




| PROCEDURE   |   |   |   |  |   |   |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| Drain<br>the washer<br>fluid tank   | Take 15mm<br>Wrench   | Unmount<br>the washer<br>fluid tank   | Remove<br>the washer<br>fluid tank  | Inspect<br>the washer<br>fluid tank  | Replace<br>the washer<br>fluid tank   | Refill<br>the system  |
| PART NUMBER   | PART NUMBER   | PART NUMBER   | PART NUMBER   | PART NUMBER  | PART NUMBER   | PART NUMBER   |
| 0000001245  | 0000001255  | 0000001273  | 0000001273  | 0000001273   | 0000001274  | 0000001274  |



## Factories 4.0

[adam.gasiorek@tppsc.pl](mailto:adam.gasiorek@tppsc.pl)



# TRANSITION TECHNOLOGIES PSC

Who we are?

## Software Integrator and PTC Solution Center



**12 years of implementing  
PTC solutions**

200 developers & architects for Windchill, WPA, Integrity



**4 years of ThingWorx know-how**

Remote Monitoring, Digital Twin, Connected Products



**ThingWorx Studio/View & Unity R&D**

HoloLens, ODG, DAQRI, iOS, Android, Windows



**Solution Center available  
to PTC Partners**

New benefit from PTC to all Partners -  
expand your workforce!



# Transition Technologies Group

## ENERGY MARKET

- Software supporting energy market participants.
- ETRM solutions for the energy corporations .
- Integrated solutions (production).
- Optimization of production.
- Services, process automation.

## GAS MARKET

- Underground gas storage management system
- Support for commercial processes (contracts management, nominations, balancing, invoicing) and technical processes (storage status monitoring, underground simulation, storage process optimization)

## HEAVY INDUSTRY

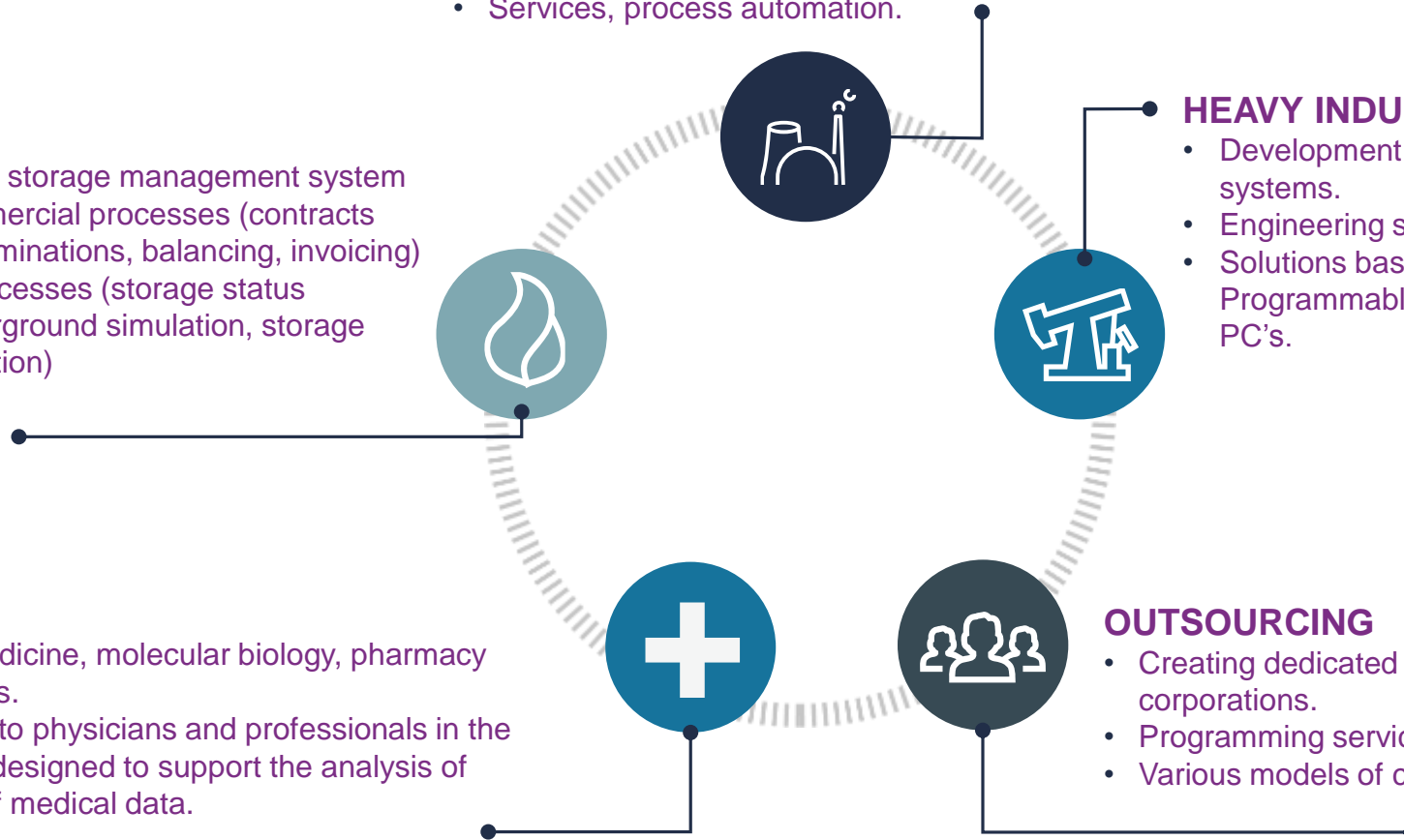
- Development and implementation of process automation systems.
- Engineering services for technological processes.
- Solutions based on Distributed Control Systems (DCS). Programmable Logic Controllers (PLC) and industrial PC's.

## MEDICINE

- IT support in medicine, molecular biology, pharmacy and related fields.
- Tools dedicated to physicians and professionals in the medical sector, designed to support the analysis of large volumes of medical data.

## OUTSOURCING

- Creating dedicated software houses for international corporations.
- Programming services in all technologies.
- Various models of cooperation.



