Adaptive Automation in Assembly
For BLUE collar workers satisfaction in Evolvable context

A4BLUE

SAE INTERNATIONAL

AEROSPACE SYSTEMS AND TECHNOLOGY CONFERENCE

AR/VR Airbus uses case

This project has received funding from European Union´s Horizon 2020 research and innovation programme under grant agreement nº 723828

A4BLUE

Presented by

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AIRBUS Commercial Aircraft

Information Management

AR/VR architect & digitalisation

1. A4BLUE project
2. AR Airbus use case
3. AR, VR feedback overview

project

The A4Blue...

AIRBUS

... workpackage is **lead** *by...*

Laure PARIGOT

Contributor to ...

... as **MR expert**

START

2017

illogic

ENGINEERING

KOMAT
INGENIERIA Y SERVICIOS DE AUTOMATIZACION Y ROBOTICA

CiaoTech

AIRBUS

RWTH AACHEN UNIVERSITY

Cranfield UNIVERSITY

IK4 TEKNIKER
Research Alliance

CESA
COMPAÑIA ESPAÑOLA DE SISTEMAS AERONAUTICOS S.A.

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MANUFACTURING INDUSTRY

BLUE COLLARS

EVALUATE

DEVELOP

new generation of

Sustainable

Adaptive manufacturing **workplaces**

dealing with

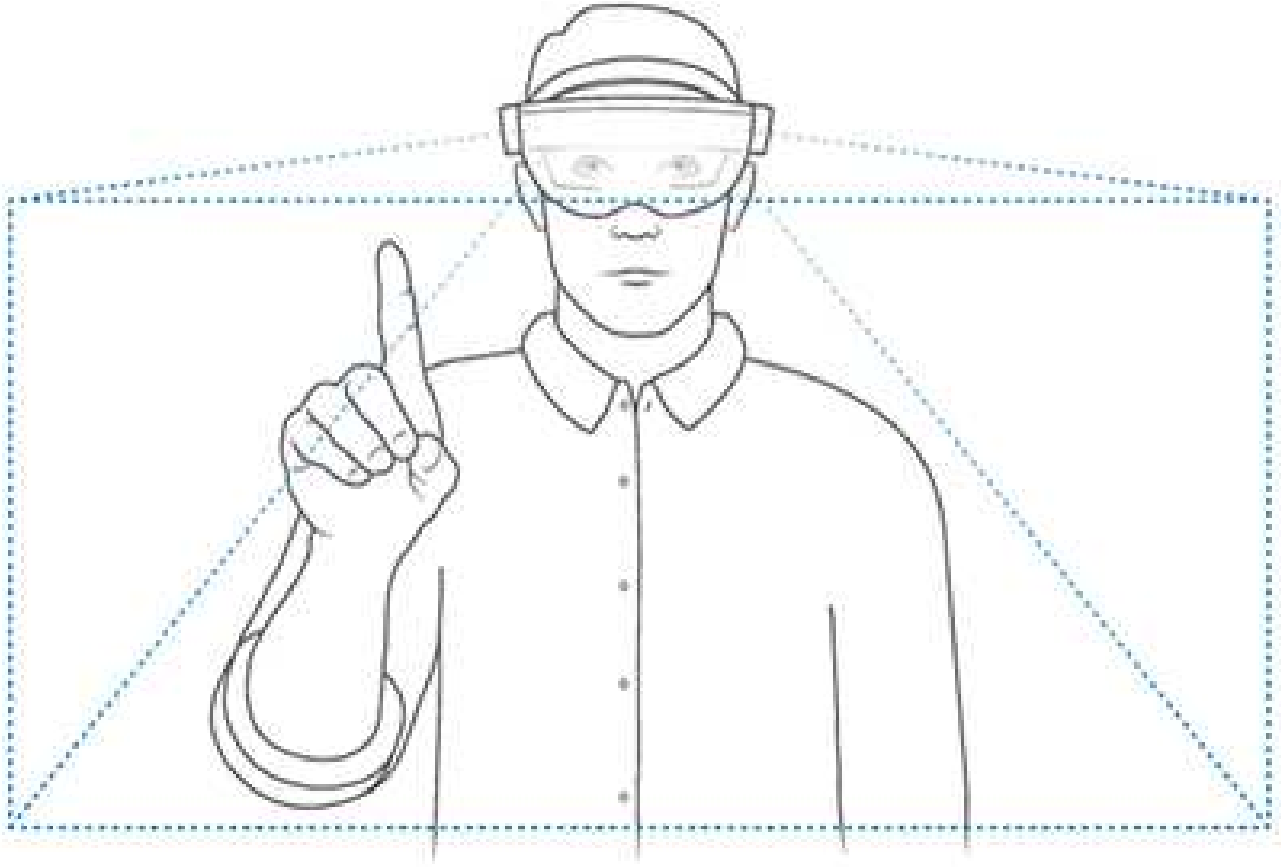
evolving manufacturing

requirements

A4BLUE

INTRODUCING

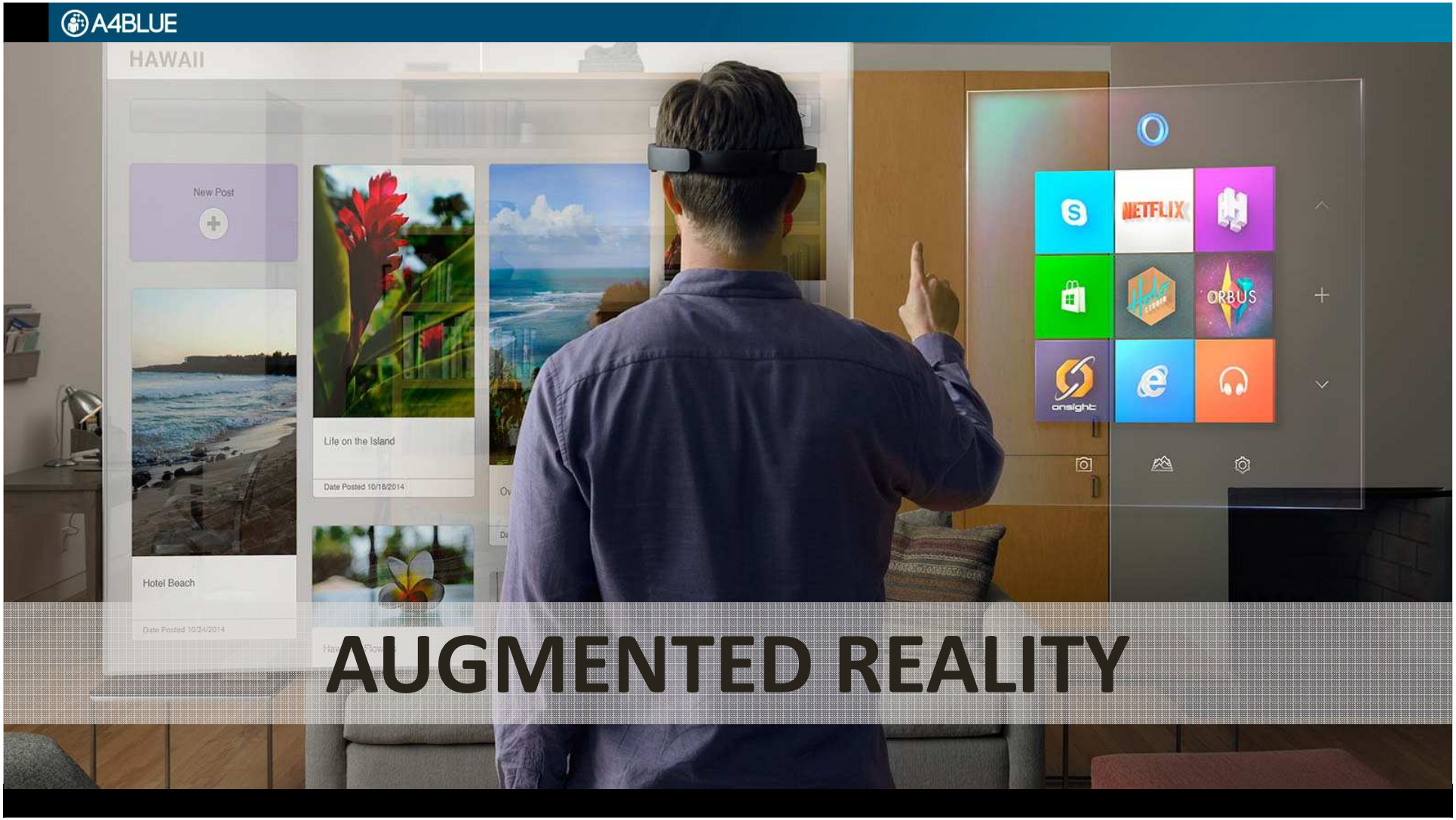
AUTOMATION MECANISMS



Interaction
human worker

Optimising
human variability

TECHnologies


A4BLUE
HAWAII
New Post
Life on the Island
Date Posted 10/18/2014
Hotel Beach
Date Posted 10/24/2014
NETFLIX
ORBUS
onsight
AUGMENTED REALITY

