orion

MULTIMODAL NAVIGATION
PLATFORM FOR SURGERY

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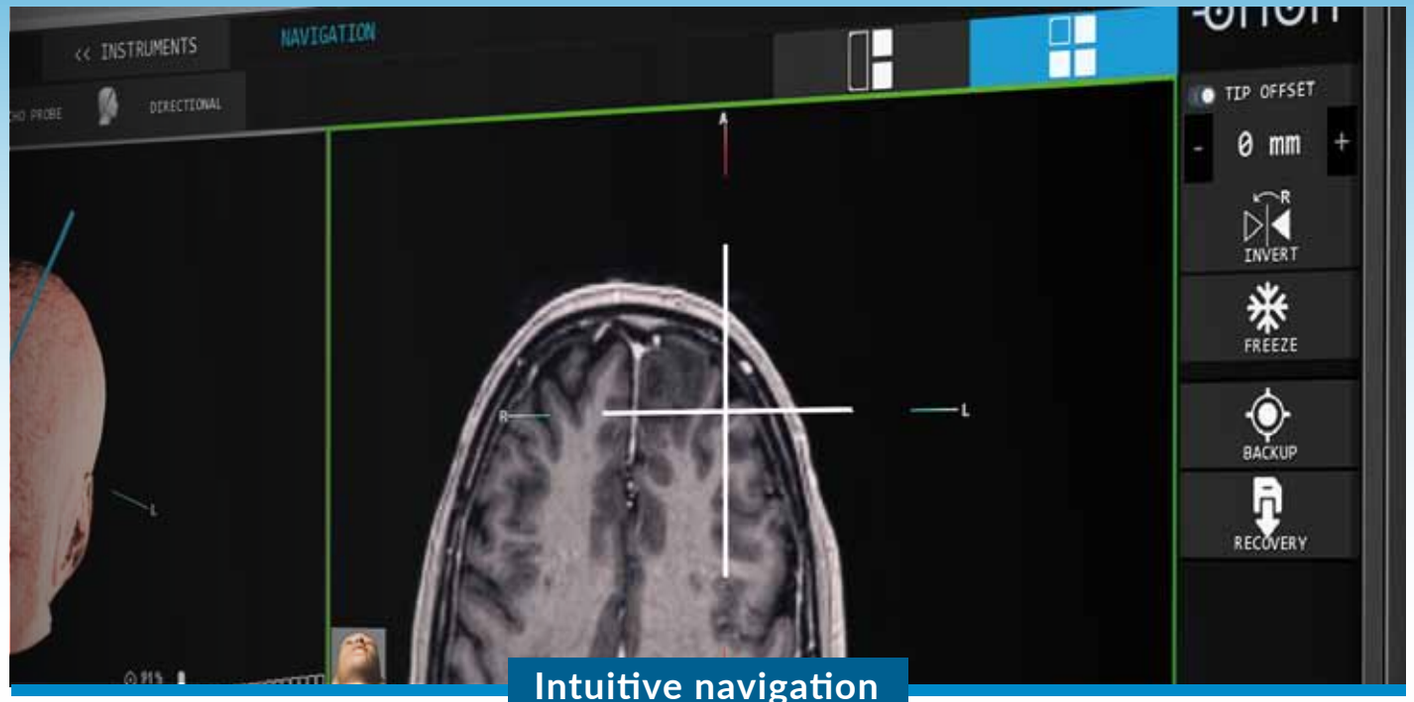
Orion is a navigation system that exploits different imaging modalities to allow intuitive navigation during surgery. Each software module is dedicated to a specific anatomical area and provides the surgeon with features designed to meet surgical needs.

Automatic fusion of preoperative (CT, MRI) images and intraoperative ultrasound images increases available information, while one compact device integrates ultrasound functionality and precision navigation based on infrared and electromagnetic technology.

The H2/US version of Orion supports up to three multi-frequency (convex, linear, micro-convex) ultrasound transducers, equipped with proper optical sensors, for ultrasound imaging plane navigation and automatic fusion of preoperative images.
Orion allows the tracking of pre-calibrated tools and specific surgical instruments through adapter clamps complete with sensors.