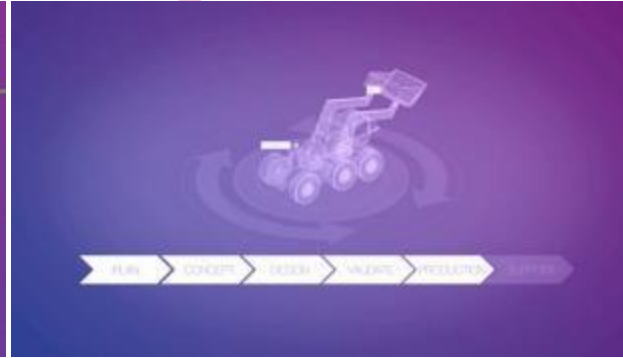


# Transition Technologies Group

## Implementation services



## Product Lifecycle Management



## Industrial connectivity



## Data science for industry



## AR / MR / VR



## Internet of Things



# Trends



Human at the center in MFG systems



AR-guided workers



Full product lifecycle data collecting



IoT and Real-Time performance

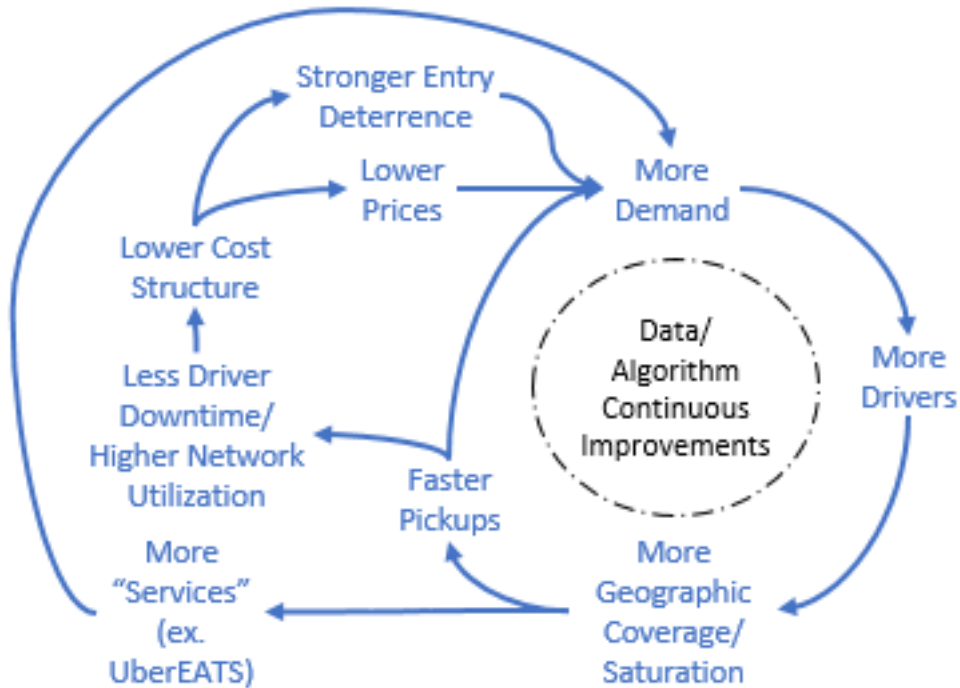


Artificial Intelligence with Predictive Analytics



