The main objective of HEPHAESTUS is to develop and test implementations and applications for cable driven robots in the outdoor built environment.

### MAIN PROJECT DATA

- **Start:** January 1, 2017
- **Duration:** 42 months

**Coordination:**
- **Coordinator:** julen.astudillo@tecnalia.com

**Exploitation manager:**
- **lorenzo.elia@r2msolution.com**

Images by Iturralde, Linner and Bock. Chair of Building Realization and Robotics. Technical University of Munich

**CHALLENGES**

The main challenge to be addressed along the HEPHAESTUS project is to enable the installation and maintenance of Curtain Wall Modules by means of Cable Robots able to operate autonomously across large vertical workspaces (up to buildings with 30-40 floors), in an outdoor environment and with active devices onboard the robot end-effector(s).

HEPHAESTUS project wants to develop a cost-effective, reliable, flexible, robust, efficient and ease of use highly automated industrial Cable Robot System equipped with a Modular End-Effectors kit with active devices onboard for outdoor built environment.

**CABLE ROBOTS**

The cable driven parallel robot (Cable Robot) carries the Modular End-Effector (MEE) and the platform hosting the MEE to perform different tasks:

- Installation of the Curtain Wall Module
- Maintenance, cleaning and painting

In cable robots, flexible cables are used as actuators of parallel manipulators. One end of each cable is connected to a platform hosting the MEE, and the other end is reeled in or out by a motor-driven winch. The MEE is a specially designed mechatronic system, which moves to different floors of the building by the help of a cable robot. Briefly, a cable robot carries the MEE to the desired position and the MEE performs the rest of the tasks (e.g., drilling, placement of the curtain wall module, cleaning, etc.)