

MICHIGAN STATE

UNIVERSITY

Beta Presentation

Augmented Reality Mechanic Training

The Capstone Experience

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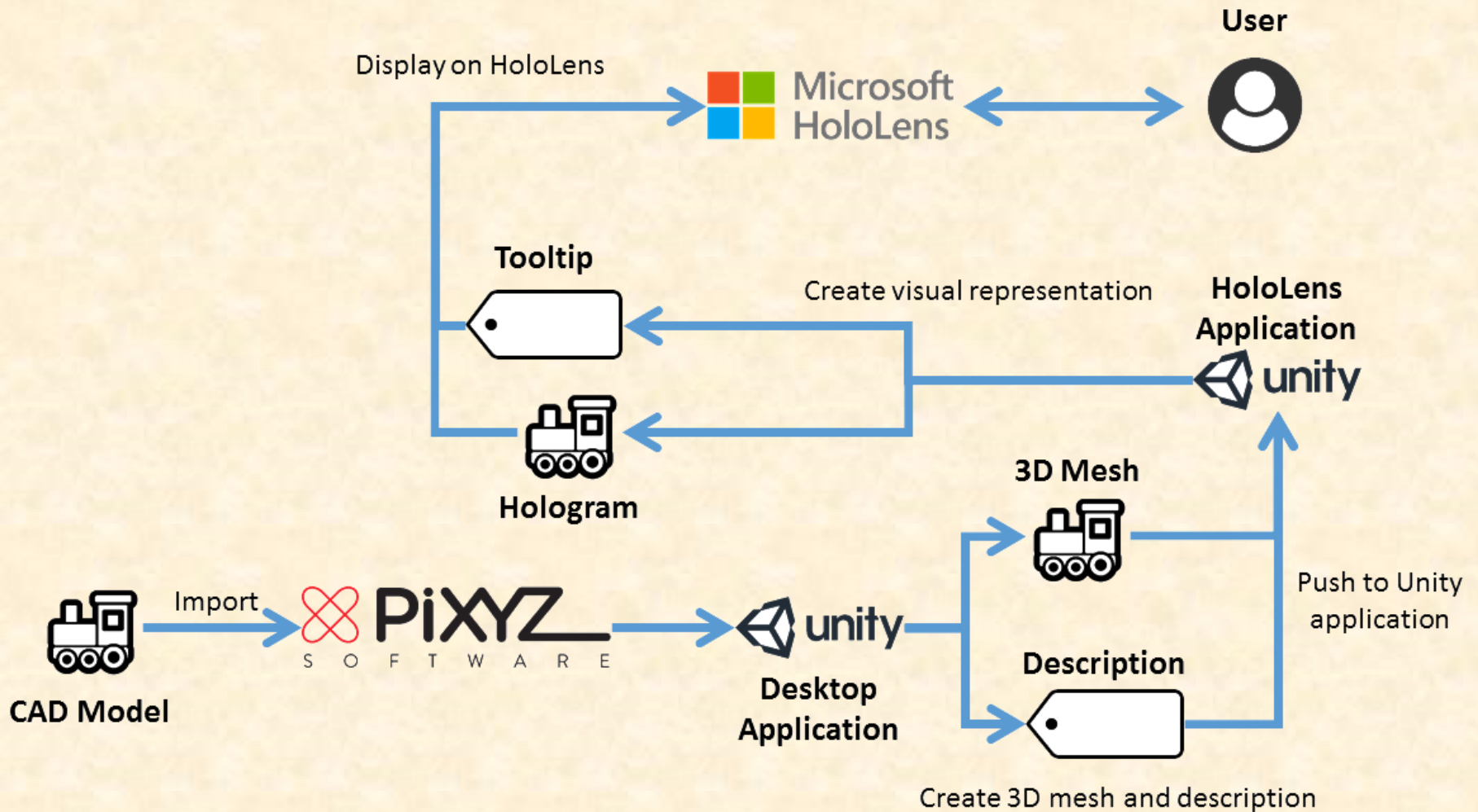
*From Students...
...to Professionals*

