Service Community Event

Real World Challenges of implementing Augmented Reality in Field Service

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Agenda

1. Introducing my-self
2. Augmented reality (AR) in few words
3. Project & Pilots
4. People & Technology challenges
5. Thoughts on future technology in Field Service

1. Introducing my-self

- Technical Support Manager (2014 – Fujifilm)
- Product Support Manager (2008 – Hewlett Packard)
- Product Leader on UV based printer (2006 – NUR Macroprinters)
- Field Engineer (2004 – NUR Macroprinters)
- Master degree in Mechanical Engineering (1997-2002, ULB)

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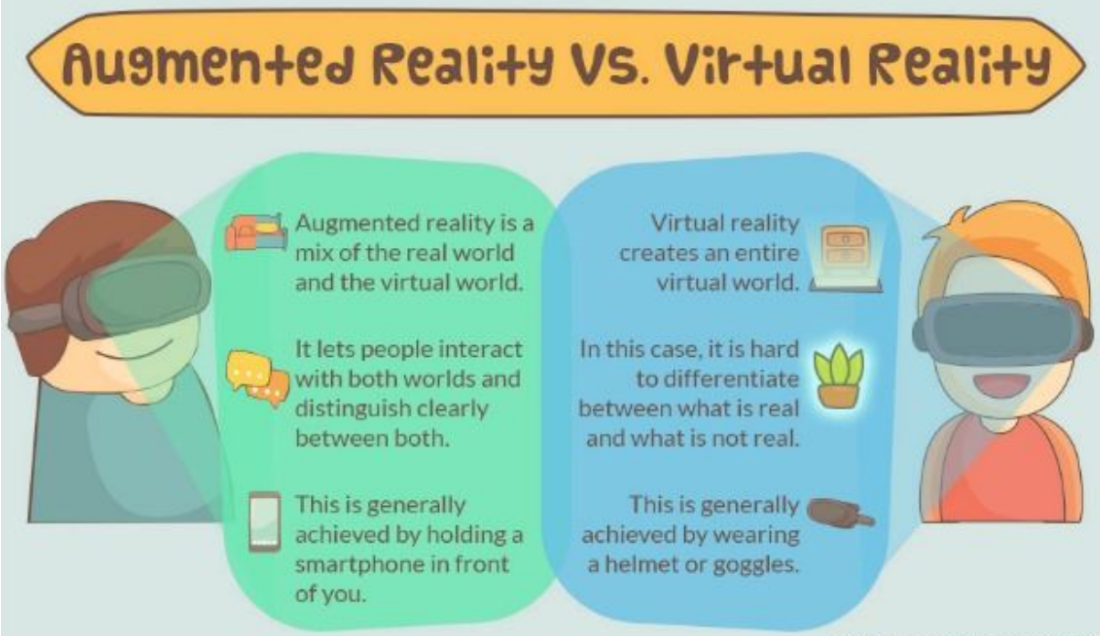
2. AUGMENTED REALITY IN FEW WORDS

Definition:

Augmented reality (AR) is defined as “the integration of digital information with the user’s environment in real time“

Example: Game Pokemon Go → Chasing Pokemon everywhere in the world



AR Applications:

- Military (navigation)
- Museum
- Gaming
- Shops (Clothing, IKEA,…)
- **Customer Service**

2. AUGMENTED REALITY IN FEW WORDS

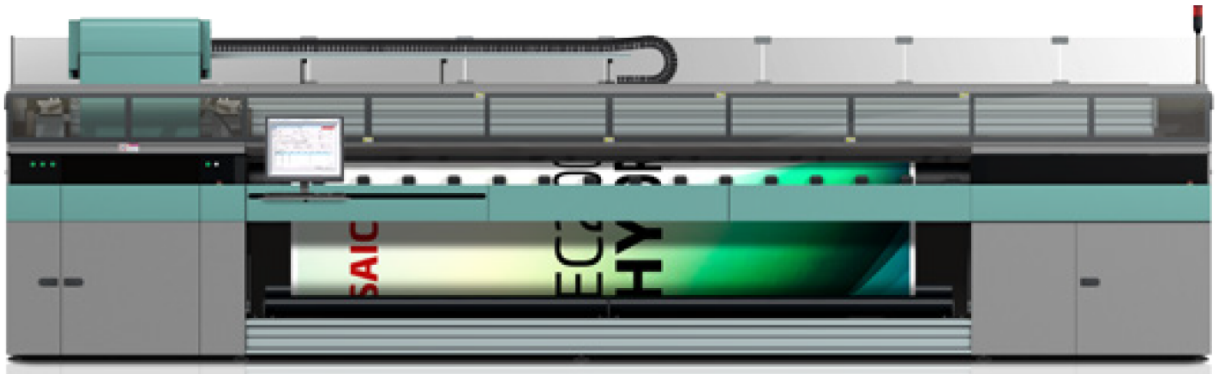
Video:

