Innovation from different perspectives

- **Common understanding**: a new method, idea, product, etc. (oxforddictionaries.com)

- **Business understanding**: the idea or invention translated into a good or service that creates value for which a customer will pay. (www.businessdictionary.com)
Example of biocalcification (biocalcis, biogroat)

- Academic: it’s an innovation if its work in the lab (concept proven)
- Consultant: it’s an innovation if design and control method is available
- Contractor: it’s an innovation, if it is feasible on large scale, at a competitive cost, and proven enough to give confidence to a client.
Innovation drivers

• **Meet the requirement of a client’s job**
  • e.g. Compensation grouting
  • e.g. Low headroom / low noise equipment

• **Anticipate the evolution of a regulation**
  • e.g. Waste and mud treatment cost

• **The competition**
Innovation freezers

• **The learning curve**
  - Any innovation needs time and tenacity to get accepted.

• **The contract**
  - Open to alternative design, prefer design and built

• **The standards**
  - Innovation is easier in repair and maintenance than new built jobs

• **Internal inhibitors!**
  - Stakeholders have different appreciation of opportunity and risks
Challenges for the profession

• take full benefit of monitoring and quality control
• low noise, low vibration techniques for urban environment
• environmental friendly solutions
• drill deeper, bigger, faster, more accurately
• safer machines and processes for workers
Summary for discussion

- Different definitions of innovations
- Innovation drivers
- Innovation freezers
- Innovation challenges for our profession