Project Overview

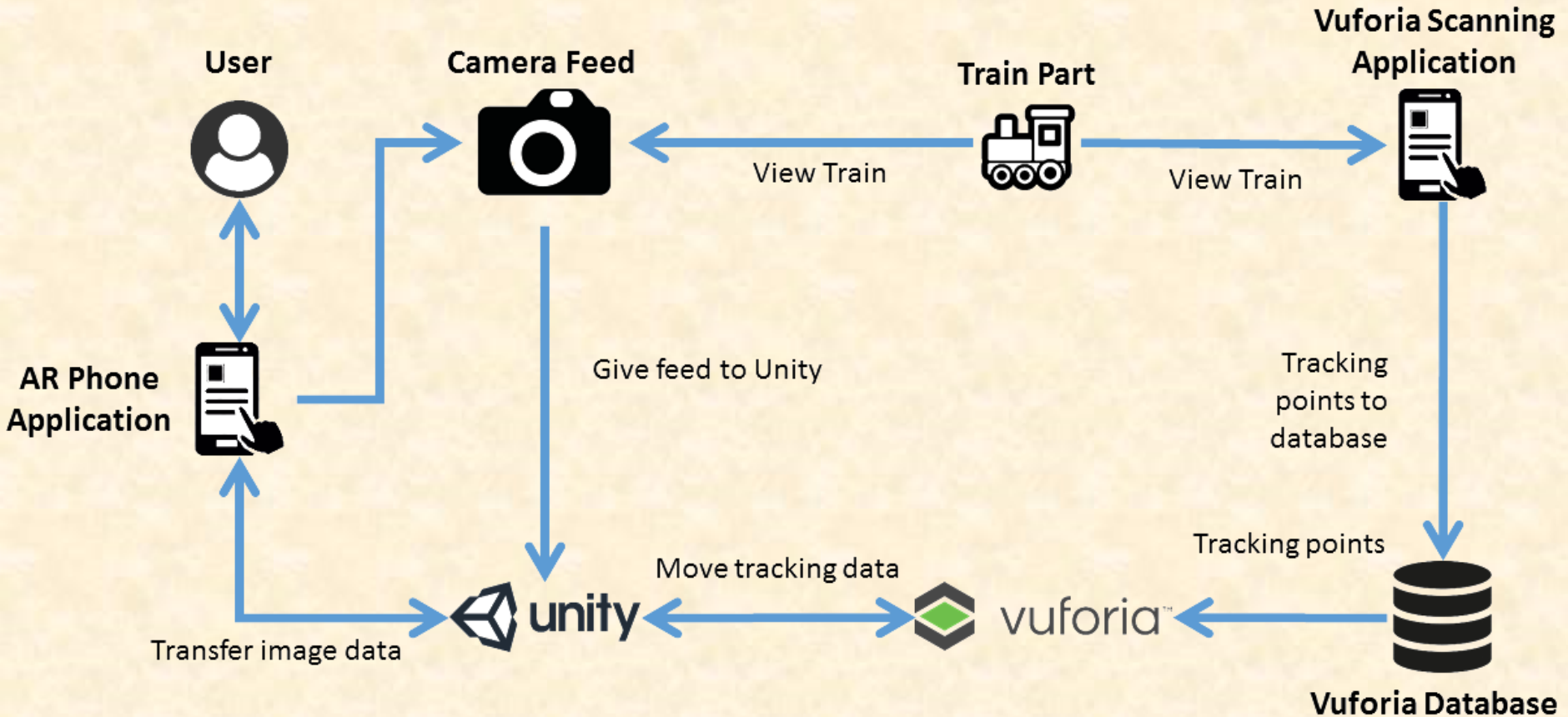
- Two immersive training experiences for mechanics
- *Learn About Machinery (HoloLens + PC)*
 - View labeled holograms of CAD models
 - Select parts to display information
 - Import CAD models through PC application
- *Build a Train (Android)*
 - Guides user through assembling a 3D printed train
 - Uses object recognition to locate train cars



