

3D Slicer



SOFA

uc3m

Virtual and Augmented Reality for medical applications

Alicia Pose Díez de la Lastra



BSEL



Cofinanciado por
la Unión Europea





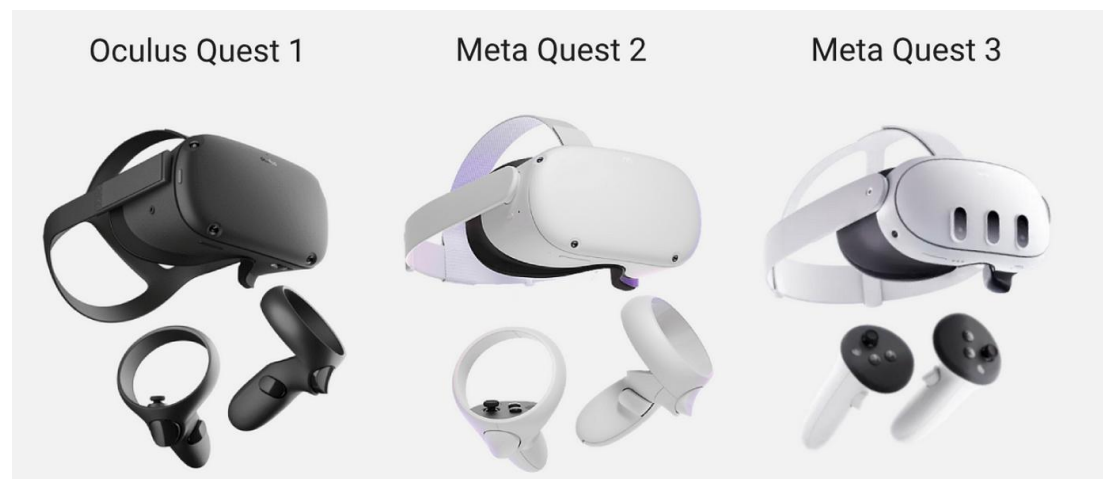
VIRTUAL REALITY

Virtual Reality: What is it?

- Virtual Reality (VR) is the use of computer technology to create a **simulated environment**.
- Unlike traditional user interfaces, VR places the **user inside an experience**:
- Users are immersed in a virtual 3D world and can interact with it.
- By simulating as many senses as possible, such as vision, hearing, touch, even smell, the computer is transformed into a gatekeeper to this artificial world.



VR: Devices



VR: Devices



PlayStation®VR



VR Applications

Virtual Reality training is an attractive alternative to live training with expensive equipment, dangerous situations, or sensitive technology.

Flight
simulation



VR Applications

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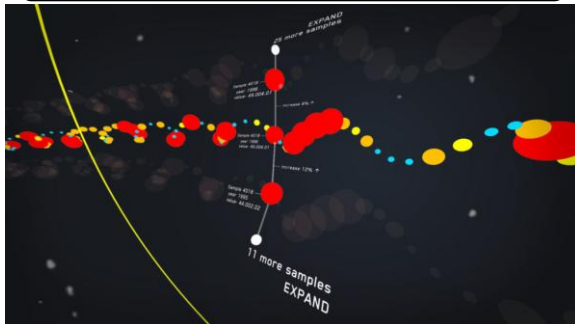
Planes



