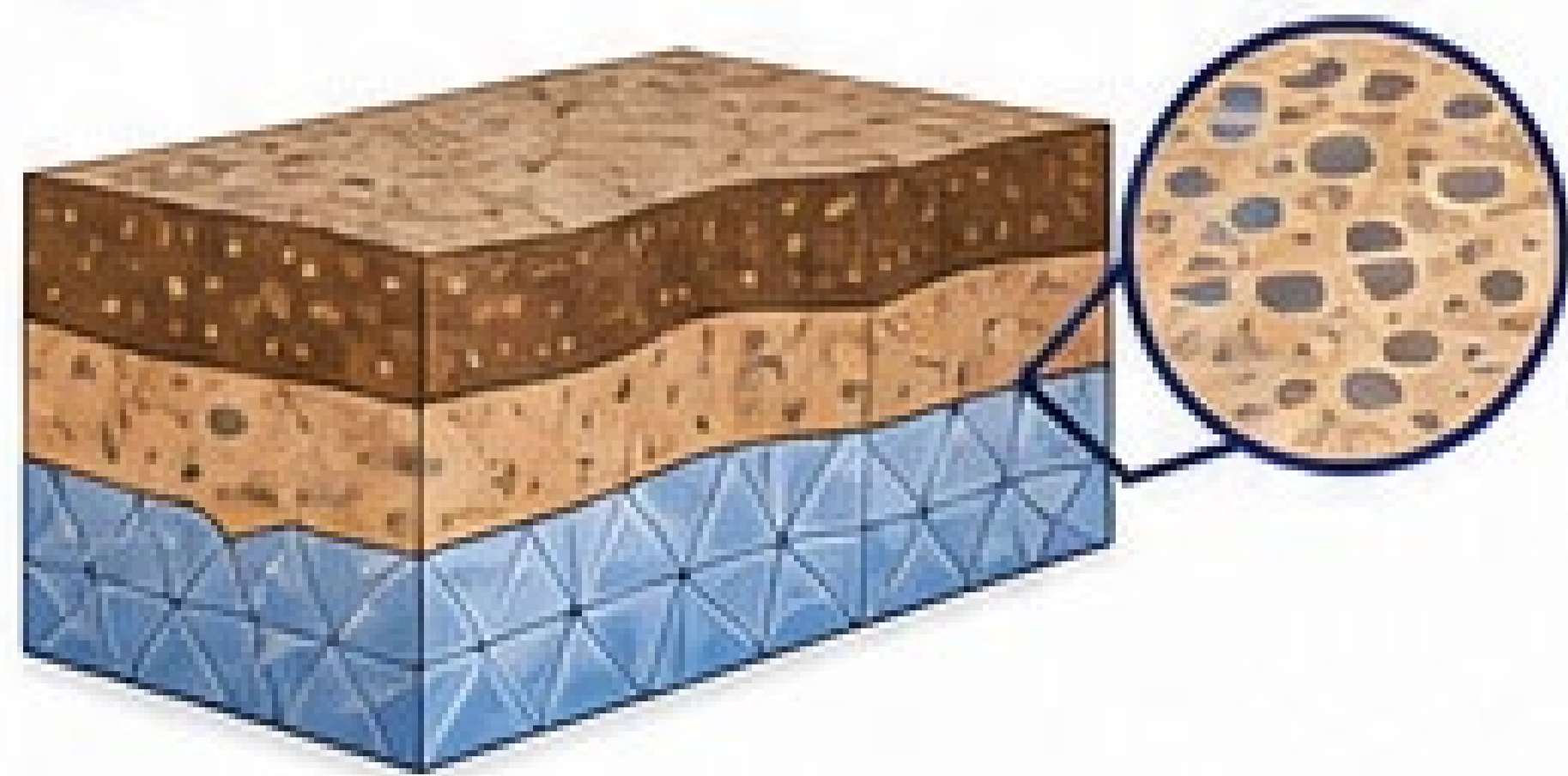




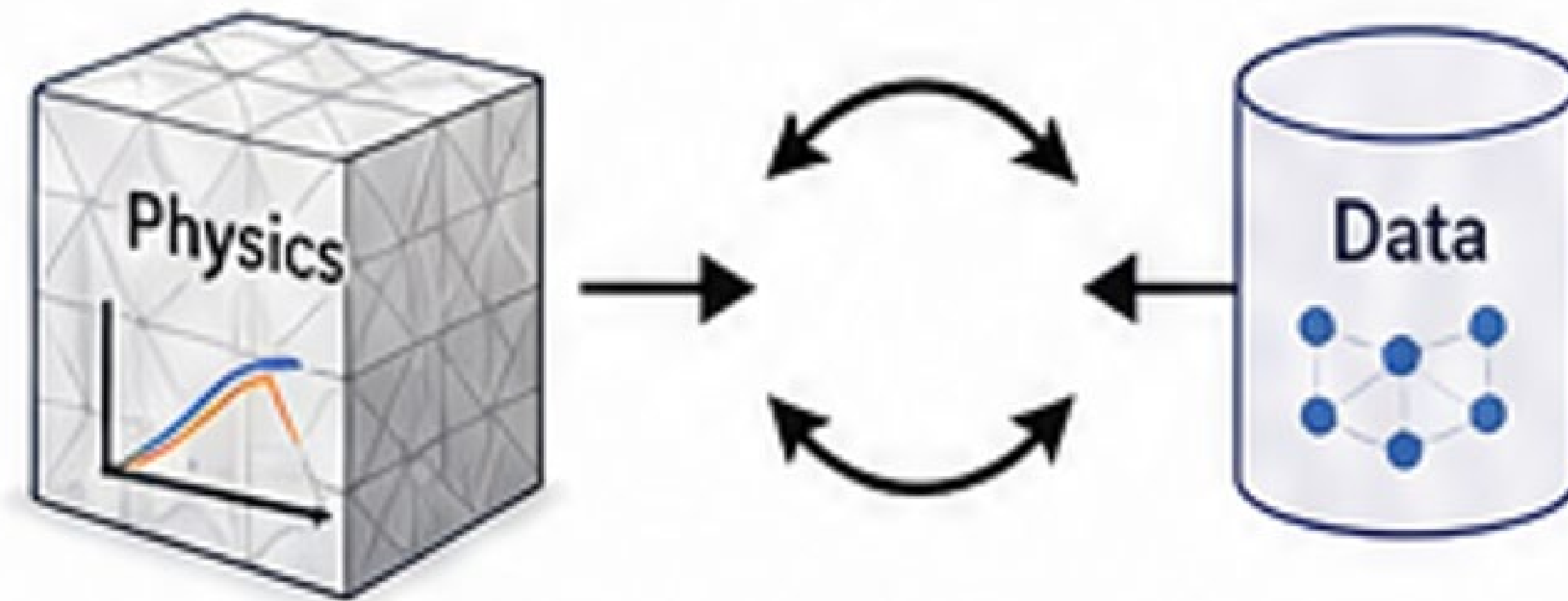
Towards Intelligent Geomechanics: *Bridging Physics, Uncertainty & Data*

