MoodleXR

A Next-Generation Open-Source Platform for Immersive Learning

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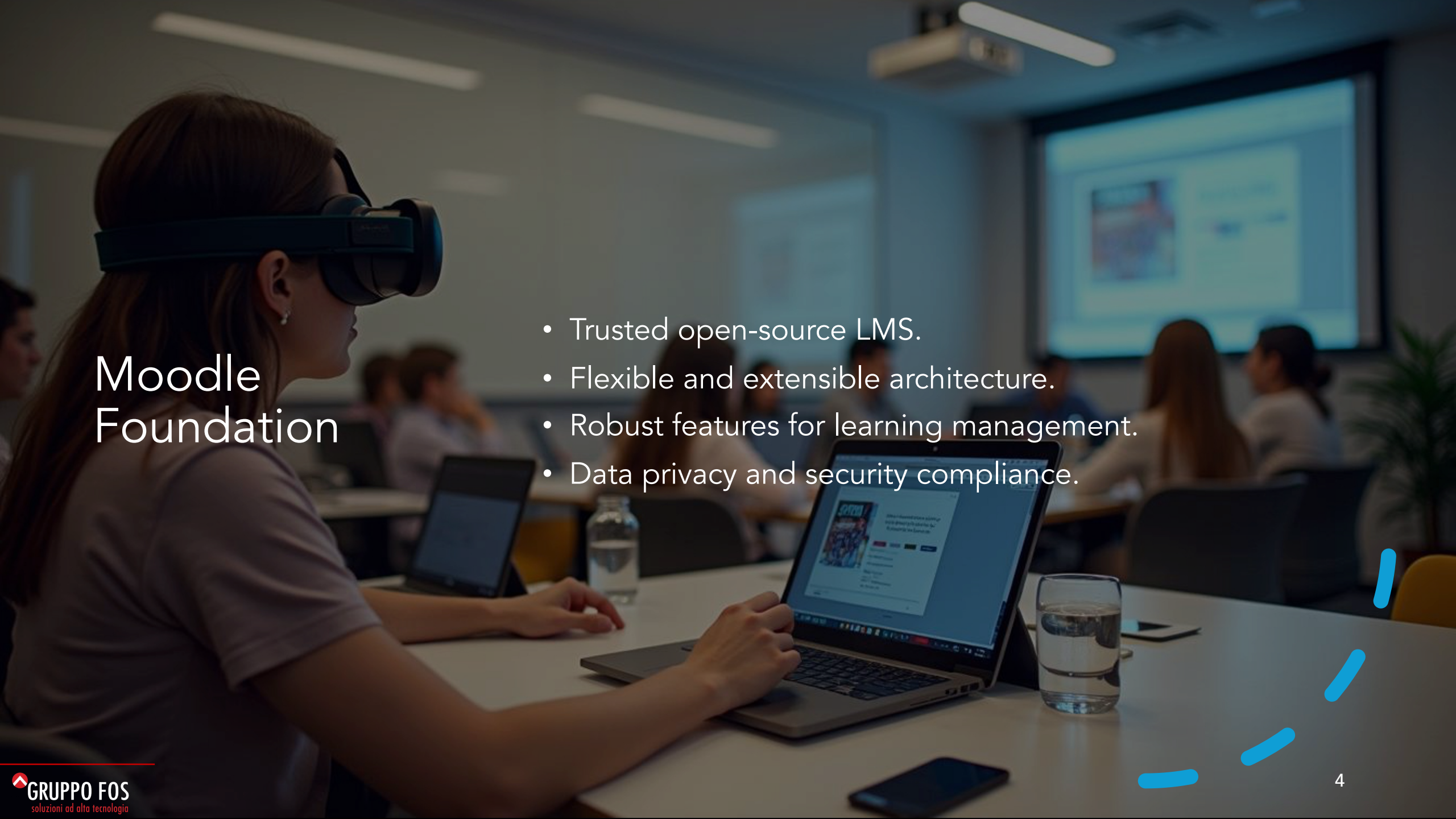
Project Overview

- **Overview:** Moodle*XR*, an open-source LMS optimized for VR/AR integration.
- **Purpose**: To make immersive education cost-effective, accessible and engaging.
- **Goals**: Scalable, flexible platform for experiential and social learning, transforming content delivery.
- **Target**: Academic institutions and Industry training.
- **Feasibility study in progress**: focus on technical integration, scalability, and usability.