Platforms and network effects

# Multi-sided platforms and network effects

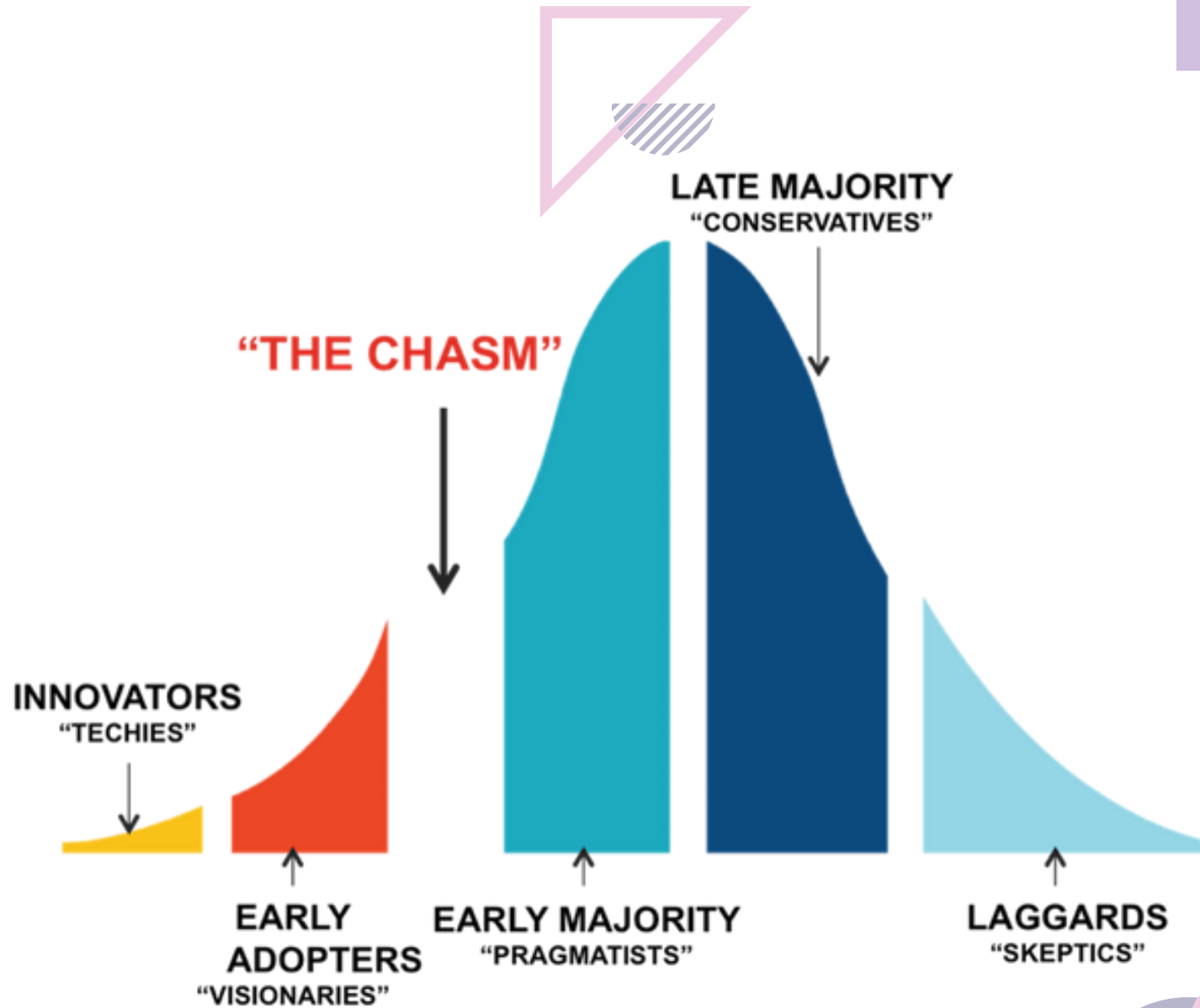


source: hackernoon.com

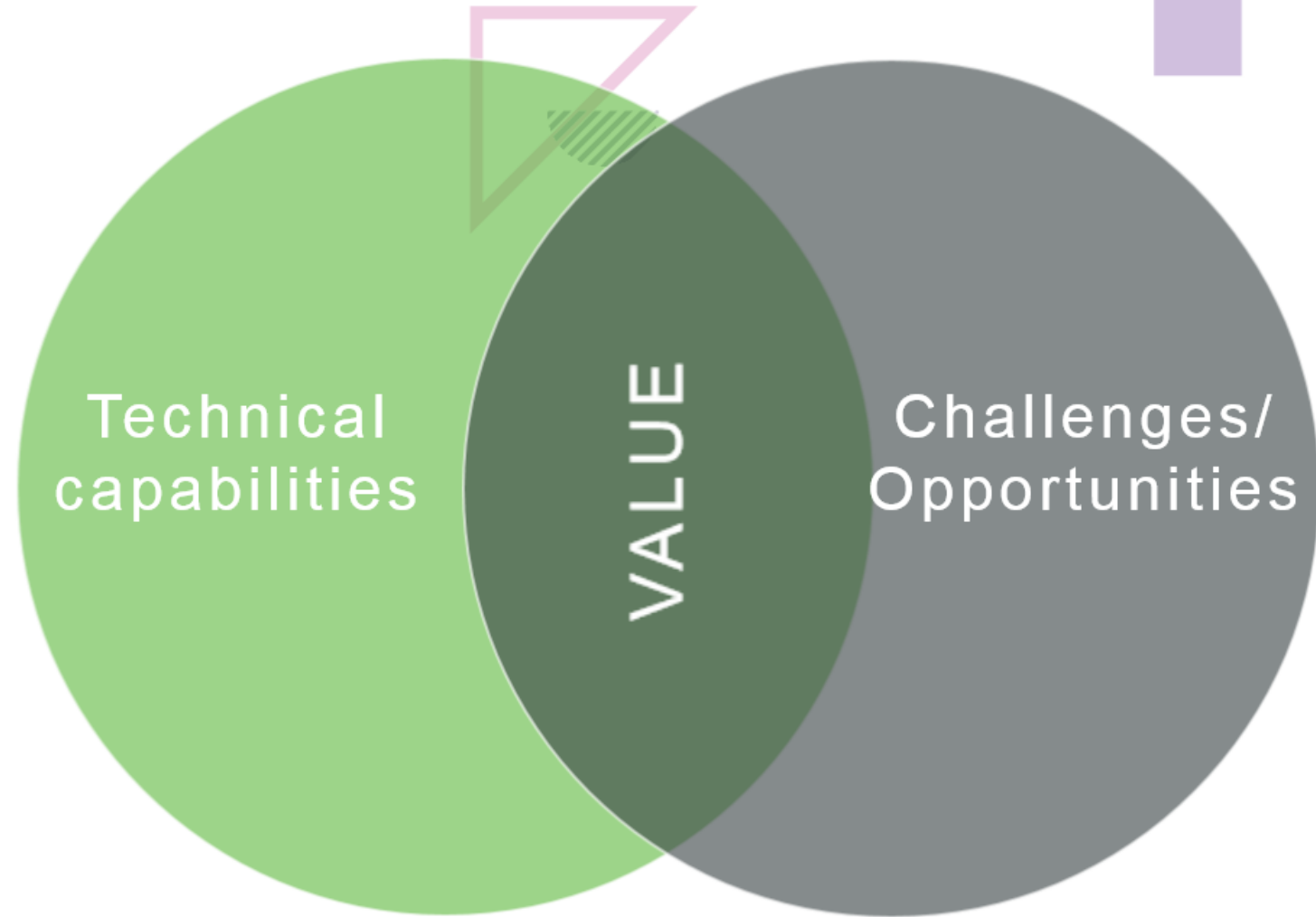


source: cbinsights.com

# Cross the chasm faster

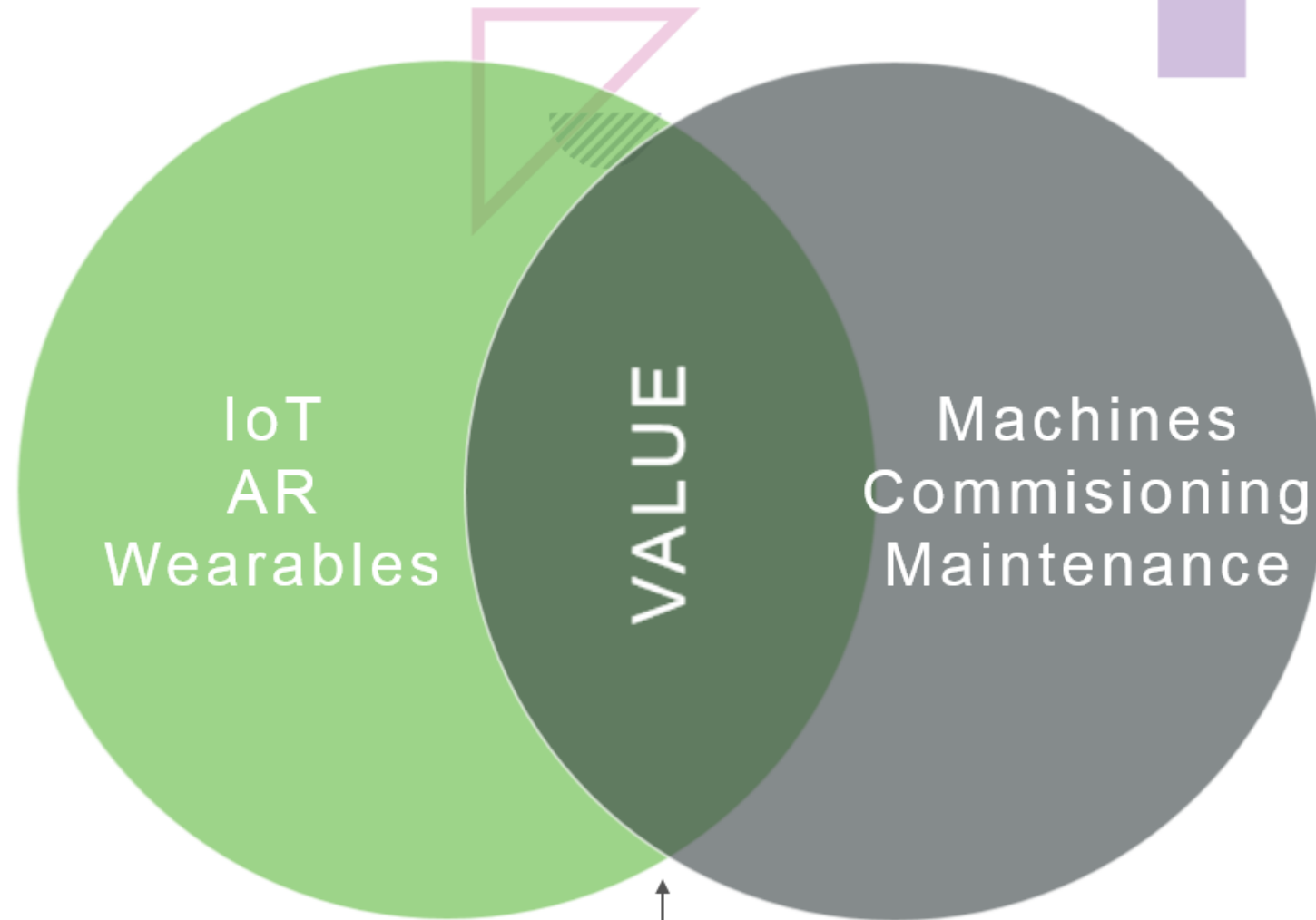


The way we do



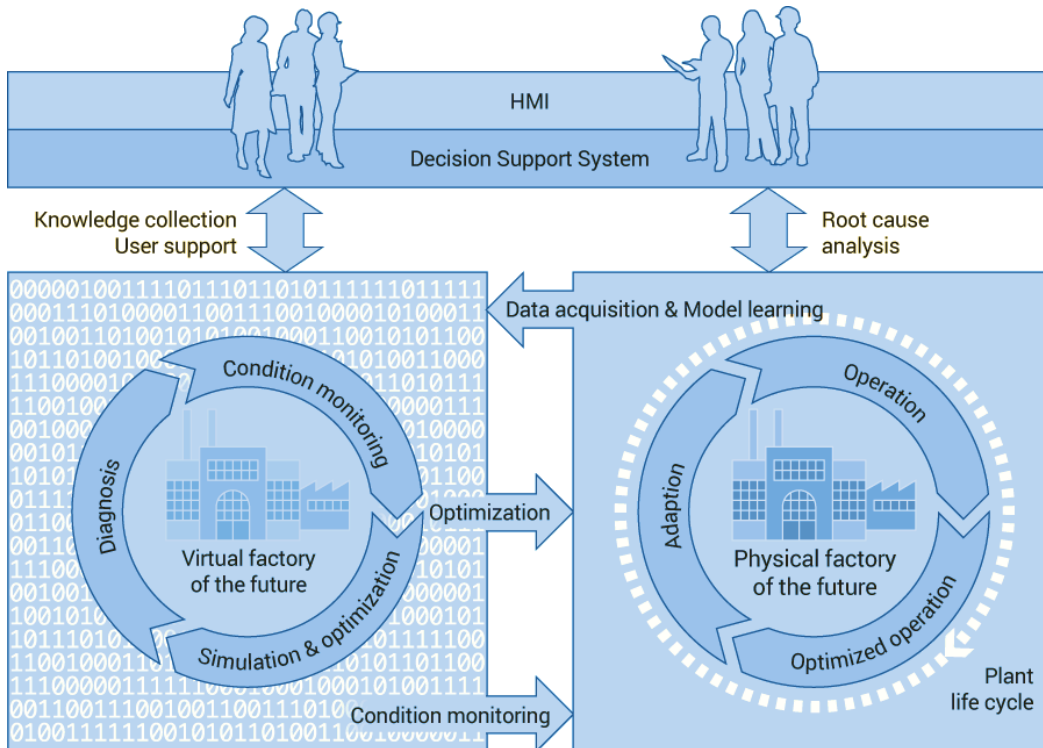


## Where IoT meets AR



AR strategy for differentiating  
After-Sales Support

# Where IoT meets AR – IMPROVE project



**Cyber-physical systems:** rapid communication and feedback control of physical processes through intelligence mechanisms

**Cyber replication of physical factory** greatly extends manual capabilities for tasks such as optimization, simulation, condition monitoring and diagnosis.

**Continuous verification** of results and self-learning mechanisms – autonomous adaption to real-life process requirements



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 678867.

