Immersive reality experiences

Extended Reality & Augmented Intelligence for an integrated digital world

vodafone business | fifth ingenium

Accelerating XR adoption across your organisation

Enhancing quality, productivity, and decision-making across the value chain through immersive and intelligent XR workflows

EDUCATION

INDUSTRIAL

HEALTHCARE

IMMERSIVE LEARNING

VISUALISE REALTIME DATA

OPERATOR SUPPORT

IMPROVE SURGICAL OUTCOMES

COLLABORATIVE DESIGN

REMOTE ASSISTANCE

SALES CATALOGUE

REMOTE COLLABORATION

For ultra-low latency reliable immersive experiences

Managed XR solutions with connectivity, hardware integration, and application to meet your outcomes

Headsets & Devices

Secure Storage & Charging

Device Management

5G MPN Connectivity

No-Code Content Creation Platform

Ready made & custom content

Setup, Training & Support

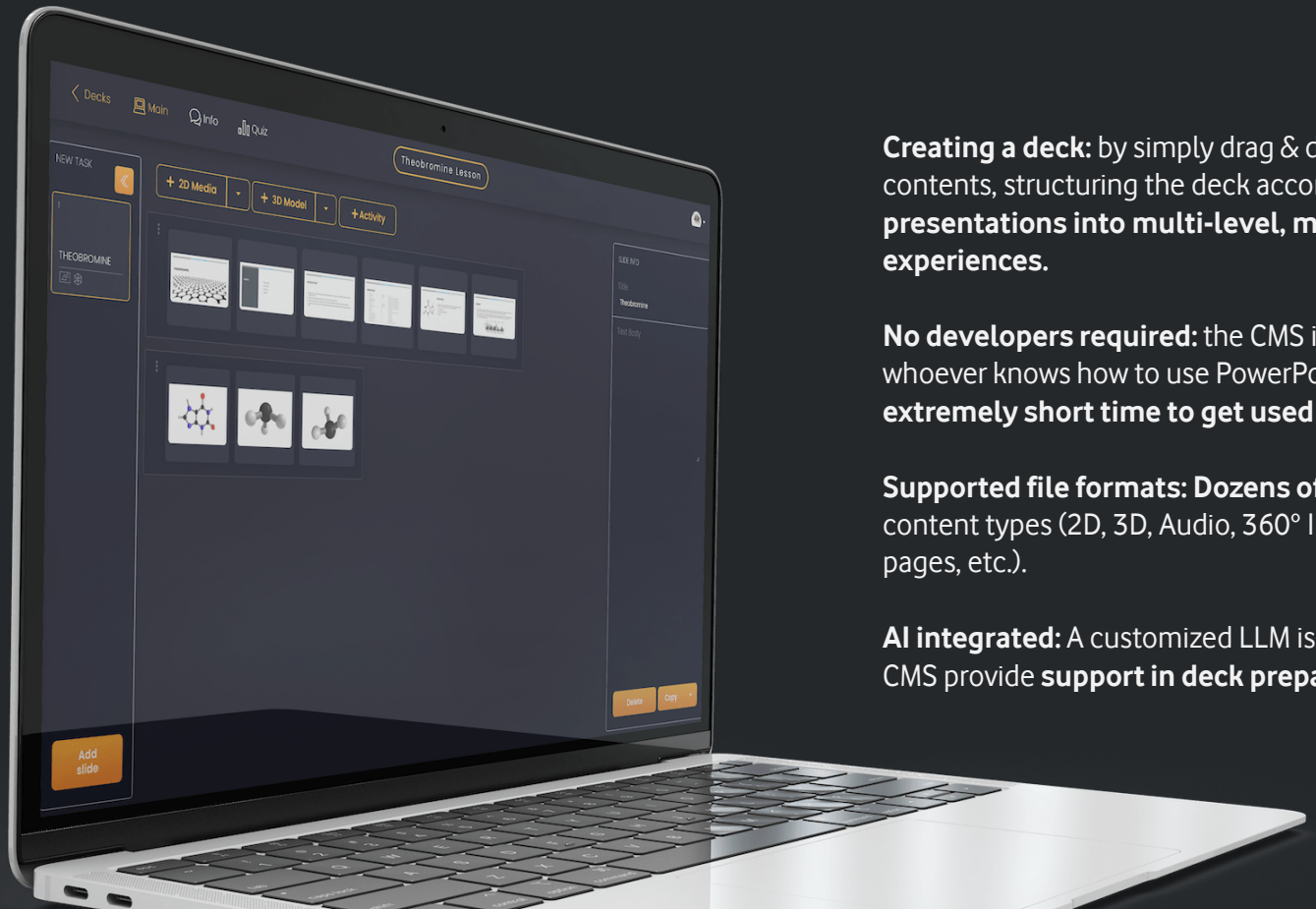
Edge Computing

vodafone business | fifth ingenium

Cross platform shared experience across different devices

vodafone business | fifth ingenium

XR content creation as simple as creating a PowerPoint



Creating a deck: by simply drag & drop 2D & 3D digital contents, structuring the deck accordingly, **turning presentations into multi-level, multi-layered learning experiences.**

No developers required: the CMS is a no-code editor: whoever knows how to use PowerPoint **will take an extremely short time to get used to it!**

Supported file formats: Dozens of different formats and content types (2D, 3D, Audio, 360° Images, Videos, PDF, web pages, etc.).

