

From Digital Ground to Intelligent Design - The Evolution of Autodesk AECO from Modeling and Automation to AI-Assisted Decision Making

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Artificial intelligence is beginning to reshape architecture, engineering, construction, and operations (AECO) workflows, but its direct application to geotechnical design remains limited. This presentation introduces how Autodesk AECO solutions currently support ground-related workflows and how these capabilities are evolving toward AI-assisted decision-making. The workflow begins with the digitization of borehole, stratigraphic, terrain, and site information using Civil 3D Geotechnical Modeler and Civil 3D. These digital ground models can then support infrastructure planning and design for roads, railways, bridges, and tunnels through Civil 3D and InfraWorks. For building projects, site and ground constraints can be carried into Forma Site Design to explore site-planning alternatives, evaluate environmental performance, and compare design options before progressing to detailed building, foundation, and underground-space modeling in Revit. The presentation also positions Autodesk's current AI capabilities within four practical roles: prediction, detection and classification, generation, and recommendation and assistance. These capabilities are not presented as dedicated geotechnical AI, but as examples of how AI is already augmenting AECO workflows. The broader progression is described through four stages—Digitize, Automate, Augment, and Orchestrate—showing how structured models, automated processes, intelligent features, and connected data environments can progressively support multidisciplinary design coordination. Looking ahead, connected project data, cloud-based collaboration, and AI-enabled assistance may support future applications such as automated extraction of geotechnical information, anomaly detection, uncertainty communication, investigation planning, and change-impact assessment. The session therefore focuses on the evolution from digital modeling and process automation to connected, AI-assisted AECO workflows, while emphasizing that professional engineering judgment remains essential throughout the process.

Keywords: Autodesk, BIM, Forma, CDE, Civil 3D, InfraWorks, Revit

References

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