# Where IoT meets AR – IMPROVE project

## ASSISTED OCME

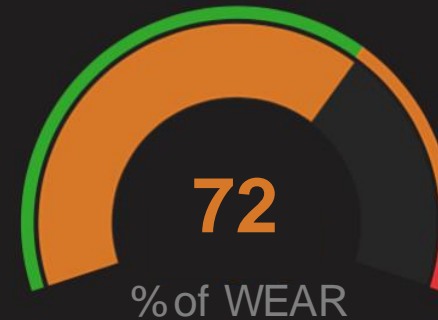
Cutting blade; S/N:1400300A01

**ocme**  
MOVING IDEAS



## KPI Panel

Cutting blade; S/N:1400300A01



SUBSTITUTE IN

150 hours

Play procedure

Worked hours

2160



\_experience digital transition!





Demo

# Create Project

Project Name

A

**Assited Reality**

**AssistedRealityExperience**

http://ar.tt.com.pl:2019



Project Type



Mobile



Eyewear



HMT

Initial View



AR



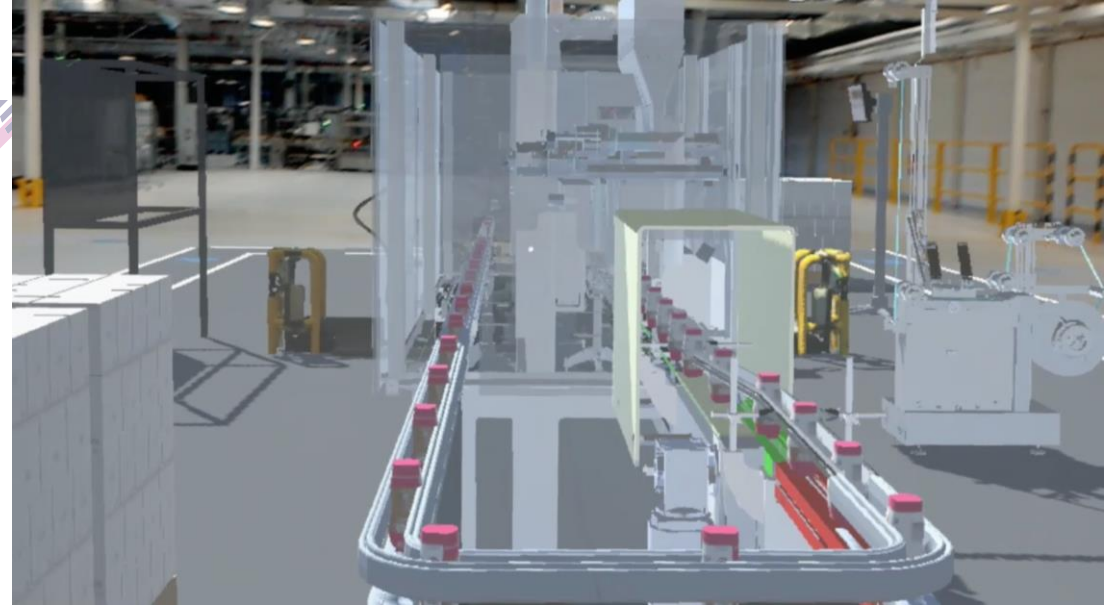
2D

Create

Cancel



# Manufacturing Space Design



**GOAL:** Scan the manufacturing area to make measurements, arrange the space with machinery, design installations, check the ergonomics, visualize hidden installations, create procedures

**MECHANISM:** Plant designers or facility layout planner wear head mounted displays can analyze the current status of facilities by registering positions of equipment/installations, generated with CAD models and explore optimal spatial layouts options for manufacturing and production