AI integrated: A customized LLM is integrated within the CMS provide **support in deck preparation and more.**

vodafone business | fifth ingenium

Education

vodafone business | fifth ingenium

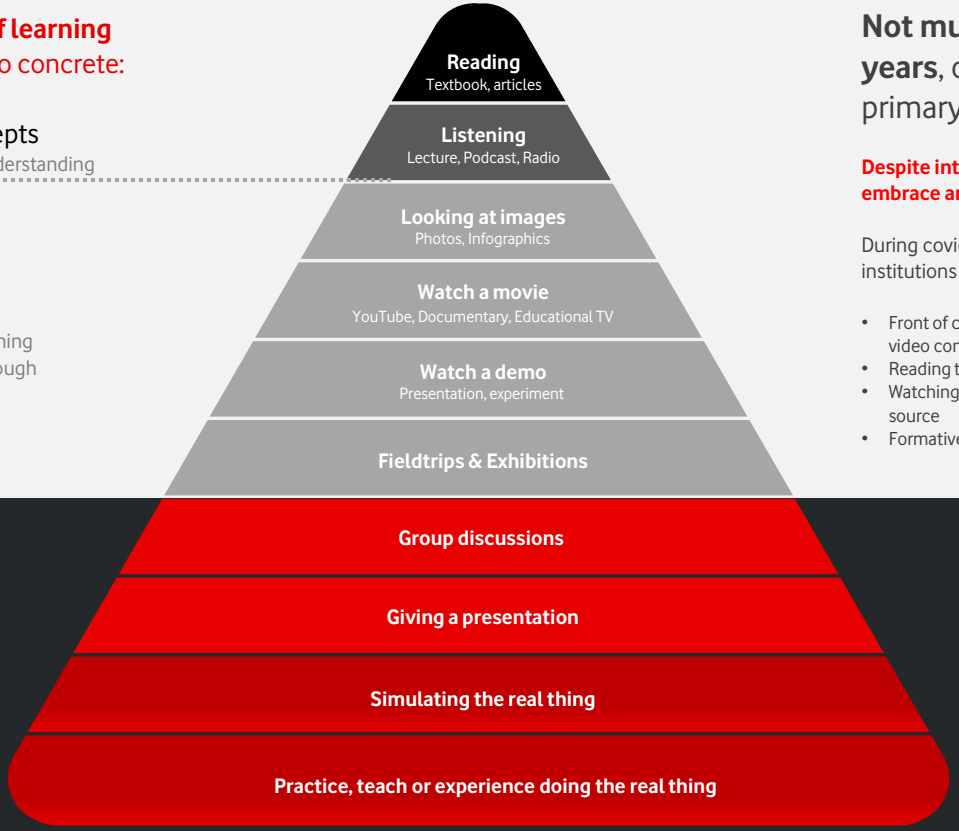
Todays learning is still mainly a passive experience

PASSIVE
Traditional Learning

Progression of learning
from abstract to concrete:

Abstract Concepts
Provides limited understanding

Observation
More insightful learning but not tangible enough



ACTIVE
Learning by doing

Meaningful Experiences
Can relate an abstract concept directly by doing & participating

Not much has changed in the last 50 years, classrooms are still using these primary teaching methods

Despite introducing technology to more classrooms, teachers embrace analogue thinking when applying digital solutions.

During covid, there was a massive investment in EdTech tools and institutions failed to see improvements in academic outcomes

- Front of class teaching moving to digital whiteboards or through online video conferencing
- Reading the same book but now in PDF
- Watching relevant YouTube videos becomes a popular free content source
- Formative assessment shifts to online multiple choice quiz or polls

vodafone business | fifth ingenium

A quick overview of XR within Education's Digital Transformation

PHYSICAL — EXTENDED REALITY (XR) — DIGITAL

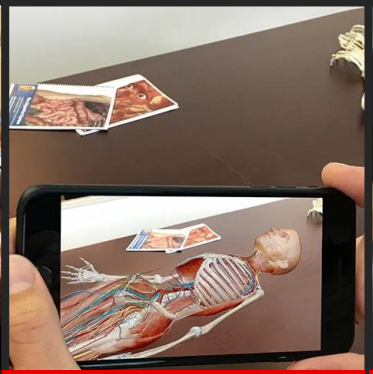
RE	www.	AR	MR	VR
Real Environment	Web 2.0	Augmented Reality	Mixed Reality	Virtual Reality

The traditional classroom

- Instructor led
- Face to face only
- Limited resources
- Physical textbooks
- One size fits all
- Lack of engagement

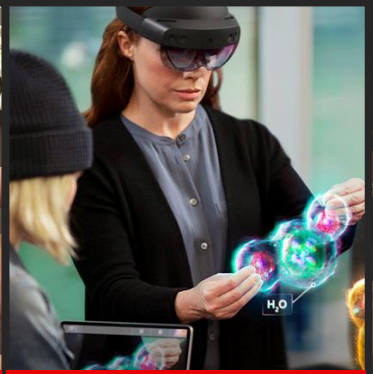
The tech-enabled classroom

- Instructor led
- Use of student devices
- Hybrid / remote participation
- Collaboration tools
- A mix of rich digital content



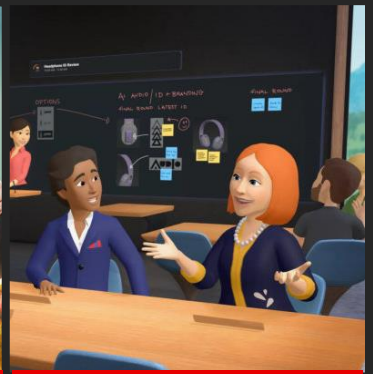
The augmented classroom

- Instructor led
- Student smartphone/tablet
- Interactive learning
- 3D models
- Overlay info



The Immersive classroom

- Student & Teachers using a mix of MR headset, Smartphone, Tablet or Laptop



The Metaverse classroom

- Everyone using a VR device
- Avatars

vodafone business | fifth ingenium

Common Challenges within the Education Sector

Traditional learning

15-30% of memorization

Schools and Universities have **struggled to adapt to the evolving times** and are stuck with the teaching method of the industrial age. **Passive learning** is known to foster **lower knowledge retention**. **It is time to embrace modernity.**

VS

Experiential learning

90% of memorization

It is widely accepted that an active approach to learning has a great impact on **knowledge retention** and thus on the overall **educational journey success**. With technology, we want to **enhance learning experiences and equip the youth with all the tools to be successful in life**.

vodafone business | fifth ingenium

THE AUGMENTED CLASSROOM

By supporting multiple devices (PC, Tablet, Mixed Reality glasses) **students can participate and interact** with the teacher's presentation.

