

CGI in metals and mining

Enabling the future state
of metals and mining
operations

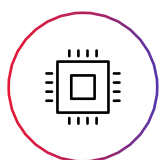


The natural resources sector, particularly the metals and mining industry, is recovering from an intensely challenging period. Supply chain disruptions, drop in commodity prices, production slowdowns, and a focus on continuing operations while keeping workers safe during the pandemic have ushered in a “new normal” for the industry.

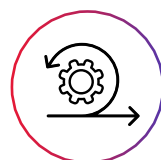
As organizations navigate this period of change, cost reduction, operational efficiency and becoming a digital organization remain top priorities. At the same time, meeting community and investor expectations and driving improvements in environmental, social and governance standards bring their own challenges.



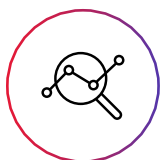
To address these challenges, metals and mining companies require:



Know-how to leverage and apply data and emerging technologies



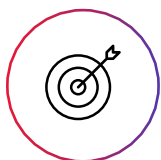
Resilient and agile end-to-end digital value chain



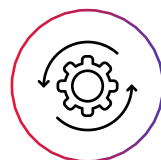
Deep insight into the current state across and within plants



Strong ecosystem of partners who share sustainability values



Clear strategy and well-defined priorities



Expertise to integrate and unify people, processes, technologies and machines

Pivoting to growth



With a change in working conditions unlike anything seen for centuries, metals and mining companies find themselves empowered by new tools and new opportunities for collaboration. Continuous innovation and co-creation go beyond any single department or function, becoming organization-wide in scope and integrated into an organic whole. Innovation has become a strategic differentiator sought by investors. Moreover, metals and mining companies need to become agile to meet the opportunities and challenges presented by the demands of the green economy.

How metals
and mining
companies
reinvent will be
critical to their
future success.

Seizing opportunities to co-create the future



For over four decades, we have helped leading manufacturers navigate and seize the opportunities of change. We have over 6,000 manufacturing experts, including 2800 supply chain experts assisting global clients in driving profitable growth.

We support over 600 manufacturing clients worldwide across multiple industries, including automotive, chemical, high-tech, metals and mining, and natural resources with our deep domain expertise and technical know-how.

This extensive experience enables us to help our metals and mining clients meet the challenges of the future by building an agile organization, underpinned by a resilient technology value chain. We provide end-to-end solutions for clients from raw material producers, to manufacturers, to end provisioners. As industry lines blur, we also bring forward lessons learned and innovative solutions from our work across industries.

We serve as a mindful visionary, helping you connect the dots from end-to-end and pursue strategic technology investments that enable you to innovate and realize value continually.

Through our global [Innovation Centers](#), we co-create and co-design solutions with our clients, research future industry trends and provide a ready-made environment for the experimentation of new emerging technologies, quickly and cost-effectively.

Annually, we meet with client executives from around the world to get their views on the trends affecting their organizations and industries. Through the [CGI Voice of Our Clients](#), we analyze these findings to provide actionable insights by industry to benchmark best practices, including the attributes of digital leaders.

From generating ideas and building strategies to managing agile at scale, we collaborate with you at every step of your digital transformation journey.

Decarbonizing operations and shifting to sustainable production

Metals and mining companies are subject to mounting demand from regulators, customers and shareholders to become more environmentally sustainable.

Headway has begun. The last few years have witnessed increased investment in sustainable processes (e.g., electric or hydrogen-powered vehicles, integrated recycling, etc.) and in creating green business ecosystems.

In addition to reducing carbon emissions through innovations in extraction and production processes, digitization and new ways of working are helping organizations achieve sustainability goals. Optimizing processes, transparent reporting of relevant emission KPIs, efficient water consumption and re-use, and energy efficiencies are all areas where metals and mining companies can benefit from deep technology experience.



2021 Voice of Our Clients reveal:

87%

of executives* view sustainability as highly core to their ability to create value.

*Interviews with client executives from the natural resources sector.

Accelerating digital transformation to reach the future state



Using technology to become a truly digital organization is a journey unique to each organization.

Digitization requires new skills for new technologies. It also requires change management, which impacts how organizations source and retain talent. High-tech talent is scarce in the industry. However, due to the pandemic, remote work has gained management buy-in and there now is an opportunity for sustainable workforce transformation.

At the same time, there is an ongoing revolution in how software is created and procured. New tools deployed on scalable cloud platforms allow for greater standardization and automation, while new providers are disrupting the pricing, access and distribution of entire parts of the technology supply chain. In addition, emerging technologies are evolving at high speed and so are new business models.

To cope with this complexity efficiently requires metals and mining companies to mirror their software counterparts. This means valuing agility, finding new solutions and widening their ecosystem of collaboration to spark innovation and shared value.

CASE STUDY

Creating a digital twin to decrease maintenance time and improve worker safety

At metals and mining facilities, planned and unplanned work stoppages for maintenance can cost millions of dollars. In addition, keeping track of all maintenance work orders as well as the location and safety of employees is a challenge.

