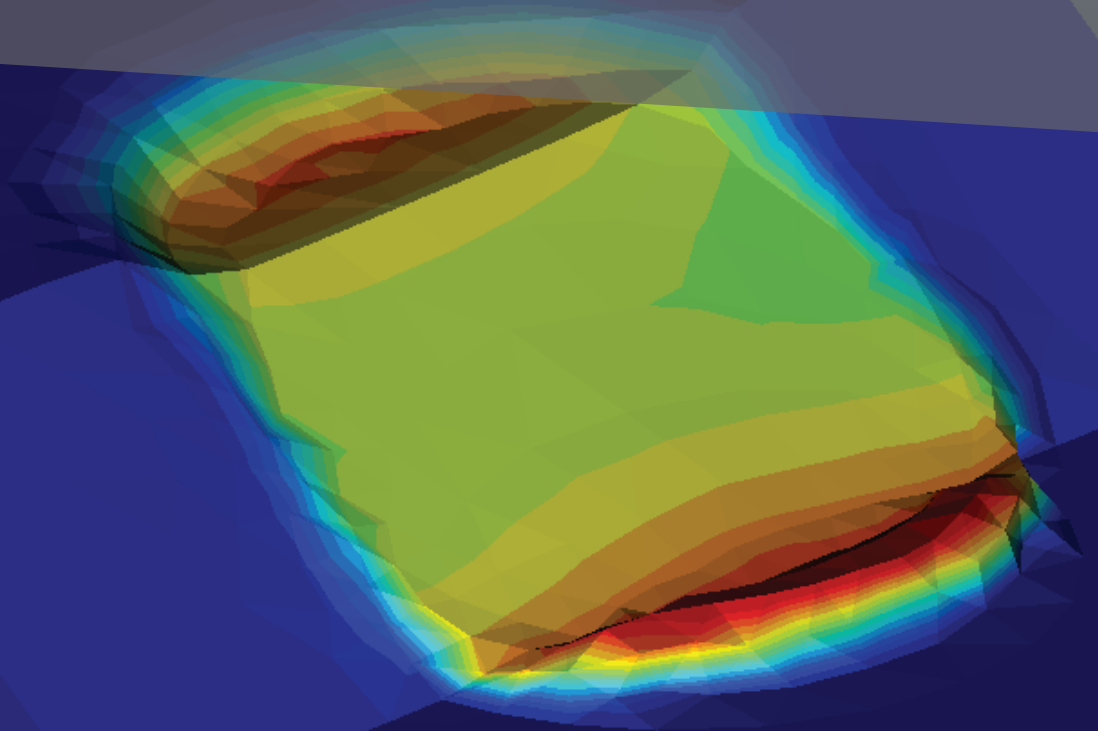


# Op+um<sup>CE</sup>

GEOTECHNICAL DESIGN SOFTWARE



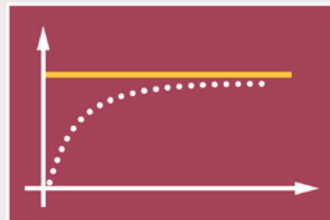
+  
G2

+  
G3

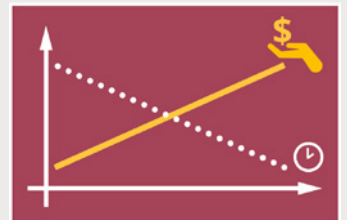
## OPTUM G2/G3 - GEOTECHNICAL DESIGN REINVENTED



LOAD DISPLACEMENT ANALYSIS



LIMIT LOADS - IN A SINGLE STEP!



3D FE - FASTER THAN EVER

## SOLVE YOUR GEOTECHNICAL CHALLENGES WITH OPTUM G2 AND G3

Are you familiar with some of the following situations in your everyday work as a geotechnical engineer:

- + Making assumptions that you know are wrong but needed to get through the job within reasonable time?
- + Doing an advanced FE analysis and in doubt of the accuracy of the solution?
- + Spending a lot of time on simplified approaches for complex problems?
- + Struggling with getting your FE model to converge?