Flight
simulation



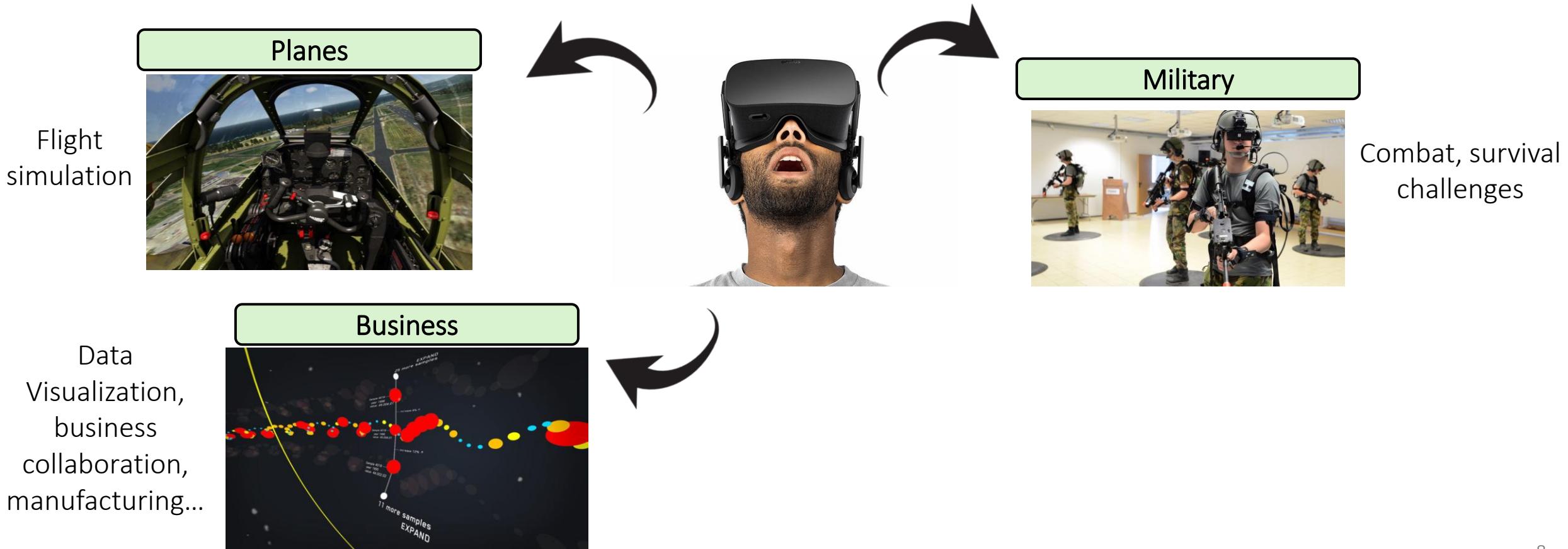
Business



Data
Visualization,
business
collaboration,
manufacturing...