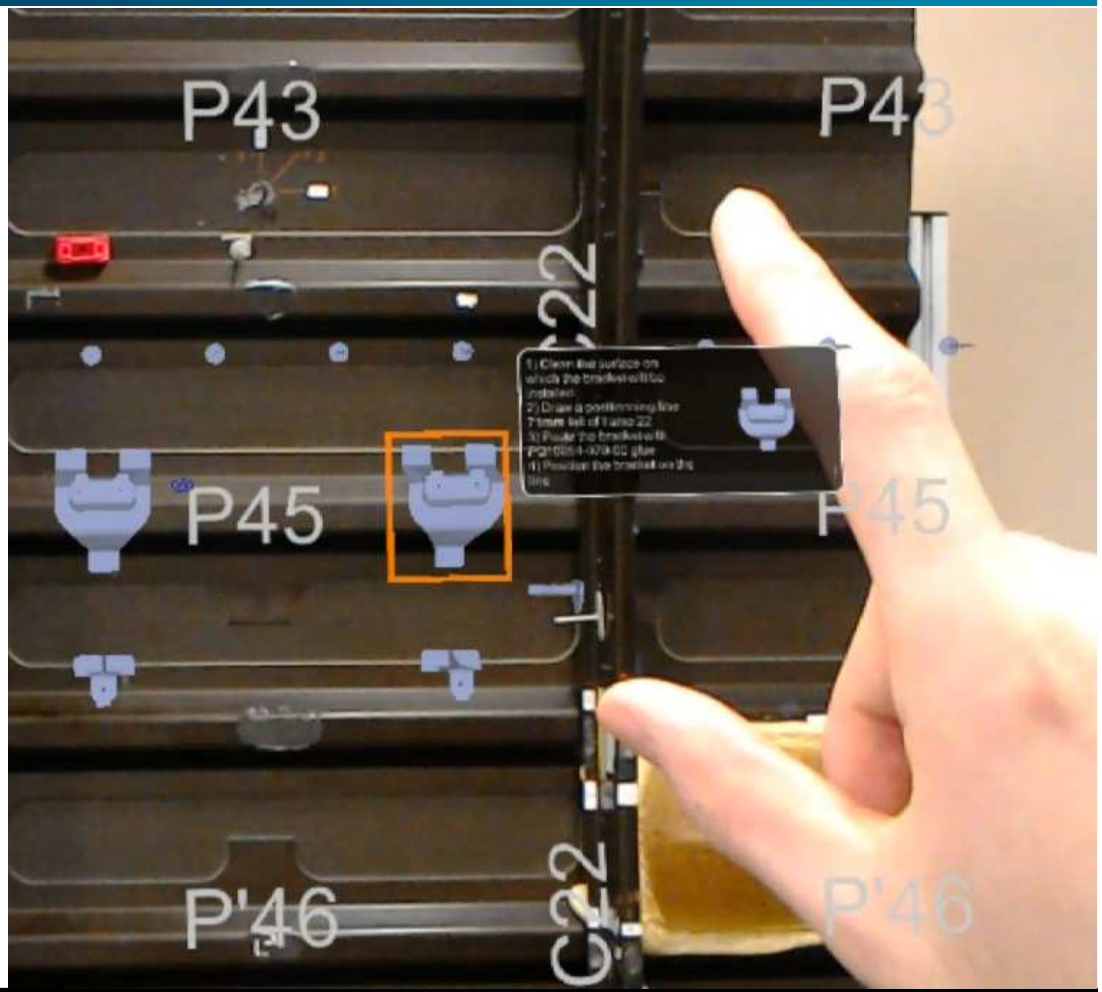
Experiment with AR

in an **industrial**

context

to **guide operators**

during assembly.



SmartTool

&

robot

connected

to a

framework

A4BLUE framework is

Adaptive **framework**

Interaction:

- manufacturing systems
- automation mechanisms
- people
- process
- instructions
- tooling, …