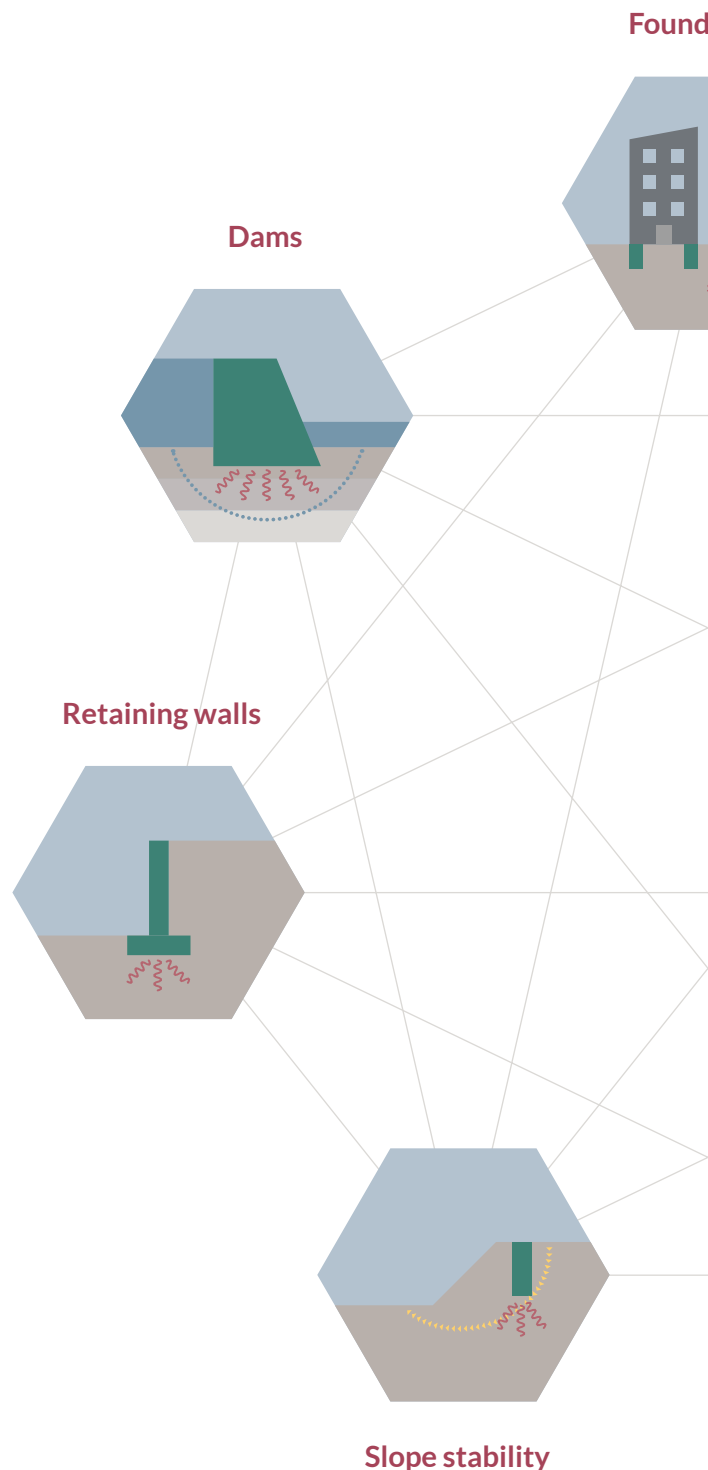
OPTUM G2 and G3 were developed with a single goal: Making advanced FE programs accessible for engineering practitioners. The challenge lies in making advanced methods, usually reserved for numerical specialist, accessible to engineers who are focused on the end design and on realizing a project within a tight timeframe and budget. How did we manage to combine the accessibility and complexity?

### SIMPLY ADVANCED

We have developed the most advanced FE analysis core on the market based on a unique combination of traditional FE techniques and modern mathematical optimization methods. This unique approach gives the following benefits for you:

- + **Robustness.** The days of turning wheels and nobs for getting your FE model to converge are over! Our solver performs with unprecedented robustness, without the need for setting or calibrating any numerical parameters.
- + **Speed.** As the only company on the market Optum provides programs with both classical FEA - useful for estimating load deflection curves and Limit Analysis (LA) ideal for calculating the bearing capacity of factor of safety in ULS. Save up to 90% of your time using the unique combination of FEA and LA.
- + **Safety.** Every wondered how precise your numerical result actually is? With Optum's unique Upper and Lower bound elements you can now determine the solution as a bracket with the exact solution guaranteed to be within the interval. The approach gives you safety and lets you move faster, saving valuable time better invested in optimizing your design or exploring different solutions.  
For non-associated plasticity use FEA and do the usual load incremental analysis - but let Optum handle it without convergence problems.

