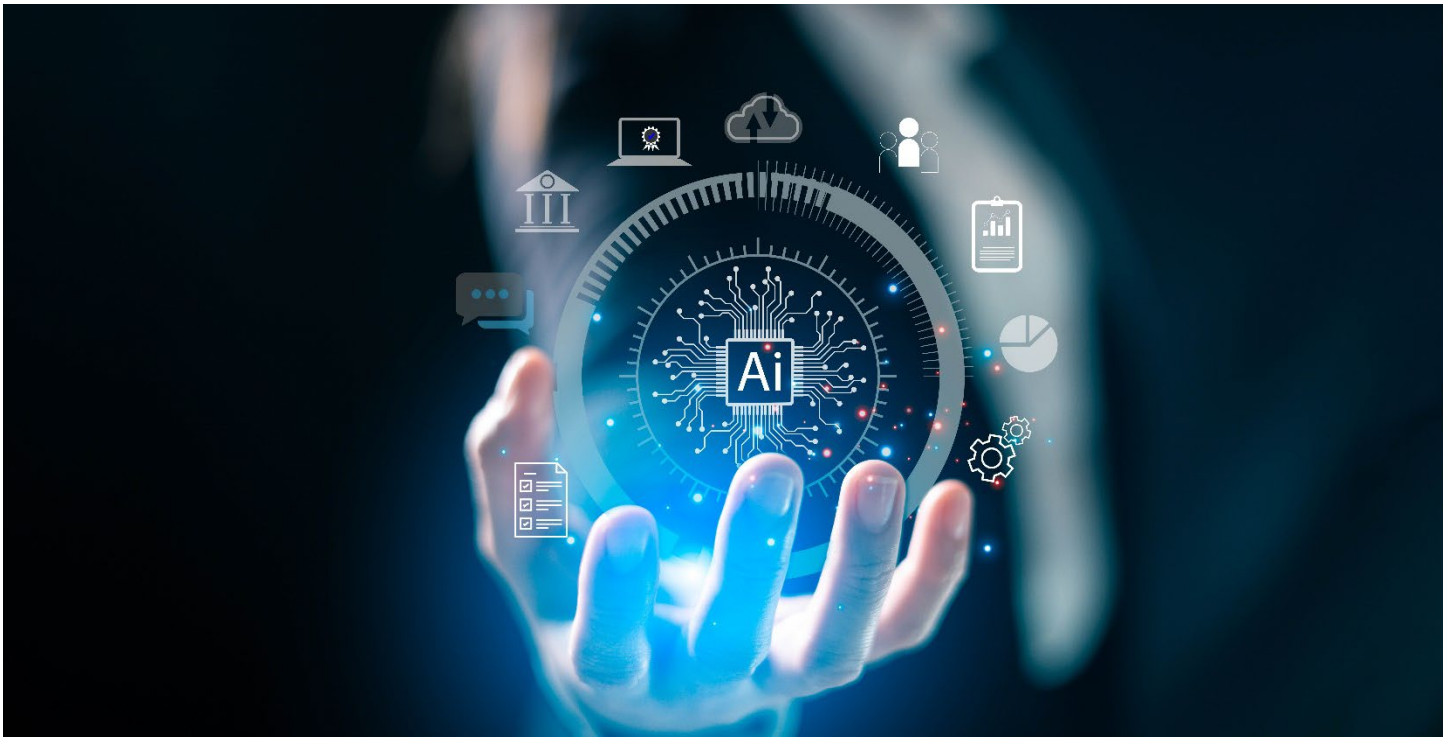
Over coffee a few hours earlier, I read *A.I.-Generated Reading List in Chicago Sun-Times Recommends Nonexistent Books,* by Talya Minsberg of the New York Times.[ii] In the instance reported, "A summer reading insert recommended made-up titles by real authors such as Isabel Allende and Delia Owens. The Sun-Times and The Philadelphia Inquirer have apologized" and "None of the book titles attributed to those authors were real. They had been created by generative artificial intelligence".

