

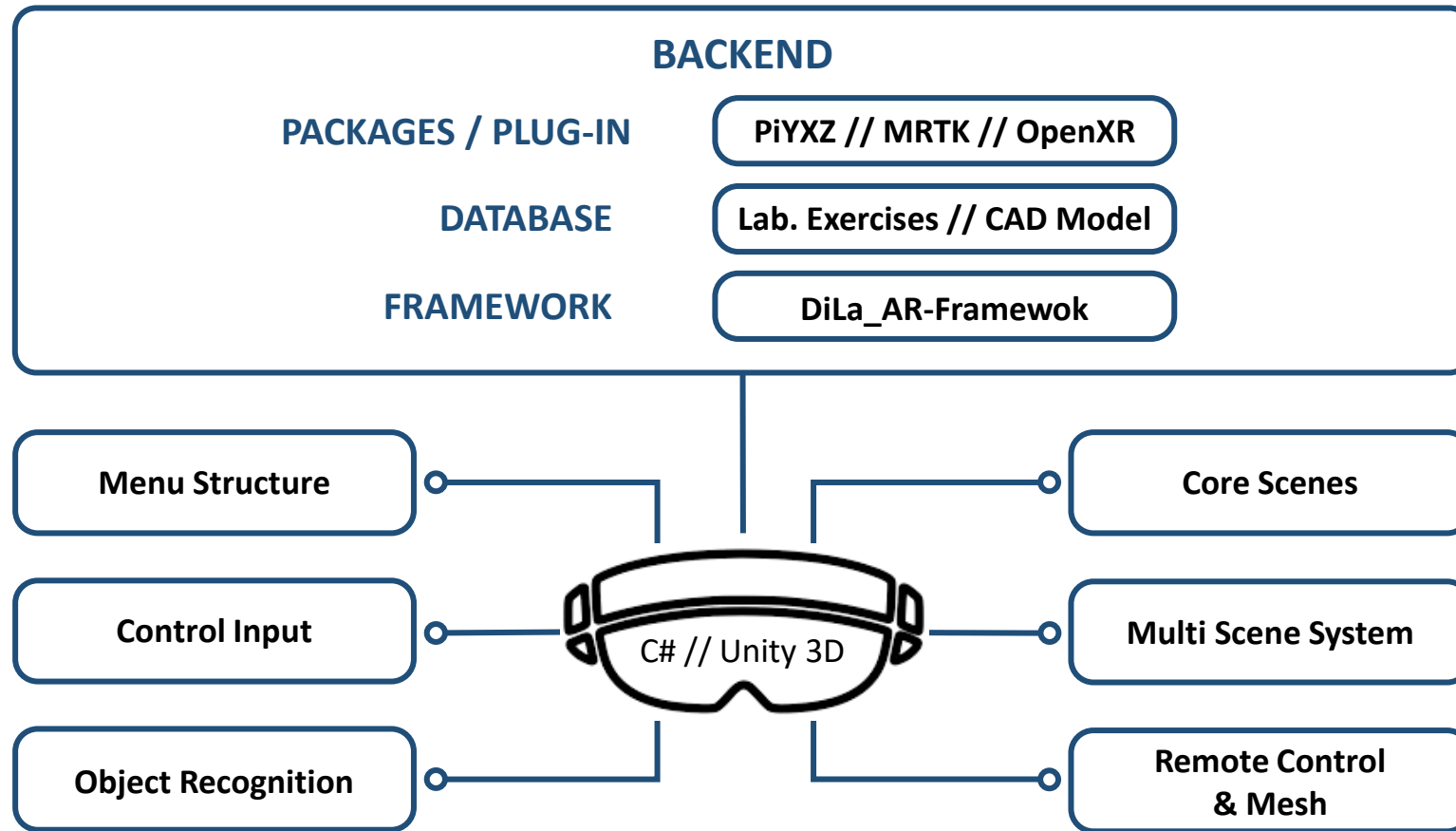
DiLa-AR-Framework

A Modular Augmented Reality Framework for Hybrid Engineering Education: Design and Application of the DiLa AR Framework

