OBJECTIVES

- Develop a cognitive robot platform that address the complete chain of shotcrete application for autonomous construction, maintenance, and monitoring activities of infrastructures.
 - Develop an advanced high-precision and real-time infrastructure perception system through AI- enabled technologies and multimodal sensor fusion.
 - Develop cognitive and adaptable humanrobot collaboration control schemes for dexterous execution of construction and maintenance tasks.
 - Release advanced modelling tools tailored to the Building and Construction Information Models for the fast and greener implementation of automated construction activities.
 - Develop cognitive Digital Twin and simulation environments for construction monitoring, diagnostics, and orchestration activities.
 - Commercialization and exploitation in application cases with economic impact in European construction industry.

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additive nufacturing skills

Human-robot collaborative construction system for shotcrete digitization and automation through advanced perception, cognition, mobility and additive manufacturing skills

> This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101058731

PARTNERS

RoBétArmé project emerged from a consortium made of 19 high-profile European partners from 12 European countries including Greece, Denmark, Switzerland, Belgium, Germany, Spain, Bulgaria, Italy, Portugal, Austria, France and Ireland.

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PROJECT CONTEXT

According to the World Economic Forum, the construction industry currently accounts for about 6% of the world gross product (GDP) and is expected to reach around 14.7% in 2030, which means that the construction sector plays a key role in any country's economy in this sense the importance of construction automation has grown rapidly worldwide.

To achieve the desired level of automation, analogous to the Industry 4.0, breakthrough technologies have been adapted for construction applications and this transformation has been called as Construction 4.0. RoBétArmé will develop collaborative construction mobile manipulators Inspection Reconnaissance manipulator (IRR) to address fast, high precision modelling and rebar reinforcement through metal additive manufacturing in the preparatory phase;

The RoBétArmé Vision

to address autonomous shotcrete application and surface finishing during the construction and finishing phase, respectively.

Surface

Finishing

Shotcrete and

Finishing mobile

manipulator (SFR)

Pre-bagged Shotcrete Gun Air compressor Water Supply

Inspection & Metal printing

RoBétArmé aims toward a step-change in **Construction 4.0** by automating particularly laborious construction tasks in all phases of shotcrete application.

Construction

Repair

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Project Facts

Consortium:19 partners from12 European countriesProgram:HORIZON EUROPEGrant Agreement:№ 101058731Start:June 2022Duration:42 months

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