Information technology tools enhance the role of engineering judgment in analysis and design.

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The practices of geotechnical engineering and engineering geology require professionals to work with very limited data about a complex environment, where conditions can change radically over a short distance and with time. Geotechnical engineers and geologists use scientifically accepted principles of interpolation, extrapolation, deduction, and inference together with their judgment to extend this limited information to a generalized model of the subsurface conditions at a site. Typically, we must rely on simplified test devices, conversions, correlations, approximations, and our engineering judgment to deduce the material properties to use in analysis and design.

Today's information technology (IT) tools and systems provide a quantum jump in capabilities. I have been involved with the application of IT for more than 30 years; therefore, it seems appropriate to consider where we are and where we may be going with applications of IT to the geotechnical practice.

Until IT tools become self-replicating and self-improving, they can never replace engineering judgment. Instead of engineering judgment becoming less important, a strong argument exists that it will become increasingly important. The exponential growth of IT tools forces us to think harder about which tools are appropriate to our problem. And the demands on our time taken by the explosion of information and IT tools increasingly pull us further from close contact with the look and feel of the actual site conditions.

Instead of rejecting judgment, we need to better understand what it is and how we use it. Additionally, we need to determine ways for engineers to develop good engi-