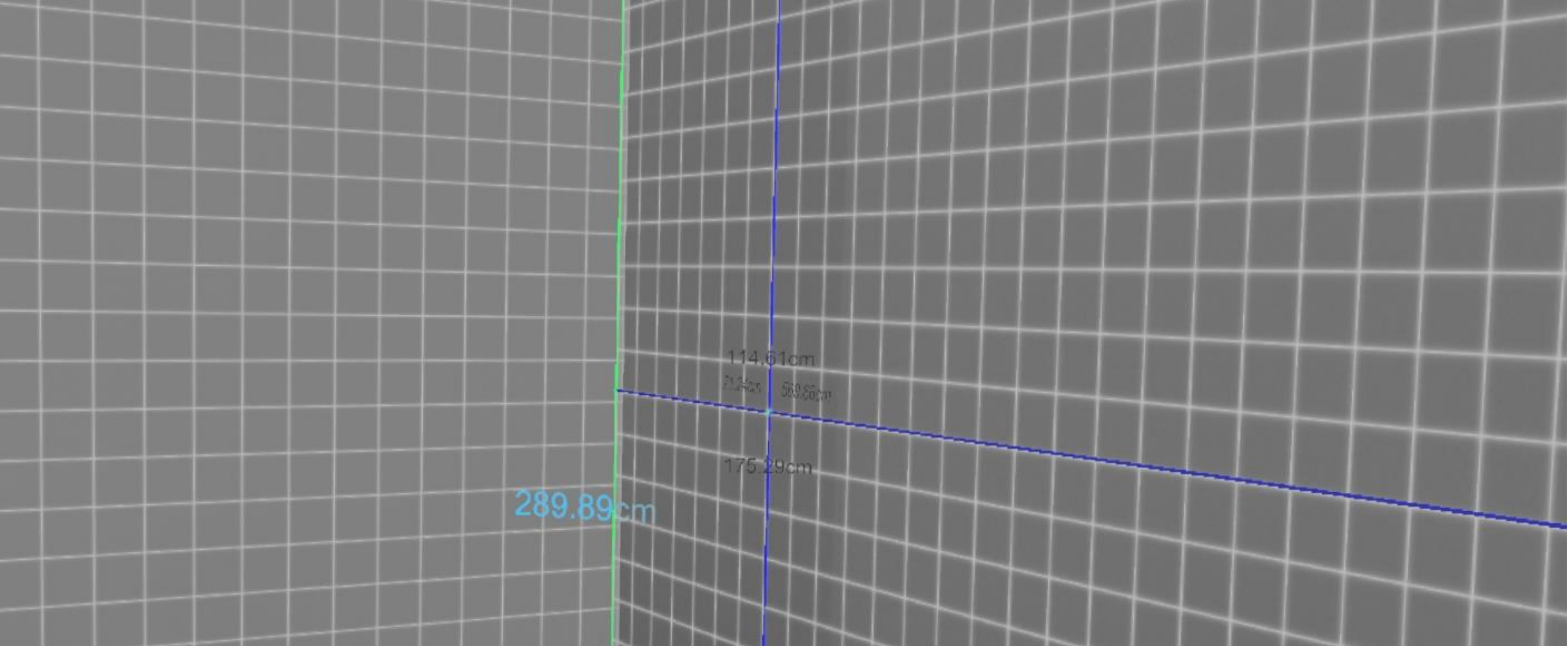


**DATA SOURCE:** area scanning





**CONTEXTUALIZE:** recognize surfaces



**CONTEXTUALIZE:** Capture 1:1 measures



**CONTEXTUALIZE:** manual 1:1 measures

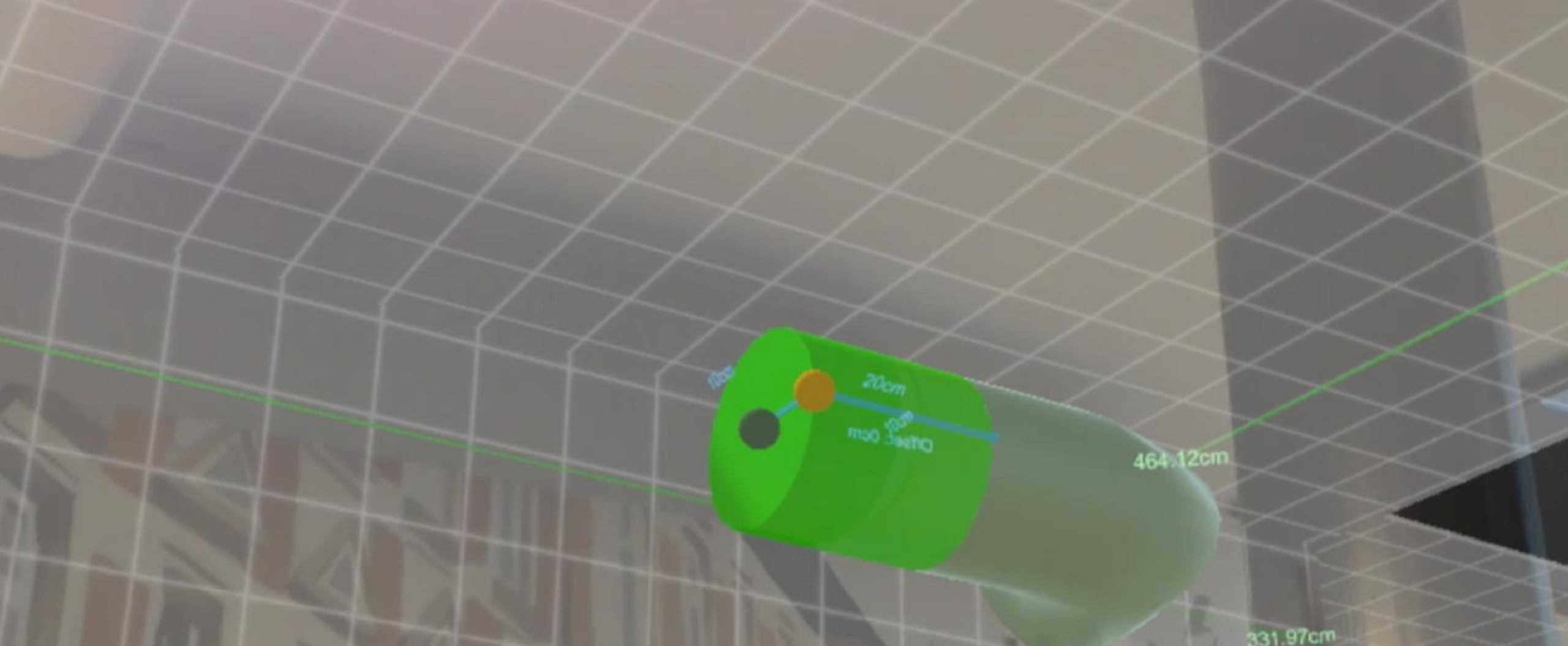




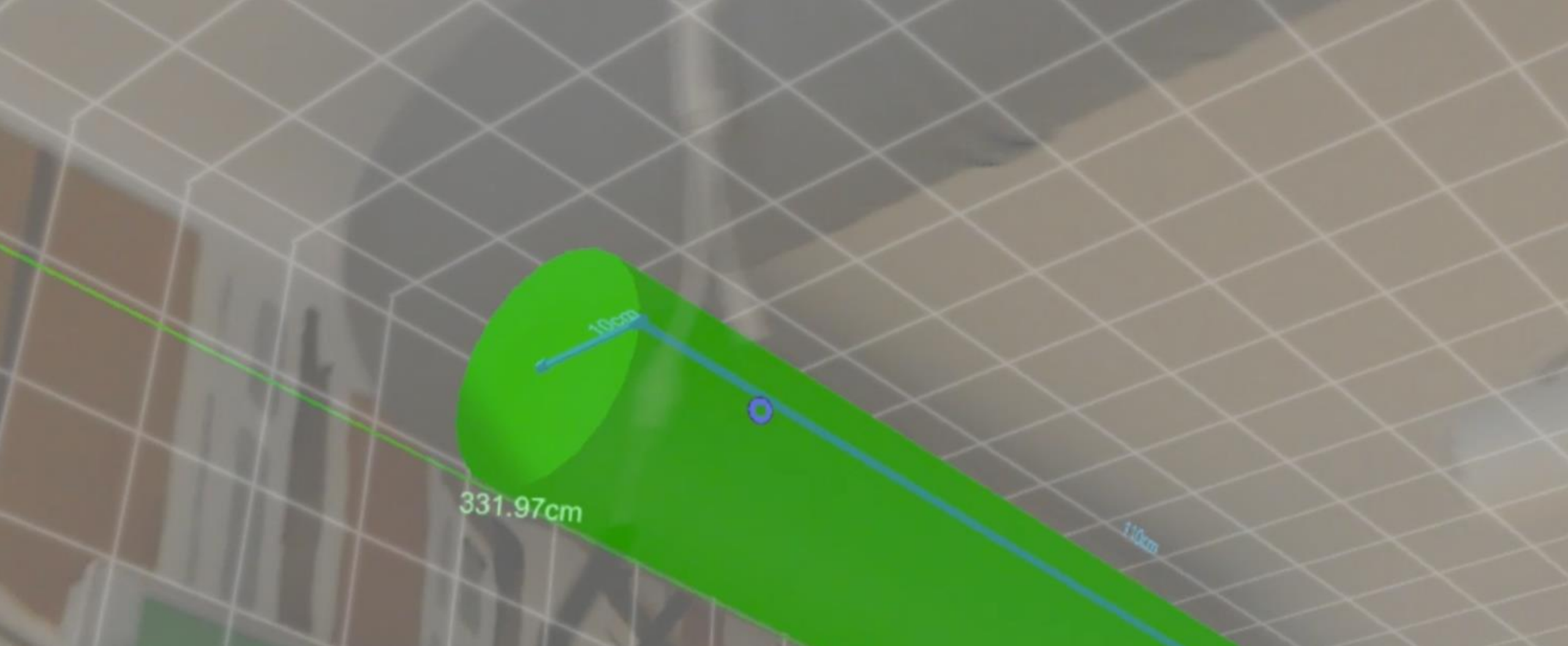
12.18cm  
671.97cm 284.21cm  
71.97cm  
252.18cm

