

PDAC 2026: Mining's Technology Shift

Data, AI, automation, and connected workflows are moving from experimentation to core operating infrastructure.

Technology was the clearest takeaway from PDAC. Across the sector, mining is moving beyond isolated digital tools and pilot projects toward connected systems that reduce uncertainty, improve decision-making, and lower operating risk across the life of an asset. PDAC simply made that shift easier to see by bringing explorers, operators, vendors, and capital into one place.

Why It Matters

Mining companies are no longer treating technology as a side experiment. For years, new tools were introduced as promising add-ons to established workflows: better sensors, smarter models, interesting software, isolated pilots. What now stands out is not the novelty of individual tools, but the growing expectation that data, AI, automation, and connected workflows should materially improve how decisions get made.

At PDAC, that change was visible in the move from Fleet Space Technologies' 2025 keynote on exploration search-space reduction to BHP's 2026 keynote on data, AI, and decision-making across the mining lifecycle.

The question is no longer whether technology belongs in mining. It is where it can most reliably narrow uncertainty, strengthen execution, and create operational advantage.

Exploration

Exploration shows the shift most clearly because uncertainty is highest and capital is easy to deplete. Increasingly, the value of technology is being measured by how early it can reduce the search space. The most useful tools are not just producing better interpretations after drilling; they are helping teams decide where not to drill, where to focus, and how to move from regional possibility to target confidence with more discipline.

At PDAC, Ideon's AI-enabled muon tomography and TerraEye's AI-supported satellite targeting workflow both pointed to the same priority: shrinking the target set before drill capital is committed.

Exploration is becoming less about collecting more data for its own sake and more about using integrated data to eliminate bad options earlier.

Orebody Knowledge

Orebody knowledge is also becoming a more durable competitive advantage. Higher-density, machine-ready geology can sharpen the feedback loop between fieldwork, interpretation, and drilling.

At PDAC, GeologicAI's digital core workflows and Vektore's structural analysis platform both pointed to the same shift: more of the geological record is being captured in forms that are faster to review, easier to audit, and more useful downstream.

The more important change is not just speed. It is the growing value of data that can move cleanly into modelling, reconciliation, planning, and decision-making rather than remaining trapped in isolated files or specialist interpretation environments.

Decision Platforms

Software is being redefined in the same direction. The industry is moving away from point tools and toward connected decision platforms. Across exploration, study work, mine planning, maintenance, and finance, the emphasis is shifting from handoffs to continuity: capture, analyze, model, decide, act.

At PDAC, IMDEX's capture-analyze-solve framing and Mira Geoscience's AI capabilities inside Geoscience ANALYST both reflected that push to embed analysis within a wider decision chain. Seen through that lens, the most important software trend is not simply the rise of AI. It is the convergence of AI with governed, connected workflows. A model on its own is not enough. What matters is whether its outputs can be validated, traced, challenged, and operationalized.

Operating Core

Operational technology is now moving into the center of the business, not sitting at the edge of it. Automation, sensing, monitoring, and remote systems are increasingly being treated as part of how mines will be run.

PDAC examples ranged from SK Godelius's robotics and teleoperation systems to Worldsensing's monitoring tools for dynamic risk management, both presented as ways to improve safety, continuity, and response speed when site conditions change.

Down-Market Access

Advanced capability is also moving down-market. Technologies that once seemed reserved for major operators are becoming more accessible to juniors and mid-tier companies through lighter deployment models, browser-based platforms, cloud software, rentable hardware, and modular analytics. At PDAC, Lithodat's browser-based data tools and Hyperspectral Intelligence's compact scanning setup both suggested that more capable workflows are becoming easier for smaller teams to deploy. The technology shift in mining is no longer only about what large, well-capitalized companies can build internally. It is also about how smaller teams can improve targeting, shorten decision loops, and operate with more technical leverage than they could a few years ago.

Closing Perspective

PDAC was useful here not as the subject, but as a market lens. Across keynotes, operator sessions, and exhibitor demonstrations, from BHP and IMDEX to Micromine and Worldsensing, the same pattern kept appearing: mining is moving beyond digital experimentation and toward operational integration. Technology is no longer sitting at the edge of the mining conversation. It is becoming central to how companies think about discovery, planning, execution, resilience, and capital efficiency.

For mining companies, the implication is practical. Technology should no longer be evaluated as a side initiative, an innovation line item, or a branding exercise. It should be judged by a simpler test: does it reduce uncertainty earlier, connect more of the workflow, and produce outputs that can be trusted and acted on? If not, it is probably still a pilot rather than a true operating advantage. The companies that outperform in the next phase will likely be the ones that treat technology as governed infrastructure for better decisions, not just as a collection of tools. PDAC simply made that shift easier to see. The shift itself belongs to mining, and it is becoming structural.

That is why technology adoption in mining is no longer just an efficiency story, but also a risk-management story.

Governance

The market is also becoming more disciplined about what good technology adoption looks like. Mining companies are not only asking whether AI can generate insight faster. They are asking whether those insights can be trusted, reviewed, defended, and embedded into technical and operating decisions.

That tone was clear in Micromine's emphasis on responsible AI and in SRK Consulting's cautionary discussion of LLM reliability, both of which underscored that adoption now depends as much on validation and control as on raw model capability.

The next phase of adoption will likely be shaped as much by data governance and workflow discipline as by AI performance itself.

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