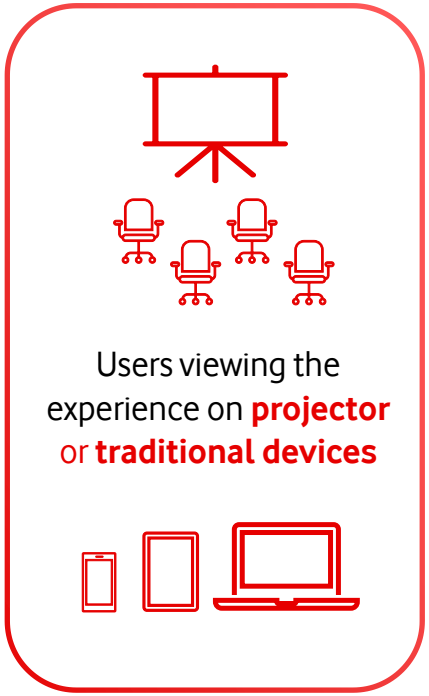
A **mirroring system** (PC + Webcam) is used to show the digital information to all those who are not wearing nor using a device.

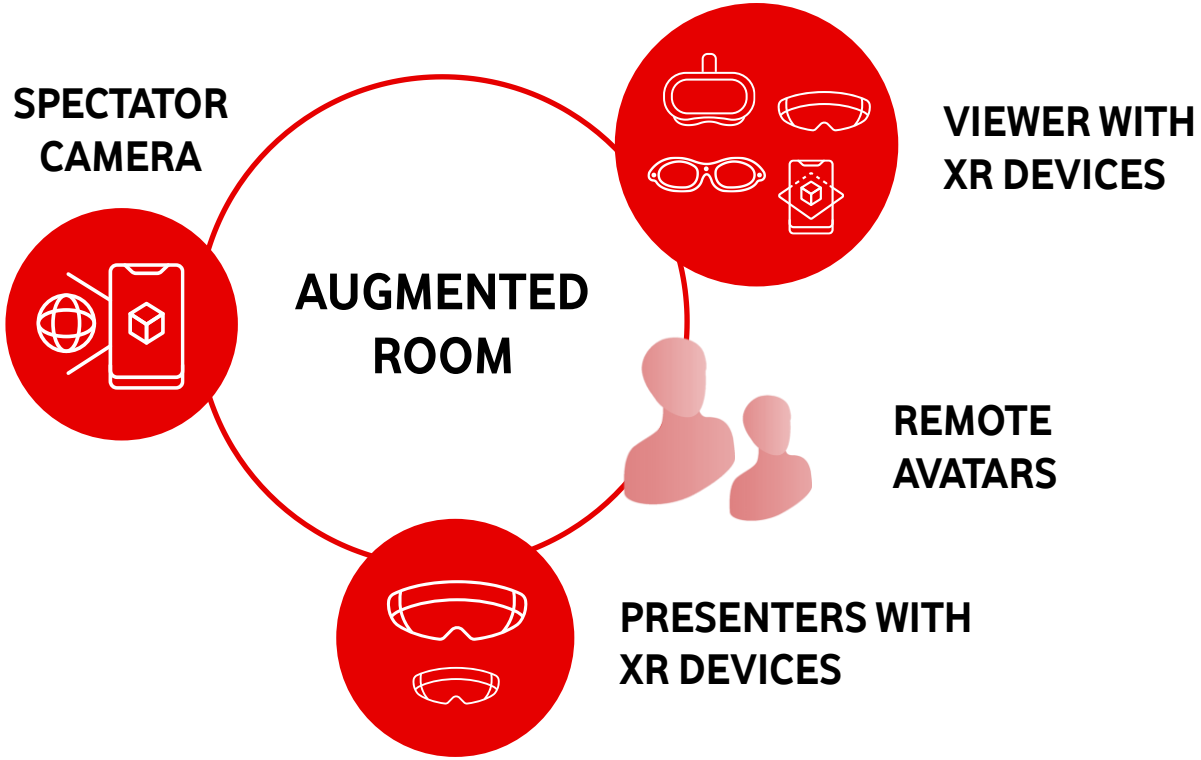
Students can join remotely with their phone, PC, Tablet or MR headset, assisting even if not in the classroom

The teacher **can present and interact** with both 2D and 3D data, with the possibility of enabling students to interact with the content as well, while the professor keeps the control over which content is shared.

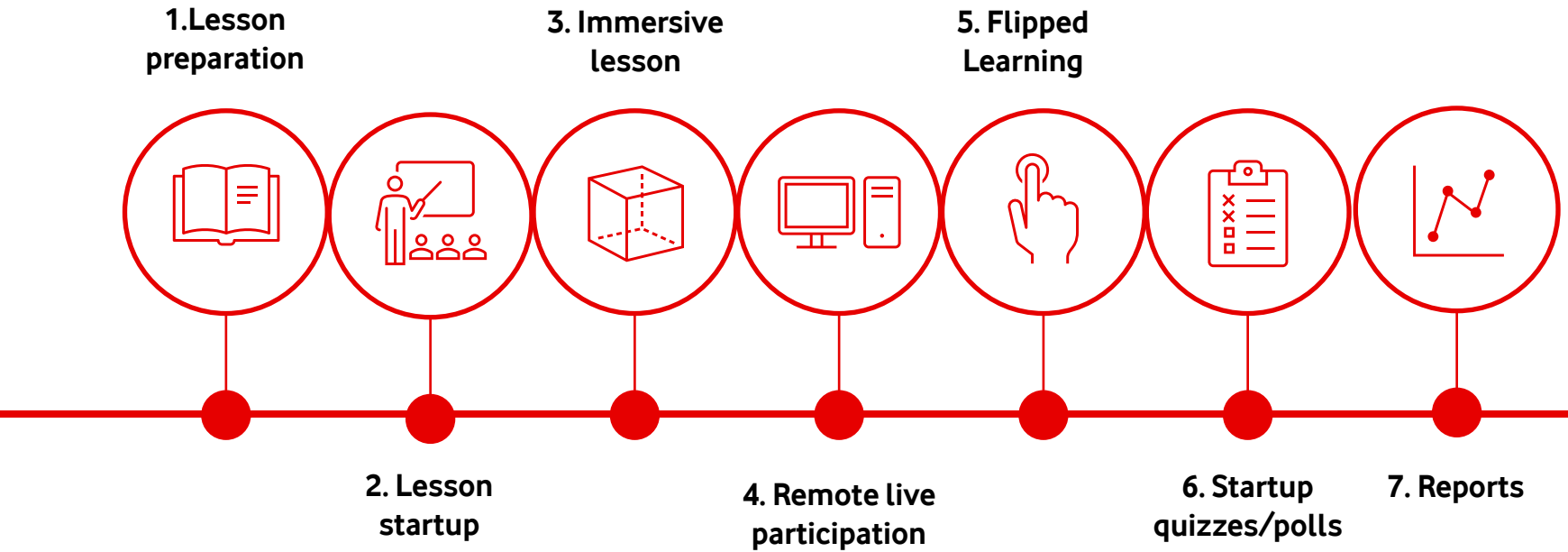
Featuring a **no-code CMS**, teachers can create AR lessons **starting from their PowerPoint**