Double click

3. Project & Pilots

Overview

Printing industry (Wide Format Printers- Flat Bed or Roll to roll units)
300 field engineers in EMEA
Relatively complex products



3. Project & Pilots

Objectives	Constraints
Being the first in the industry Innovative Increase our customer service • Customer experience • Remote support efficiency • Sales argument • Overall P&L	Mentalities (excitement & negativity) Chemicals

Highlights

- Epson glasses (Moverio BT200)
- Pilot in France and UK
- Pilot duration: 4 months in each country
- Project cost: 8.000€
- Increase first time fix ratio and decrease MTTR
- Avoid expenses caused by unnecessary visits

3. Project & Pilots

- **1st Pilot in France**
  - 5 licences
  - 2 sets of **Epson smart glasses** to French field engineers
  - 1 set to 2nd Line Support (Product Experts)

Outcome and feedback	Limitations
• Intuitive interface • Confortable • Ability to open Technical notes, take pictures and send them by email: All controlled with the eyes • Both hands are free	• Can't zoom on specific area's • Difficult to use in a very bright environment • Limited time of use (digital fatigue) • 1 set of smartglasses per engineer? (cost 700€), shipment to manage and additional tool to carry • **Most critical**: On site connectivity

3. Project & Pilots

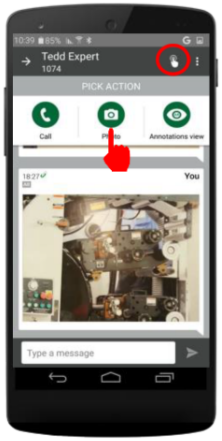
On site connectivity

- **Test 1** – Sharing Wifi with Iphone: Video transmission issue, bad sound
- **Test 2** – Same config as Test 1 + phone call: Not sharing Wifi once we accept the call
- **Test 3** – Internal Wifi & phone call: Best configuration but need to overcome the **firewall!**

→ **Stopped using the smartglasses and moved to the next trial with an App**

→ **2nd Pilot in UK: Smart Application for Smartphone**

- 7 engineers in May 2017
- Same capabilities as the smart glasses except the free hands…



Action Menu:

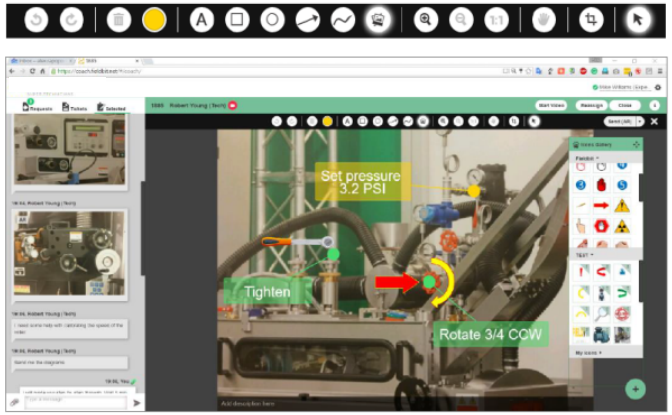
Annotations view – Transmit live video and display Augmented Reality annotations

Photo - Take and send still pictures. Activates the standard iOS/Android camera dialog

Call – Place a regular phone call (telephone number should be defined for the user)

3. Project & Pilots

Augmented Reality Annotations Editor



- Zoom and Crop tools
- Text, shapes, colors and free-hand tools
- Drag & drop clipart gallery
- Sequence of annotations
- Import JPG and PNG from a file or clipboard

Powerful editor for building augmented reality annotations online

AR Annotations Sequence

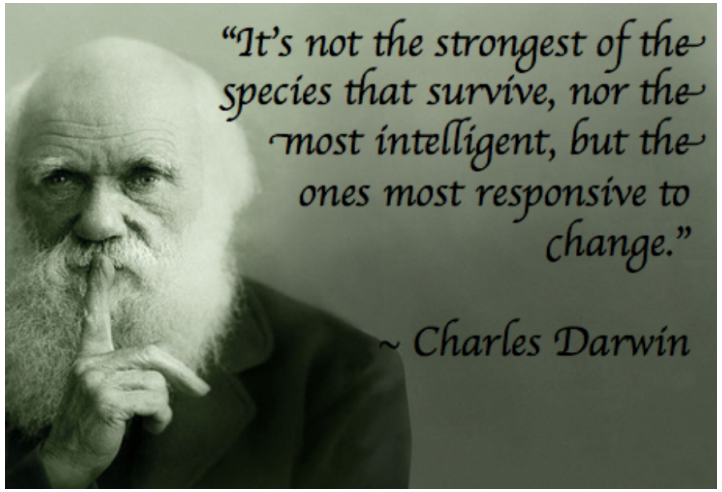
- Expert can design a sequence of step-by-step AR instructions
- Step-by-step AR is displayed on smartphone or smartglasses
- Can be used off-line

