BADGER at a glance...

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The Objectives

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News and Events

Upcoming Events

- **BADGER at Autonomous Machines World, July 1-2 – Berlin, Germany**

  Autonomous Machines World meeting is going to hold on between July 1-2 in Berlin, Germany. BADGER will participate in this event with Sebastian Fischer, Senior Project Manager at TRACTO-TECHNIK Gmbh & Co. Kg though an invited presentation.

- **BADGER at IEEE Smart World Congress 2019, August 19-23 – Leicester, UK**

  BADGER organizes a workshop at the IEEE Smart World Congress 2019 (IEEE SWC 2019) entitled "Workshop on smart robots to construct future smart worlds" (SR4CSW). The congress will be held in De Montfort University, Leicester, UK, on 19-23 August 2019.

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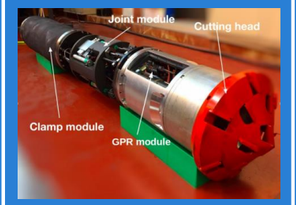
Integration of BADGER robot

The integration of the BADGER underground robot has started in the premises of the project Coordinator, UC3M, in Leganes, Madrid, Spain.

Design and construction of the drilling head module of the BADGER robot is completed.

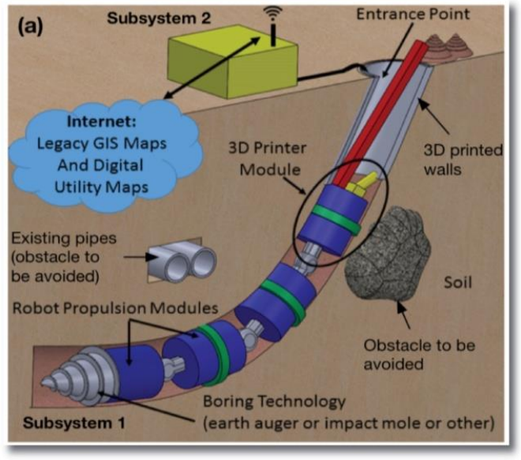
Assembly of the drill head with the first of the clamping modules and the first of the steering-propulsion modules has been performed.

Integration of all H/W and S/W modules of the BADGER system is in progress.



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. The robotic system will enable the execution of 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.



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.

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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

BADGER

BADGER at the 2018 ICT event of the EC

In the context of the CERTH participation to the EC ICT event of 2018, which was held on 4-6 December 2018 in Vienna, Austria, the BADGER project was presented to the visitors of the ICT event exhibition. More specifically, CERTH provided the ICT event participants and visitors with information material on the BADGER project, explaining the concept, objectives and research advances that are being implemented in the context of our exciting H2020 project.

BADGER at bauma 2019

BADGER participated in this year's bauma trade fair, which was held in Munich, Germany on April 8-14. Bauma (International Trade Fair for construction machinery, building material machines, mining machines, construction vehicles and construction equipment) is the world's largest trade fair in the construction industry. The trade fair, which can be visited by anyone, is held every three years on the grounds of the Neue Messe München and lasts for seven days.

BADGER workshop at the European Robotics Forum 2019 (ERF 2019)

BADGER organized a workshop in this year's European Robotics Forum, entitled "Applications for Intelligent trenchless underground robotic systems". The aim of the workshop was to present and discuss the future applications of the BADGER Robot; a robot for autonomous underground trenchless operations, mapping and navigation. Among others, the BADGER ERF 2019 workshop hosted talks of the EU-funded STAMS and UNEXMIN Projects

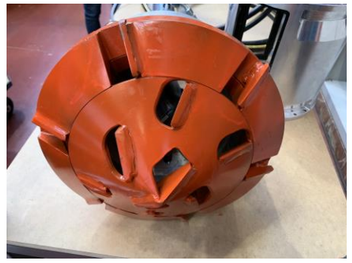
BADGER project presented at 34th International CAE conference and Exhibition 2018 in Vicenza, Italy

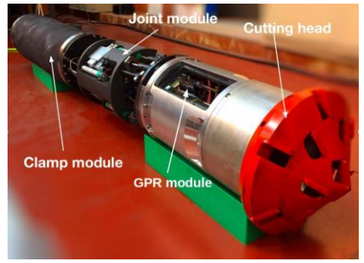
BADGER project has attended the CAE 2018 Conference on 8-9 October 2018 in Vicenza, Italy.

UC3M, as coordinator of the BADGER consortium, presented the vision, the main objectives and the desired future impact of the project that is to enable access to the underground space with minimum disruption, even if it contains buried objects and other utilities. BADGER project raised increased interest, which culminated in an open discussion and proposals of new applications for the project.

This issue's highlight
BADGER robot integration

The integration of the BADGER robot has started at the UC3M. The drilling head module is ready with some concerns regarding the pressure it can accept compared to the pressure provided by the hydraulic pump. The inverse kinematics and propulsion of the first steering-propulsion module have been successfully tested while the clamping mechanism will be directly controlled by the PCL. Both clamping and steering-propulsion modules have been integrated with the drilling head. Regarding the PCL module, a hardware abstraction node will be developed to communicate the data to ROS. The IMU module is ready and tests are scheduled with the drilling head operating to simulate the vibrations. Finally, the GPR antenna is also ready along with a prototyped integration in the drilling head.





BADGER at Autonomous Machines World 2019

The Autonomous Machines World is back for its 3rd year – Europe's first platform bringing together all stakeholders who play an active role in the deep learning, computer vision, sensor fusion, perception and cognitive machines scene.

AUTONOMOUS MACHINES WORLD

The event provides precise insights into new technical innovations and challenges regarding the integration of AI and machine learning based systems into intelligent robots, highly automated systems and smart machines. Autonomous Machines World meeting is going to hold on between July 1-2 in Berlin, Germany. BADGER will participate in this event with Sebastian Fischer, Senior Project Manager at TRACTO-TECHNIK Gmbh & Co. Kg through an invited presentation.

Workshop on smart robots to construct future smart worlds (SR4CSW)

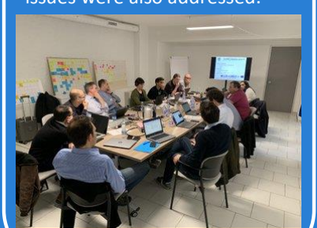
BADGER organizes a workshop at the IEEE Smart World Congress 2019 (IEEE SWC 2019), held in De Montfort University, Leicester, UK, on 19-23 August 2019. Read more…

IEEE CIS Smart World TC

BADGER meets in Thessaloniki

The Consortium of the BADGER project met in Thessaloniki, Greece, on 23-24 October 2018, at the premises of Centre for Research and Technology Hellas (CERTH), Information Technologies Institute (ITI). The meeting's primary purpose was to bring partners together so as to discuss on a series of technical aspects of the development of the BADGER robot, which is currently in progress.

During the meeting, the partners visited the robotics lab of CERTH-ITI and had among others the opportunity to have hands-on experience with the BADGER surface rover module prototype, which is currently in CERTH.

BADGER meets in Pisa

The Consortium of the BADGER project met in Pisa, Italy, on 3-4 April 2019, at the premises of IDS GeoRadar. The primary purpose of the meeting was the discussion of technical aspects regarding software and hardware integration, the GPR system and antennas and the 3D printing module that will be installed on the BADGER robot along with dissemination activities. Some administrative issues were also addressed.