



Final Event | Turin, May 7, 2026

Market shaping, scale-up business models and socio-economic impact & Mine.io outreach and awareness generation.



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Final Event, May 7, 2026



Final Event Workshop

Market analysis and Exploitation

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Overview and objectives

Position the Mine.io results for credible post-project uptake.

Strategic objective

Translate project results into exploitable, market-facing solutions with a credible route to standardisation, commercialisation and long-term adoption.

Core workstreams

Market analysis
Business modelling
Cost-effectiveness assessment
Exploitation planning
Socio-economic framing

Expected outcome

A coherent exploitation roadmap showing where the Mine.io innovations fit, how they create value and what is needed to move them into practice.

What the review should take away

- The project has moved from scattered exploitable results to clearer exploitation packages.
- The market logic is now visible: needs, customers, competition, business models and barriers.
- The next step is selective prioritisation and post-project mobilisation, not more generic analysis.

Review message

Mine.io is no longer presented as a collection of technical outputs only; it is presented as a set of solutions with identifiable value, users and adoption pathways.

What we have done so far

Phase 1 M10-M21

- 25 exploitable technologies identified
- Initial partner exploitation intentions mapped
- SWOT, IPR claims, policy and regulatory framing completed

Phase 2 M22-M33

- Target customers, costs, revenues and synergies updated
- Market identification, KER methodology, VPC and BMC methods defined
- Initial barriers-to-entry analysis and Zenodo knowledge repository created

Phase 3 M34-M42

- KER identification and scoring refined
- VPC and BMC developed per KER
- Horizon Booster support and D7.5 finalisation in progress

Mine.io ecosystem and value chain

How the project components, partners and pilots connect to form an integrated mining digitalisation framework.

Platform and infrastructure

Mine.io platform ecosystem integrates data, tools and services under a unified cloud architecture, connecting 8 pilot sites across 7 EU countries.

Digital tools and software

25 exploitable technologies spanning AI-assisted geophysics, 3D SLAM, autonomous navigation, digital twins, workflow automation and blockchain traceability. These have been consolidated into 6 Key Exploitable Results (KERs) for targeted post-project uptake.

Pilot sites and validation

8 real-world pilot sites covering exploration, extraction, processing, waste management and post-mining, validated by mining operators and research partners.

Consortium structure and partner roles

- 22 partners across 10 countries: SMEs (ACC, JOTNA, INNOV, FRONTIER, UGR), research (TUB, POLITO, UOULU, NTUA, USAL, ICCS), technology (GFT, MUO, IPT) and end-users (KGHM, TUB).
- Value chain coverage from exploration through extraction, mineral processing, waste management and post-mining rehabilitation.
- Platform-level integration ensures interoperability, open data sharing and a common exploitation framework for all results.

Ecosystem logic

Mine.io is not a collection of standalone tools but a connected ecosystem where each technology feeds into a shared platform, validated at real sites and ready for post-project uptake.

Current results at a glance

Partner intentions, customer focus and monetisation logic.

Primary target customers

Mining operators, research institutes, national authorities and IT firms. 76% of technologies target emerging markets. Main adoption interest from paying customers and research adopters willing to apply innovative concepts.

Main expected costs

Specialised personnel, infrastructure and hardware, further R&D integration effort. Initial setup costs for training and system integration are financially demanding. Strong network connectivity required for real-time monitoring capabilities.

Expected revenues

Direct sales with one-time payment, licensing and royalties, maintenance and support fees, consulting and training workshops, and knowledge transfer to technical universities and research partners.

Market analysis approach

A structured methodology applied to each exploitable asset, combining partner input, competitive analysis and business modelling.

SWOT and competitive landscape

Strengths, weaknesses, opportunities and threats assessed per technology. Competitive positioning mapped against existing mining digitalisation solutions and alternative approaches.

Business Model Canvas

Nine building blocks defined: customer segments (mining operators, research, governments, IT firms), value proposition, key partners, revenue streams, cost structure and channels.

Value Proposition Canvas

For each KER: customer jobs, pains and gains mapped against product features, pain relievers and gain creators to ensure market fit and adoption logic.

What the analysis covers per asset

- Market overview, supply and demand dynamics, investment activity and entry barriers for each technology domain.
- Regulatory landscape: UAS regulations, GDPR, EU AI Act, automation standards and ISO compliance for underground mining.
- Risk analysis with mitigation measures covering IPR ambiguity, low TRL maturity, cybersecurity and adoption resistance.