Immersive shared experiences for all participants





Designed to fit into your existing teaching workflow



XR can have transformational impact across education sectors

Primary

Transform early learning by turning abstract ideas into playful, hands-on experiences. Children can explore concepts through visualisation, movement, and interaction, improving engagement and understanding. Immersive learning supports curiosity, creativity, and different learning styles, helping young learners build strong foundations while making education more inclusive, memorable, and fun

High School

Help students grasp complex subjects by visualising science, maths, and technical concepts in 3D. It encourages active participation, critical thinking, and problem-solving through simulations and collaborative experiences. By bridging theory and practice, XR boosts engagement, supports hybrid learning, and better prepares students for further education and future careers

Vocational

XR enables safe, realistic, hands-on training without the risks or costs of physical equipment. Learners can practise procedures repeatedly in immersive simulations, improving skills, confidence, and retention. Remote collaboration and guided assistance also support workforce upskilling, faster onboarding, and consistent training outcomes across locations and industries.

University

Enhances teaching, research, and collaboration by enabling immersive lectures, virtual labs, and shared 3D environments. Universities can deliver richer learning experiences, attract students globally, and support hybrid participation. XR also enables advanced simulations, digital twins, and interdisciplinary collaboration, helping institutions innovate and stay competitive

Ministry of Education

Scale national education strategies by improving learning outcomes, modernising curricula, and enabling scalable digital transformation. It promotes equity through remote access, supports teacher innovation, and aligns education with future workforce needs. XR investments help ministries drive measurable impact, foster innovation, and build resilient, future-ready education systems.

Ideas and use cases in education to explore

Improve Learning Outcomes

XR Labs & Simulations
Create virtual laboratories and simulations in VR or MR environments, allowing students to conduct experiments and explore concepts in a safe and controlled digital space.

Immersive Field Trips
Conduct field trips using VR or AR to transport students to historical sites, museums, or natural environments, providing an immersive and interactive learning experience.

Medical Training
Medical, Veterinary, Dentistry and Nursing students can explore detailed 3D anatomy models or simulate real-world surgical procedures.

Architectural & Design
XR technologies can be used to present and introduce different building systems, mechanical systems, and structural components

Visualising scientific concepts & data
Complex data sets can be better modelled allowing students in disciplines such as biology, chemistry, and physics to interact with abstract concepts.

Support Hybrid Learning

Collaborative classrooms
Enable collaborative learning environments where students can interact with each other and instructors in real-time, regardless of their physical locations.

Immersive Tutoring
Professors and tutors can support in person and remote tutoring sessions that guide students with personalised help and clarification on complex topics

Inclusive & assisted learning
Reduce barriers by creating accessible immersive media that support students with different learning styles

Engaging formative assessments
Make testing concepts more engaging and interactive with gamified and virtual learning

Remote research and innovation
Facilitate projects with research spaces that enable different institutions and businesses to model and solve distributed challenges

Increase Engagement

Digital Twin
Virtual replicas of physical campuses, laboratories, classrooms, and equipment to enable simulation

Student Recruitment
Virtual campus tours, allowing prospective students to explore the campus remotely in a highly immersive manner.

Campus Navigation
Providing additional and personalised interactive information overlayed in real-time e.g. maps, directions, timetables, etc to help new students find their way around the campus, locate buildings, and access important information

Wellness & Mental Health
Wellness spaces using for mindfulness activities, stress relief, and mental health counselling services.

Alumni Community Events
Connecting alumni from around the world through events, creating a sense of lasting community, networking and mentoring opportunities.

POLITECNICO MILANO 1863

Ollscoil Teicneolaíochta an Atlantaigh

Atlantic Technological University

National Technical University of Athens

Success stories

and more...

POLITEHNICA DIN BUCUREȘTI 1818

Università degli Studi di Napoli Federico II

Università degli Studi di Palermo

VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

UNIVERSITATEA TEHNICĂ DIN CLUJ-NAPOCA

vodafone business

fifth ingenium

Unlock Public Funding

Since 2022, we've proudly secured €24.3 million for Vodafone and our Education customers, enabling innovation in 5G Extended Reality technology.

FY23 (CEF Call 2)
5G4ASSAC Vodafone Italy: €4m
FY25 (CEF Call 3)
5GCRESCA Vodafone Italy: €2.4m
5GINED Vodafone Italy: €2.3m
5G-ENRICH Vodafone Romania: €1.1m
5G-BECOME Vodafone Greece: €2.1m*
FY26 (CEF Call 4)
5G-SHARE
Vodafone Ireland: €2.5m
Vodafone Romania: €1.5m
Vodafone Czech Republic: €2.4m

vodafone business | fifth ingenium

Industrial

vodafone business | fifth ingenium

TODAY'S MANUFACTURING PAINS

Downtime & Maintenance Costs: Inefficient maintenance and lack of expertise cause unplanned downtime and production halt

Workforce Challenges: Skills gap, high turnover and lack of training are causes for loss of essential knowledge and expertise

Operational Inefficiencies: Complex workflows, manual data entry and inefficient collaboration cause errors and delays

Safety Risks: Poor understanding of hazards expose workers to an increased risk of accidents.

vodafone business | fifth ingenium

1 - OPERATOR SUPPORT

Workers can easily access crucial data like **step-by-step guides, training videos, and real-time IoT insights** right in their field of view.

AI-powered agents assist by suggesting or retrieving relevant procedures based on task needs.