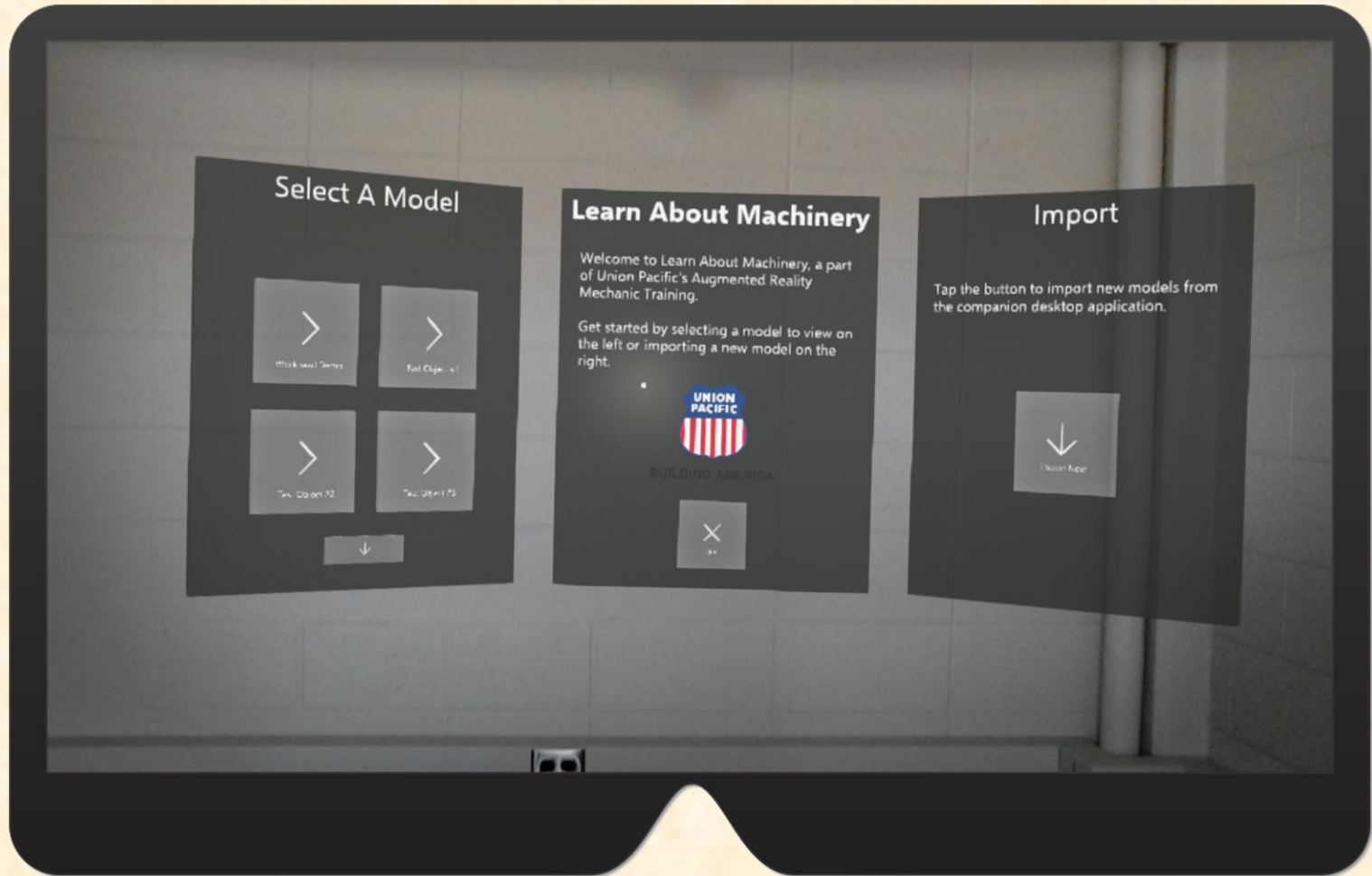
System Architecture