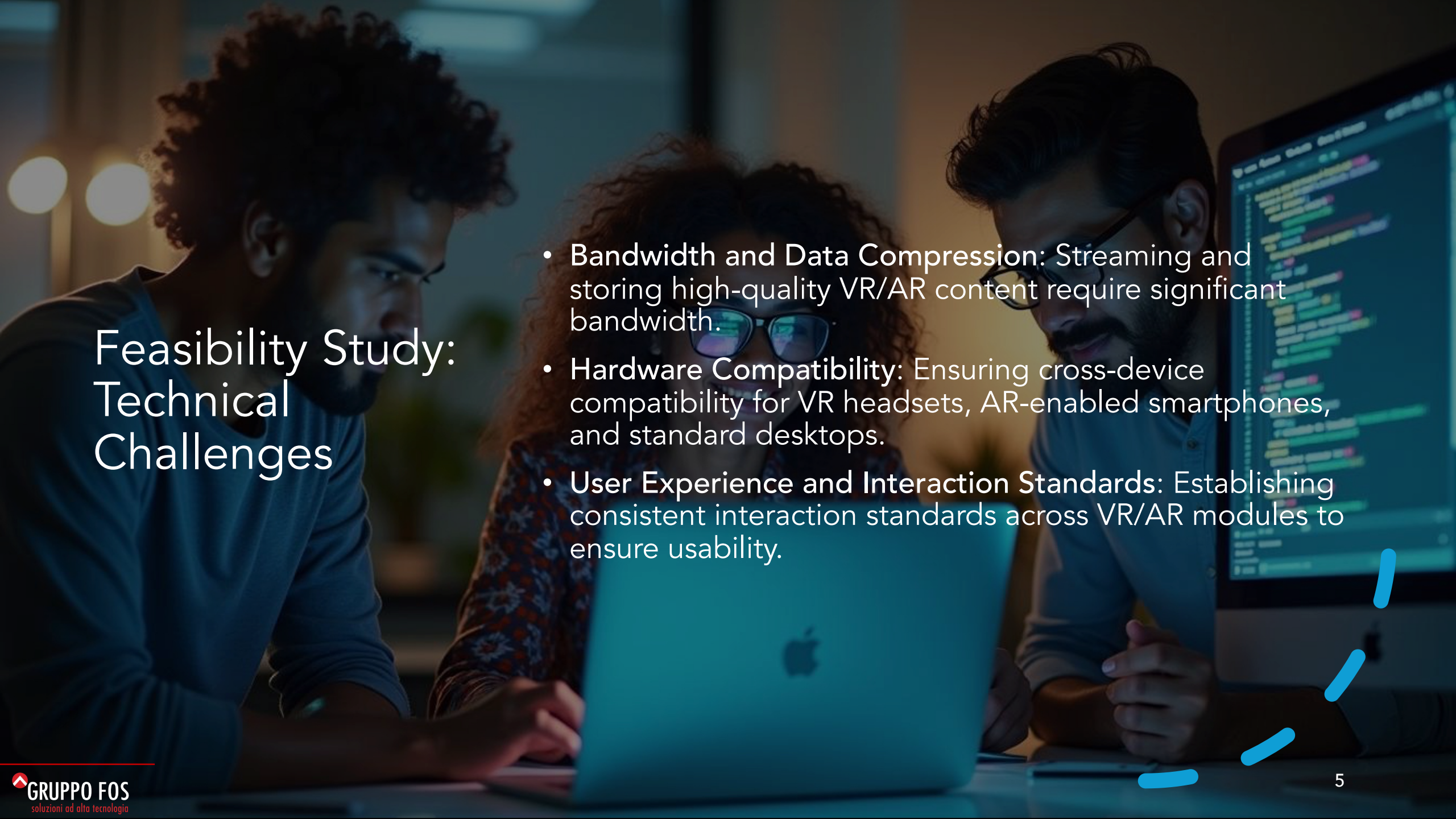
Why the Open-Source Approach

- Cost-effective and accessible.
- Global community support.
- Highly customizable and flexible.
- Sustainable and independent.