MAIN FEATURES



Intuitive navigation

Orion tracks the surgical tools and displays their position in real time in relation to the anatomical images, helping the surgeon to reduce the incision size and minimizing invasiveness.

- Multimodal navigation (CT, MRI, US)
- Compatibility with all DICOM imaging modalities
- Touchscreen control interface
- Automatic functionalities and minimal interaction
- Tracking of pre-calibrated pointers and surgical tools
- Calibration of surgical tools on the fly

Rapid registration

Orion provides different registration modes to match the patient's anatomy to the data set.

Surface matching: it is simple and fast; registration is done by acquiring some points on the skin with the SkinTouch tool or navigation pointer

Fiducial matching: it is accurate and efficient; preoperative images must contain fiducial markers

Registration back-up in the event that the patient and/or reference sensor shift accidentally

Precise trajectories

The Positioning Arm enables surgeons to plan the entry trajectories with extreme precision to reach a target.

They can perform a biopsy, place a shunt or guide an endoscope while monitoring the instrument's position continuously.

Intraoperative ultrasound

As ultrasound images are fused with preoperative images, the surgeon can control the patient's anatomy in real time as well as compensate for anatomical shifts occurring during surgery.

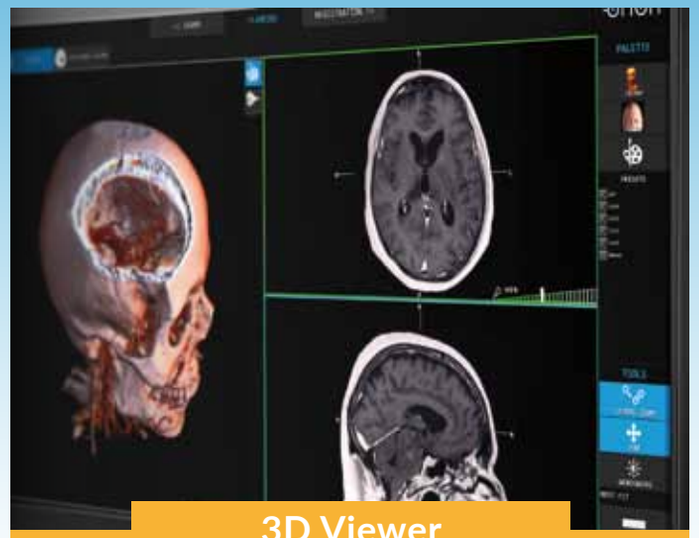
- Integrated ultrasound technology and small footprint
- Fully-automatic fusion of ultrasound and preoperative images
- Ultrasound control panel with touchscreen functionality
- Connection to up to three (convex, linear, micro-convex) transducers

Multiple tracking technology

Having multiple cameras in the operating room makes it possible to overcome the limits of infrared tracking technology.

- Tracking of tools is simpler because sensors are detected from various points
- The surgeon can move more freely as tools are tracked easily
- Navigation is more precise due to automatic management of multiple data

SOFTWARE SUITE



3D Viewer

- Study of several data sets in axial, sagittal and coronal planes supported by multi-touch gestures
- Visualisation and adjustment of 3D imaging with cut-plan tool and selective colour palettes

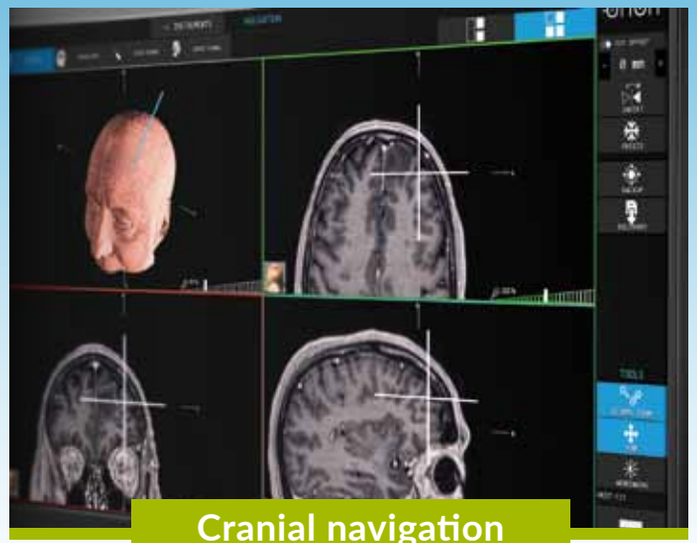
Segmentation

- Three-dimensional and interactive segmentation of tumour lesions and anatomical structures
- Target handling, planning, import into navigation