Motivation & Challenges

Heterogeneous materials challenge modeling



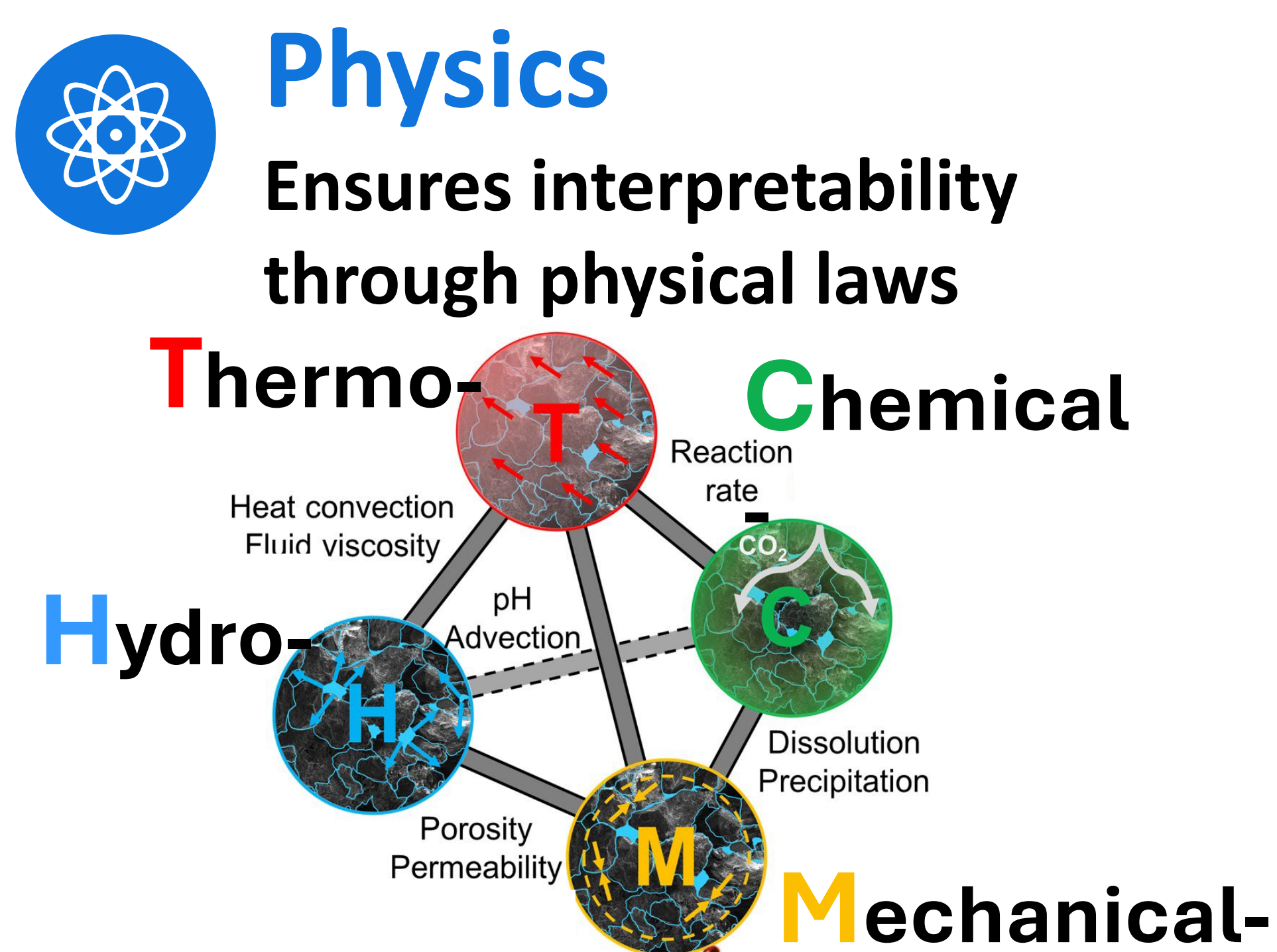
Physics–data coupling is needed for reliable constitutive modeling