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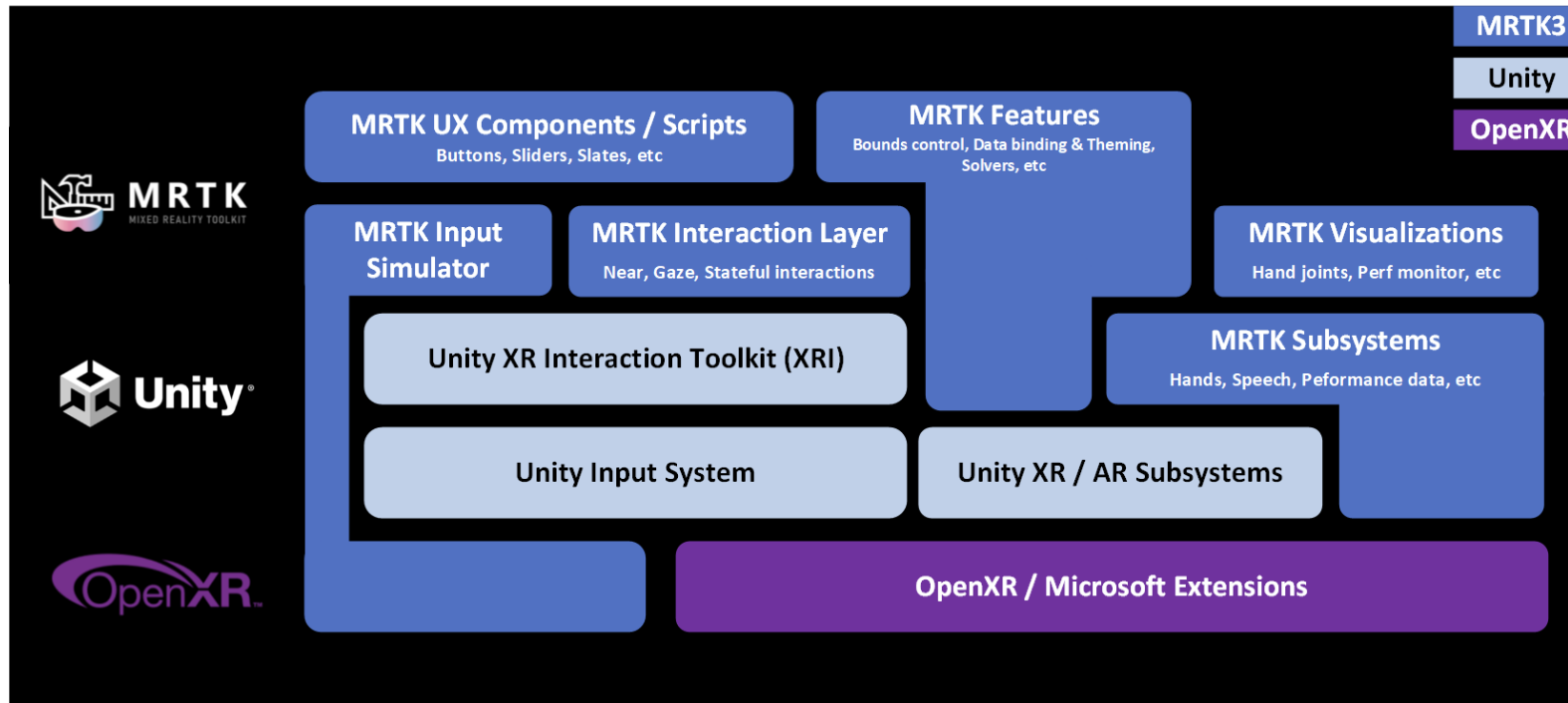
Components of the Hololens2 Application



Core Functionalities:

- Menu Structure (via MRTK)
- Control Input (via MRTK)
 - Control Pannel
 - Gesture Input
 - Voice Commands
- Object Recognition (QR-Code)
- Core Scenes (Defined by Use Cases)
- Multi Scene System (via MRTK)
- Remote Control (Remote-Control-Box & Overlay network)*
- Mesh (Multi-Streaming via Remote-Control-Box)*

