ITASCA™

Numerical Modelling with FLAC3D

2019-01-09 – 2019-01-10

Instructors

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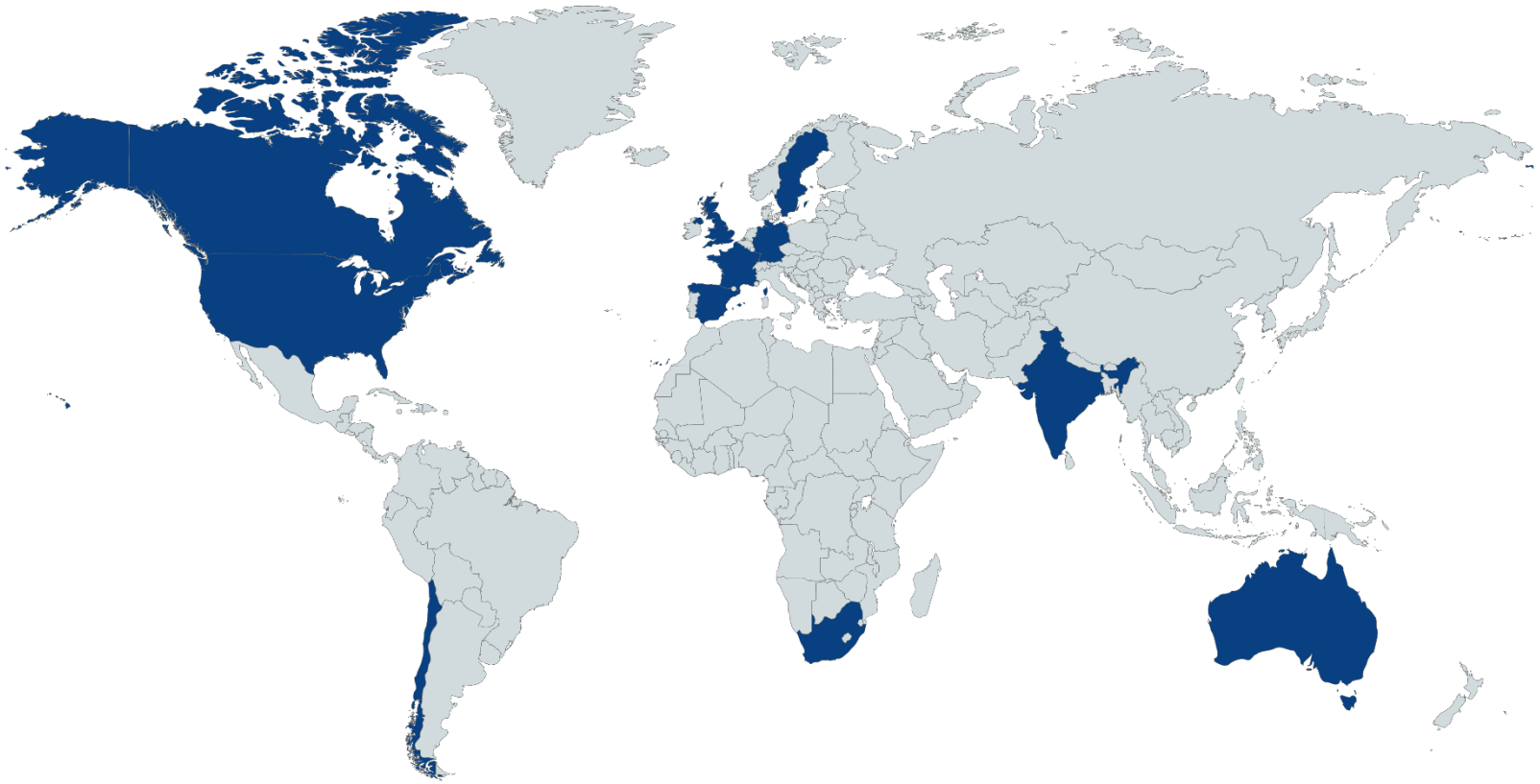
Schedule