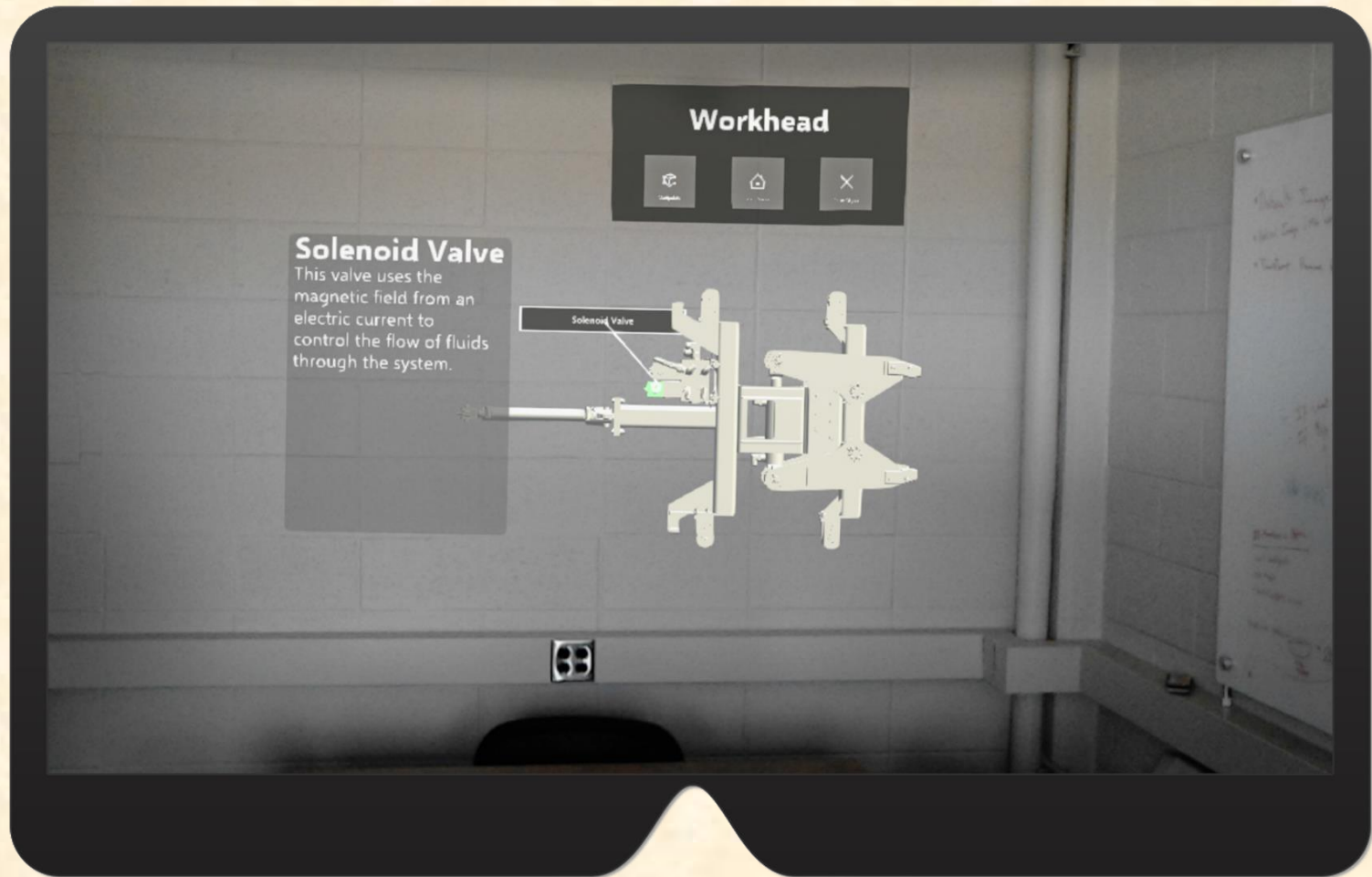
System Architecture