Components of the Hololens2 Application



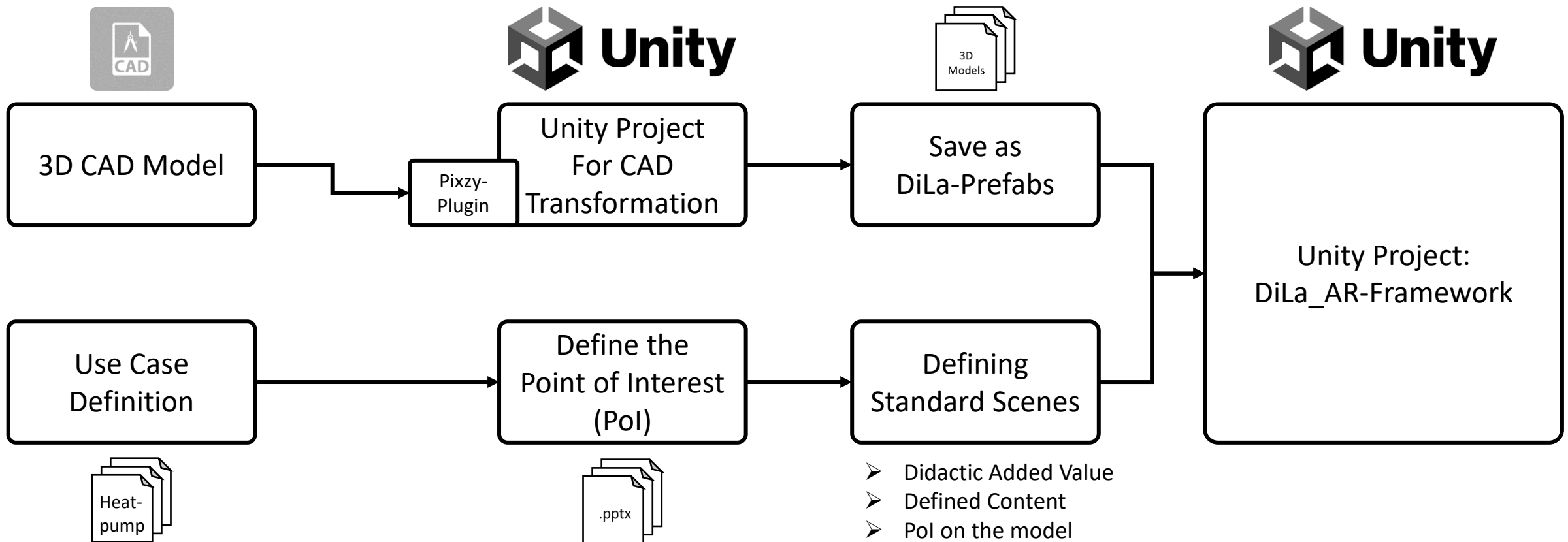
MRTK3

- ↪ Toolkit for Standardized Functions
- ↪ Standardized Input Components
- ↪ Standardized Input Visualizations
- ↪ spatial manipulation