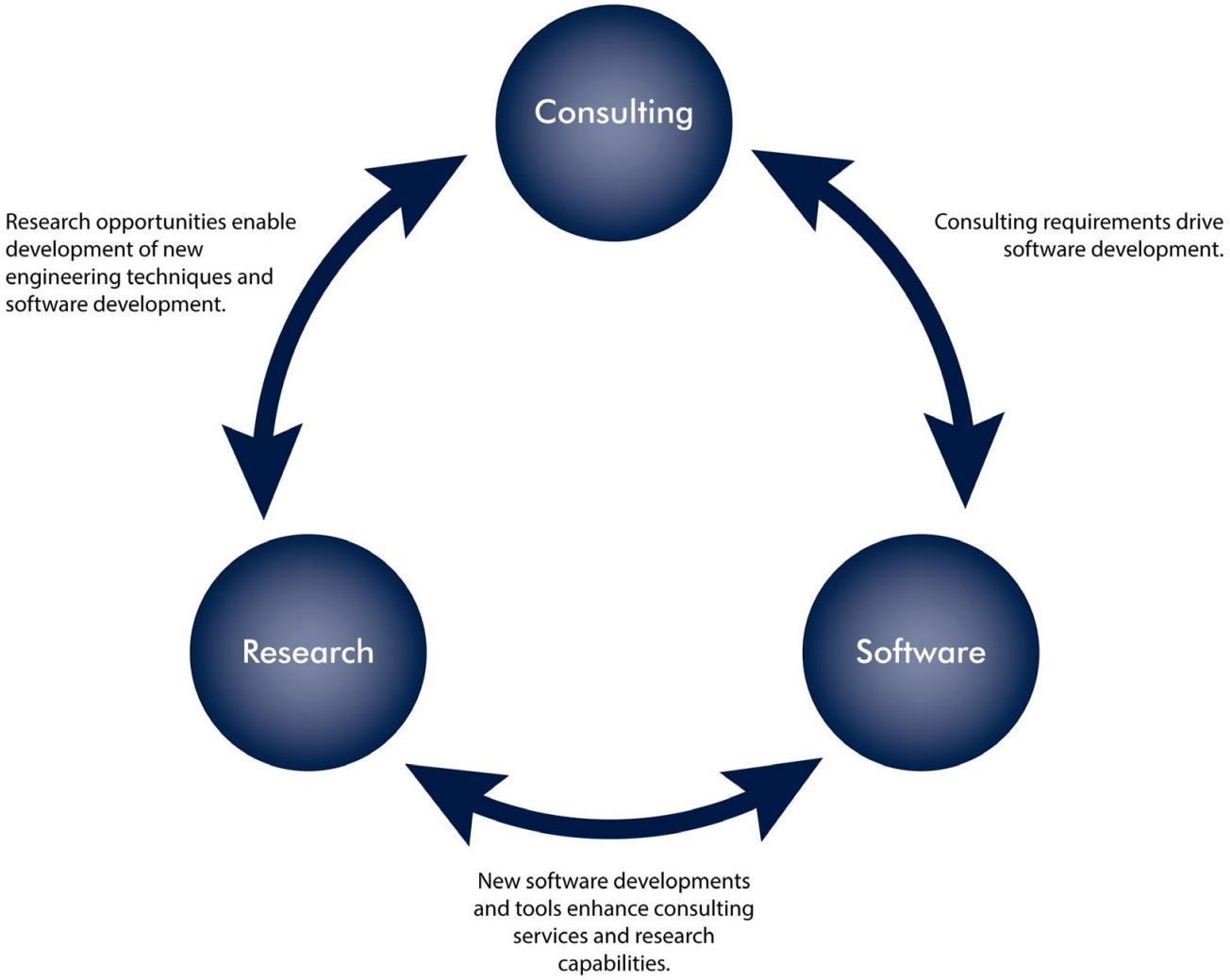
	Day 1: Tunnelling	Day 2: Mining
Morning 1 (2 hr)	Introduction to numerical modelling (why and how) Theoretical background FLAC3D Continuum vs discontinue Finite difference Starting with FLAC3D	Application of modelling workflow: 1. Mesh generation Interfaces 1. Boundary conditions 2. Constitutive model and properties Theoretical Background FLAC3D Plasticity
Morning 2	Application of modelling workflow: 1. Mesh generation 2. Boundary conditions 3. Constitutive model and properties 4. Initial loading	Application of modelling workflow: 4. Initial loading 5. History points 6. Running Theoretical background FLAC3D Explicit solution scheme
Afternoon 1	Application of modelling workflow: 5. History points 6. Running Theoretical background FLAC3D Support elements	Theoretical background FLAC3D FISH and Python Application of modelling workflow: 5. Analysis and plotting
Afternoon 2	7. Analysis and plotting	Summary, discussion and questions