A4BLUE framework is

Based on **Semantic** model

&

OPC-UA standard

A4BLUE

Framework for a new agile **platform**

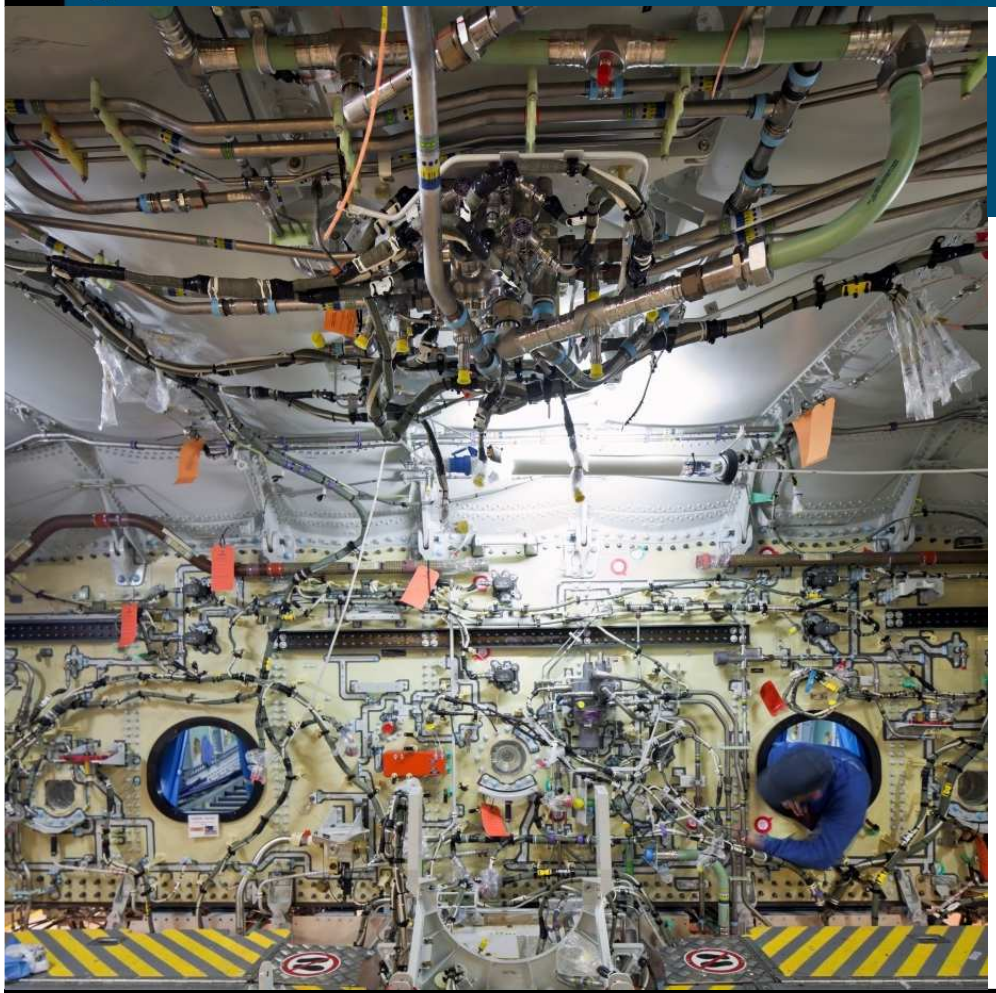