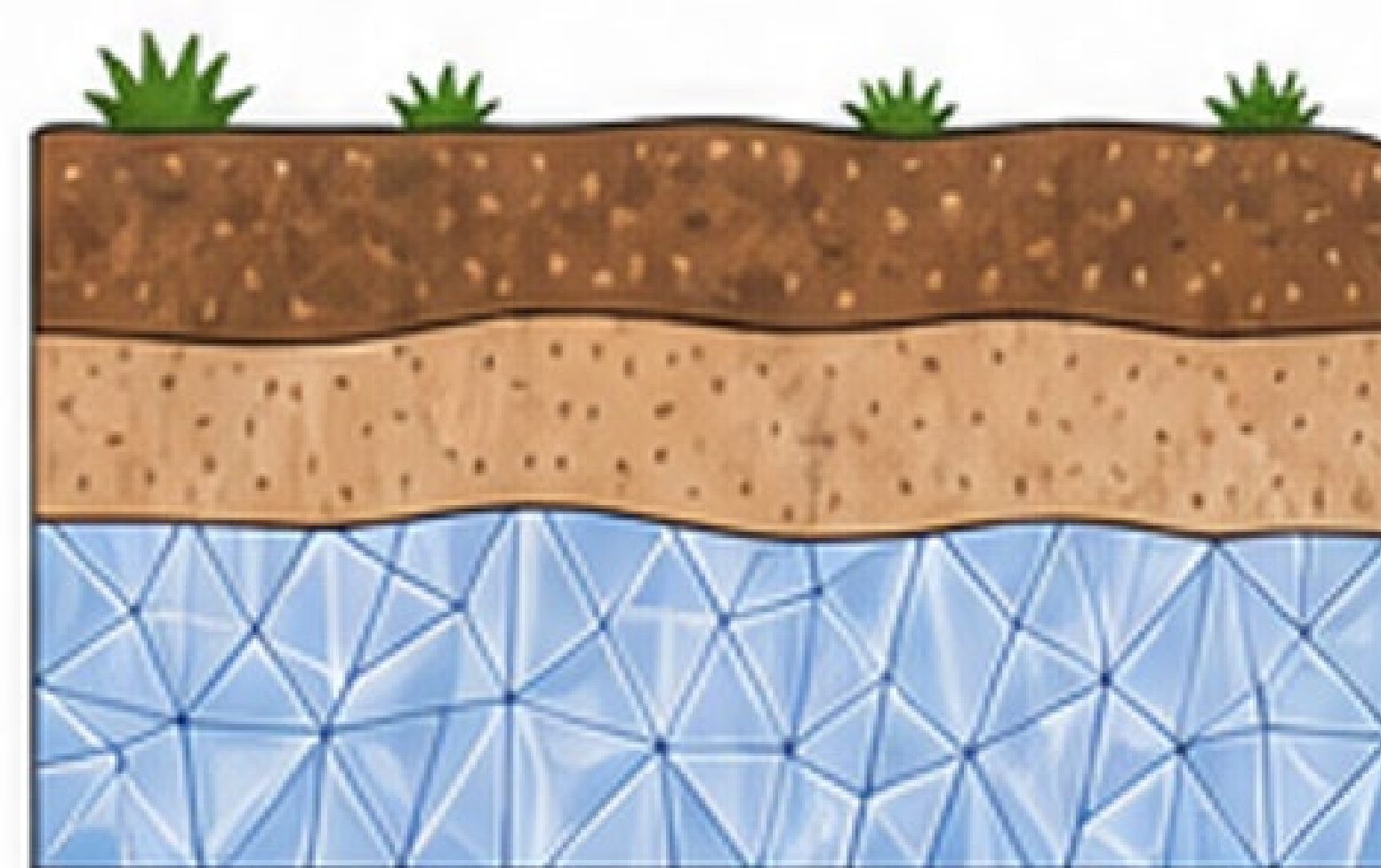
Limited computational efficiency and generalization