Itasca International Inc.



12 countries, approximately 170 employees

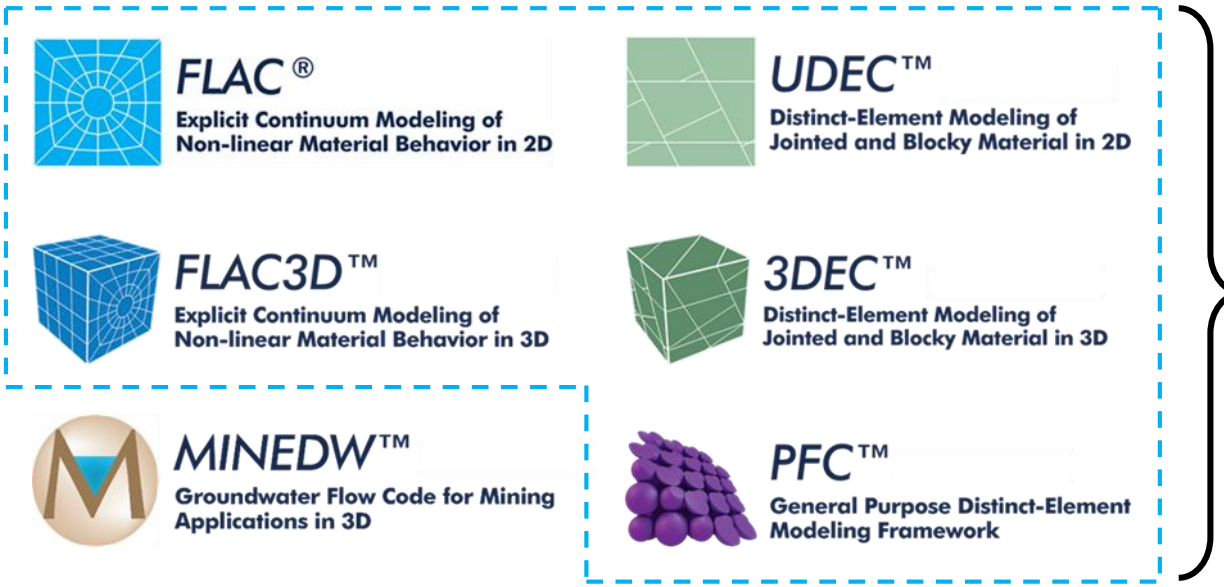
Itasca International Inc.



Itasca Sweden

- Consulting, research & software sales
- 10 employees
- Focus on civil, mining, and spent fuel repositories
  - 3D model creation
  - Numerical modelling and analysis
  - Empirical design, feasibility studies
  - Site investigation

