SARAS
SMART AUTONOMOUS ROBOTIC ASSISTANT SURGEON

# SMART AUTONOMOUS ROBOTIC ASSISTANT SURGEON

THE PROJECT AT A GLANCE

Currently, during laparoscopic or robotic assisted surgical procedures, several units of medical personnel are requested to stay in the operating room for supporting the main surgeon tele-operating the surgical robot. This practice leads to an inefficient management of the hospitals' economic resources and to unnecessary long waiting lists for patients.

The goal of SARAS is to develop the **next-generation of surgical robotic systems that will allow a single surgeon to execute Robotic Minimally Invasive Surgery (R-MIS) without the need of an expert assistant surgeon**, thereby increasing the social and economic efficiency of a hospital while guaranteeing the same level of safety for patients.

The SARAS project will develop a **solo-surgery system that consists of a pair of cooperative and autonomous robotic arms holding the surgical instruments**.

THE SARAS TECHNOLOGY
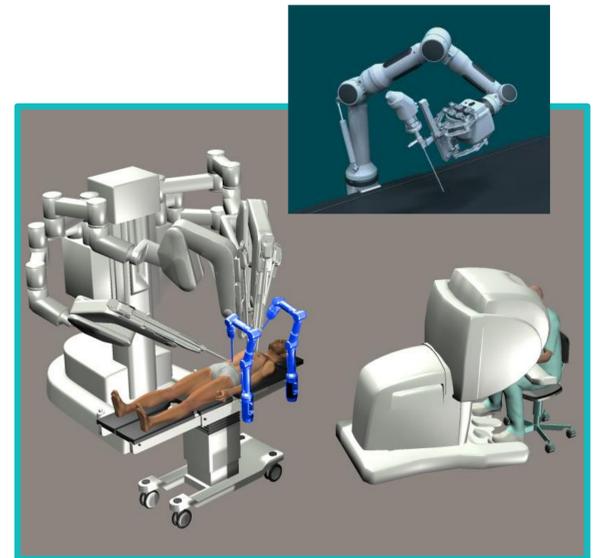
1. Two assistive robotic arms designed to implement the tasks currently done by the assistant surgeon in R-MIS, by holding o-the shelf laparoscopic instruments.

2. A cooperative and cognitive supervision system able to infer the current state of the surgical procedure by analyzing the information coming from the sensors and to act accordingly with the surgeon's needs.
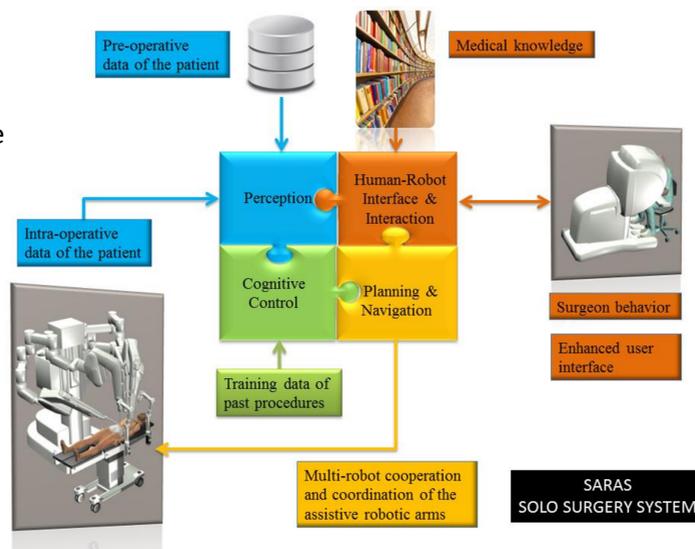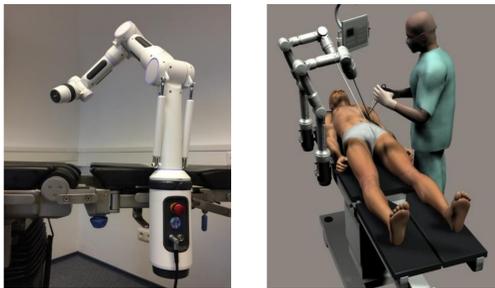
THE SARAS PLATFORMS

MULTIROBOTS-SURGERY
The main surgeon uses commercial robotic system whereas the assistant surgeon tele-operates the SARAS assistive robotic arms.

SOLO-SURGERY
The system is autonomous and plays the role of the assistant to help the main surgeon at the da Vinci console performing the surgical procedure.
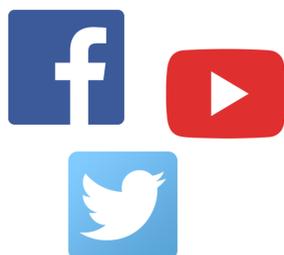
LAPARO2.0-SURGERY
The system plays the role of the assistant as in the SOLO-SURGERY case, but with the main surgeon using standard handheld laparoscopic tools.

IMPACT

1. Decrease the cost per procedure, thus increasing the value of each surgical robot unit for hospitals that already have it.

2. Increase surgeon awareness during laparoscopic operations, thanks to the information exchanged through the new generation multimodal user interface. Moreover, SARAS will pave the way to the creation of ad hoc training **curricula for junior surgeons** in standard and robotic laparoscopy and for senior surgeons in robotic laparoscopy.

3. Working prototypes of the SARAS platforms will boost the creation of a European **network for developing autonomous devices** working with teleoperated robots.

FIND US ON
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