2

AR

AIRBUS

use case

A4BLUE



TOPIC

HYDRAULIC

ASSEMBLY

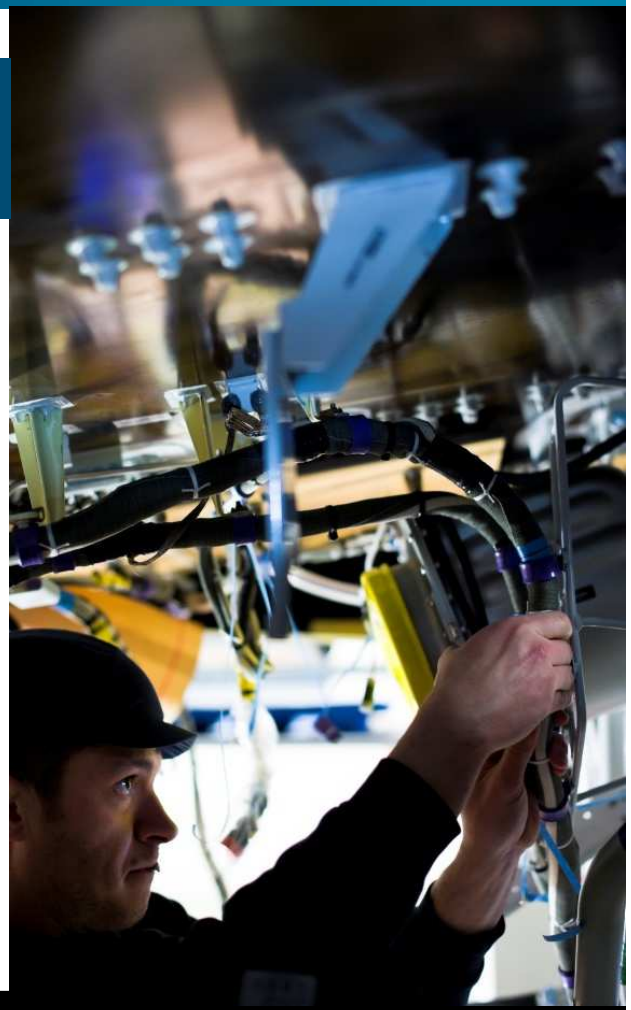
A4BLUE

AUTOMATION