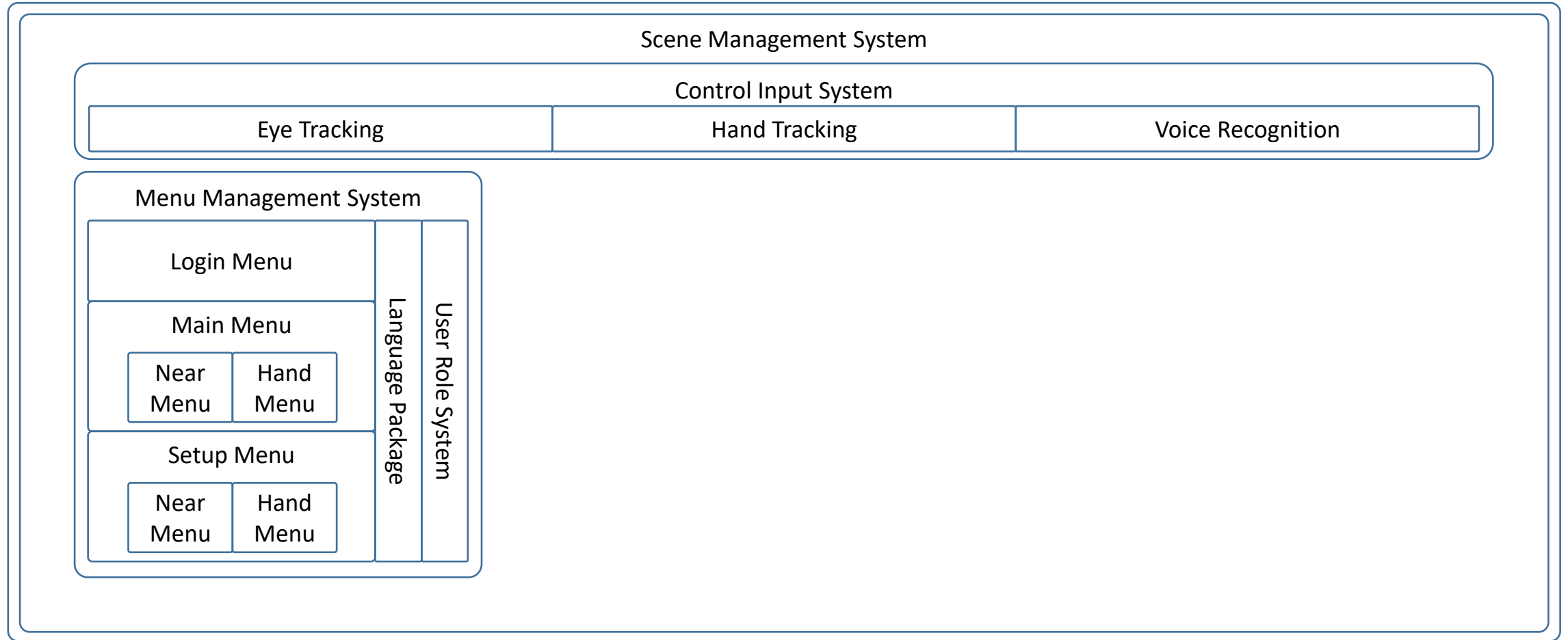
Open XR / AR Exentsions

- ↪ API for XR applications

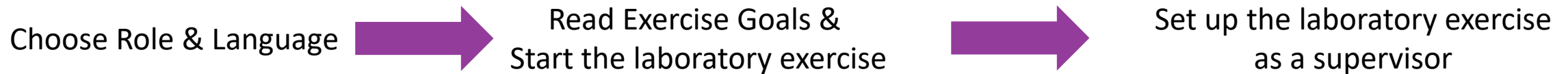
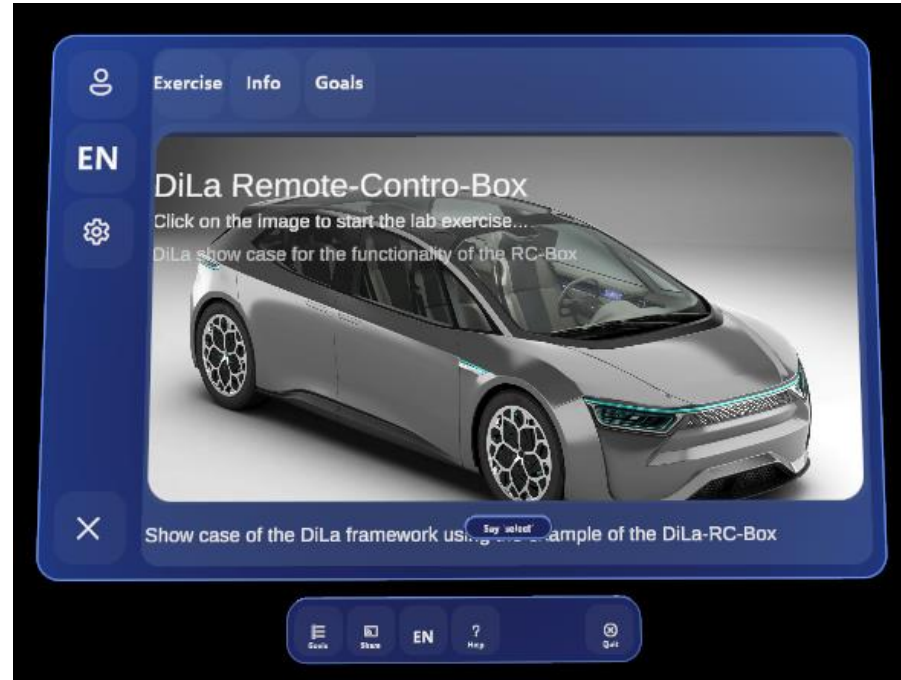
Building Process for the DiLa_AR-Framework