Moodle Foundation

- Trusted open-source LMS.
- Flexible and extensible architecture.
- Robust features for learning management.
- Data privacy and security compliance.



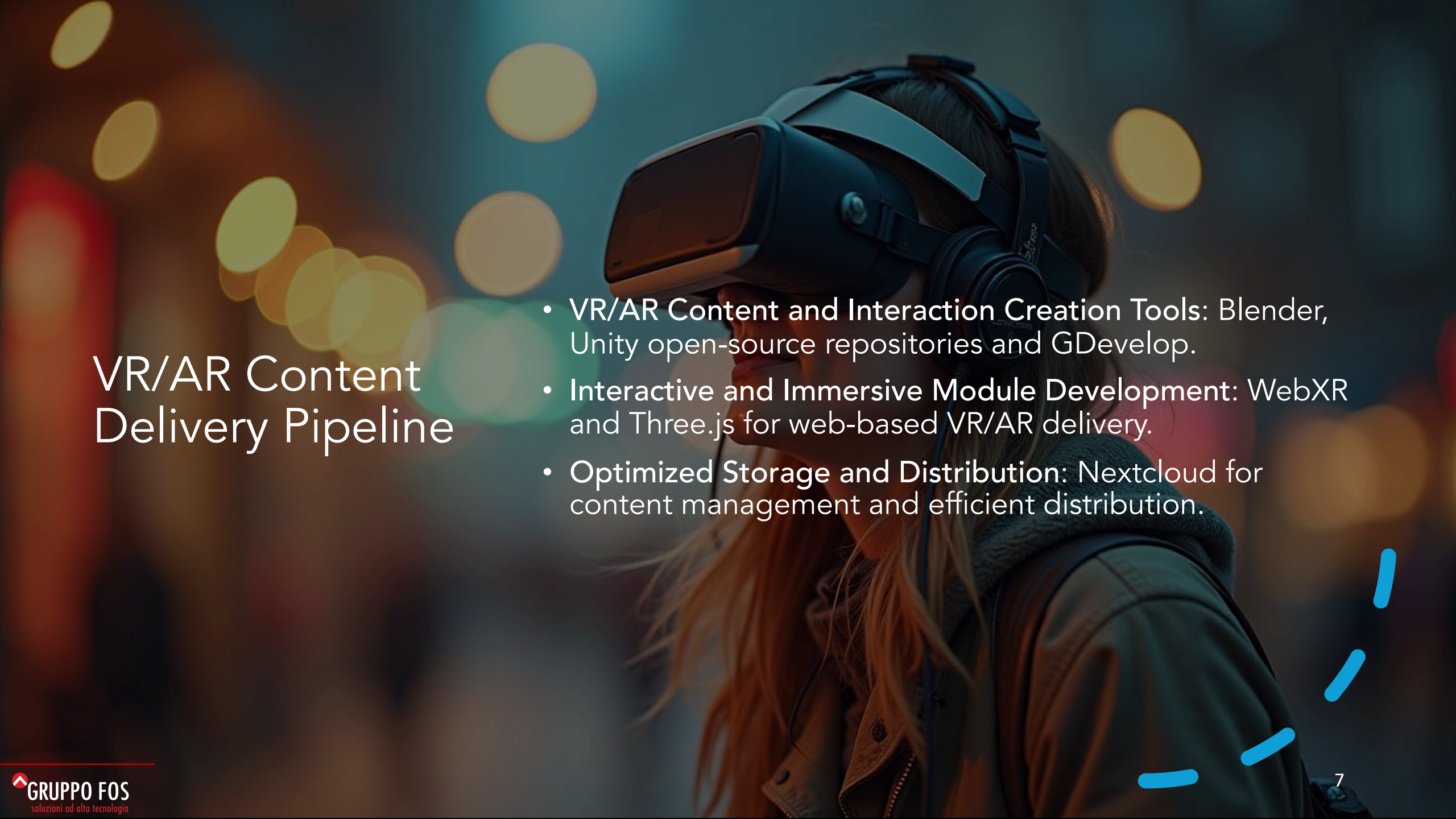
Feasibility Study: Technical Challenges

- **Bandwidth and Data Compression**: Streaming and storing high-quality VR/AR content require significant bandwidth.
- **Hardware Compatibility**: Ensuring cross-device compatibility for VR headsets, AR-enabled smartphones, and standard desktops.
- **User Experience and Interaction Standards**: Establishing consistent interaction standards across VR/AR modules to ensure usability.

Feasibility Study: Target Markets Challenges

- **Educator Training and Support**: Preparing educators to effectively use and manage VR/AR content.
- **Integration with Existing IT Infrastructure**: Ensuring compatibility with existing IT systems and LMS platforms.
- **Cost-Effectiveness and Resource Allocation**: Balancing the investment in VR/AR resources with institutional budgets.