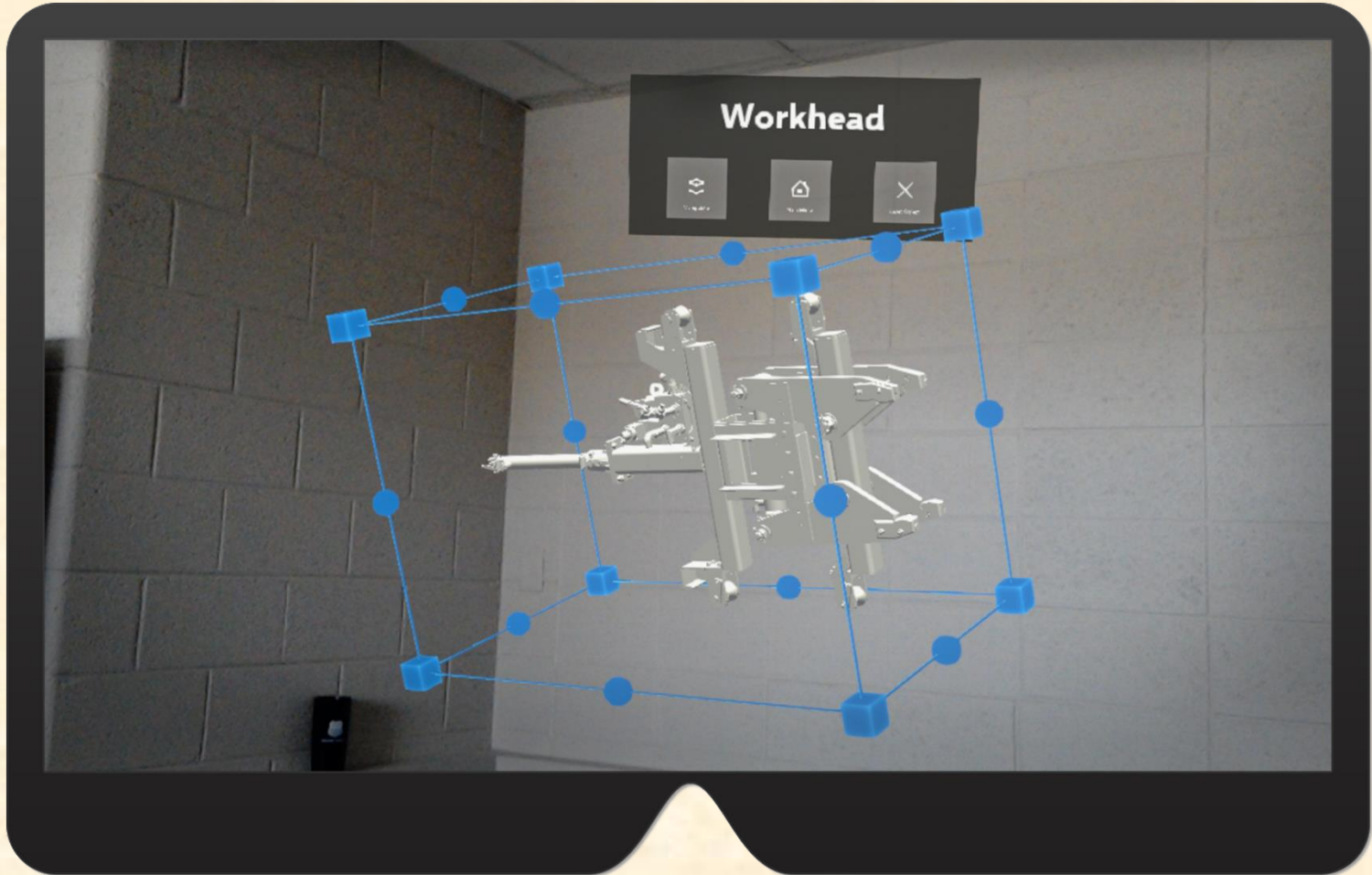
Learn About Machinery: HoloLens Main Menu



