



HUVANT
Medical Simulation Platform

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HUVANT is a **medical and surgical simulation platform for advanced training**, built to accelerate and increase the efficiency of medical residents' and updating surgeons' formation processes, with the aim of promoting a safer surgical practice, with better clinical outcomes for the patients, at sustainable costs. The platform is natively phygital since it combines and integrates haptic and virtual models of organs and anatomical parts into a single simulation solution with high-technological content.

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HAPTIC SIMULATORS

3D models capable of faithfully reproducing the mechanical and functional response of biological tissues

VIRTUAL REALITY

Virtual environments of anatomical parts projected into an immersive reality viewer

AUGMENTED REALITY

3D reconstructions from medical imaging overlapped in the surrounding reality

EXTENDED REALITY

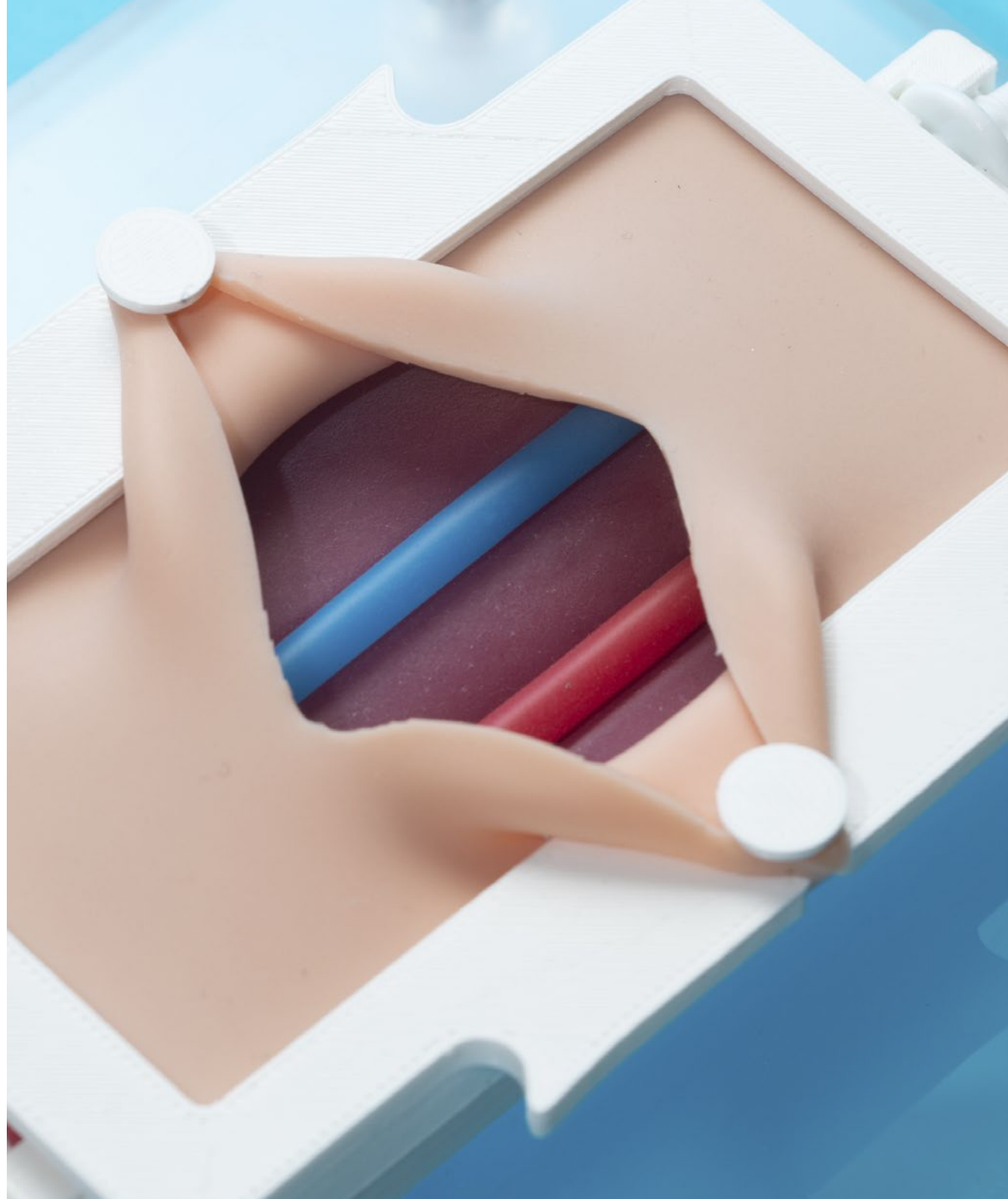
Haptic models and augmented reality merged to obtain a single anatomical system

TRAINING

15+ training courses for medical residents and trained doctors, based on the use of the proprietary platform

HAPTIC SIMULATORS

HUVANT produces 3D haptic simulators i.e. 3D physical models able to reproduce the mechanical, tactile and functional response of organs and anatomical parts. These models are used for practical training, providing a reliable and realistic simulation experience to the users. Clinical and surgical procedures can be performed using devices and tools typical of modern surgery, as ultrasounds, radiofrequency and electro-active based systems.



