



Immersive collaboration in Smart Industry

Ideation workshop

Thursday 23 April

A. DIAGNOSIS

1. Technological locks

- HMD not convenient for longer use
- Not sufficient resolution
- Bad quality
- Computational power
- Connection with information system
- Internet connection
- UI and interaction
- HMD convenience
- lack of standard, companies' technology
- no killer technology

2. Psychological locks

- Cybersickness
- Change of paradigm
- Decision makers aren't native XR users
- Many people are not comfortable with XR technologies
- Data privacy and fear of being watched
- Virtual vs physical (e.g. time zone problem, ...)
- fear of unknown
- Not seeing your body in VR
- Videoconference impossible in HMD!

3. Organizational locks

- horizontal
- Big companies working in silos
- reliability (not willing to beta test)
- Different business cultures of big corporation
- Manage with digital continuity
- First step of experimentation easy, moving to full-scale more difficult. Reluctance from IT department and/or purchase department

4. Clients' needs or pains

- XR is a real need for many sectors (e.g. Oil, gas etc.)
- Many vital industries aren't digitized yet
- Need a product that works immediately with immediate benefits
- Long way from prototype to end product, because technology not mature
- believable, recognizable appearance
- over-all accessibility

5. EU advantages/assets

- Stronger scientific background
- EU slower than other countries
- Multidisciplinary, multicultural, multiethnic approach and aspect

- Many small innovative companies
- Multiculture
- Multilingual community
- Strong experience, lots of pioneers
- Relationships between companies and research
- Facilitated exchanges (EU is a community)
- data privacy

6. World competitors advantages or mistakes

- US and Asia are investing A LOT of money on XR.
- Great on marketing, more focused on business
- More agile
- society more tech driven than average Europeans
- EU slower but it can be a strength as EU can learn from others' mistakes

B. DREAM PROJECTS (coming from participants, individually)

Most chosen projects

1. Muriel: Develop a European sovereign AR Cloud for industry 4.0 and tourism applications
2. Stylianos: Open Source XR toolkit to create immersive learning experiences linked with Open Education
3. Matthieu: European companies have developed a VR platform (based on OpenSource) so intuitive and creative, that it became an international reference for collaboration.

Other projects:

- Luis: Promote European Culture Heritage with XR (galleries, libraries, archives, and museums)
- Gero: official EU owned social XR platform like VRchat but more realistic and serious
- Saimon Conti: European State Owned Geometric Kernel+ARkit
- Maciej: high quality/8K/16K live and interactive streaming for XR
- Jean-Rémy: XR accessible to anyone, anywhere, anytime (breaking social barriers including "forgotten" people and not a tech that is accessible only to "rich" people)
- Gero: holographic telepresence incl. infrastructure

C. PROJECTS FOR EUROPE (3 most chosen dream projects are developed to fit the research agenda)

Project : Develop a European sovereign AR Cloud industry 4.0 and tourism applications (Saimon, Muriel, Pedro)

1. Description

The project is a EU cooperative that support the development EU software and hardware applications.

Essentials:

Learning tutorials -> Re-skilling courses.(education, industry: aviation/manufacturing/etc...)

Other business applications -> Experience-based businesses..

2. Big steps

- a. Horizon1: EU state owned cloud
- b. Horizon2:
 - i. EU State owned full library
 - ii. Corporative
 - iii. software library
- c. Horizon3 : European sovereign AR Cloud for industry 4.0 and tourism applications

3. Technologies and knowledge to develop

- a. Need to be developed (participants had to leave)

4. User experience

Having an easy to use and acmes library and certification. Easy and straightforward access to well-written technical and non-technical documentation.

5. Why would companies use that tool?

To be part of the EU corporative or get a certificate and approved tool.

6. Ethical consideration?

Data privacy

Project : Open Education XR Toolkit for Immersive Learning (Stylianos, Jean-Remy, Luis)

1. Description

- Facilitate the creation of communities of practice with XR for open education and learning
- Create flexible, collaborative, immersive learning experiences for classroom and distance education
- Added value: teach science through simulation and abstract concepts (e.g art), turn European cultural sites into learning hubs and points of cognitive interest

2. Big steps

- a. Horizon1:
 - i. Turn European art & culture sites into resources for citizen science & life-long learning with AR platform
 - ii. Facilitate the creation communities of practice on XR
 - iii. digital experience platform (DXP) - integrated set of core technologies that support the composition, management, delivery and optimization of contextualized digital experiences.
- b. Horizon2:
 - i. Teaching complex knowledge through abstract means (art, ...) in XR
 - ii. Social VR learning platforms for distance Education
 - iii. Social XR platform e.g. for remote science simulations & labs
- c. Horizon3 : Open Source XR toolkit to create immersive learning experiences linked with Open Education

3. Technologies and knowledge to develop

- a. An open, European Social XR platform
- b. Psychologists (human science - social related)UX design

- c. Develop all tech based on evidence, according to design-based research (DBR) focusing on the users, learners and teachers
- 4. User experience**
 - Propose engaging applications
 - Use state-of-the-art CoP animation strategies
 - Empower users to connect and peer-collaborate
- 5. Why would companies use that tool?**
 - Easy to deploy and cheap (no need to buy brand new techs - think about learners who don't have much money)
- 6. Ethical consideration?**
 - learners data (protection) and anonym.

Project : European XR social platform for collaboration (Mathieu, Maciej, Gero)

1. Description

The aim of this project is to develop an OpenSource European XR social platform to collaborate professionally and to enjoy spare time

2. Big steps

- a. Horizon1:
 - i. Animation for this group composed of freelancers and small companies
 - ii. Europe could provide a framework
 - iii. Build a specific group to develop the specifications of the platform
- b. Horizon2: MVP (minimum valuable product) has been developed
- c. Horizon3 : European companies have developed a VR platform (based on OpenSource) so intuitive and creative, that it became an international reference for collaboration.

3. Technologies and knowledge to develop

- a. Need to be developed
- b. Missing bricks: need to be developed

4. User experience

intuitive
emotional
non-verbal communication skills

5. Why would companies use that tool?

Saving time and money by avoiding travelling.
Dealing space constraints

6. Ethical consideration?

If the system remains cheap: could help dealing with small real spaces by creating large virtual space. Military applications. Capture of sensitive data.