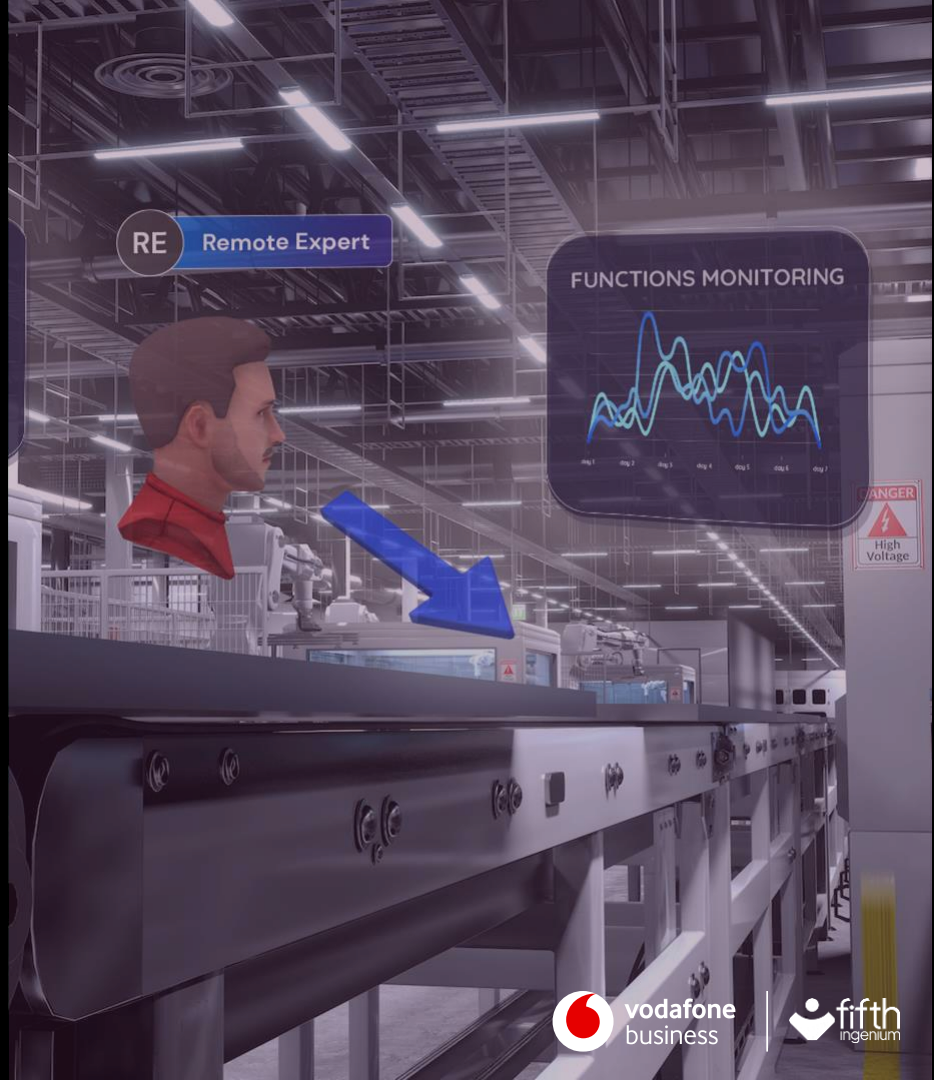
Errors are quickly reported with visual charts, and **integration with ERP, MES**, and other systems is seamless via APIs.

vodafone business | fifth ingenium

2 - REALTIME DATA VISUALIZATION

Workers can view **real-time data** through their Augmented Reality glasses, offering up-to-the-second insights such as sensor readings, machine performance, and IoT data.

- This enables **real-time monitoring and analysis of production processes**, resulting in improved quality control and reduced defects.
- Additionally, it enhances **quality, precision, efficiency, and field verifications**, ensuring workers have the most accurate information at their fingertips for immediate decision-making without interrupting their workflow.
- Data can be plotted on **2D and 3D charts**, boards and can be interpreted and explained by **conversational AI agents**.



3 - IMMERSIVE TRAINING

With Augmented and Virtual reality, elevates workforce skill levels by allowing workers to reproduce realistic simulations **on digital twins in a safe controlled environment** reducing the risks associated with physical training.

- **Safe Learning Environment**: Train without the hazards of real-world machinery.
- **Realistic Simulations**: Engage with accurate digital twins to practice procedures.
- **Enhanced Retention**: Interactive and hands-on learning improves knowledge retention.
- **Remote Training**: avoid unnecessary travel or equipment relocation for training purposes.

4 - COLLABORATIVE DESIGN

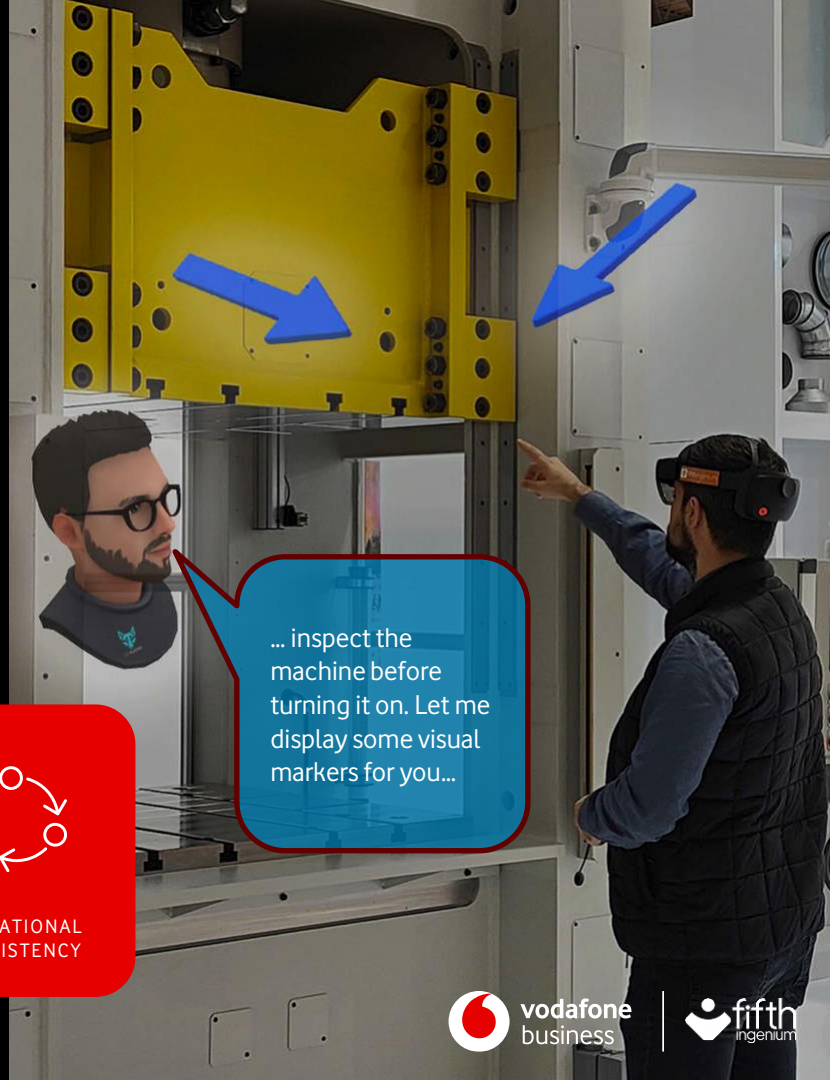
During design and pre-prototyping phases, designers and engineers can seamlessly visualize **CAD files** (BIM) **from any 3D software** (Inventor, Solidworks, Revit, CATIA, Blender, ...) and engage in a phygital 3D discussion with colleagues in the same room or even **connected remotely**.

