



## ARGOxr introductory document

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## 1. EXCELLENCE – ARGOr

### 1.1 Brief description of the innovation

ARGOr is a breakthrough next-generation XR platform designed for capturing, distributing, and executing operational knowledge in physical space. It is not a traditional digital twin, but a "Knowledge Digital Twin"—a new paradigm where users themselves create a digital shadow of an object (e.g., machine, device, room) and embed all essential procedures, data, and documentation into it.

The platform enables:

- extremely fast object capture using a phone (lidar scan → digital shadow in under 10 minutes),
- intuitive attachment of documentation (manuals, warranties, videos, sensors, etc.),
- step-by-step instruction creation and real-world execution via XR interface,
- instant knowledge retrieval via QR code on the object (turning the physical space into an information access point),
- execution tracking: time, user, location, image evidence, and checklist in real time.

### 1.2 Technological explanation and key components

ARGOr is based on a modular architecture including:

- **ARGOCloud**: cloud-based knowledge model structured for integration with systems like SCADA, MES, ERP.
- **ARGOm**: XR module for spatial display of procedures and content (3D, video, text) on headsets or mobile devices.
- **ARGOr**: remote support module with 3D annotations and real-time collaboration, including remote device control (if security and context allow).
- **ARGOvr**: VR training module for realistic simulation of procedures.
- **AI contextual agent (in development)**: private, locally trained LLM that generates procedures and answers in real time from internal company documents.

The interface supports video editing (standardization of format), importing of 3D models (.fbx, .STEP, .obj, .dwg, .BIM), and step creation via intuitive building blocks (Lego-like approach). The system is designed as a multi-device solution: HoloLens, Meta Quest, Pico, iOS, Android, Apple Vision Pro (in preparation).

### 1.3 TRL status and development plan

**Current status (TRL 7):**

- Platform already operational at 5 client sites (automotive, energy, construction, manufacturing, and foundry industries).
- Used for knowledge transfer, supervision, maintenance, and training.
- Integrated with MES, SCADA, and IoT systems (MQTT protocol, SCADA simulator in VR).
- Supports full lifecycle: capture → model → attach → execute → analyze.

### Development plan (TRL 9):

- improved security (sandbox infrastructure, encryption, identification),
- scalability and performance optimization (enterprise-grade),
- AI module (local training + multilingual support),
- UX optimization for defense and industrial use (STANAG-ready design),
- certifications (e.g., ISO/IEC 27001, CE/UKCA), robust validation.

### 1.4 Disruptiveness and competitive advantage

Current solutions (e.g., PTC Vuforia, Microsoft Guides, TeamViewer Frontline) focus on:

- predefined AR displays,
- centrally generated content,
- limited device support,
- CAD/PLM integration or MS Teams ecosystem.

### ARGOxr is different:

- **Twin type:** Knowledge Digital Twin vs. classic CAD/IoT twin
- **Creation:** User-created via phone (10 min) vs. centralized modeling
- **Access:** QR-coded + AR display vs. context-limited apps
- **Process tracking:** Yes (time, person, location, evidence) vs. occasional
- **Devices:** VR, AR, mobile, Apple Vision Pro vs. mainly HoloLens + selected platforms
- **AI:** Local LLM on internal docs vs. rare, chatbot-like tools

### 1.5 IP strategy

- ARGOxr is being registered as a trademark.
- The data model and knowledge storage approach in 3D space will be protected as a design and potentially a patent.
- The AI module runs on local infrastructure without data sharing (core IP differentiator).
- A proprietary protocol tracks execution (time, executor, location, confirmations), enabling regulatory compliance.

### 1.6 Openness to further development

- The platform is easily adaptable across industries (e.g., energy: substations; construction: building components; manufacturing: production lines).
- APIs allow integration with any sensors, SCADA, MES, ERP.
- Potential to support open digital procedure libraries, integration with ePID/eGP systems, and EU Digital Product Passport initiatives.

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## 2. IMPACT – ARGOxr

## **2.1 Market opportunity**

### **Target users:**

- Industrial companies (manufacturing, energy, automotive, pharma, construction),
- Maintenance departments,
- Infrastructure operators,
- SMEs without digital systems (no CMMS/MES/ERP),
- Large systems with existing infrastructure (to integrate an XR knowledge and assistance layer).

### **Main pain points addressed:**

- Knowledge loss due to workforce turnover,
- Time-consuming document search,
- Inaccurate or outdated instructions,
- High training and intervention costs and delays.

### **Market size (estimates):**

- EU market for XR in industrial training, maintenance, and digital twins: >€6 billion by 2027.
- Addressable SME market in the EU (potential SaaS clients): >5 million companies.
- Most receptive sectors: energy, automotive, construction, smart factories.

## **2.2 Growth potential and revenue projections**

### **Business model:**

- SaaS subscriptions based on user count and functionality tiers,
- Service-based income (implementation, modeling, integration),
- AI module licensing (local LLM with access to sensitive internal documents).