Disclaimer

Conducting a market analysis for each exploitable asset does not mean all assets will go to market. The analysis supports informed prioritisation of the strongest candidates.

Market needs, KERs and business models

A concise logic chain linking what the sector requires, what the project delivers and how it reaches users.

Market needs

The sector needs efficient mining support tools, validated digital methods and lower adoption friction for data-driven approaches and transferable knowledge.

Key exploitable results

Grouped exploitation packages
Commercially compatible bundles
Clearer customers and value fit
Stronger prioritisation logic

Business model logic

Product or platform offers where maturity is high, service and training where maturation is needed, licensing and joint exploitation where collaboration creates leverage.

Why this logic matters for the review

- Market pull is framed first, so that results are positioned as answers to sector problems rather than standalone outputs.
- Grouped results are easier to explain, position and commercialise than isolated technical outputs.
- Business model choices flow directly from the maturity and ownership profile of each result.

Reviewer takeaway

This chain makes the exploitation narrative easy to follow: market pull, packaged results, then credible route to uptake for each offer.

Exploitation strategy and market positioning

Clear pathways for further development, market entry and real-world deployment.

Strategy

Prioritise KERs by market pull and maturity. Four exploitation modes identified: direct product sales, licensing and royalties, consulting and training services, and continued R&D partnerships. IPR, access rights and responsibilities clarified per KER.

Market positioning

76% of technologies target emerging market segments
Competition from alternative approaches, not one dominant incumbent
Positioning as integrated mining ecosystem, not standalone tools
8 pilot sites across 7 EU countries provide credible evidence

Pathways forward

Four practical application domains: operational mine support (process optimisation, safety), research and validation (benchmarking, method refinement), commercial service offers (consulting, licensing, platform services) and ecosystem enablement (open knowledge, replication support).

What this means in practice

- Mine.io is positioned as an integrated answer to mining challenges rather than a loose collection of tools, which improves credibility with adopters.
- The exploitation mode is chosen per result, depending on maturity, ownership clarity and partner appetite, not imposed uniformly.
- Repository assets are used to shorten onboarding and lower the cost of replication for new adopters and follow-on projects.

Positioning message

Mine.io combines technical depth with clear market framing. Key customer segments: mining operators, research institutes, technology end-users, national authorities and IT firms. Revenue logic: direct sales, maintenance fees, training and consulting.

Barriers and enablers

What may slow down uptake, and what can accelerate it.

Main barriers

Shared ownership of key components can create IPR ambiguity. Some outputs still need packaging and clearer market-facing language before they are adoption-ready.

Main enablers

Strong pilot-based evidence
Clearer KER and business-model tools
Synergies through shared data
Public repository as durable asset

Conditional factors

Market entry may be indirect when customers prefer validated service offers first, and fragmented partner incentives can weaken joint exploitation momentum without active governance.

Priority actions

- Turn enablers into concrete commitments on IPR, partner roles and which results deserve post-project investment.
- Package outputs in customer-ready language that speaks directly to mining operators, research users and service buyers.
- Use pilot evidence and repository assets to lower perceived risk for first adopters considering the Mine.io toolset.

Enabler to activate first

The public repository is the most immediate enabler to activate, as it combines visibility, transfer and follow-on work with minimal coordination cost.

Pilot validation and stakeholder engagement

Real-world evidence from 8 pilot sites and structured stakeholder input that ground the exploitation strategy in practice.

8 pilot sites across the EU

Covering exploration (geophysics, muography), extraction (autonomous navigation, SLAM), processing (digital twins, workflow automation), waste management and post-mining rehabilitation.

Socio-economic assessment

Each pilot assessed for socio-economic, environmental and compliance indicators. Measurable values collected for operational efficiency, safety improvements and environmental impact.

Stakeholder and partner input

Partner surveys on exploitation intentions, IPR preferences, revenue expectations and target customers. 76% of technologies in emerging markets with strong adoption interest.

What the pilots demonstrate

- Technologies validated in real mining environments, not only in laboratory conditions, providing credible evidence for reviewers and future adopters.
- Socio-economic indicators quantified at pilot level, supporting cost-benefit analysis and future scaling scenarios for the next 5 to 10 years.
- Partner exploitation intentions mapped: 13 partners plan individual exploitation, with further joint exploitation coalitions under discussion.

Evidence for the review

The pilot results provide the strongest foundation for post-project uptake. Each KER can point to specific validation evidence, not just theoretical market potential.

Pathways to industrial uptake

Integrated view across technology, society and market.