With its **patented AI powered 3D optimization technology**, simplifies and converts automatically big size complex files into lightweight files with multiple LOD.

- Instantly edit and upload new files
- Instantly connect remote teams
- Present and collaborate on projects at scale
- Remove physical barriers

5 - REMOTE ASSISTANCE

- **Reduce machinery downtime** by teleporting experts sitting in a control room next to machinery operators saving on travel expenses.
- Guide operators remotely into completing their tasks by sharing their point of view and by **adding spatial markers**.



BETTER EFFICIENCY

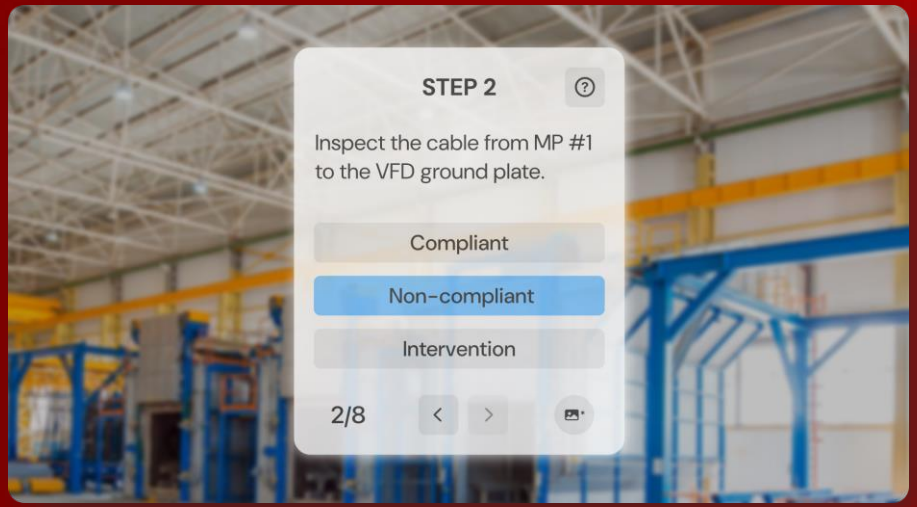
BETTER PRODUCTIVITY

REMOTE EXPERTS

OPERATIONAL CONSISTENCY

vodafone business | fifth ingenium

Oil & Gas Focus



Voice-controlled checklists & instructions on 5GSA compliant ATEX ZONE 1 AR Glasses

vodafone business | fifth ingenium

A remote expert connects via a PC and can see exactly what the operator is doing by **viewing the live feed from the AR headset's** front camera. This allows the expert to guide the operator in real time, providing critical visual support.

Additionally, the expert can **remotely highlight objects and draw directly within the operator's field of view,** placing spatial markers to give precise instructions.

When an expert is not available, the operator can rely on **conversational AI-powered avatars** that provide guidance, **significantly improving efficiency** and reducing downtime.

6 - SALES CATALOGUE

Transform your sales strategy by offering immersive, interactive, and visually compelling presentations of your products.

- **Immersive Product Demonstrations:** Allow clients to explore products from every angle, understanding intricate details effortlessly.
- **Scalable Presentations:** Seamlessly switch between different product sizes and configurations to match client needs.
- **Enhanced Engagement:** Use spatially distributed information to make complex technical details easily digestible.
- **Technical Accuracy:** Present technical specifications, usage scenarios, and benefits in an easily understandable format.

Healthcare

vodafone business | fifth ingenium

The Workflow

From Patient Scan to Immersive Visualization in Minutes

1

Collect Patient Data

Gather digital data from CT, MRI, CBCT, X-rays, Ultrasounds, and DICOM files.

2

Process & Organize

Drag & drop to web editor for auto-conversion to 2D/3D formats in your private workspace.