x2 TORQUING

with

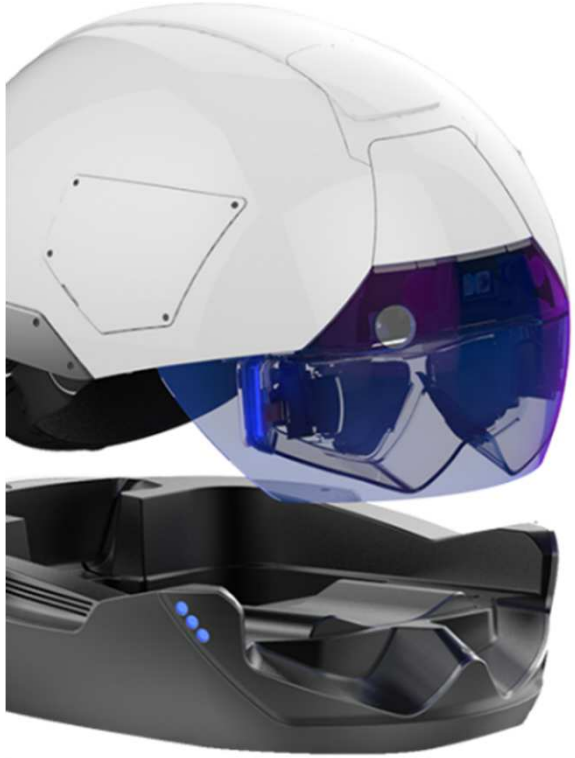
DYNASAM 4.0



DYNASAM 4.0®

AIRBUS

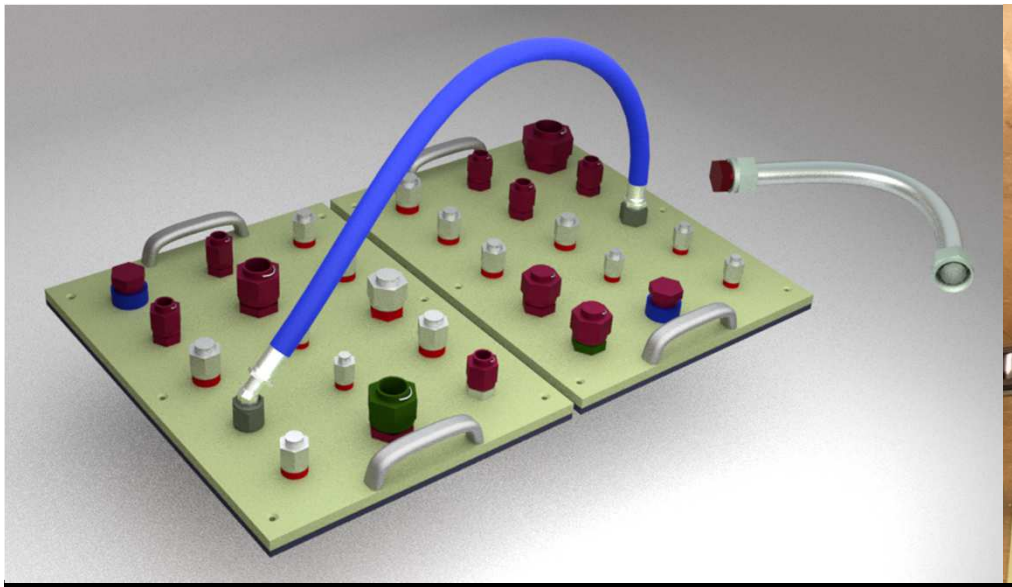
A.R.



