The aim of BADGER is to design and develop an integrated underground robotic system for autonomous construction of small-diameter and highly curved tunnel networks in urban environments. For that, advanced robotics control techniques will be used such as localization, mapping and autonomous navigation; sensor fusion including underground odometry and geo-radar; adaptation behaviours for different soils; machine learning.

ROBOT FOR AUTONOMOUS UNDERGROUND TRENCHLESS OPERATIONS, MAPPING & NAVIGATION

We envision an underground robotic system that autonomously navigates in the subsurface by pulverizing, removing and pushing through the subsurface soil, while at the same time the system uses advanced sensing modalities, perception techniques and cognition to localise itself, map and understand the working environment and make decisions on how to better pursue its goals.
**BADGER Project Kick-Off Meeting in Leganes, Madrid, Spain**

The kick-off meeting of the project was held at the premises of the BADGER Coordinator, UCM. Consortium members discussed the project and its aims from their perspectives, setting the grounds for the successful project implementation.

**BADGER at the ERF 2017**

The BADGER project participated in the European Robotics Forum 2017, held in Edinburgh, Scotland, UK on 22-24 March 2017. BADGER was presented by the project Coordinator, prof. Carlos Balaguer.

**BADGER meeting in Valencia**

The Consortium of the BADGER project met in Paterna of Valencia, Spain, on 7-8 June 2017, at the premises of the BADGER partner, Robotnik Automation. The meeting gave the BADGER consortium the opportunity to discuss their progress and the future directions of the project. Special focus was given to the overall system design and hardware components development.

**BADGER at the at #EUinMyRegion OPEN DAY**

The BADGER project was represented during the #EUinMyRegion OPEN DAY, organized by the Information Technologies Institute (ITI) of the Centre for Research and Technology Hellas (CERTH) in collaboration with Technology (ESRT). The primary purpose of the meeting was to further elaborate on the design of the BADGER robot, its specifications and overall architecture.

**BADGER meeting in Glasgow**

The Consortium of the BADGER project met in Glasgow, Scotland, UK, on 13-14 November 2017, at the premises of the University of Glasgow. The primary purpose of the meeting was to further elaborate on the design of the BADGER robot, its specifications and overall architecture. Decisions on a series of key aspects of the BADGER H/W and S/W design were taken, paving the way towards the following project steps which will focus on the detailed definition of the BADGER architecture and the initial developments of the robot prototype.

**BADGER at the European Robotics Week 2017**

The BADGER project was at the European Committee of the Regions exhibition during European Robotics Week 2017 in Brussels, Belgium.

**This issue’s highlight**

Initial cuttings soil removal and ultrasonic drill head tests performed at TRACTO-TECHNIK

Initial experiments for cuttings soil removal and the ultrasonic drill head were performed at the premises of TT. The new ultrasound drilling head being developed for the autonomous underground robot substantially increases the penetration force. Read more...

**BADGER in the press**

The BADGER project has been featured in a series of news stories within mainstream media, including IEEE Spectrum and the Economist. Links to such news stories, featuring BADGER, can be found below:

**BADGER social media**

The BADGER project is very active in social media. Follow the latest events, highlights, cutting edge simulations and discover the innovations in trenchless technologies.

**First video of the BADGER project**

A short demo video providing an overview of the BADGER project has been made available by the BADGER Consortium. The project Coordinator, prof. Carlos Balaguer from UCM, describes in this video the key aims and objectives of the BADGER project. The link to the video can be found here.