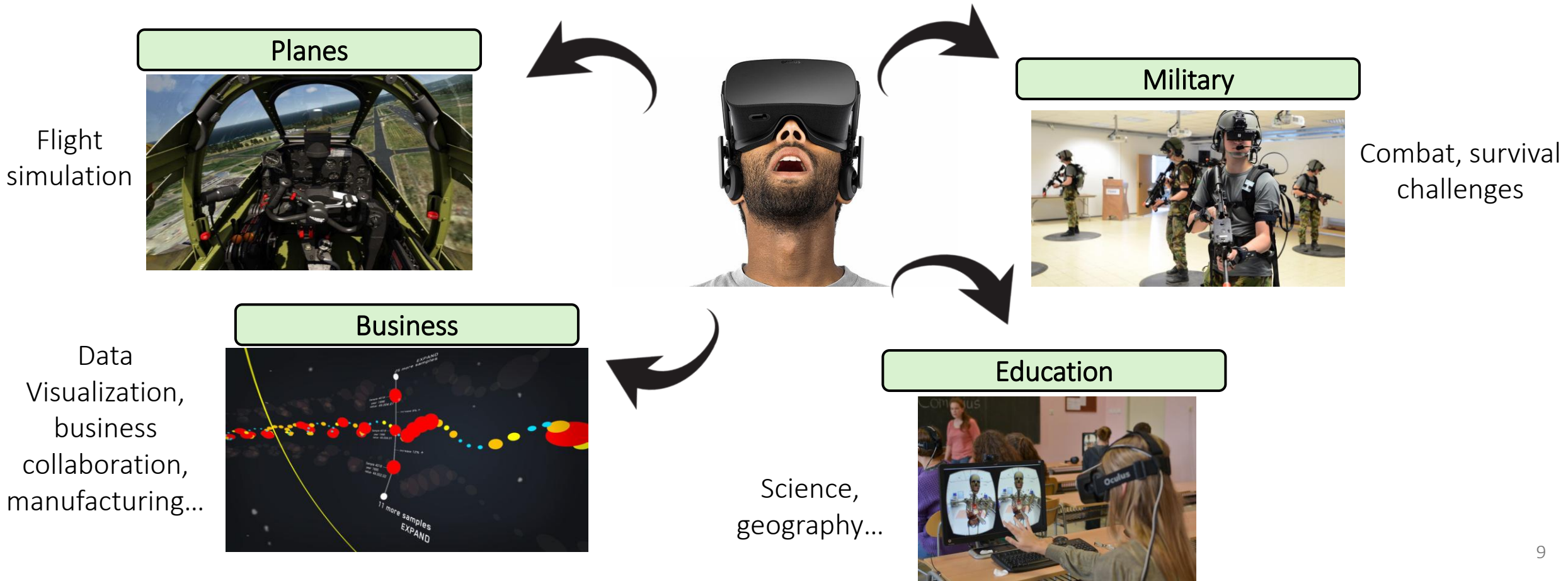
VR Applications

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Healthcare

Surgeons can train with virtual tools and patients, and transfer their virtual skills into the operating room, and studies have already begun to show that such training leads to faster doctors who make fewer mistakes