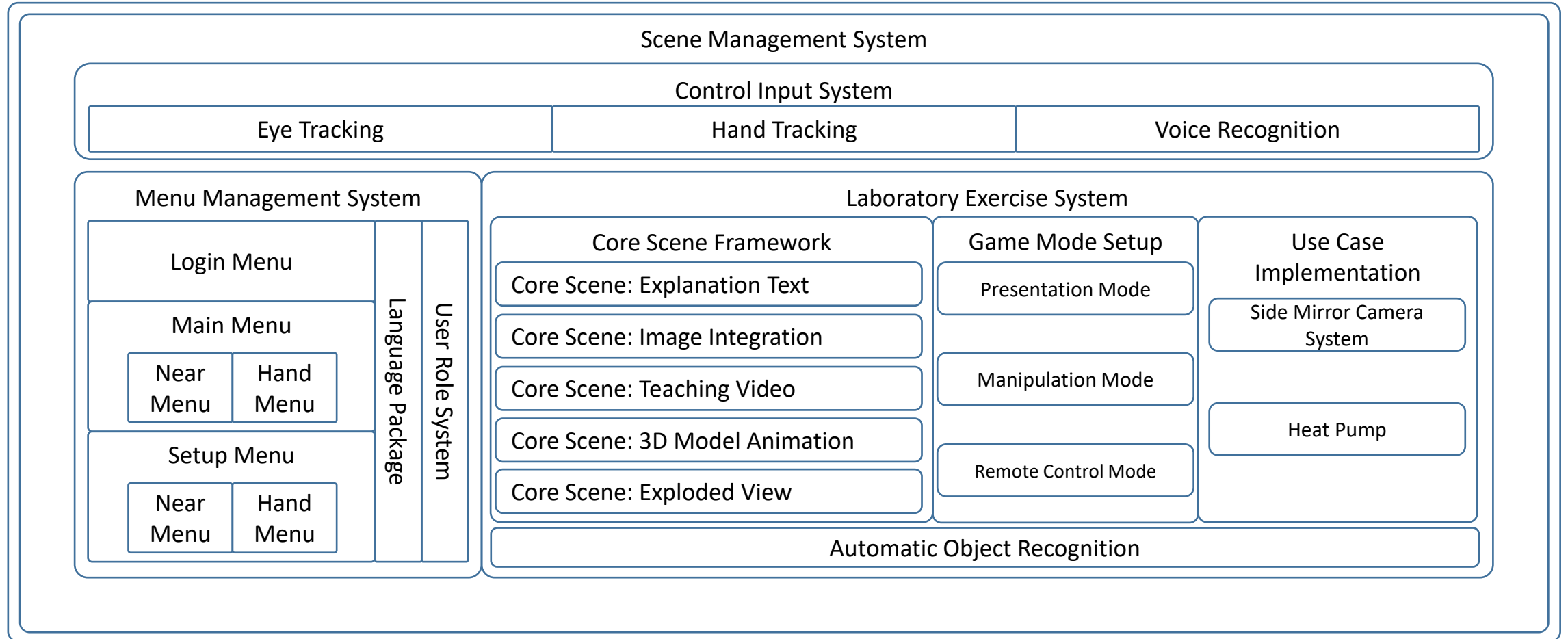
Architecture of the DiLa-AR-Framework



