

COLLABORATIVE RESEARCH CENTER 837  
**INTERACTION MODELING IN  
MECHANIZED TUNNELING**

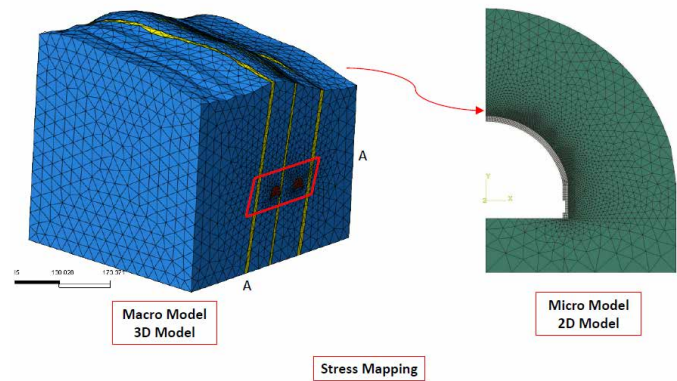
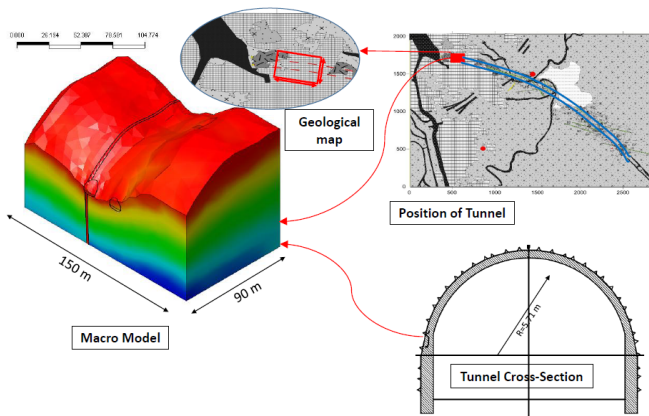
**RUB**

## TOWARDS A COMPREHENSIVE PERSPECTIVE TO MINIMIZE THE CHALLENGES AND RISKS OF TUNNELING PROJECTS

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The utilisation of the underground space is now recognised as an effective solution for various purposes like transportation networks, traffic congestions at crossings, underground parking, hydropower projects, different utility networks, storage purposes, etc. These projects are usually characterised by high risk, complexities, uncertainties, repetitive construction tasks, and relatively large budgets and long durations. In the 21st century, the demand for such projects is increasing dramatically, especially at large cities and urban areas resulting in new and many complex intersection problems, which increases the risk more and more. It is now the common target of tunnelling communities all over the world to eliminate or reduce the risk encountered for these projects employing all the available means.

In this presentation, the challenges and risks during and after tunnelling are briefly outlined. The role of different technical studies to evaluate and overcome the possible risks is introduced. These technical studies include three main categories to cover the different phases of the typical project, namely, planning, design and construction. The roles of the three main techniques of dilapidation survey, modelling, and monitoring (before during and after construction) are highlighted. The ways of how to improve the reliability of modelling results incorporating all the available field data and identifying the optimal modelling level and effort are introduced. Finally, the application of these techniques on some real case studies in Europe and the Middle East and the lessons learnt are summarised.

**Guests are welcome!**