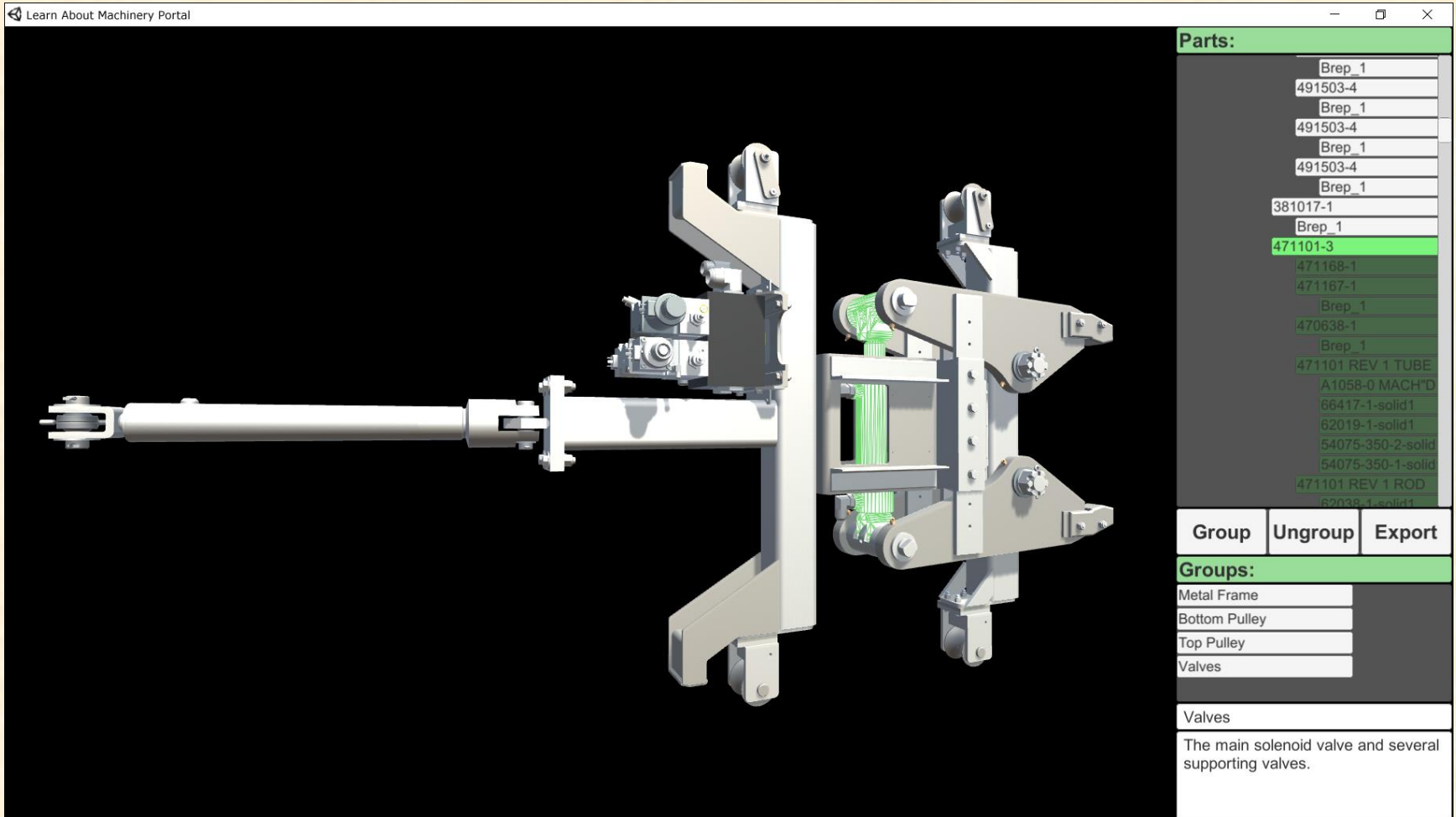
Learn About Machinery: Key Part Information



Learn About Machinery: Model Manipulation



Learn About Machinery Portal



The screenshot displays the 'Learn About Machinery Portal' software interface. The main window shows a 3D CAD model of a complex mechanical assembly, including a long shaft, pulleys, and various brackets. A specific part, a solenoid valve, is highlighted in green. On the right side, there is a 'Parts:' list with a table structure. Below the parts list is a 'Groups:' section with a table structure. The 'Parts:' list includes the following items:

Part Name
Brep_1
491503-4
Brep_1
491503-4
Brep_1
491503-4
Brep_1
381017-1
Brep_1
471101-3
471168-1
471167-1
Brep_1
470638-1
Brep_1
471101 REV 1 TUBE
A1058-0 MACH'D
66417-1-solid1
62019-1-solid1
54075-350-2-solid
54075-350-1-solid
471101 REV 1 ROD
82038-1-solid1

Below the parts list is a table with three columns: Group, Ungroup, and Export.