3. Project & Pilots

2nd Pilot in UK: **Smart Application for Smartphone**

Benefits	Limitations
• Everyone has a smartphone (no shipment & cost savings) • Same capabilities as smartphones: Technical annotations, AR, pictures and movies but hands are not free • Secured chat with experts • Data security (unlike Whatsapp,…) • Capture knowledge and share • Create complete on site repair video • Unlimited time of use (unlike smart glasses)	• Phone batteries do not last long • Need high speed connection (3G, 4G) • Phone calls more efficient and quicker • Firewalls not allowed

4. People & Technology challenges

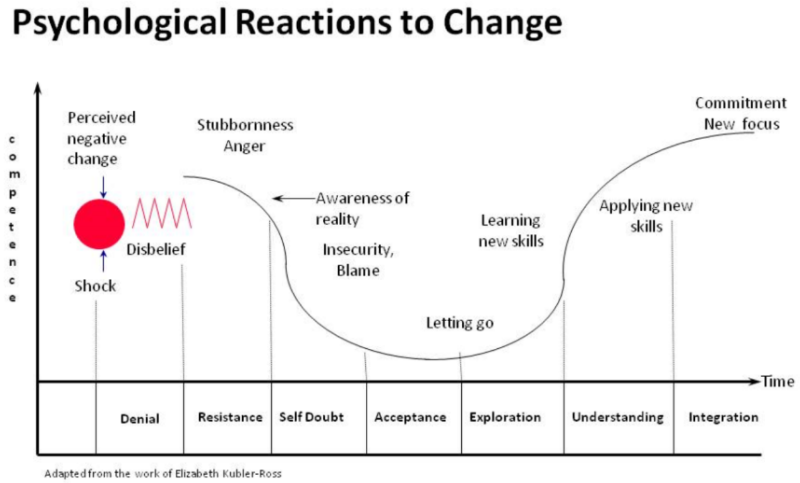


Key elements: **Mentalities & Open mindset**

Resistance to changes

- Misunderstanding about the need for change
- Fear for the unknown
- Connected to the old way/routines
- Low trust

→ Can lead to: **Inertia, Arguments, Revolt, Sabotage**



5. Thoughts on future technology in Field Service

Research on the internet:
→ Samples of the many trends impacting field service organizations across industries

Smart Uniforms

- Prevent field service technicians from injury
- Conductive fibers and embedded sensors that can already monitor heart rate, breathing rate, sleeping patterns, calories burned, intensity of activity, temperature, posture, and muscle movement
- Smart hats are already being used in industries like trucking and mining. Some can monitor for signs of fatigue and send alerts to those in risky situations or operating sensitive machinery
- Smart gloves could provide feedback to technicians as they are making repairs, such as indicating when a part has been properly adjusted.

Autonomous Vehicles

- Technicians traveling by self-driving cars could spend their travel time more productively

Augmented Reality

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Research on the internet:
→ Samples of the many trends impacting field service organizations across industries

3D Printing

- Rather than order and wait for a part to arrive, a technician could print parts on demand using a 3D printer installed in the service van. First-time fix metrics would reach new heights.

Service Drones

- Hard-to-reach equipment – like wind turbines, oil rigs, rooftop HVAC systems, and power lines – need routine examination.
- Streamlining parts delivery
- Providing temporary internet coverage in hard-to-reach areas
- Transporting service techs to job sites

Robotic Technicians & Virtual Assistant

5. Thoughts on future technology in Field Service

Let's step back and come back to basic!

- Many companies are still using manual methods to handle field service

→ **Digital Transformation**

→ Digital technologies can enhance relationships between the company, their customers, their products, and other industry players. This requires capturing and leveraging information generated across their digital ecosystem.

- Use Big Data (ex: Netflix)
  - Learn customer's behaviour and needs
  - Monitor machine's performances and failures
  - Propose a quick fix and assist Technician and/or Operators

  → **Build a Predictive and Preventive Field Service**


SPACE

'Mars Express' to get remote software fix

The European Space Agency will remotely update the software on its *Mars Express* probe to ensure the ageing spacecraft remains stable. The probe arrived at Mars in late 2003 for a two-year mission, but it's still operating. Four of *Mars Express*' six gyroscopes are failing, which would end the mission in 2019.

5. Thoughts on future technology in Field Service

Thanks