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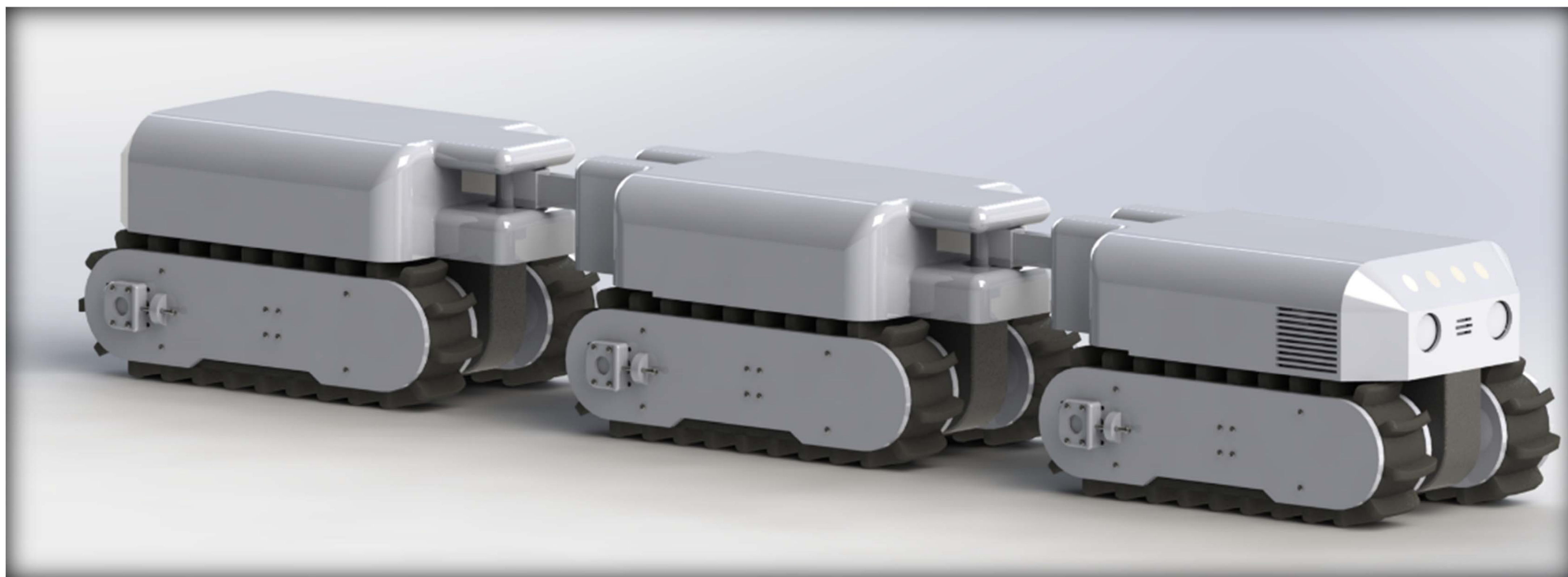
(*)EU FP7 project: Technological and Methodological Solutions for Integrated Wide Area Situation Awareness and Survivor Localization to Support Search and Rescue Teams

Introduction

- Urban Search and Rescue (USaR) crews must detect, locate and rescue alive victims under rubble as quickly as possible.
- The EU FP7 project INACHUS aims to improve technological and methodological support to improve the operational picture at the command level, in order to reduce the response time and increase the efficiency and safety of USaR operations.
- New sensor concepts are developed for both inside the rubble and on the surface cases. This takes into account existing operational guidelines and it is done in close collaboration with end-users.

INACHUS snake robot main objectives and first design idea

- As a part of new sensor concepts for inside the rubble, a snake robot is developed.
- The main objectives of the snake robot are to:
 - carry sensors able to detect and localize possible survivors;
 - reach places inaccessible to USaR team members either because it is too dangerous or they are too small.
- The pictures below is a first 3D design idea of the INACHUS robot.
- It has a cross section of about 20cmx20cm.
- It is belt-driven and it has active joints.



INACHUS snake robot and its sensors

- To be able to localize potential victims, the snake robot has the following sensors:
 - Two HD video cameras, one mounted on the head and one on the tail.
 - Several LED-light sources.
 - One IR camera mounted on the head.
 - An e-Nose to analyse the air composition.
 - A radar to detect body movements of possible victims behind obstacles, such as walls.
- To be able to communicate with the victims it has a two-way audio communication system, i.e. microphone and speakers.

INACHUS snake robot and its Operator Control Unit (OCU)

- The robot is tele-operated from an Operator Control Unit (OCU)
- The OCU has a PC, touchscreen, joystick and it is connected to the snake robot through a tether/cable.
- The tether is strong enough to support the weight of the robot and can be used to lift/pull the robot if necessary.
- The tether delivers power to the robot and it is used for communication with the robot and its sensors.

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