Group	Ungroup	Export

Below the table is a 'Groups:' section with a table structure.

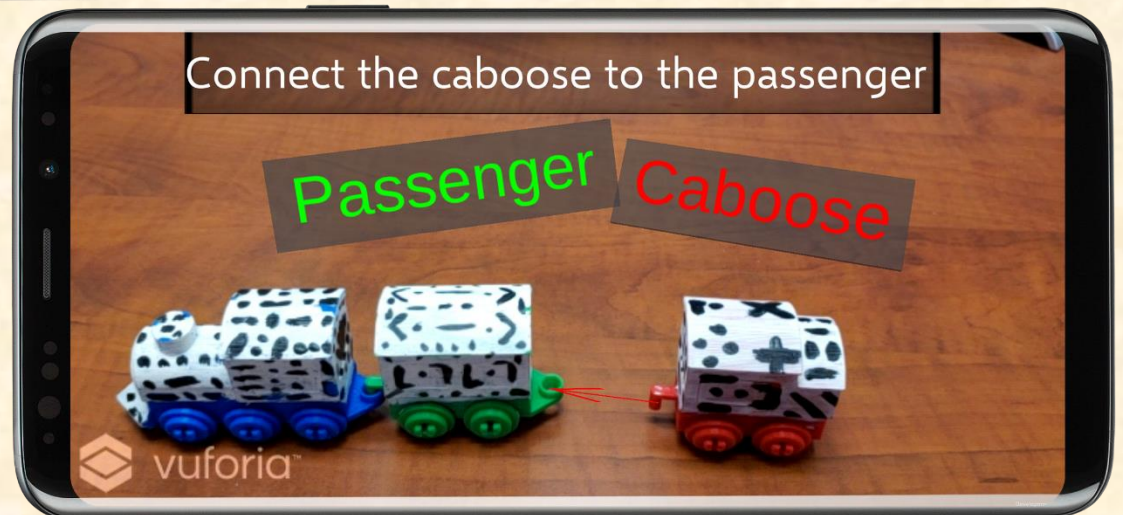
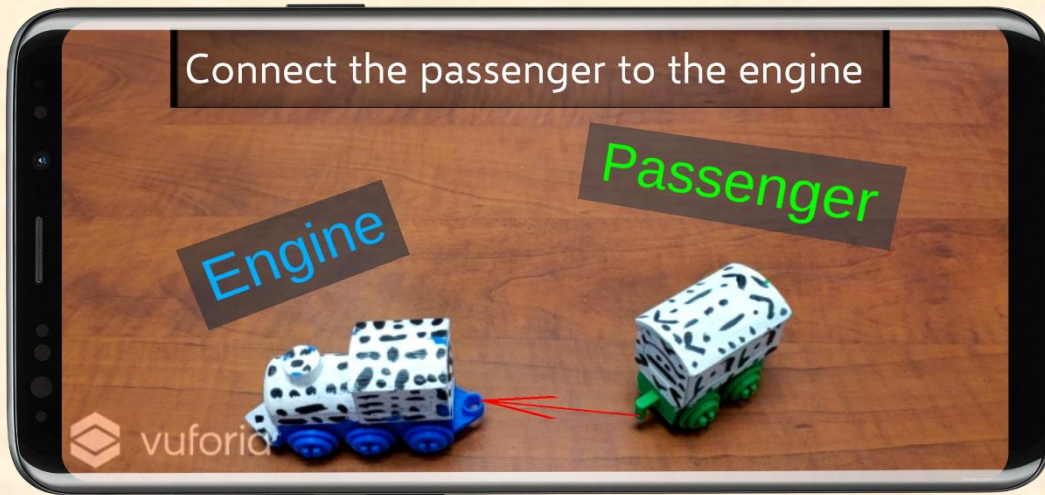
Group Name
Metal Frame
Bottom Pulley
Top Pulley
Valves

Below the groups list is a table with one column: Valves.