Technology pathway

Consolidate the strongest evidence from pilots and partner use cases, then mature high-potential results toward deployment-ready offers fit for real mining environments.

Uptake steps

Validate evidence from pilots
Prioritise results by fit and maturity
Package offers for target users
Deploy through service or licence

Society and market view

Position the offer against sector needs, social expectations on safer and cleaner mining, and the market structure dominated by alternatives rather than a single incumbent.

Integrated uptake logic

- Technology readiness alone does not secure adoption, so maturation is combined with market framing and stakeholder confidence building.
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- Social acceptability and policy context shape the viable pathways, especially for results connected to safety, data use and environmental impact.
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- Market entry is expected to be selective, starting from service-led and licence-based offers before full productisation where it is justified.

Reviewer message

Mine.io can show a credible route from project outputs to practical adoption without overclaiming immediate full-scale commercialisation across all results.

Public repository as a long-term value asset

Why the Mine.io knowledge repository matters beyond the project lifetime.

Knowledge sharing

Makes project outputs easier to discover, reference and reuse across the mining and research communities, reducing duplication and speeding up follow-on work.

What the repository holds

Methods and documented workflows
Pilot evidence and datasets
Exploitation and business materials
Dissemination and reference assets

Innovation continuity

Reduces knowledge loss after the project and supports continued development by partners and external actors through a transparent, citable and durable set of assets.

Why this matters for the sector

- Replication support is strengthened because external actors can understand the methods, evidence and assets needed to adapt Mine.io results to new contexts.
- Visibility and credibility are reinforced through transparent dissemination, which helps partners and adopters justify further investment.
- Continued innovation in the sector is supported because the repository becomes a shared resource that lowers the barrier to further R&D and services.

Strategic value

The repository is not only an archive, it is an enabling mechanism for continued innovation in the sector beyond the Mine.io project horizon.

Key Exploitable Results identified at GA6

6 KERs consolidated from 25+ exploitable technologies — scored by Innovation, Exploitability & Impact criteria at the Porto General Assembly.

KERo1 • Aerial EM & Magnetic AI Exploration

Lead: USAL, AcceliGence

AI-driven airborne geophysical surveying combining electromagnetic and magnetic sensors for rapid mineral deposit identification over large areas.

→ Market-driven exploitation & services

KERo2 • Photonic (PIT) Mine.io System

Lead: Lithorica, AGH, KGHM

Photonic interrogation technology for real-time underground environmental monitoring, integrating fibre-optic sensors with AI-based anomaly detection.

→ Market-driven exploitation & licensing

KERo3 • Underwater Robotic Platform

Lead: WRCP, MUO, INESC TEC

Autonomous underwater vehicle for exploration and mapping of flooded mines, enabling resource assessment in otherwise inaccessible environments.

→ Technical services & further research

KERo4 • Underground Autonomous Vehicle

Lead: USAL, AcceliGence, LTU

Autonomous navigation and automation platform for underground mining operations, reducing human exposure to hazardous environments while increasing operational efficiency.

→ Market-driven exploitation & internal use

KERo5 • Wireless Dynamic Charging

Lead: ENRX-IPT

Inductive power transfer system enabling continuous wireless charging of electric vehicles in underground mining operations, eliminating battery-swap downtime.

→ Market-driven exploitation & licensing

KERo6 • Digital Twin PLM Module

Lead: Jotne

Product Lifecycle Management module with open-standard interoperability (STEP/ISO 10303), enabling digital twin integration across mine planning, operations and closure.

→ Market-driven exploitation & SaaS model

Consolidation approach

25+ individual exploitable technologies were assessed by Innovation, Exploitability and Impact criteria. 6 Key Exploitable Results were selected as the priority packages for post-project uptake, each backed by at least one industrial partner with a concrete exploitation commitment.

Partner exploitation pathways – summary

Based on 23 partner exploitation surveys (92% response rate).

- 13 partners plan **market-driven commercialisation**; the majority target emerging markets in critical raw materials, green transition and mine automation.
- Most partners plan **individual exploitation**; joint exploitation across KER bundles remains an underexplored opportunity that needs active coordination post-project.
- Exploitation timelines are realistic: **9 partners short-term** (0–2 yrs), **11 medium-term** (2–5 yrs), with additional funding and regulatory alignment identified as the main enablers.
- IPR strategy needs formalisation: **~25% pursuing patents/trademarks**, but 37% have not yet decided – IPR agreements between co-developing partners should be finalised before project closure.



MINE.IO

A Holistic Digital Mine 4.0 Ecosystem

Thank you for your attention!

Any questions?



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