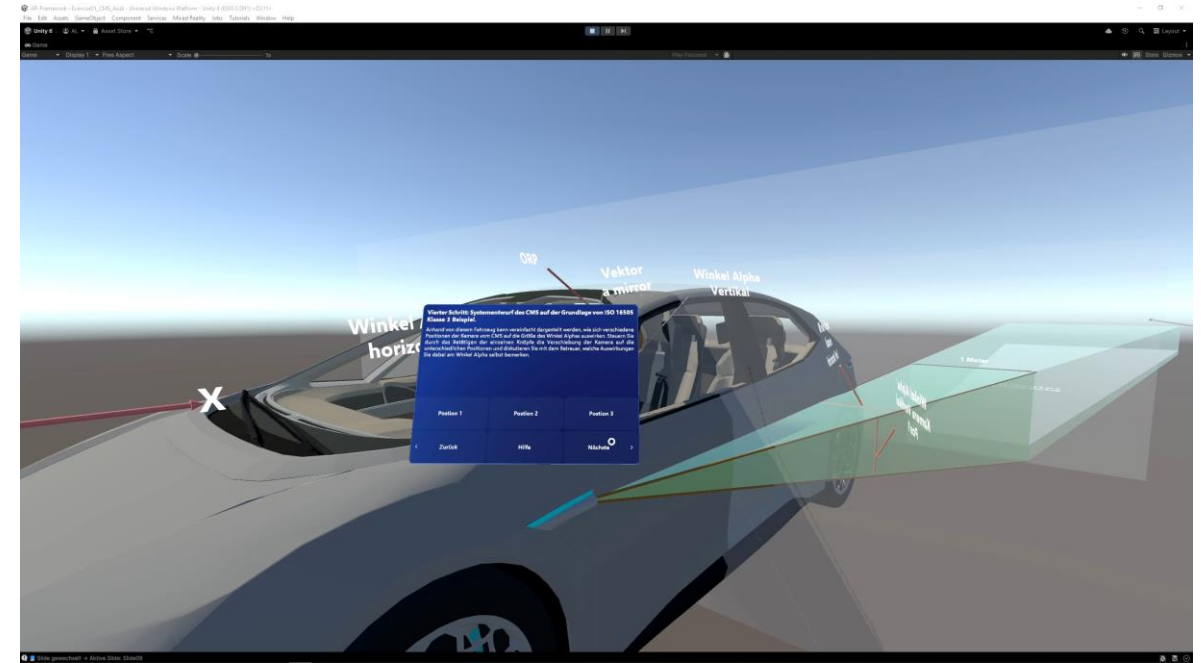
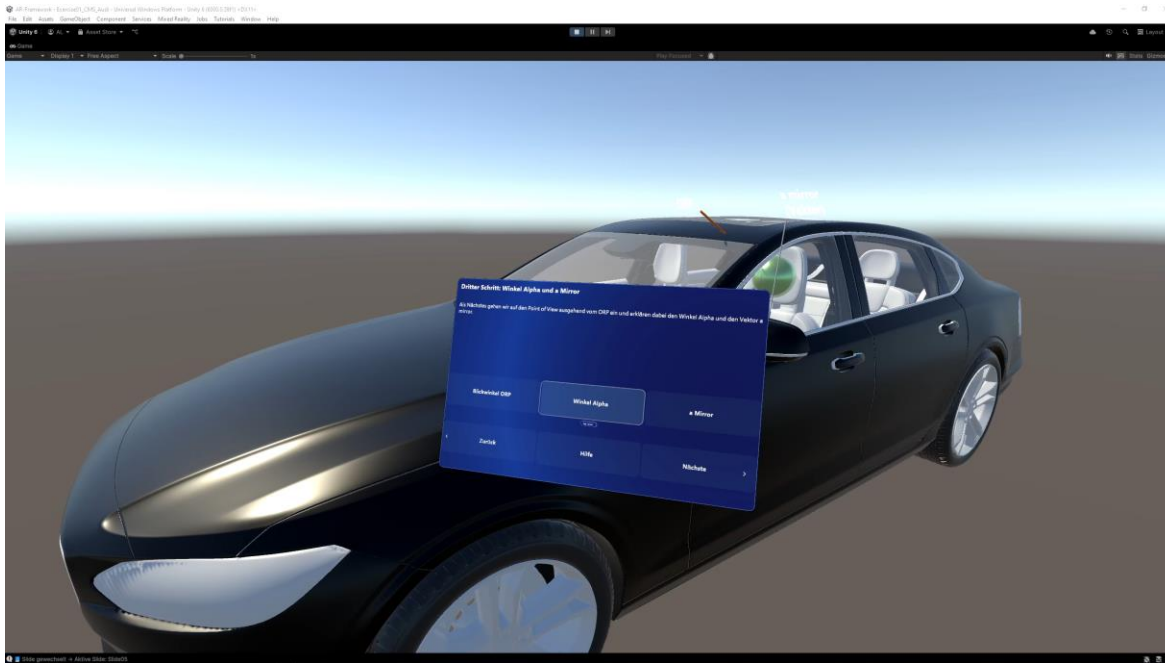
Menu Management System