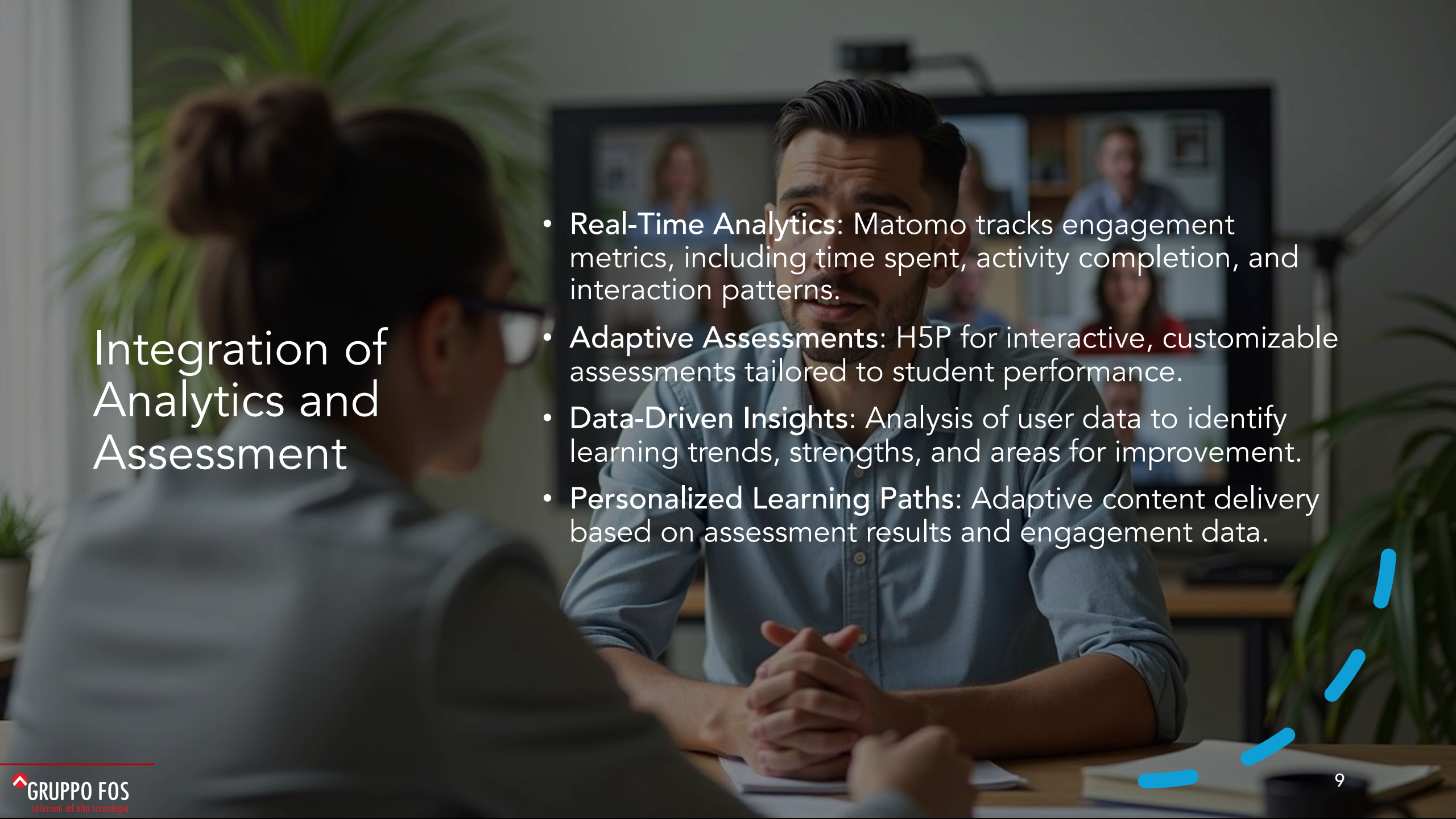
VR/AR Content Delivery Pipeline



- **VR/AR Content and Interaction Creation Tools**: Blender, Unity open-source repositories and GDevelop.
- **Interactive and Immersive Module Development**: WebXR and Three.js for web-based VR/AR delivery.
- **Optimized Storage and Distribution**: Nextcloud for content management and efficient distribution.