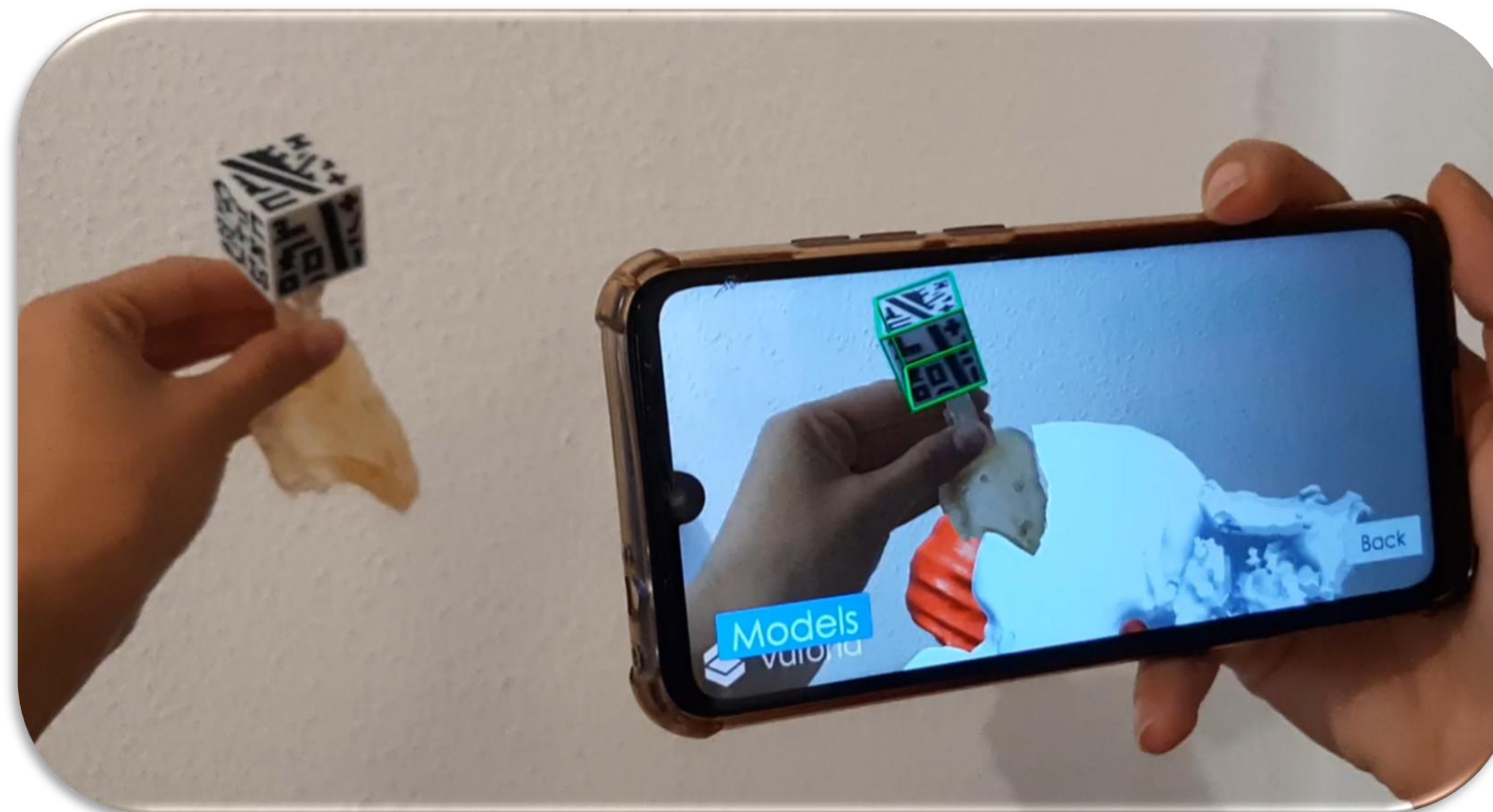
Mainly used for training



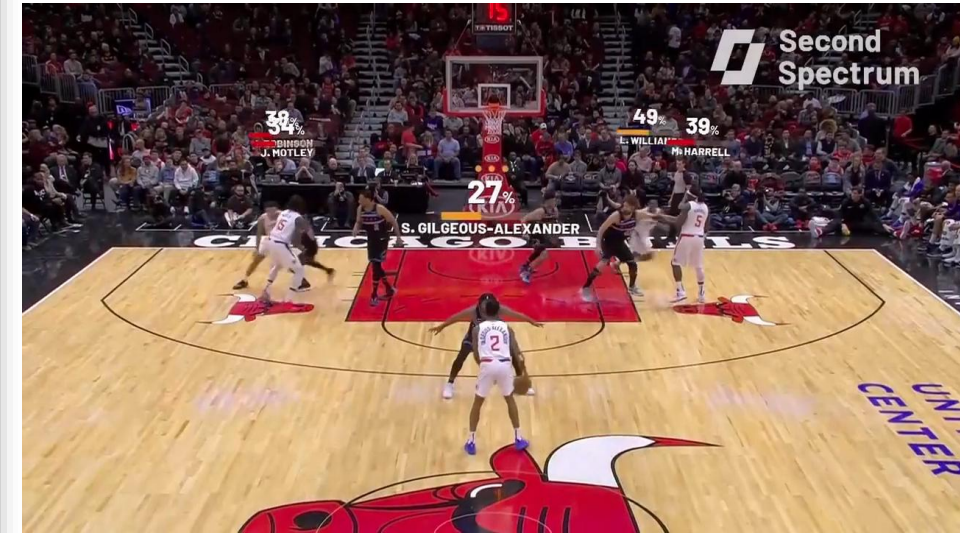
Augmented Reality

Augmented reality (AR)

3D virtual elements overlayed to real world



AR in daily life:



AR devices

Smartphones



- ✓ Cheap
- ✓ Easy-to-use
- ✗ Look at the screen
- ✗ Ergonomics
- ✗ Limited recognition capacities