3

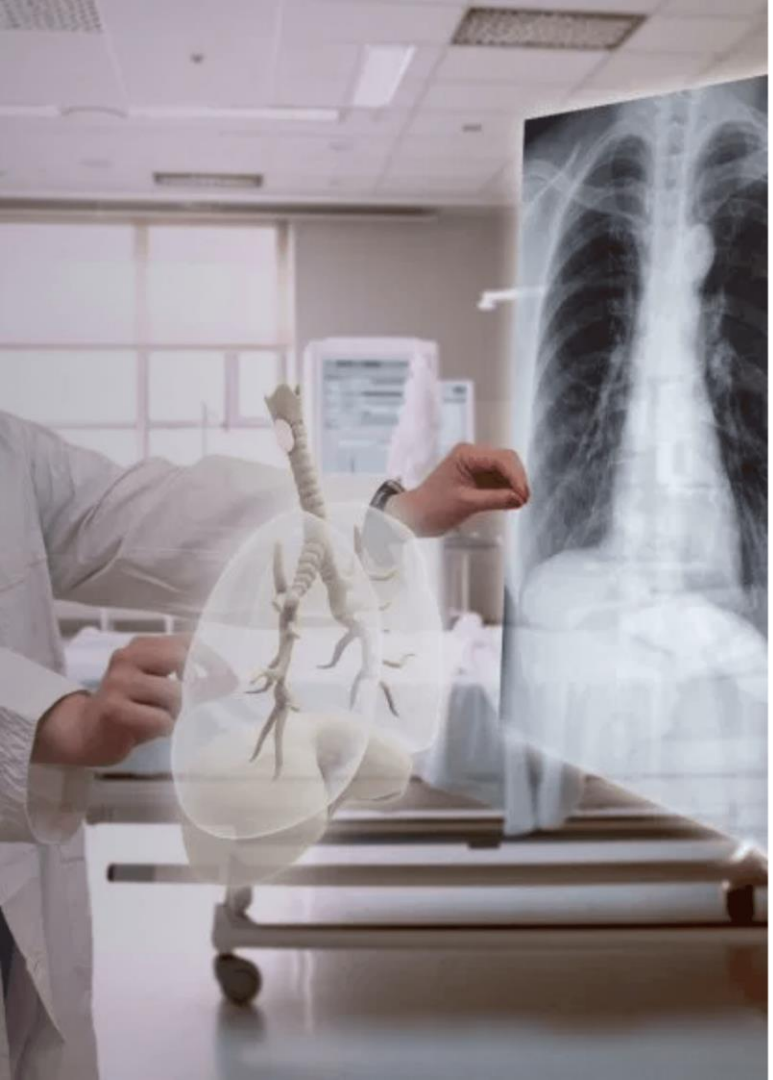
Visualize & Interact

View, zoom, measure, and annotate 3D anatomical structures using the HoloDoctor XR app.

4

Share & Collaborate

Invite patients or remote specialists to join the experience in real-time for collaborative care.



The Challenge

Healthcare Professionals Need Better Tools to Visualize Complex Patient Data

Limitations of 2D Screens

Flat screens cannot adequately represent complex 3D anatomical structures, creating barriers to accurate diagnosis.

Remote Collaboration Gaps

Existing tools lack real-time synchronization for medical data, making remote teamwork inefficient.

Patient Understanding

Patients struggle to grasp their conditions when explanations rely on abstract, technical 2D images.

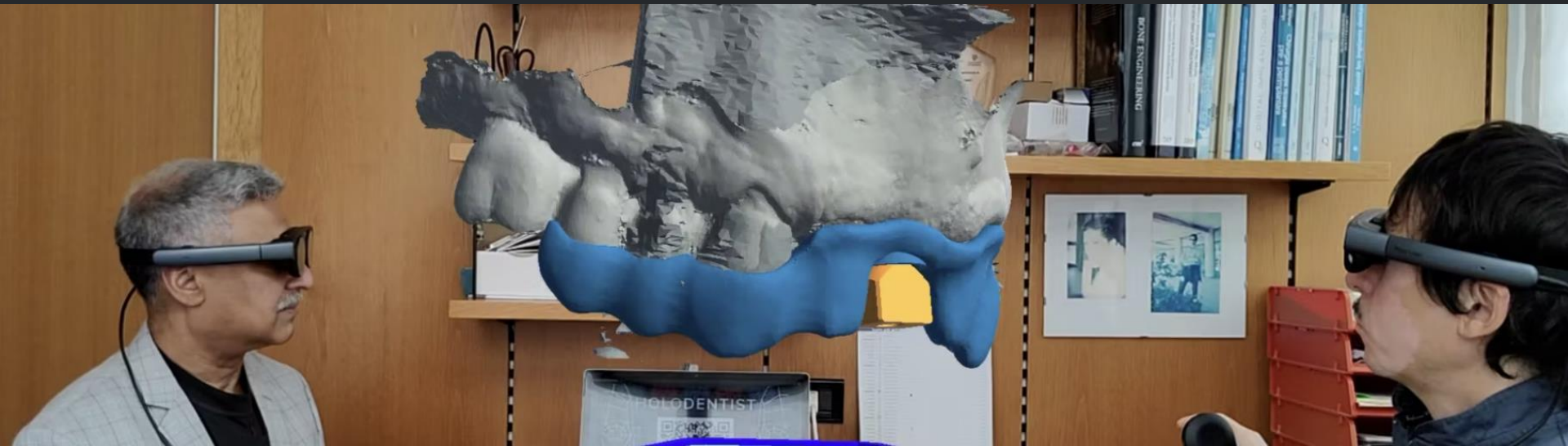
The Future of Digital Healthcare is Now

Revolutionizing Healthcare Through eXtended Reality

PATIENT DISCUSSION AND EDUCATION

HoloDoctor allows clinicians to visually explain procedures to patients using 3D models coming from CBCT, intraoral and face scanners. This immersive experience helps patients understand their treatment plans better, leading to **increased trust and satisfaction.**

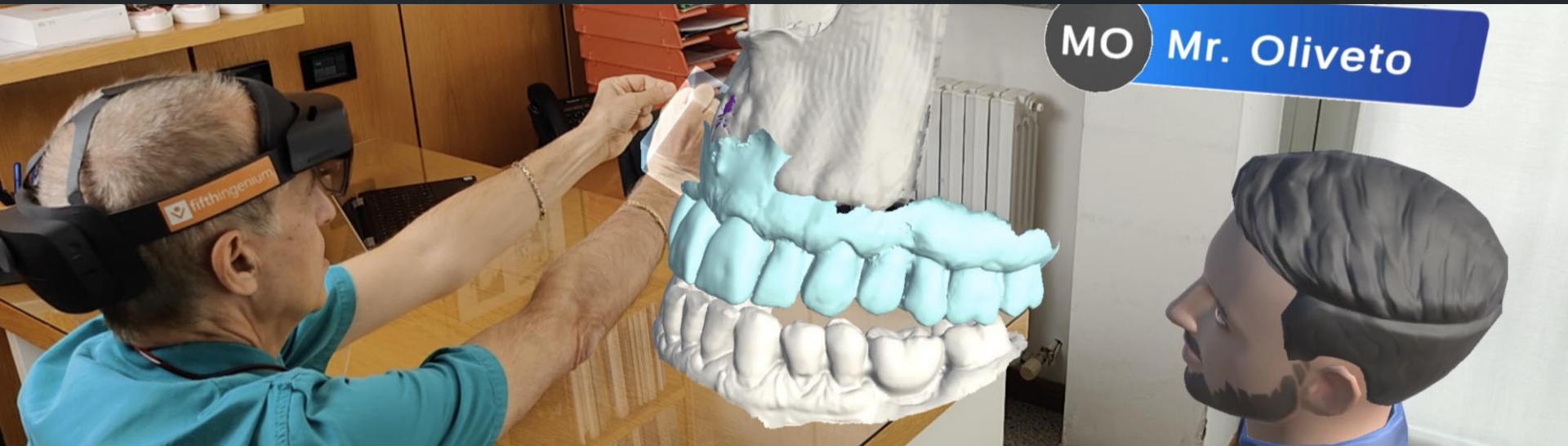
HoloDoctor is **compatible with DICOM and all the 3D files (.stl, .ply, .obj),** digital machineries and CAD software available in the clinics and labs, making its adoption smooth and fast.