The image shows a 3D wireframe model of a room. A green laser point is positioned in the center of the room, with a small blue circle around it. Several green lines extend from this point to different parts of the room, representing virtual rangefinders. The lines are labeled with distance measurements in centimeters: 12.18cm, 671.97cm, 284.21cm, 71.97cm, and 252.18cm. The room's structure is visible as a grid of lines, and a portion of a desk or table is visible on the right side.

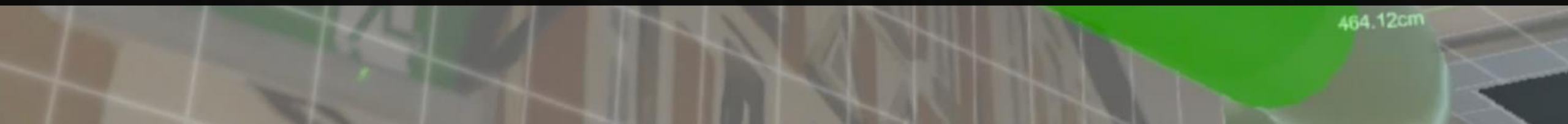
**CONTEXTUALIZE:** virtual rangefinders



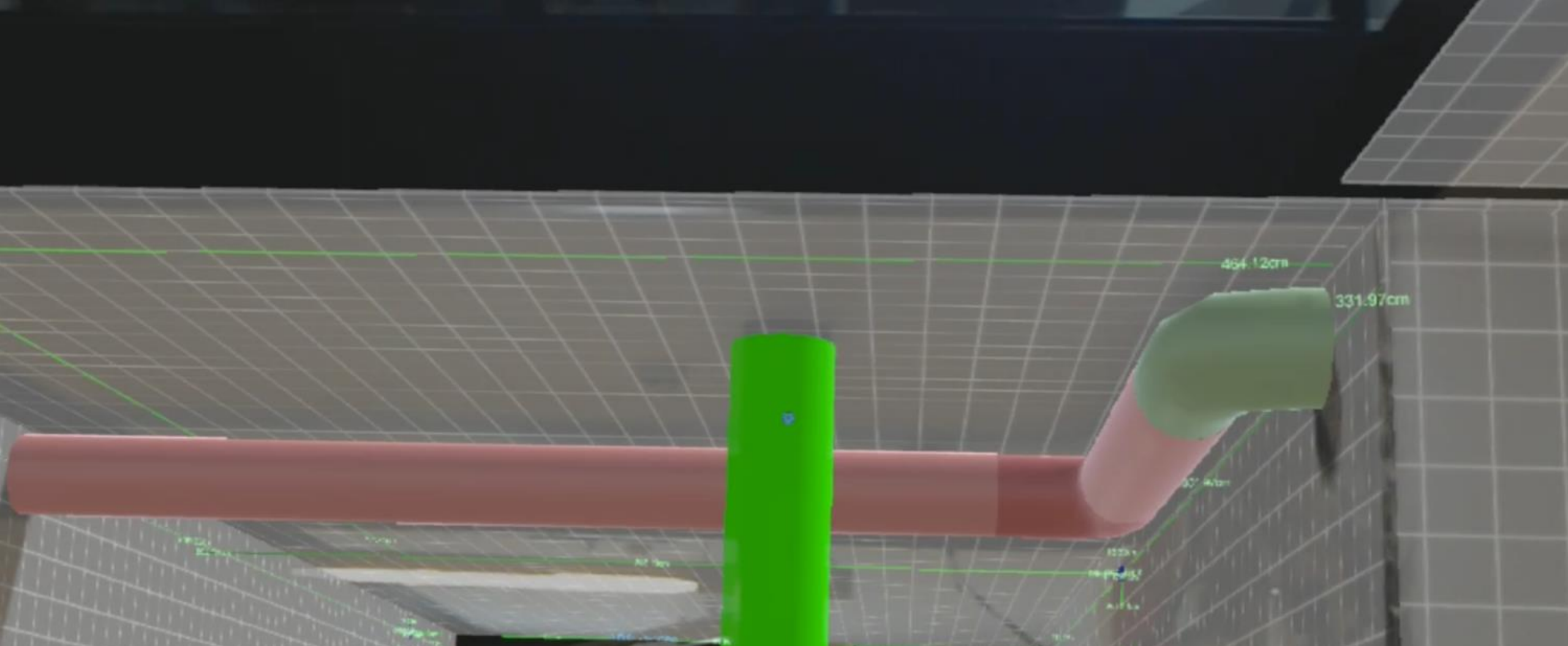
**ENGAGE USERS:** AR-assisted modelling



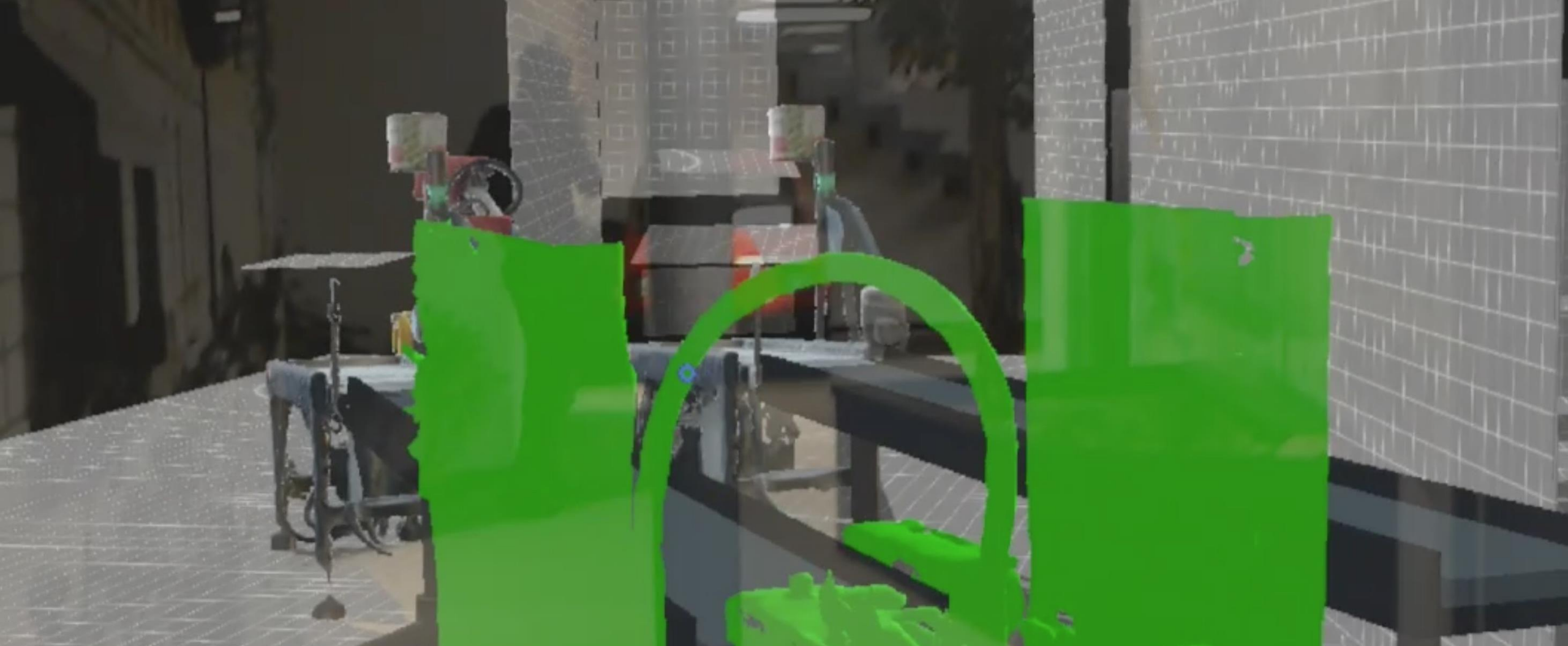
**ENGAGE USERS:** AR-assisted modelling







**ENGAGE USERS:** AR-assisted modelling



**MFG Space Design: AR-assisted layouting**



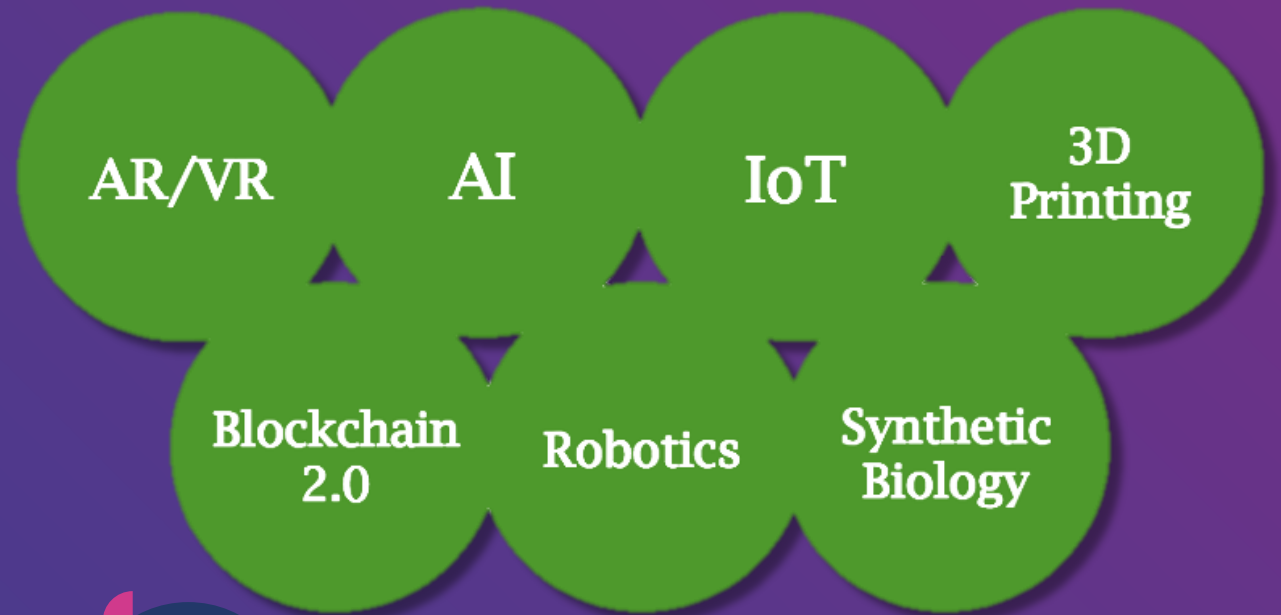


**TRANSITION**  
TECHNOLOGIES

# FUTURE?



Platforms and network effects





Thank you

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