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
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
The A4Blue... AIRBUS... workpackage is lead by...

Laure PARIGOT
Contributor to ...

... as MR expert
START

2017
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EVALUATE

DEVELOP
new generation of Sustainable Adaptive manufacturing workplaces
dealing with evolving manufacturing requirements
INTRODUCING AUTOMATION MECANISMS
Interaction
human worker

Optimising
human variability
AUGMENTED REALITY
Experiment with AR in an **industrial** context to **guide operators** during assembly.
SmartTool & robot connected to a framework
Adaptive **framework** Interaction:

- manufacturing systems automation mechanisms
- people
- process instructions
- tooling, ...
Based on *Semantic* model & OPC-UA standard
Framework for a new agile platform
AUTOMATION

x2 TORQUING

with

DYNA SAM 4.0
DYNASAM 4.0®

- **Serrage maîtrisé**
  Grâce à la grande cassure de 15°.

- **Contrôle continu**
  De toutes les opérations de serrage en temps réel.

- **Précision**
  Mesure indépendante de la position de la main.

- **Compatibilité**
  Avec tous les embouts dynamométrieurs 9x12 mm.

- **Fonctionnalités**
  Gestion des gammes de serrage, Compensation des longueurs d’embouts.

AIRBUS
A.R.

HANDS FREE

A.R. HEADSET
A mobile customisable tool to test AR & Smart tools
PLATFORM ARCHITECTURE
FRONT-END TECHNOLOGY STACK

- HoloPlayer
- VRStar
- OpenGL ES
- Universal Windows Platform

Source: Illogic
AR & VR Feedback overview
STRATEGY

Make or buy

Integration, Development

PLM suite target?

Access to data?
« 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*
UI Interaction

SDK maturity

OS harmonisation

Shape recognition (3D shall not be always on top)
Brep / Tesselate (.FBX/STEP242/GLTF2)

Repository *duplication*

Pipeline *conversion*

Meta data *encapsulation*
Tracking accuracy *(Target: <1 mm)*

Initialisation process *(3D on reality)*

Marker less & geolocalisation

*Impact on manufacturing preparation?*

*Tracking of the smart tool*
NETWORK

Network discrepancies

Wireless reliability

Device Management

LDAP
IoT aggregator

PLM connector

SmartTool connector
HARDWARE DISTRIBUTION

PC like

Smartphone like

Shoop floor tool like

...

Healt & Privacy

Wireless, ...

Privacy & IP

Operator performance