Our client, a high-tech mining and mineral group, wanted to improve their worker safety and business agility, and decrease overall maintenance time. As a long-standing partner who understood their business and strategic goals, we built a 4D digital twin of one of their plants, based on building information modeling (BIM) in combination with data from maintenance work orders and systems. With an easy-to-navigate API to the maintenance management system, they can now view, in real-time, a 4D model of operations as well as current maintenance projects.



With this solution, the client is able to plan and effectively manage maintenance tasks leading to faster, more efficient repairs and a safer environment.

Automating to unlock the value of data

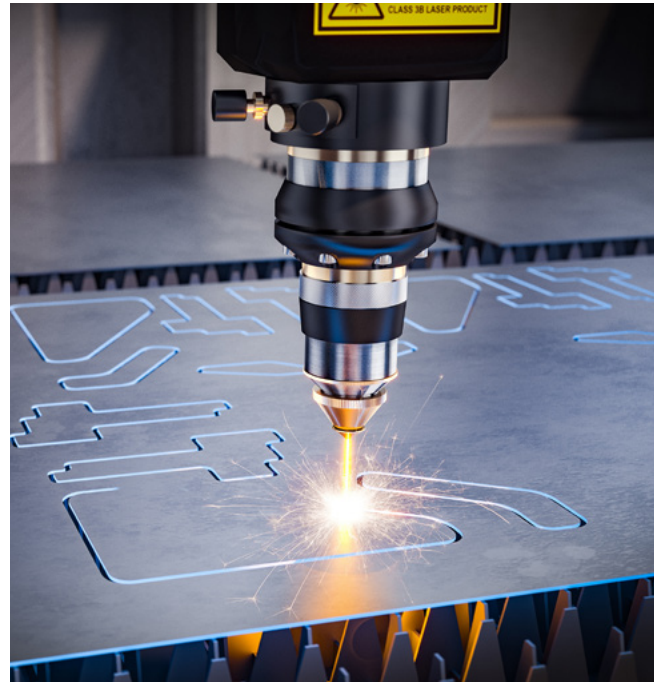
As metals and mining companies digitize processes and integrate systems to reduce operational cost, drive agility and improve productivity, automation will be a key enabler.

Collecting, processing and analyzing massive amounts of data will support the shift from reactive decision-making to proactive situational responses based on forecasts and predictions. Moreover, artificial intelligence, machine learning and other advanced analytical technologies will support continuous monitoring and create the foundation needed to work with simulations.

Having data will not be enough; having access to quality data is the key differentiator. Data governance can ensure reliable data exchange across the value chain.

Becoming a data-driven organization calls for a clear strategy to manage how and where data is stored, what kind of data is shared, how it is owned and how the data is contextualized. Moreover, as metals and mining operations become increasingly connected, the importance of data to fuel success will grow alongside the need for advanced cybersecurity controls. Cybersecurity operations and forensics will become key capabilities tied to protecting competitive advantage.

In addition, managing data produced throughout the metals and mining life cycle—from prospecting the ore body to customer delivery—will require more advanced communication and infrastructure solutions, as many of the earlier Wi-Fi and 4G investments approach capacity limits.



Automation and advanced analytics promise to significantly improve throughput, safety and return on capital.

CASE STUDY

Using machine learning to predict cracks in steel

Steel manufacturers cannot assess the quality of their output until the end of the manufacturing process, at which point they can discover cracks in a large amount of the finished product. The damaged steel must be melted and fed back into the process, wasting enormous amounts of energy, time and money.

Uddeholm, a Swedish multinational producer of high-alloyed tool steel for electronics and automotive customers, wanted to improve their manufacturing process and reduce the cracks in completed steel.

Analysis of the data and reverse engineering of the machine learning models enabled Uddeholm to pinpoint the cause of quality issues, greatly improving the ability to eliminate or reduce damaged steel.



Together with Uddeholm, we worked to develop a high-powered machine learning model that could predict—with over 70% accuracy—where and when cracks would occur.

What the future state looks like

As the metals and mining industry transforms through new ways of thinking and new approaches to technologies and systems, we believe five factors will be foundational to achieving the future state.

Seamless

connectivity

Real-time

data processing

Digitized

processes

Data-driven

decision-making

Scalable

cloud platforms



Serving as your transformation partner

The future is full of promise for metals and mining companies due to the transformative nature of innovation. There are challenges ahead and organizations must remain nimble and responsive. They must also invest in technology and organizational agility to keep moving forward.

CGI is the business and IT partner of choice for the metals and mining industry. Our consultants have a deep understanding of the challenges facing the metals and mining industry. This insight enables us to deliver pragmatic, high value-added solutions and services through long-term partnerships based on trust and delivery excellence.

Working together, we help you improve business agility to drive efficiencies, increase productivity and agility and reduce costs to advance your strategic goals and sustainable future. Through strategic IT and business consulting services, systems integration, managed IT services and intellectual property solutions, we help you realize the promises of digital transformation, Industry 5.0 and beyond.

Founded

1976

Locations worldwide

400

Manufacturing consultants

6,000

Supply chain experts

2,800

Manufacturing innovation centers

5

Avg no. of years our top 10 clients have worked with us

28



About CGI

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. We are insights-driven and outcomes-based to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

Learn more at cgi.com/manufacturing or contact us at manufacturing@cgi.com.

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