Architecture of the DiLa-AR-Framework



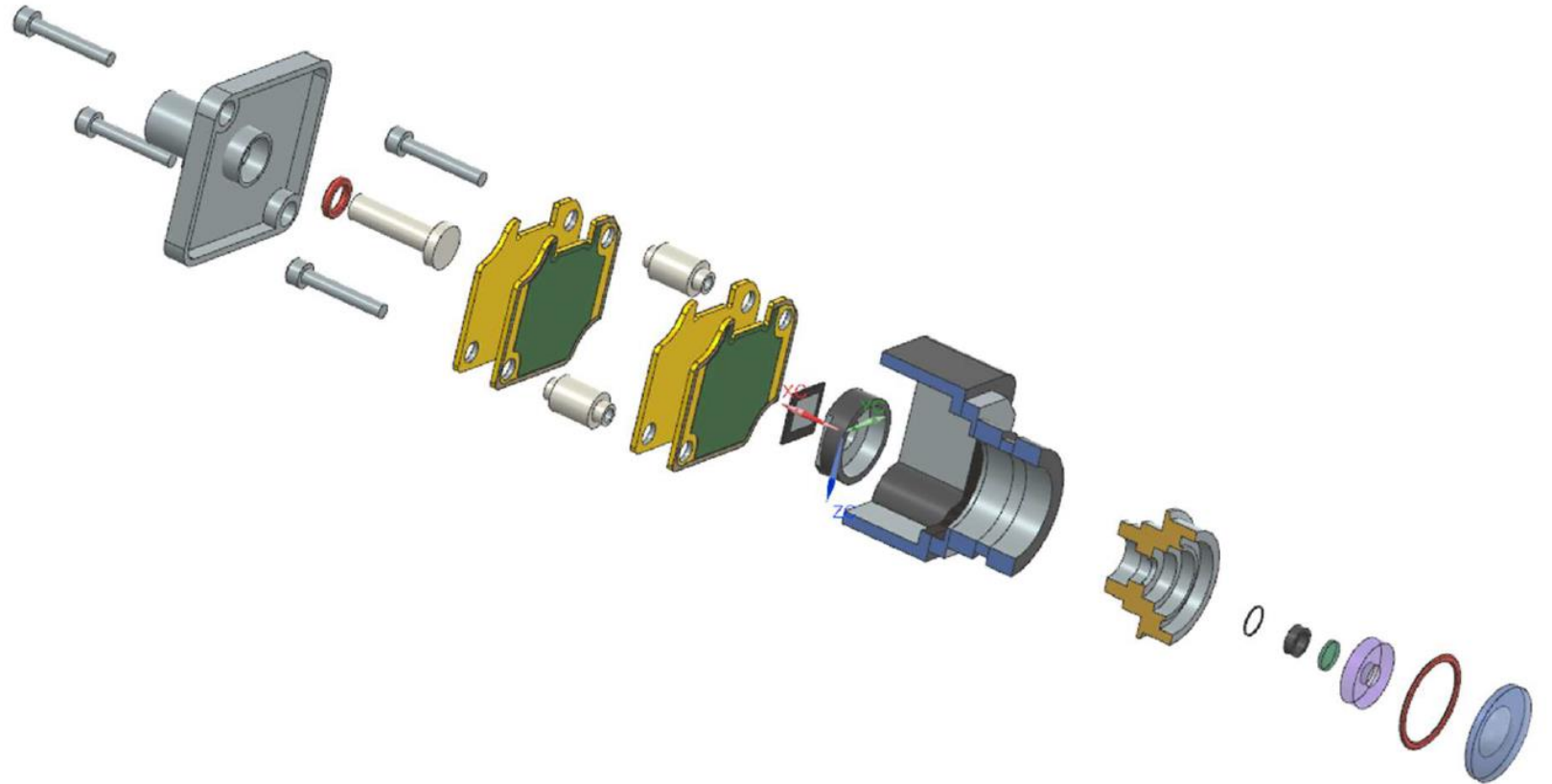
Laboratory Exercise System (LES)



