

BADGER at a glance...

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Upcoming Events

🌿 **European Robotics Forum 2018, Mar 13-15 - Tampere, Finland**

BADGER will be present at the ERF 2018, organizing a workshop on Intelligent trenchless underground robotic systems. The BADGER workshop at the ERF will take place on the 14th of March, starting at 10:45 in the morning.

🌿 **ICRA 2018 – International Conference on Robotics and Automation, May 21-25 – Brisbane, Australia**

🌿 **Automatica 2018 – 7th International Trade Fair for Automation and Mechatronics, June 19-22 – Munich, Germany**

🌿 **IROS 2018 - 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems, Oct 1-5 – Madrid, Spain**

This year's IROS conference is organized in Madrid, Spain, on 1-5 of October. The conference is chaired this year by the BADGER Coordinator, prof. Carlos Balaguer of UC3M (General Chair of IROS 2018).

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1st press release of the BADGER project

The 1st press release of the BADGER project is available online in the project's website, under the title:

"BADGER: Robot for Autonomous Underground Trenchless Operations, Mapping and Navigation"

Following this, during its first year, the project has been featured in a series of national and popular international media, including the IEEE Spectrum, the Economist. The project has also been featured in the [newsroom of the EURobotics SPARC](#).

The visitors of the BADGER website can find in its pages different versions of the project's first press release, dissemination material, including the project's leaflet, public reference presentations, posters, initial introductory videos, and much more.



ROBOT FOR AUTONOMOUS UNDERGROUND TRENCHLESS OPERATIONS, MAPPING & NAVIGATION

The aim of BADGER is to design and develop an integrated underground robotic system for autonomous construction of subterranean 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.

tasks in different application domains of high societal and economic impact including trenchless constructions (cabling and piping installations), search and rescue operations, remote science and exploration applications, among others. In this scope, we will go a step further from existing trenchless excavation and environment mapping technologies, by introducing technical approaches and latest innovations inspired by the most advanced robotic technologies. .

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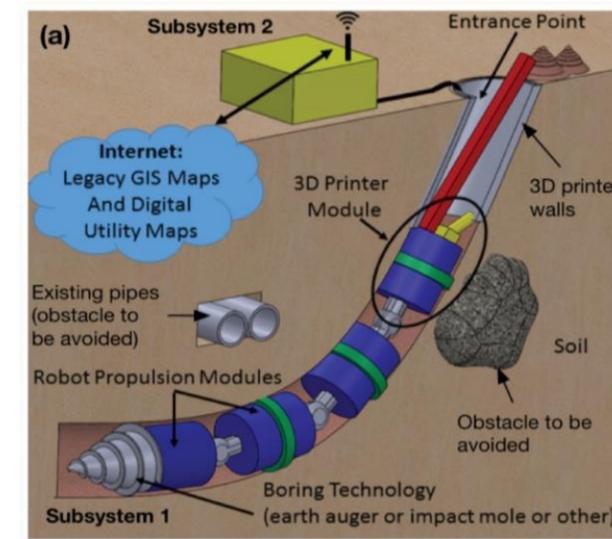
www.badger-robotics.eu

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BADGER Project



This project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation under grant agreement no 731968



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, UC3M. Consortium members discussed the project and its aims from their perspectives, setting the grounds for the successful project implementation.



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.



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.



BADGER Consortium visit to TRACTO-TECHNIK

On June 21, 2017, the BADGER consortium met at the technology center in Lennestadt-Langenei. The visit, established in the scope of a technical project meeting, was scheduled upon invitation by Sebastian Fischer, who represents TRACTO-TECHNIK as project manager next to Meinolf Rameil and Markus Hamers. The consortium members had the opportunity to learn more about the different trenchless drilling methods and the corresponding machine technology. They were enthused by the innovative NODIG systems manufactured by TRACTO-TECHNIK and gained a lot of valuable knowledge for their research work. [Read more...](#)



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



in the ERF Session entitled "The new H2020 robotics projects in the SPARC strategy"

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.



Further discussions on the options for each component paved the way towards the definition of the functionalities and technical specifications. [Read more...](#)

BADGER at the #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 the General Secretariat for Research and Technology (GSRT) on 16 May 2017 in Thessaloniki, Greece. [Read more...](#)

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



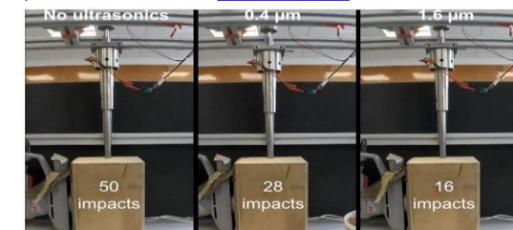
Glasgow. The primary purpose of the meeting was to further elaborate on the design of the BADGER robot, its specifications and overall architecture.

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. [Read more...](#)

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...](#)



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 UC3M, describes in this video the key aims and objectives of the BADGER project. The link to the video can be found [here](#).