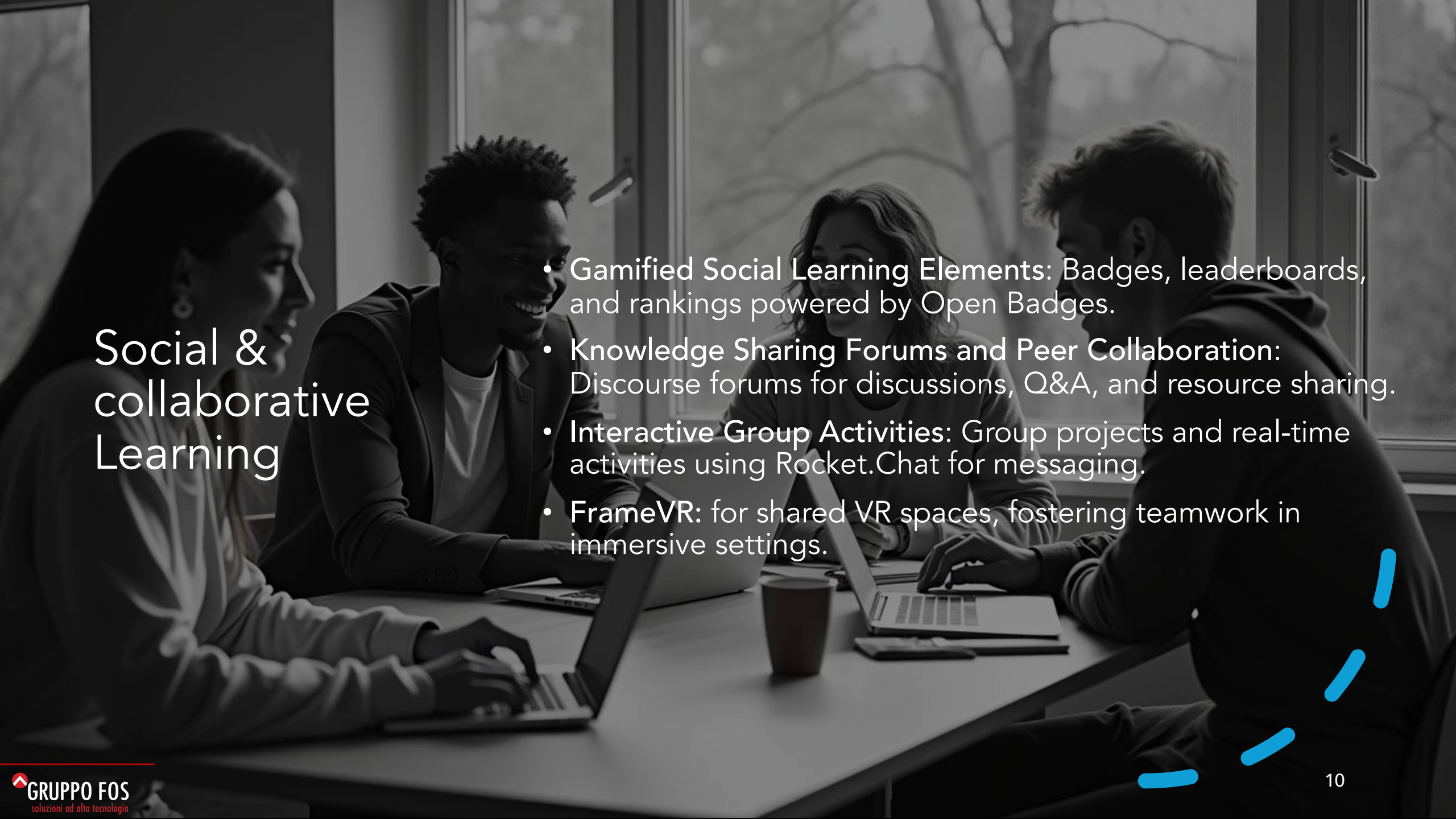
Scalability and Accessibility

- **Dynamic Scaling**: Powered by Kubernetes, adapting resources based on user demand.
- **Cross Platform Features**: VIVE WAVE integration provides high-performance device optimization for third-party partners.
- **Optimized for Diverse Devices**: Accessible on VR headsets, plus alternative formats for non-VR/AR users (desktops, tablets, and smartphones).
- **Cloud Infrastructure**: Deployed and distributed on a cloud-based environment for flexible scaling and robust performance.



Integration of Analytics and Assessment

- **Real-Time Analytics**: Matomo tracks engagement metrics, including time spent, activity completion, and interaction patterns.
- **Adaptive Assessments**: H5P for interactive, customizable assessments tailored to student performance.
- **Data-Driven Insights**: Analysis of user data to identify learning trends, strengths, and areas for improvement.
- **Personalized Learning Paths**: Adaptive content delivery based on assessment results and engagement data.



Social & collaborative Learning

- **Gamified Social Learning Elements**: Badges, leaderboards, and rankings powered by Open Badges.
- **Knowledge Sharing Forums and Peer Collaboration**: Discourse forums for discussions, Q&A, and resource sharing.
- **Interactive Group Activities**: Group projects and real-time activities using Rocket.Chat for messaging.
- **FrameVR:** for shared VR spaces, fostering teamwork in immersive settings.