LES Functionalities Example: Exploded View

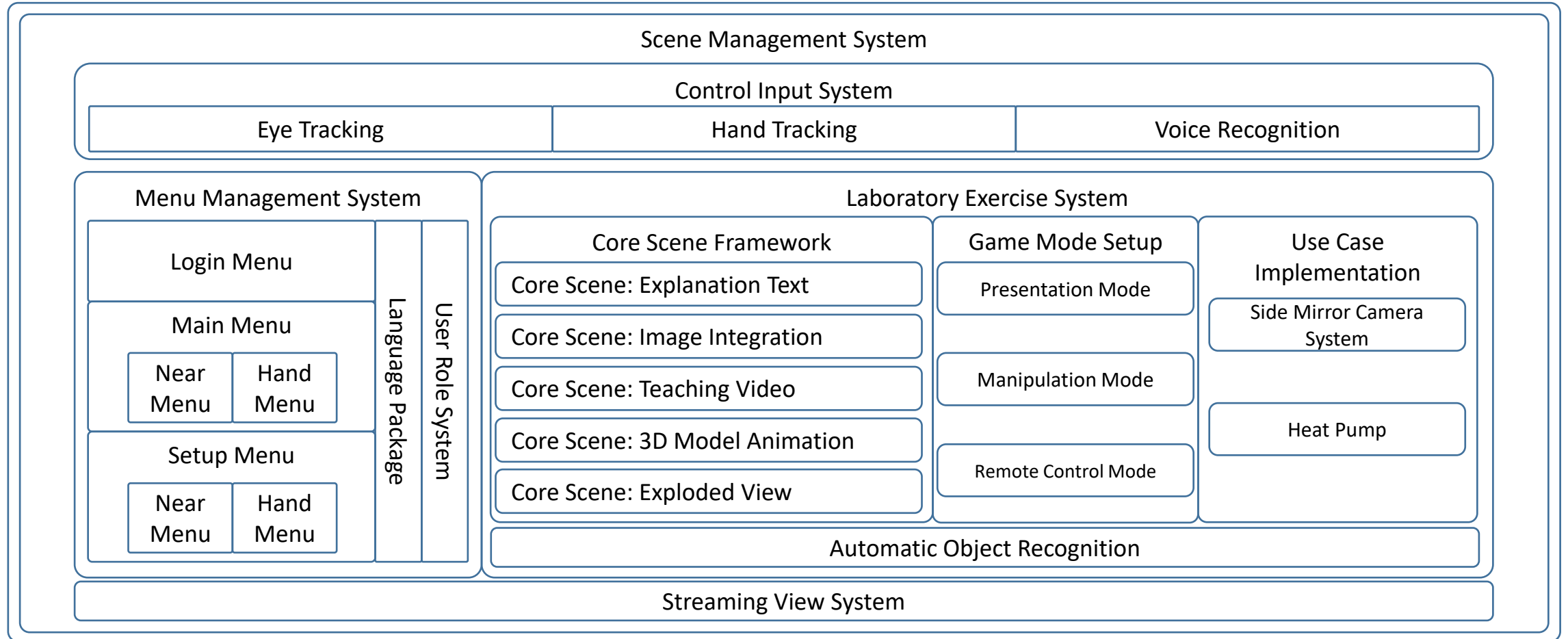
Exploded view

- Shows an exploded view as an animation when someone is clicking on the object
- Gives a better view of the inside of the object and its parts
- Also possible to make every part of the inside interactable

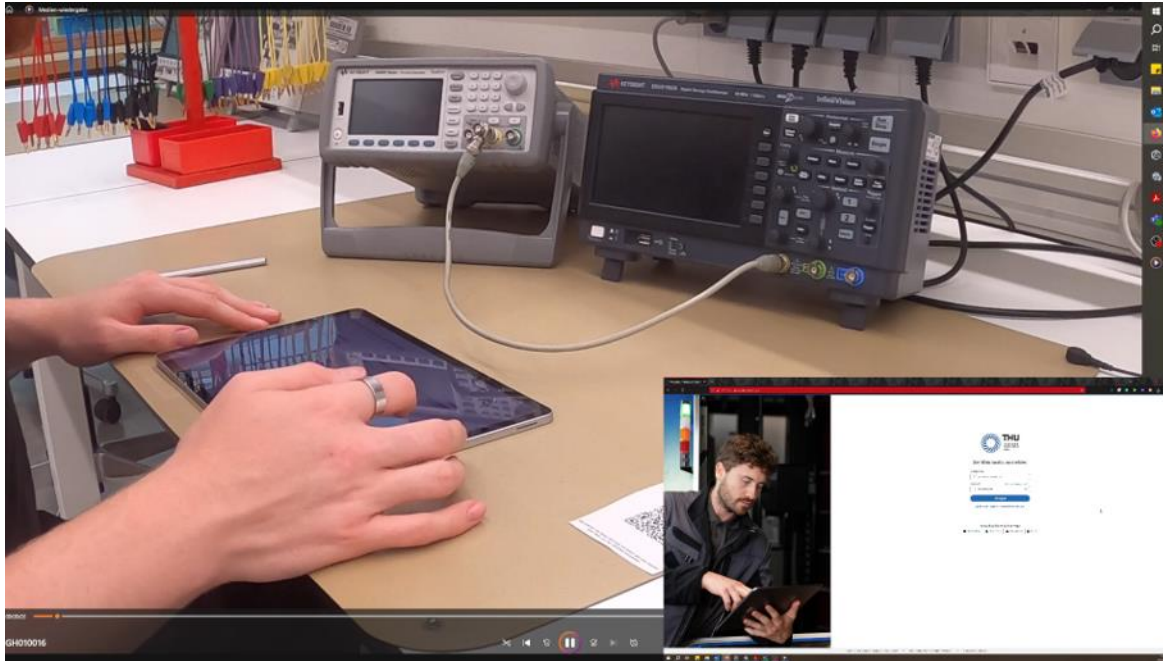


© CAD Model created by Pavlos Aisopoulos (IFS)

Architecture of the DiLa-AR-Framework



Other approaches that were pursued



- ♪ Platform for digital laboratory document management
- ♪ allows the student to review individual steps of the exercise in videos
- ♪ Every technical measurement device can be assigned to an experimental setup
- ♪ The student can access the step-by-step instructions via a QR code on a tablet

Other approaches that were pursued