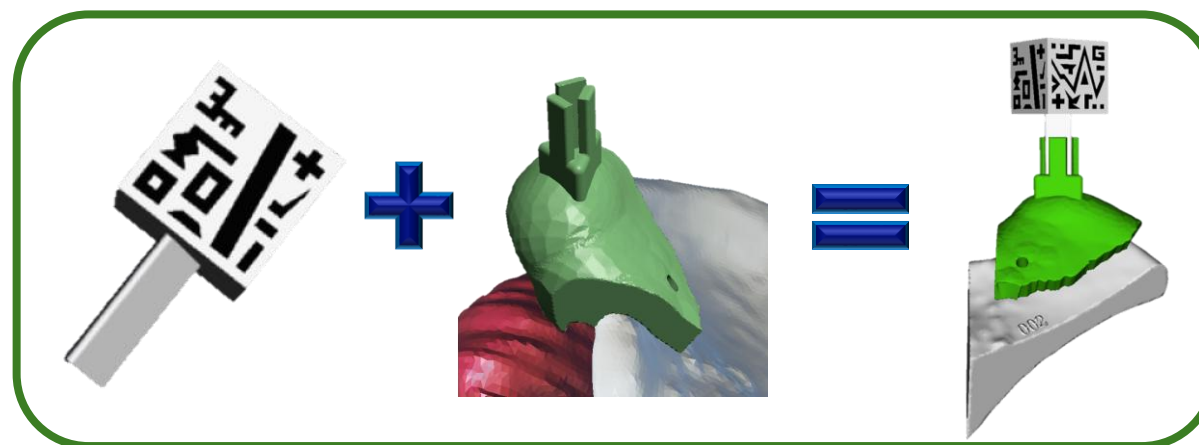
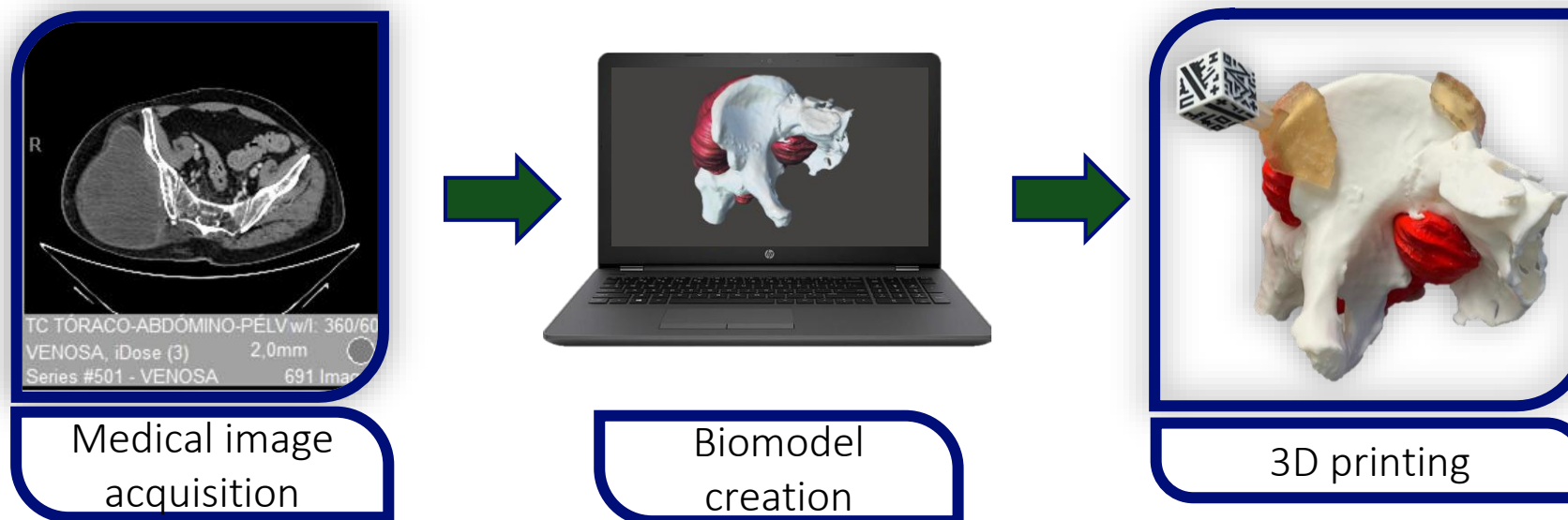
AR glasses