Fusion

- Automatic and accurate fusion of multimodal preoperative images
- Different types of display for the analysis of fused images: side-by-side, blending, overlapping on the area of interest with adjustable position and size

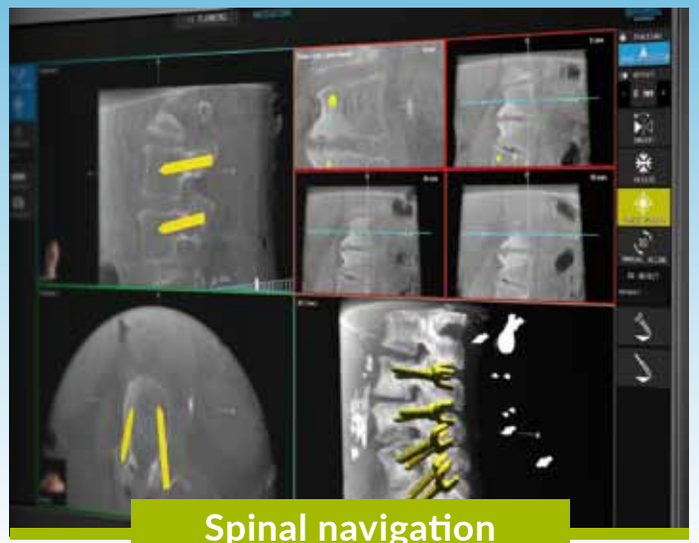
APPLICATIONS



Cranial navigation

Modul dedicated to neurosurgical navigation for craniotomies, tumour resections, biopsies, shunt placements.

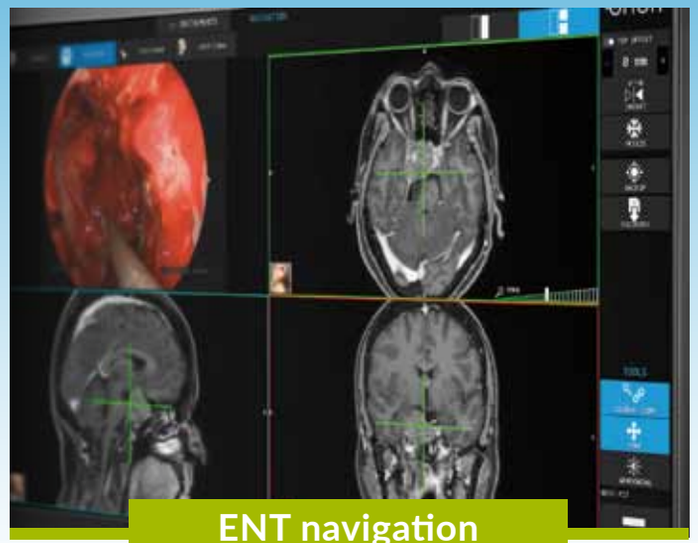
- Optical or electromagnetic tracking technology
- Intraoperative ultrasound



Spinal navigation

Modul dedicated to spine navigation for stabilisation procedures and trauma treatments.

- Optical tracking technology
- Tracking of implants and surgical instruments within 3D images (intraoperative CT) and 2D images (C-arm)



ENT navigation

Module dedicated to ENT navigation for FESS and transsphenoidal surgery.

- Optical or electromagnetic tracking technology
- Connection to endoscope and navigation with integrated endoscopic view
- Tracking of endoscope

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MASMEC SpA
MASMEC BIOMED DIVISION
VIA DELLE VIOLETTE, 14
70026 - MODUGNO (BA) - ITALY
TEL. +39.080.5856701
WWW.MASMECBIOMED.COM