HANDS FREE

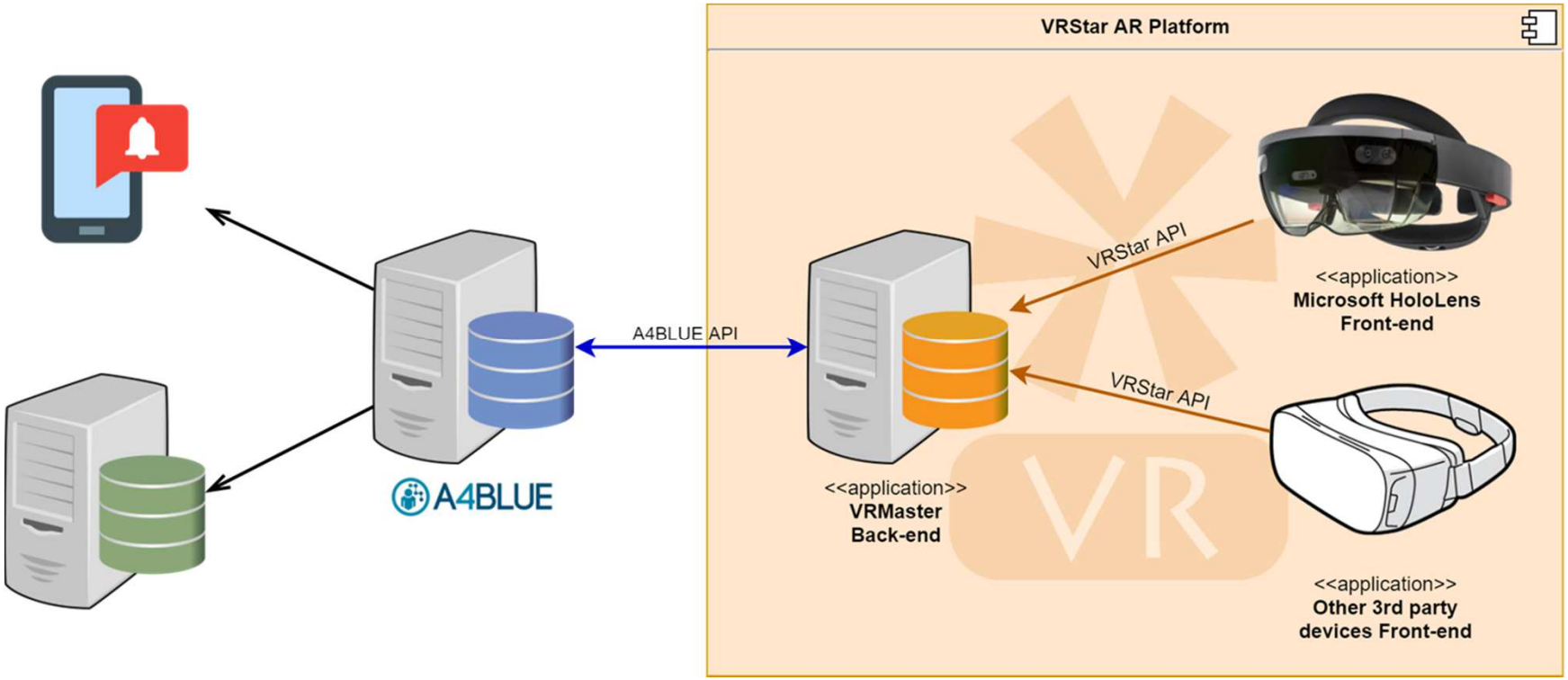
A.R. HEADSET

A mobile customisable tool to test AR & Smart tools



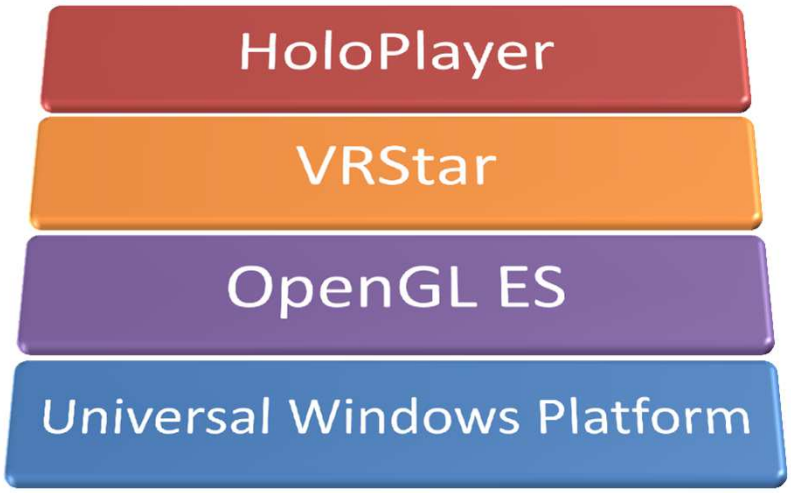

illogic

PLATFORM ARCHITECTURE



Source: «Illogic

FRONT-END TECHNOLOGY STACK



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AR & VR Feedback overview

STRATEGY

Make *or buy*

Integration, *Development*

PLM *suite target?*

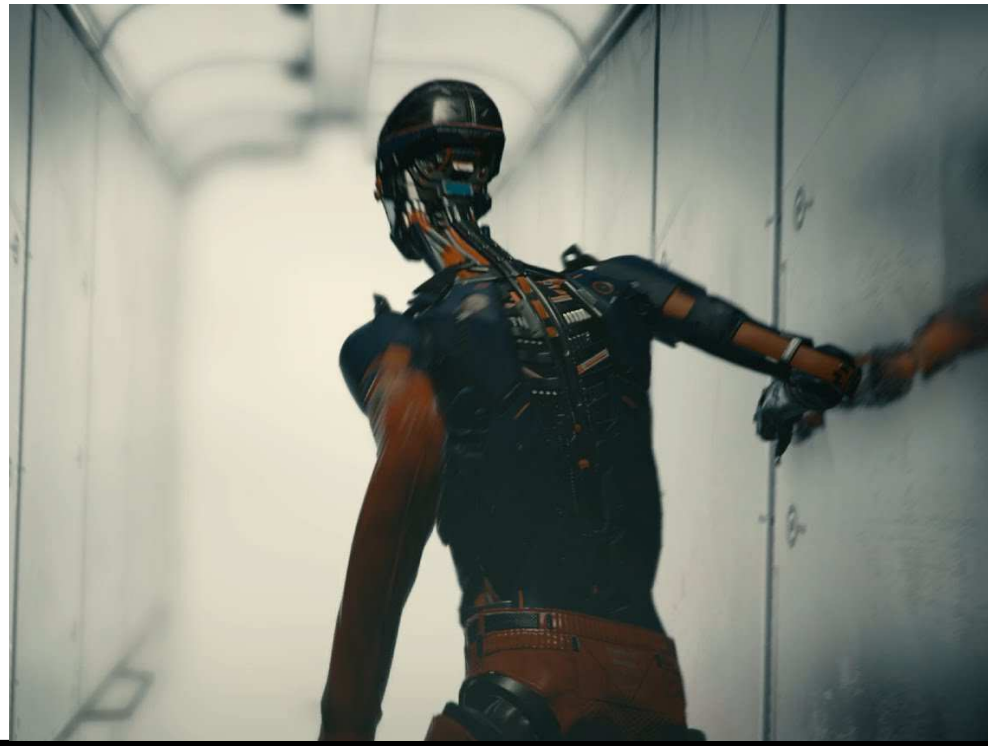
Access *to data?*

ENTERTAINMENT REPUTATION

*« **Are you** serious ? »*

Mass market *to industry*

Find & define **uses cases**



HARDWARE MATURITY

FOV *(Target > 220°)*

Pixel/Deg *(Target > 30°)*

Depth of field

CPU/GPU

Plug & **Play**

Industrials norms

Autonomy *(uses case ?)*

Dock & **Mobile front screen**

Resistance & **protections** *(sound, shock, …)*

Weight *(Target <300g on a head)* & **comfort**

CODING

UI *Interaction*

SDK *maturity*

OS harmonisation

Shape recognition *(3D shall not be always on top)*

FORMAT

Brep / **Tesselate** *(.FBX /STEP242/GLTF2)*

Repository **duplication**

Pipeline *conversion*

Meta data *encapsulation*

TRACKING MATURITY

Tracking accuracy *(Target: <1 mm)*

Initialisation process *(3D on reality)*

Marker less *&* **geolocalisation**

Impact on **manufacturing preparation?**

Tracking of the **smart tool**

NETWORK

Network *discrepencies*

Wireless reliability

Device **Management**

LDAP

IoT

IoT *agregator*

PLM *connector*

SmartTool *connector*

HARDWARE DISTRIBUTION

PC *like*

Smartphone *like*

Shoop floor **tool** *like*

…

Healt & Privacy

Wireless, …

Privacy & **IP**

Operator **performance**


THANK YOU
is providing Virtual Reality
AIRBUS