Security and Compliance

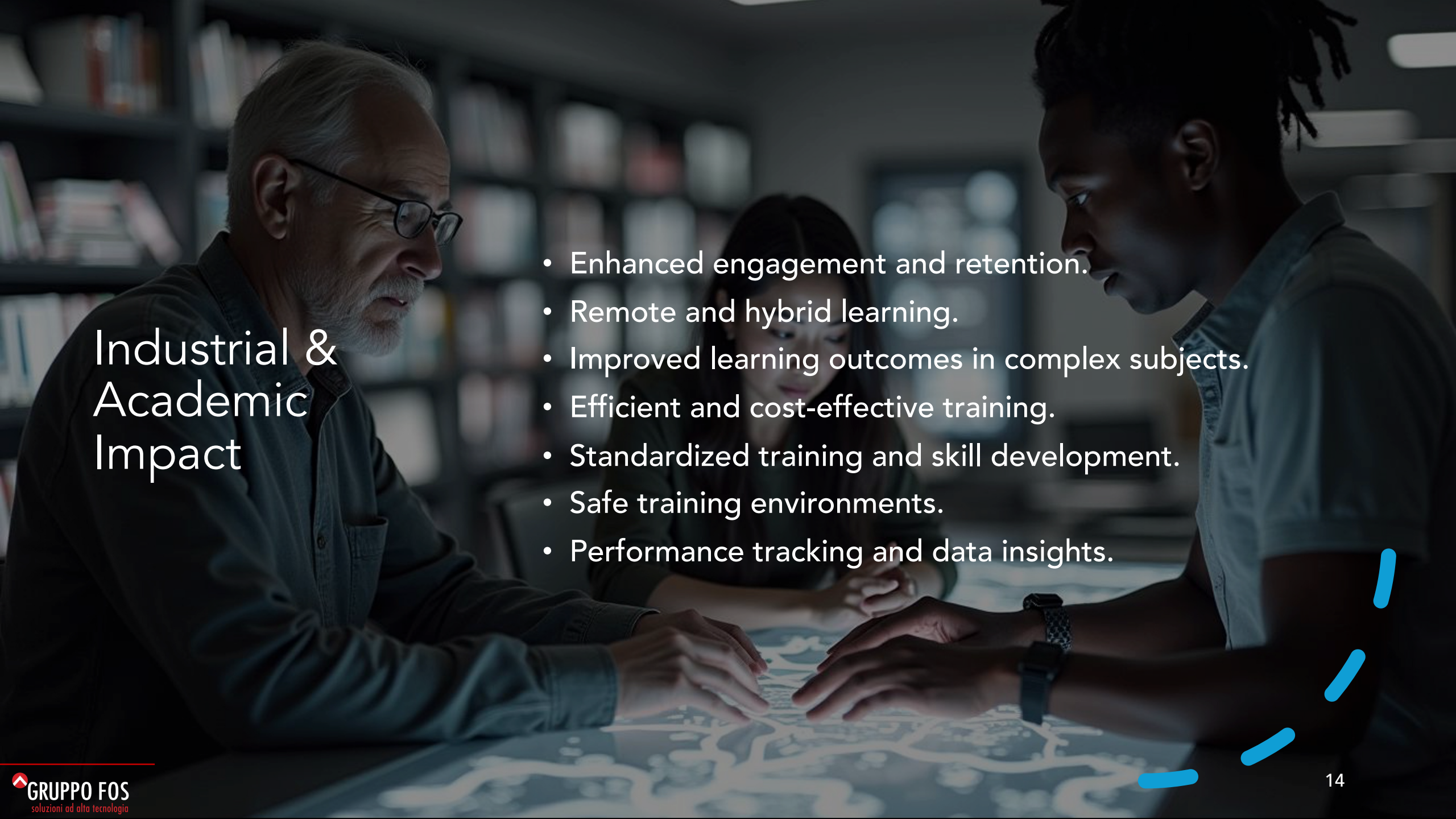
- **Data Encryption and Secure Access**:
  OpenVPN for encrypted data transmission and secure access.
  SSL/TLS certificates from Let's Encrypt for secure data exchanges.
- **Compliance with Data Privacy Regulations**:
  GDPR-compliant to protect user privacy.
  Customizable privacy settings to meet local regulations.
- **User Authentication and Access Control**:
  Single Sign-On (SSO) and Multi-Factor Authentication (MFA) for user verification.
- **Role-based access** controls to limit content access based on user roles.

Outcomes and Benefits: Academic Stakeholders

- **Students**: Enhanced engagement through immersive, interactive learning.
- **Educators**: Flexible, robust teaching tools.
- **Institutions**: Scalable, secure, and future-ready platform.

Outcomes and Benefits: Industrial Stakeholders

- Efficient and cost-effective training for industries like:
  - Manufacturing and Engineering;
  - Healthcare and Medical;
  - Logistics and Supply Chain;
  - Construction and Safety Compliance;
  - Aerospace and Defense.



Industrial & Academic Impact

- Enhanced engagement and retention.
- Remote and hybrid learning.
- Improved learning outcomes in complex subjects.
- Efficient and cost-effective training.
- Standardized training and skill development.
- Safe training environments.
- Performance tracking and data insights.

Project Outcome

- Transformative LMS with VR/AR, global accessibility.
- Engaging, flexible and impactful learning solutions.
- Scalability and accessibility for diverse training contexts.
- Consistent, measurable training outcomes.
- Future-ready platform supporting education and industry.


Q&A
Thank you! Questions?