Airbus Digital Incubator

- Big Data & Advanced Analytics
- ALM & 3D Printing
- Mobility
- Cloud Services
- Mixed Reality
- Internet of Things
- Robotics & Drones
- Artificial Intelligence
The Virtuality Continuum

- **Virtual Reality**: Digital environment
- **Augmented Reality**: Digital information added to the real world
- **Augmented Virtuality**: Real information added to a digital environment
- **Virtual Reality**: Digital environment

Mixed Reality
4th Digital Revolution

80's
- Personal Computing

90's
- Internet

2000's
- Mobility

2010's
- Mixed Reality

Companies:
- Apple
- IBM
- AMIGA
- COMPAQ
- MICROSOFT
- Dell
- HP
- eBay
- Yahoo!
- Google
- Amazon
- NOKIA
- BlackBerry
- Samsung
- Meta
- HTC
- Sony
- Magic Leap
- Uber
- Spotify
- Vuforia
- ODG
- Valve
- Airbus
Why now?

Massive investment and competence acquisition

Everybody has a supercomputer

Mature capture, mapping and tracking technology

Accessible standards and tools to develop

User centric devices enabling long uses
MR Software Application 2020

Total $45b

Enterprise & Public Sector $20.7b
Healthcare
Engineering
Real estate
Retail
Military
Education

Consumer $24.3b
Videogames
Live events
Video entertainment

$6,6b
$6b
$3.3b
$2b
$1.8b
$1.8b
$0.9b
$4.1b
$5.3b
$14.9b
$24.3b
Next Technical Step ...

2015

- Spatial Understanding
- User tracking
- 3D display
- Room recognition

2025

- Context Understanding
- Eyes tracking
- High fidelity natural display
- Object Recognition
2018 is the new 2007. When Steve Jobs presented the iPhone in 2007, a lot of people in large corporations thought that apps were for gaming so they didn’t have to care about them. Consequently, they failed to do any proof of concepts to try to learn what this new technology could do for them. Several years later, these businesses realized they were wrong and started — but by then mobility wasn’t a competitive advantage, it was a matter of survival.

Today many people view VR/AR technologies the same way, pushing it off as just for gaming and not a concern for the enterprise. But the signs are telling us we are at the same stage with AR and VR today that we were in 2007 with mobility. Now is the moment to decide if you want to invest and be prepared when VR/AR becomes a competitive advantage, or wait until everyone else is using it.

Manel Martorana
Digital experience Director at Everis
Experiences rather than technologies

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Objectives & Timescale

2016
DEMONSTRATE TECHNOLOGY VALUE
- Validate a global approach and synchronize all stakeholders
- Launch first pilot projects and partnerships, demonstrating technology added value
- Deploy sandboxes to develop and spread the technology inside the business

2017
PREPARE AND DRIVE VALUE EXTRACTION
- Deliver partnerships and industrial-grade standalone prototypes to businesses through booster projects
- Create transversal guidelines and processes to convert blockers into enablers, and consolidate the Airbus implementation politic
- Ruggedize and organize the Airbus MR network, beyond the holographic academy, and build a bottom-up portfolio of company use cases

2018
MAKE MR AN INDUSTRIAL COMMODITY
- Boost through framework, products and partnerships
- Scale up thanks to the implementation framework
- Ruggedize the community and secure strategic capabilities
- Open business perspective with customers.
Strategy

#1 – Booster projects

#2 – Implementation Framework

#3 – Tech Lab Network
Booster Projects

Boost Airbus learning curve and capture technology, experience and knowledge with world class partner.

2016

Microsoft

Lexington
Microsoft HoloLens Early Access Program
Manufacturing / Operation

2017

Singularity University

Sequoia
Envisioning future of learning in Airbus
Learning / Human Resources

MR-Trainer
Airline Training System
Training / Support & Services
Implementation Framework

Define an environment to transform prototype into industrial product & standard

- Technology investigation & benchmarking
- Health & Safety
- Procurement model
- Development capitalization
- Use cases mapping
- IT & Cyber security
- Community
- Implementation partners
Set up a lab network in the Airbus sites to make the link between business and technology.
Use Cases & Portfolio

**Intelligence**
- Generic map based application for defence.

**Manufacturing**
- Hand free and context aware work order in augmented reality.

**Marketing**
- Aircraft cabin or cargo layout configurator

**Engineering**
- Mixed Reality application for design review & process simulation

**Customer Services**
- Virtual & Augmented reality Air Crew training system

**Quality**
- Automatized quality inspection in augmented reality

**Human Resources**
- Next generation learning system using augmented reality

**Maintenance**
- Remote assistance

**Program**
- 7%

**Program Support**
- 6%

**Production**
- 46%

**Marketing**
- 6%

**Engineering**
- 17%

**Customer Services**
- 15%
This prototype developed with Microsoft is an optimized HoloLens-based application enabling to author and replay sequential instruction set, on the fly, based on world locked 3D content, without the need of DMU. It has been significantly upgraded in 2017 to fit business needs. Today, the number of possibilities has been increased, adding to the initial documentation capabilities (text, photo, video, sound, icon and 3D curve) new kind of digital objects: 3D objects (link or not to the DMU), PDF and feedback. The application also supports multi-user experience for collaborative work, includes a simpler and more accurate initialization system, and a module to edit sequences created on the fly on a standard computer workstation. In addition, the user can now provide his feedback (free text or photo) during the instruction set execution.
MiRA is an augmented reality technology and platform developed by Airbus Group Innovation targeting to:

- reduce inspection time of the thousands of hydraulics and harnesses brackets of Airbus A/C
- allow the creation of Non Conformity (NC) fully automated in SAP based on 3D data
- enable traceability and data collection about most problematic parts (and fix the true source of the issue at design level)
- support of the installation of A/C system for Flight Test Installation

Results of the initial system are significant with regards to costs and delays reduction for events linked to quality NC. For instance, the inspection time of the 70 000 A380 brackets has been downsized from 3 weeks to 3 days.
Fusion is a dynamic and interactive application that capitalizes on MR technology capabilities to enrich Airbus selling techniques and propose innovative demonstrations of cabins and their future developments to our customers. It is a collaborative application running on Microsoft HoloLens device, allowing to display virtual elements (seats, monuments, security equipment, screens) inside or outside an aircraft and customize them via a menu. It can be used to prototype, test, and compare virtual elements and configure cabin layouts. Several people can see the same scene at the same time, changes being synchronized between all users. This powerful marketing tool supports our sales and differentiates Airbus from the competitors as it strengthens Customer engagement and interactivity.
MR-Trainer

Customer Services
Mixed Reality Air Crew training system

Started in June 2016, it was delivered in October 2017 to the Airbus Training Center and Japan Airline. The system is one of the very first advanced training application worldwide to run on both augmented and virtual reality, based on the same development package.

The final app includes 2 different scenarios, which were selected by Airbus and JAL during various brainstorming session (envisioning workshop described in the 2016 document): Engine Run Up, Door Opening Sessions.

Since its delivery, the prototype has been used for testing purposes, demonstrating positive results; trainees using the system are more performant than the control group (no MR trainer). Numbers still need to be refined. The project complement and improve existing prototype developed on older technologies in AH and ADS.
Thank you !