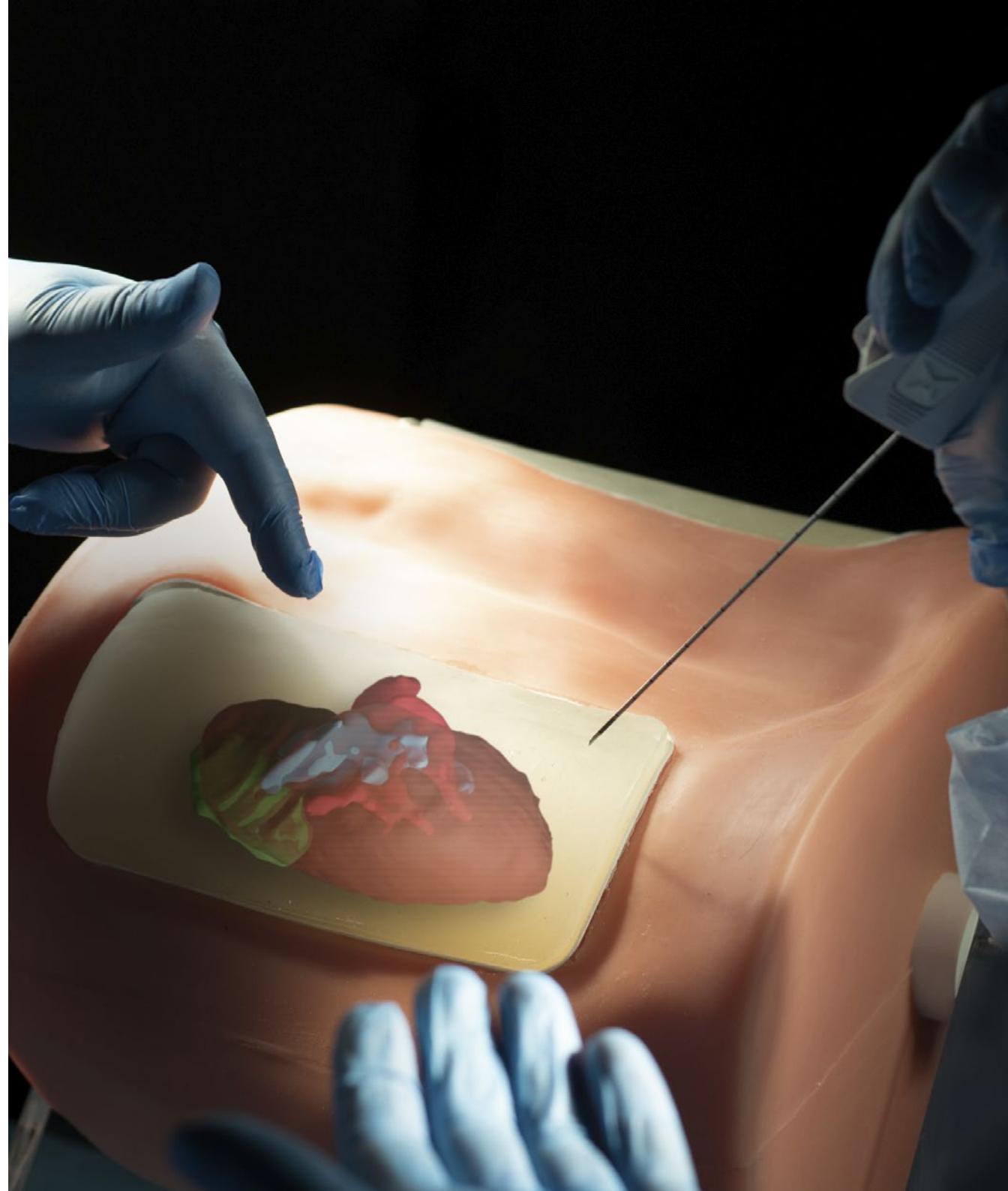
VIRTUAL REALITY

3D digital models are integrated and displayed into immersive virtual reality (VR) environments, where users have the possibility to navigate the human anatomy in 3D, focusing on different pathologies, malformations and healthy cases, by employing gaming headsets. In the VR, users have a combination of different functionalities to visualize specific structures of interest by changing the level of transparency of each anatomical part, rotate and zoom in and out the 3D scene through the use of controllers.



AUGMENTED REALITY

The same 3D digital data can be displayed as holograms using augmented reality environments. With this technology, the user can interact with the scene and manipulate the models in the real physical space using see-through displays. The system is provided with customizable functions, including users' hand and eye-tracking, static and dynamic tracking of 3D objects, models' scene selections and can be employed for collaborative augmented experiences.



EXTENDED REALITY

By merging haptic simulators and augmented reality environments, HUVANT provides extended reality solutions, in which virtual and physical models are coupled into a single anatomical and functional system, as in the digital twins domain. This approach enables an active, interactive and dynamic simulation experience thanks to the overlap and cross-talk between the digital and physical parts of the platform, providing anatomical/physiological information and haptic feedbacks to the users at the same time.



TRAINING

HUVANT organizes, manages and implements training courses in different clinical and surgical specializations (e.g. nephrology, neurosurgery, general surgery, pediatric surgery and more) both at the Medical Simulation Theater in Milan and in other simulation centers or venues around Italy and Europe. Given the phygital nature of the platform, these practical learning experiences provide quantitative information and data related to the procedures that are simulated, paving the way for cutting-edge adaptive training paths in the medical field according to the most recently accredited best practices.



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