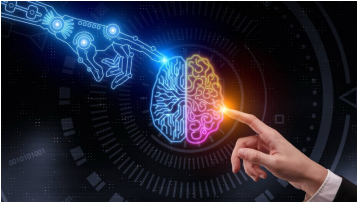



### AI, AR, Machine Learning In Aortic Interventions: For The Novice, How Do these Systems Work



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### Disclosures


- None



### Intraoperative imaging Cydar maps (Medtronic)



### Set up– Hybrid room (or C-Arm) solution




Cydar-loaned PC situated in the technical cupboard or control room (dependent on the available connections)

Navigation through a remote control

Connections needed for the Cydar Appliance

- Live DVI Output from the fluoroscopy set to the Appliance
- Available theatre display DVI port
- Network port in the tech or control room
- Power outlet

The Cydar Appliance is not configurable by the hospital. No personal data is stored in the Cydar Appliance.



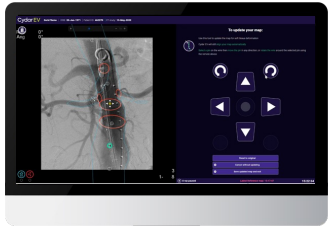
### Pre-op planning: AI supported map creation



- AI AUTOMATICALLY SEGMENTS THE ARTERY AND BRANCH VESSEL STRUCTURE
- AUTOMATIC PLACEMENT OF VESSEL MAP POINTS
- AI ASSISTED PLACEMENT OF BRANCH VESSEL CONTROL OPERATIONS AND TAGS

• USEFUL MARKERS OR MARKER POINTS DURING SURGERY FOR

### Intraoperative Navigation: soft tissue deformation

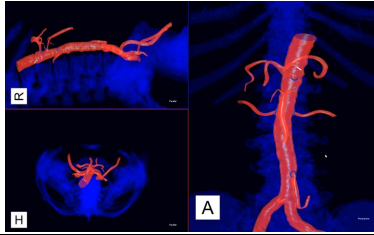


• ABILITY TO ADJUST THE 3D MAP WHEN BLOOD VESSELS CHANGE SHAPE AND ARE DISPLACED DUE TO PLACEMENT OF STIFF WIRES OR DEVICES.

You can update



### Clinical use examples-SMA



- Bart Chess, MD, Allegheny General Hospital
- 70% proximal SMA stenosis
- Previously abandoned when unable to cannulate SMA after ~6Gy

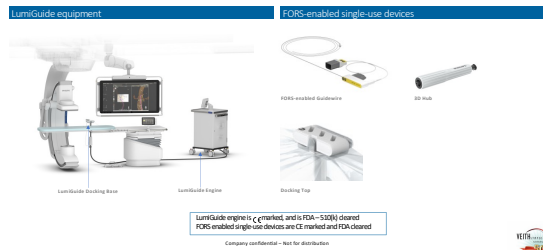


### Fiber Optic RealShape (FORS)

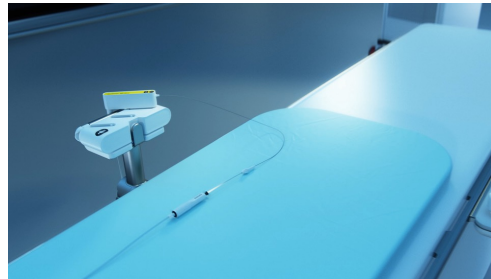
CE MARKED/FDA CLEARED



### LumiGuide overview



5



Visualize conventional catheters with the 3D Hub and LumiGuide



### AI-AR Summary

- Feasibility demonstrated
- Benefits
  - Lower radiation dose/workflow
  - Improved ergonomics
  - Improved cannulation times
- More experience and widespread adoption are needed



Artificial Intelligence, Augmented Reality and the  
Future of Medical and Vascular Imaging



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