3-D modeling technology offers groundbreaking solution for engineers

EurekAlert!

Software developed at the University of Sheffield has the potential to enable engineers to make 'real world' safety assessments of structures and foundations with unprecedented ease.

Developed in the Department of Civil & Structural Engineering, the software can directly identify three-dimensional collapse mechanisms and provide information about margin of safety, vitally important to engineers.

A method of directly identifying two-dimensional collapse mechanisms was first developed in the Department in 2007, and commercialised through the spinout company LimitState Ltd. This method, for the first time, fully automated the hand calculation techniques that had been relied upon by engineers for decades. Software incorporating this method is now used in dozens of countries worldwide.

Now, in a study published by the Royal Society, the researchers have shown that the same basic approach can be applied to 3D problems, ensuring that real world features can be taken into account.

Professor Matthew Gilbert, who co-authored the study, says: "The software we have developed means that engineers should in future be able to model real world geometries much more easily than before, obviating the need to idealise a complex 3D problem as a much simpler 2D problem. This should lead to more reliable assessment of margin safety and, ultimately, save companies time and money on projects."

Further development work will be needed before the software is made commercially available.

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