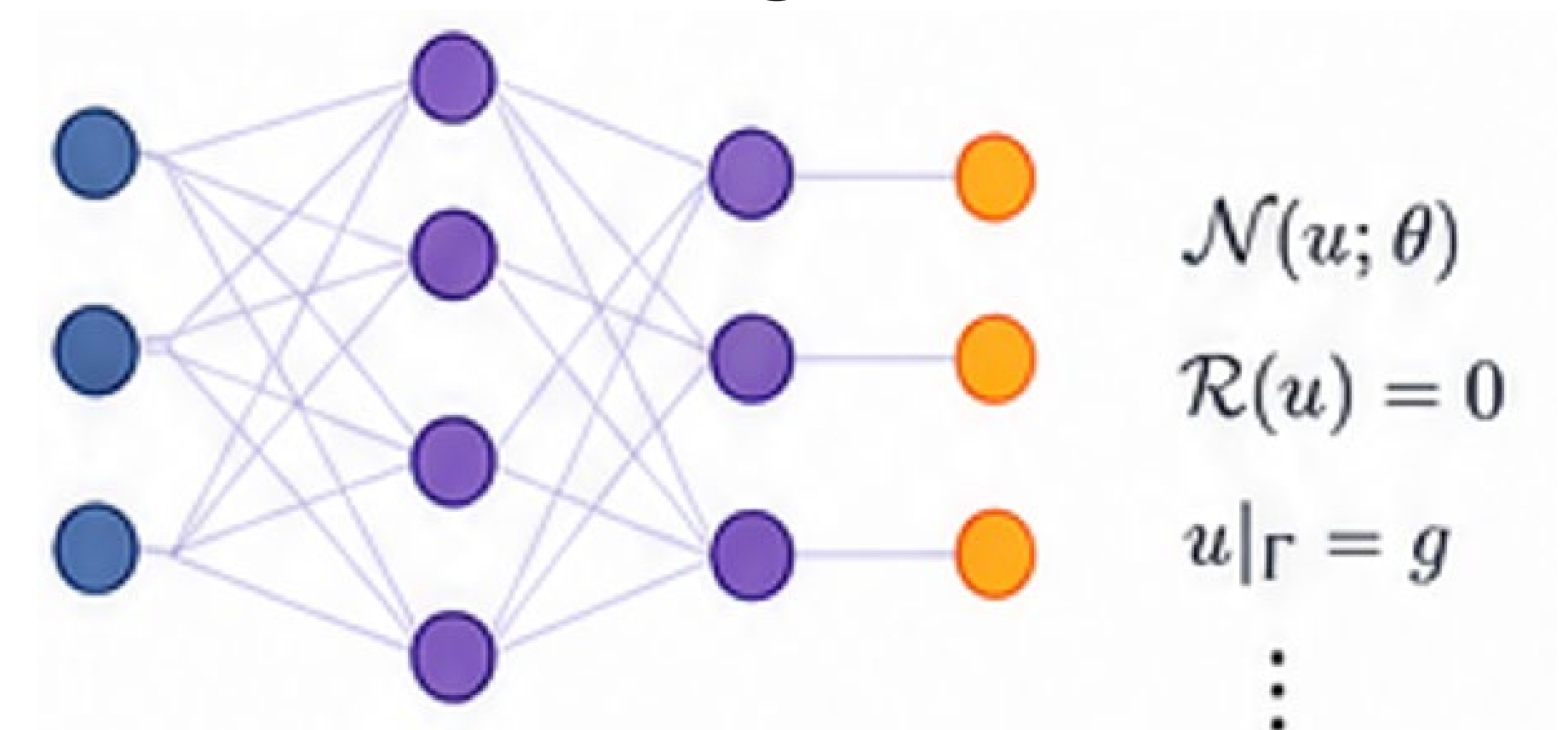
GeoPUDding Framework



Uncertainty
 Represents complexity and quantifies spatial and model uncertainty



Data
 Improves efficiency through observations, simulations, and machine learning



Intelligent Geotechnics
Physics + Uncertainty + Data

Outcomes & Applications

Digital Twins



Real-time, multiscale digital twins for subsurface and infrastructure systems

Hazard Warning



Uncertainty-aware early warning of geohazards for safer communities

Intelligent & Automated Design



AI-enabled, automated, and sustainable design of geotechnical and civil infrastructure

“Shaping the Future of Geotechnics through Intelligence & Uncertainty Mastery!”

Organizers