Good AI and bad AI? Not really, but systems employing different data, models, and management. City and country cousins might be a better allusion.

AI - childhood and adolescence?

In her just published second book on AI[iii] written to convey capabilities, applications and their growing effects on individuals and societies, Melissa Peneycad summarizes how work that began with neural networks grew into analytical and predictive applications leading eventually to AI. Developments

included discriminative models to identify patterns and advise about outcomes. In operating and maintaining the built environment, fast and thorough processing of sensor data to support, even to suggest interpretations and take or advise about actions is in concept an advanced version of automatic equipment long known and accepted. AI at this level can analyze powerfully and present sensibly, working with strictly managed inputs and following formal rules. Learning and predictive capabilities have evolved and strengthened. They are now widely diversified and applied in the built environment, in functions from strategic planning to waste management and all in between. But this AI does not generate new content; generative AI does. When generative AI works with limited, not always clear access to data and unclear ongoing learning, the risk of going off the rails is substantial.



We're surrounded. What now?

Everyone is talking about AI. "Everyone" in our view means especially organizations that occupy or broadly hold responsibility for the built environment – its condition, extent, systems, equipment, expenses & balance sheet, and (most importantly) the well being and productivity of its occupants. Two distinctly different realms of AI invite use. The one that can hallucinate (there are a host of them in the public domain) can be invaluable in writing & illustrating, organizing, and the forming and testing of ideas. Its use calls for scrutiny that should trigger cross checking of salient results. Value acquired can improve with disciplined use. The term "prompt engineering" refers to methodical adjustment of intent, content and phrasing in conversations with generative AI to refine user objectives and results. But checking salient output remains essential.

To anyone not at least somewhat familiar with a subject, a grossly wrong AI output can look valid.

Applications that can't hallucinate – or won't – are designed and curated for specific needs as encountered in managing the built environment. Data are secure, valid, documented and not generally open to the public internet. Thus far, applications are mainly analytic and predictive, up to, for example, a scenario using a digital twin to simulate possible solutions in technical, organizational, financial, etc. areas. But generative AI is coming on strongly.

Conclusion

Digitization is bringing steadily more powerful and extensive capabilities across many fields, including many aspects of managing the built environment. The AI resources mentioned already help provide value to stakeholders. We in the field should stay informed, experiment, build expertise, and duck the hype.

David Reynolds, RCFM, is a senior consultant in management for the built environment. He is a partner in GFMA Global Strategy Advisors, LLC and maintains memberships in IFMA and the World Association of PPP Units & Professionals (WAPPP). David has extensive experience implementing and managing projects and programs with facility planning, operations, and maintenance.

[i] *Educate, empower, engage: Siemens and the future of electrical trades*, webinar May 28, 2025, sponsored by Siemens and Unity. Four panelists discuss the evolution of knowledge and training in construction and facility maintenance staff and various organizational and learning technology developments gaining use. *https://create.unity.com/xr-solutions-siemens-electrical-products-webinar (Availability of recording to be announced)*

[ii] Minsberg, Talya, *A.I.-Generated Reading List in Chicago Sun-Times Recommends Nonexistent Books* New York Times, May 21, 2025.

[iii] Peneycad, Melissa, 2025, Generative AI Basics and Beyond, Amazon Canada. Chapter 4 takes up essentials of prompt engineering. (For an account of prompt engineering in an unusual case demonstrating the control of a generative AI system, see *For One Hilarious, Terrifying Day, Elon Musk's Chatbot Lost Its Mind* by New York Times columnist Zeynep Tufekci, May 17, 2025. The chatbot concerned was Grok, owned by xAI. The author, who concentrates in technology, used a series of prompts to reveal a bias injected into Grok using a "system instruction." Was there really such a control? Tufekci acknowledges that there is no certainty, though the pronounced behavior soon went away, with Grok administrators blaming a "rogue employee.")