Itasca's software

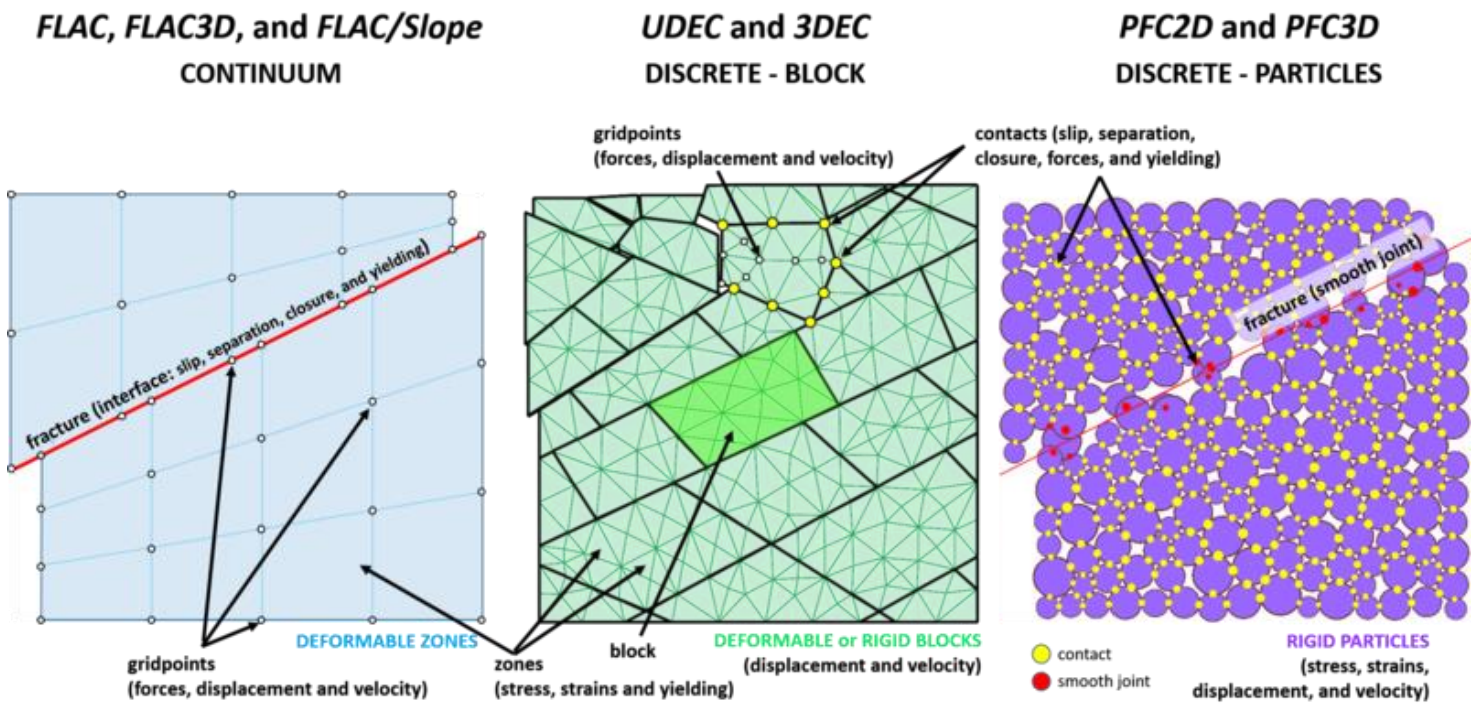


Geomechanical Software

Common Features:

- Large deformation
- Tracks sequential material failure
- Library of material behavior models
- Incorporates realistic geological features
- Dynamic capabilities
- Groundwater modeling
- Built-in scripting languages

Software Comparison



http://www.itascacg.com/software-comparison

Let’s install the program!

Why do we use numerical modelling?

Approximation is ok
Simple problems
Well-studied problems

Accuracy is important
Interested in probabilistic approach
Complex problems
New problems

Problem solving with numerical modelling

1. Define the problems and objectives
2. Create a conceptual model of the physical system, focus on simplifications
3. Construct and run model(s)
4. Interpret results

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Why am I building this model?

What behaviour do I expect from the rock mass?

What should I be analyzing?

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Focus on simplifications

How can I build a model to test this behaviour?

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2. Boundary conditions
3. Constitutive model and properties
4. Initial loading
5. History
6. Running
7. Analysis and plotting

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