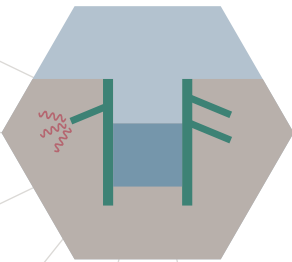
All these advanced and time saving features are now available and accessible to engineering practitioners - we call it Simply Advanced.



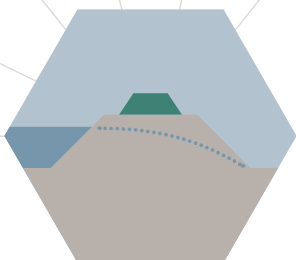
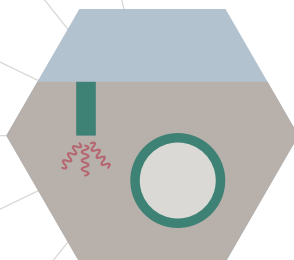
ations



Walls and excavations



Tunnels



Embankments

## DESIGNED FOR DESIGN

Using the unique and state-of-the-art FE core in all Optum programs you are provided with the markets leading FE design tool. By implementing G2 or G3 in your organization you get the following benefits:

- + Timesavings of up to 90% compared to traditional programs.
- + Increase your profit.
- + Start doing design jobs that you usually send out.
- + Let experienced geotechnical design engineers with no prior FE experience start doing FE based design.
- + One software package for Limit Analysis, Finite Element Analysis, Strength Reduction (phi-c), Seepage and Consolidation Analysis

## WHAT DO OUR USERS SAY?



*"The availability of Limit Analysis with upper and lower bound solutions is exceptional"*



**US Army Corps of Engineers**®

*"Learning the program takes very little time, and the program leads to quicker and more rigorous validation of results"*



*"Even a geologist with little training can use the software with no problem"*



*"This is a unique program that sets new standards"*

# + FREE DOWNLOAD

Visit [www.optumce.com](http://www.optumce.com) to download your copy of the latest version of OPTUM G2 or G3.

TRY IT FREE FOR 30 DAYS

## FULLY SUPPORTED

Whether you are in need of technical advice or assistance with your model, our support team is always available to offer expert advice on all aspects of the software.

### + SOIL AND ROCK MODELS

**+Mohr-Coulomb:** The classic benchmark model including tension cut-off. Use associated flow rule in connection with Limit Analysis for determining bearing capacity, and more refined non-associated flow rule in connection with a classic Elastoplastic analysis. Both options are possible.

**+Drucker-Prager:** Similar to but sometimes preferred over Mohr-Coulomb for rock and concrete.

**+Tresca:** Standard and Generalized versions, the latter being relevant for axisymmetric analysis.

**+AUS:** Anisotropic Undrained Shear model for advanced analysis of soft soils displaying anisotropic strength and stiffness.

**+Elastic:** Simple and useful material model for representing structural elements and concrete.

**+Rigid:** A very useful material for modelling structural elements, such as slabs and walls, with infinite stiffness - without any numerical problems.

### + ANALYSIS TYPES

**+Limit Analysis:** Fast and rigorous evaluation of upper and lower bounds on bearing capacity, stability numbers, etc. With introduction of the new Mixed Element 3D simulations have never been faster, easier and more precise.

**+Strength Reduction:** Fast and rigorous evaluation of upper and lower bounds on factors of safety. Extremely fast and powerful in connection with automatic adaptive mesh refinement.

**+Elastoplastic:** Fast and accurate analysis using a variety of basic and advanced constitutive models. Use either associated or non-associated flow rules.

**+Initial Stress:** Determination of initial stresses on the basis of a specified earth pressure coefficient (arbitrary geometries).

**+Elastic Analysis:** The simplest analysis type but still useful for various verifications.

**+Staged Construction:** Convenient and intuitive sequencing of construction stages.

### + STRUCTURAL ELEMENTS

**+Plates:** Elastoplastic plates, possibly with elastoplastic hinges, for modelling walls, tunnel linings, foundation skirts, etc.

**+Interface elements:** For modelling discontinuities, faults, and similar features.

### + OTHER FEATURES

**+Matlab API:** Bypass the graphical user interface and call the computational core via Matlab. Great for setting up parametric models.

**+CAD import:** Import advanced geometry directly into OPTUM G2/3.

**+Language support:** Work in your preferred language.



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