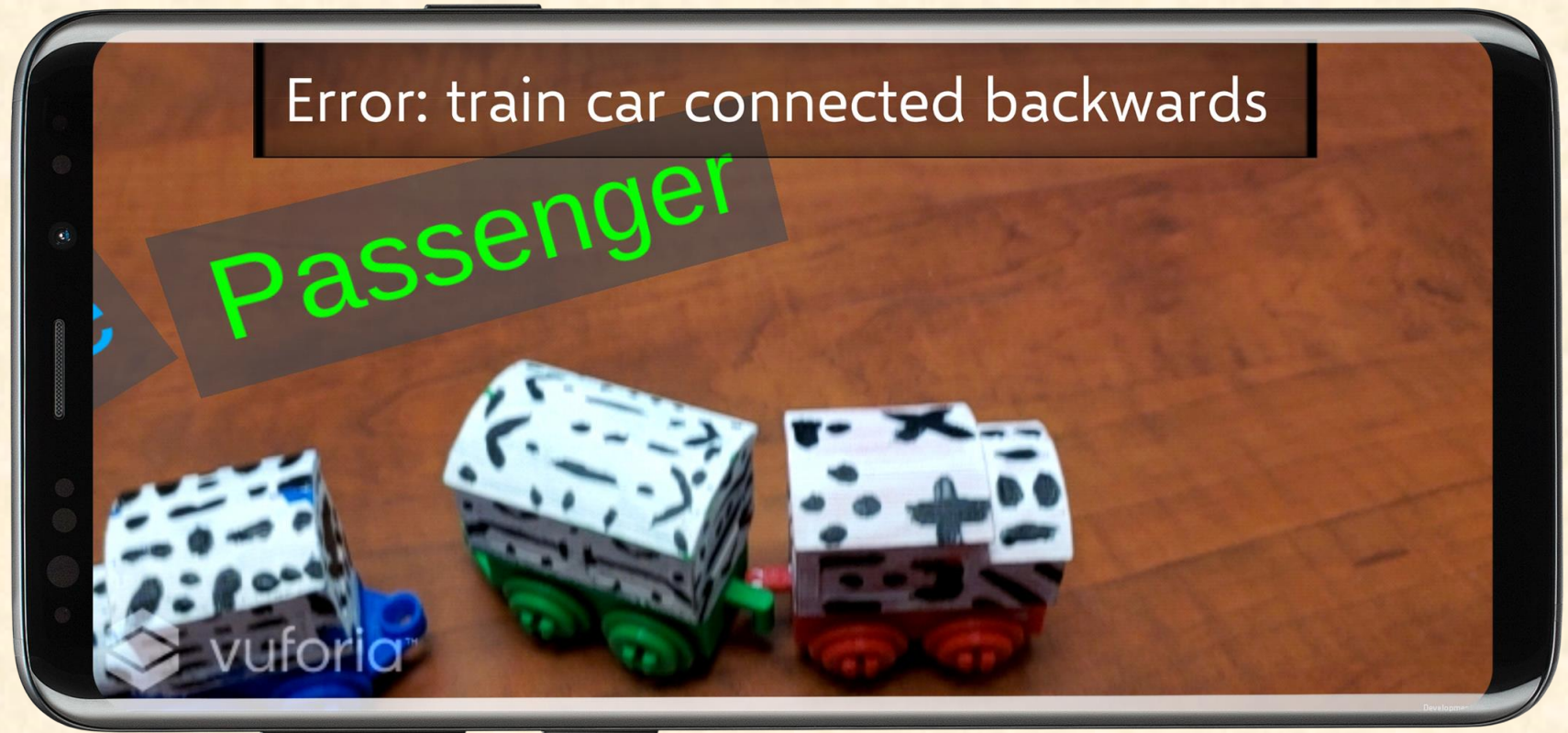
Valves
The main solenoid valve and several supporting valves.



Build a Train: Instructions



Build a Train: User Error



Build a Train: Tutorial Complete



What's left to do?

- More extensive error handling and optimization of Learn About Machinery networking code
- Distinctive sound/vibration when errors detected in Build a Train
- User interface cleanup
- Final style guide pass on project code



Questions?

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