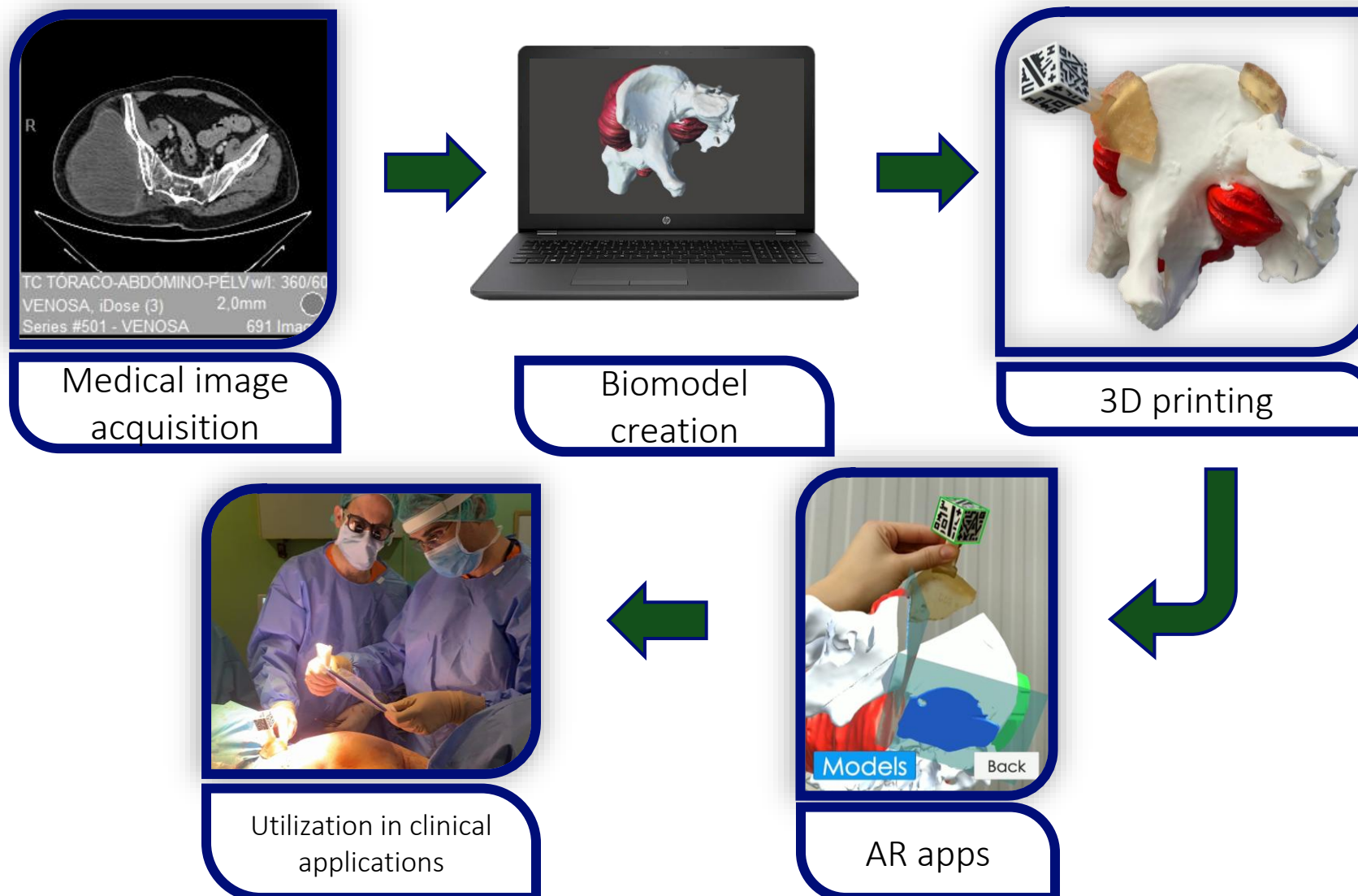
Microsoft
HoloLens 2

- ✓ Comfortable fitting
- ✓ Voice and hand recognition
- ✓ AR just in front of our eyes
- ✗ Expensive
- ✗ Little training needed

AR at UC3M and HGUGM



AR at UC3M and HGUGM



AR at UC3M and HGUGM



AR at UC3M and HGUGM

Smartphones



AR at UC3M and HGUGM

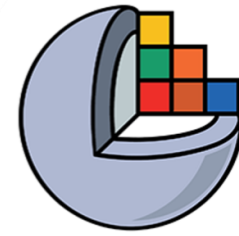
Microsoft HoloLens 2



AR and 3D Slicer

- Send and receive information from 3D Slicer in real time



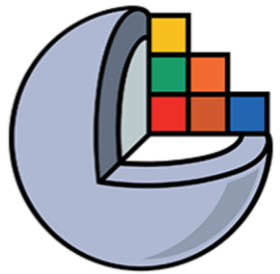


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More examples coming up in the demo session!





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