

Towards a Work Path for Data-Centric Geotechnics: Geotechnical Analysis with PLAXIS

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Data-Centric Geotechnics (DCG) has gained significant momentum in research, yet industry adoption remains limited. A key obstacle is the absence of an accepted work path: no established workflow connects site data to data-driven analysis within commercial project settings, design codes, and review processes. This paper proposes one candidate workflow, built from tools already in industry use, and examines where it holds up and where it falls short. Three elements are demonstrated. First, constitutive parameter determination: transforming site investigation data into Hardening Soil model parameters via data-driven correlations and Bayesian updating. Second, connected model building: linking structured ground data (OpenGround) and 3D geological models (Leapfrog Works) directly into PLAXIS and GeoStudio, so limit equilibrium screening, seepage analysis, and finite element modelling all inherit a common, traceable ground model. Third, automation at scale: Python-API-driven staged excavation analysis, parametric sweeps, and design envelope extraction. Worked examples from retaining wall and slope analysis in soft ground illustrate each element, alongside discussion of unresolved issues. The lecture invites the FOMLIG community to treat industry workflows as a shared research and industry problems: accepted paths will emerge only by creating and iterating concrete proposals.

Keywords: geotechnical analysis; geological modelling; geotechnical information modelling;

References

About the Presenter

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