REMOTE COLLABORATION

HoloDoctor facilitates clear communication between clinical staff and lab technicians. By sharing detailed 3D models, both parties **can discuss specifications accurately, reducing errors** and improving prosthetics and restorations.

The integration of **HoloDoctor** into the workflow streamlines the process from diagnosis to treatment. It ensures that all team members are aligned, resulting in **higher quality dental products and services.**



Working together, we quickly get your pilot up and running

Engagement

- Initial engagement and kick-off meeting with key stakeholders
- Understand the pilot goals, objectives and use case and requirements
- Sign Pilot Agreements

Discovery

- Agree high level scope and objectives for the pilot
- Identify and plan pilot activities, timelines, sites, resources and pilot team
- Deep dive into technology requirements and design

Pre-pilot

- Accounts setup
- Setup and integration with systems
- Provision of 5G & XR Solution
- Complete training
- Set up support
- Handover & Acceptance Sign off

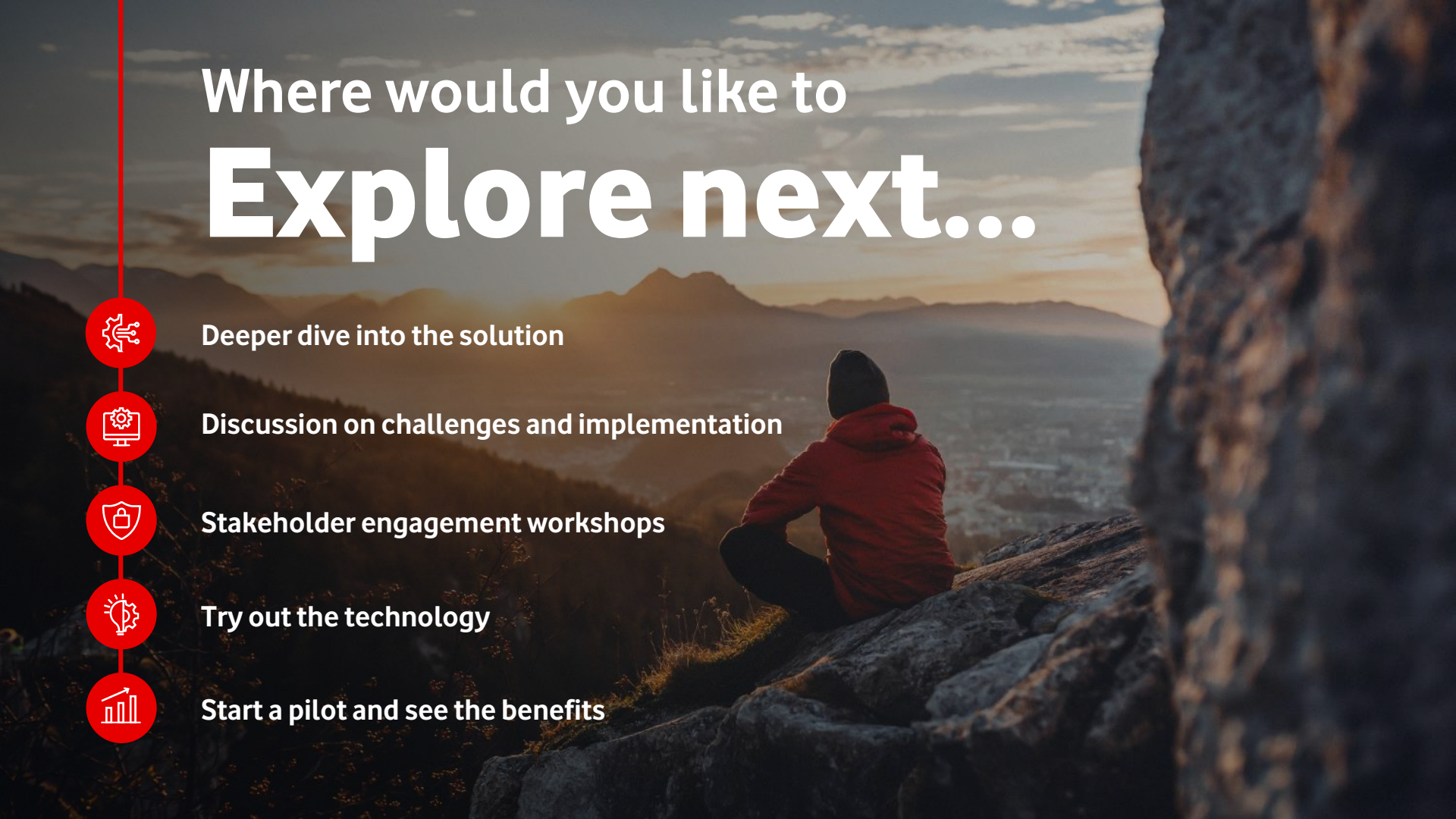
The Pilot

- On-boarding sessions
- Ongoing support
- Regular check-ins
- Surveys for feedback and learning

Conclusion

- Summary of findings
- Next steps for scaling
- Formally exiting pilot

vodafone business | fifth ingenium



Where would you like to Explore next...

- Deeper dive into the solution
- Discussion on challenges and implementation
- Stakeholder engagement workshops
- Try out the technology
- Start a pilot and see the benefits


vodafone
business
fifth
ingenium