### **Revenue forecast:**

- 2025: €180,000 (pilot customers and early subscriptions),
- 2026: €800,000 (SaaS + partnerships),
- 2027: €3,250,000 (scale-up after market entry),
- 2028–2030: exponential growth through B2B partnerships and modular upselling.

### **Deal value:**

- Typical implementation: €25,000–€80,000 + monthly subscriptions (€500–€5,000),
- Potential for recurring revenue across multiple sites of the same customer (land & expand model).

## **2.3 Societal and economic impact**

### **For the EU economy:**

- Knowledge retention despite employee turnover,
- Reduced maintenance costs and downtime caused by human error or lack of knowledge,
- Increased productivity via contextual access to information.

#### **For workers:**

- Faster onboarding and training through simulated environments and procedures,
- Reduced stress and errors when using unfamiliar systems,
- Increased confidence through real-time assistance.

#### **Support for the EU digital transition:**

- ARGOr directly supports EU Digital Decade 2030 goals:
  - SME digitalisation,
  - Workforce digital literacy,
  - Industrial interoperability,
  - ESG alignment (digital docs, fewer travel needs, improved efficiency).

## **2.4 Why support? Why now?**

#### **Partnership support will enable us:**

- Completion of development to TRL 9 (required robustness for safety-critical industries),
- Deployment of an AI agent for knowledge extraction (closed environments for sensitive data),
- Product scale-up and go-to-market preparation (hiring, certification, distribution).

#### **Why blended finance:**

- **Grant:** to finalize development and validation (sandbox, AI module, integration),
- **Equity:** to support market entry, team expansion, and sustainable growth (sales pipeline, localization).

**Without this support,** development would be delayed, and market access would be limited due to the high TRL level and capital-intensive nature of industrial XR platforms.

## **3. IMPLEMENTATION – ARGOr**

### **3.1 Team and key competences**

The project is led by a well-coordinated team combining deep tech expertise, experience with industrial XR solutions, and business development know-how:

- **Project lead & product development:** *Matija Zupančič* – over 10 years of experience with XR systems, digital twins, and solutions for industrial clients.

- **AI development lead:** a dedicated expert with experience in NLP and deployment of LLMs in secure, closed environments.
- **UX & XR design:** an ergonomics specialist with a focus on XR interfaces and STANAG compliance.
- **Backend & integrations:** a development team experienced in cloud data models, cybersecurity, and integration with MES/SCADA systems.
- **Business development:** team responsible for partnership building, market localization, and SaaS model optimization for SMEs.

**In addition to the core team, the project includes:**

- external legal counsel for IP protection,
- a certified auditor for ISO 27001 preparation,
- an academic AI consultant for LLM validation and optimization.

### 3.2 Project timeline and key milestones

The project is structured as a 24-month development and commercialization transition from TRL 7 to TRL 9.

**Phases and milestones:**

- **M1–M6:** Technical stabilization (stress testing, robustness, scalability)
- **M4–M12:** AI module and document semantics (LLM agent development, testing)
- **M9–M18:** Validation through industrial pilot deployments
- **M12–M20:** Certification and security procedures (sandbox setup, STANAG, ISO)
- **M18–M24:** Commercial launch (SaaS activation, localization)

### 3.3 Partnerships and collaborations

**Existing and planned collaborations include:**

- **ELES (power transmission operator):** real-world validation in HV substations using the AI module in high-risk procedures.
- **AquafilSLO:** expansion to additional production lines, followed by enterprise-wide rollout (19 global sites); solution has twice been awarded best-in-house tool for knowledge capture and transfer.
- **GIC Gradnje:** daily use of ARGOxr in concrete plant management – primarily for maintenance and supervisory processes with IoT integration. Currently in discussions for upgrade with a digital materials passport.
- **SRC d.o.o.:** transfer of full production layer to an external partner with appropriate security certifications.

**Future partnerships:**

- **Water treatment IT service company:** agreement in progress for ARGOxr to become the standard operating system for maintenance (LOI in preparation).
- **ISO 55000-compliant maintenance provider:** planned partnership where ARGOxr will serve as the execution platform for field operations (LOI in preparation).

- **New industrial clients:** multiple discussions underway, backed by letters of intent (LoIs), aiming to integrate the platform into broader production workflows.

### 3.4 Risks and mitigation measures

#### Key risks and mitigation strategies:

- **AI module fails to achieve desired contextual understanding**
  - *Probability: medium; Impact: high*
  - Mitigation: iterative development with academic partners and continuous validation.
- **Delays in MES/SCADA integration**
  - *Probability: medium*
  - Mitigation: use of generic connectors and collaboration with experienced integrators.
- **Hiring challenges during scale-up**
  - *Probability: high*
  - Mitigation: engagement of external contractors and a prepared hiring roadmap.
- **Complications in certification processes**
  - *Probability: low*
  - Mitigation: ongoing involvement of ISO 27001 expert; security partner already identified (SRC).
- **Security incidents**
  - *Probability: low; Impact: high*
  - Mitigation: use of local, encrypted instances, sandbox architecture, and regular security audits.