Deloitte.

Intelligent Mining
Delivering Real Value

March 2018

Contents

Introduction

To capitalise on the digital revolution, mining companies need to drive radical change. Yet many still focus on point solutions – underestimating internal organisational barriers and bureaucracy that can hinder their ability to disrupt and prosper. This lack of value realisation can be attributed to a limited understanding of the impact that digital transformation can have on the work, workforce and workplace.

Globally, mining operators across all commodities are facing the combined challenges of declining ore grades and operating efficiency. Responding to such challenges is difficult due to the significant variance inherent to ore bodies. This is exacerbated by costly infrastructure requirements, distant planning horizons and lengthy implementation timelines, notwithstanding dangerous operating environments and subsequent critical safety considerations.

While many mines strive to drive meaningful, sustainable transformation in their operations, they lack real visibility, and struggle to access accurate, complete and timely data or business options. This leads to diminishing returns as they continue to follow the approaches of old – sweating their remaining assets and working harder for smaller gains.

The cost of digital technology is decreasing and digital solutions are being trialled and tested, so there is no better time than now to explore Intelligent Mining, address the underlying causes of obstacles and focus on value.

Deloitte understands digital transformation. Being digital is about the ability to see differently, think differently and do differently. The digital future brings great promise. It enables quicker and better decisions that can reduce performance variability and improve equipment utilisation and safety. It can move organisations from a reactive management approach to one that looks forward with insight and confidence.

This potential value realisation will increase further as organisations transition from doing things better to doing things differently:

- **Using Digital Technology to Manage Better –**
  Evidence-based insights allow organisations to do the same work better thus eliminating execution waste (10-20% improvement potential)[1]

- **Integrating information –**
  Leveraging technology to automate processes and make better system-wide decisions (20-30% improvement potential)[1]

- **Redesigning Integrated Systems –**
  Integration and optimisation of all technologies across the mining value chain allows organisations to work differently (greater than 50% improvement potential)[1]

"To survive in this new world, businesses must learn to think differently, see differently and do differently."

Deloitte Digital

Since the release of our thought leadership piece in 2017 entitled "*The Digital Revolution: Mining starts to reinvent the future*"[2] we have been on a digital journey with our clients, gaining invaluable experience and insights into the building blocks of successful transformation. Observing several mining organisations, we have been able to identify the following key challenges that hamper the rate of digital transformation:

• Opting for "out-the-box" point solutions which are not fit-for-purpose

• Inability of technology providers to implement their solutions

• Limited comprehension of the impact on the workforce and changes required to work processes

• Underestimating agile methodologies and how to implement these

• Inability to adapt governance models to support agile principles

• Fragmented ownership of the digital transformation agenda

• General tendency to focus on project outputs instead of business outcomes.

Through walking the transformation journey with our mining clients, we understand what it takes to transform and where to start with digital. We have invested in, and pre-configured solutions with our partners that accelerate time to value realisation and reduce the cost of pioneering new solutions.

It's not just about the technology. It's about changing the way you do business.

Agile execution approach
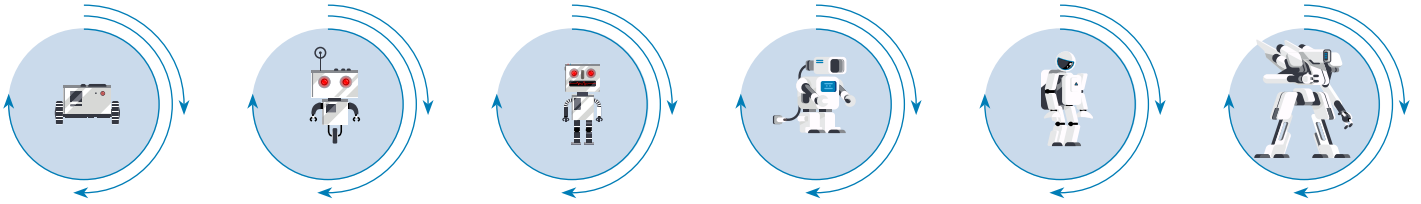
Deliver small batches Regularly   **Reduce Waste**   **Learn and Improve**   **Solve for the System**   **Empower the Team**

From			
	Broad Focus	Test at Scale	Slow Adoption

To			
	Think Big	Test Small	Scale Fast
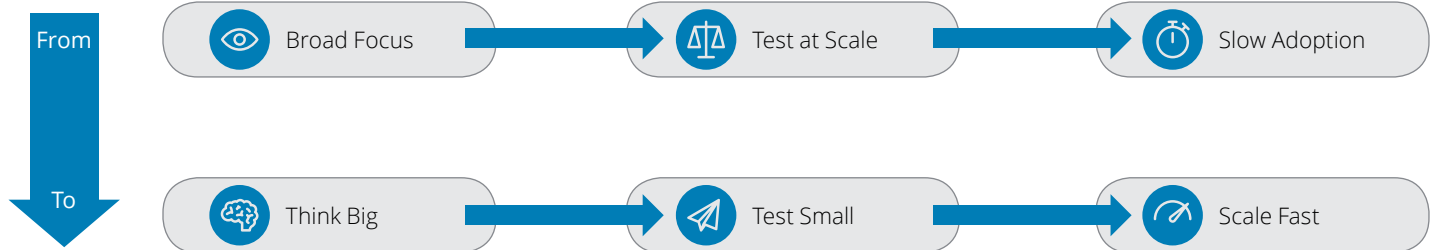
The agile execution approach is based on key principles focused on delivering a digitalisation programme that, over time, becomes self-funding. These implementation principles enable the move away from the traditional broad focus, test at scale and slow adoption approach that typically accompanies a technology roll out. In a rapidly evolving technology environment, where solutions are often unique and target step-changes in performance, a 'think big, test small and scale fast' method is recommended.

The future is Intelligent Mining

Intelligent Mining is about broader organisation transformation, and not just a 'digital mine'. Intelligent Mining will impact the way decisions are made, the skills you require, how you engage with your workforce and communities, and how to optimally utilise resources, such as energy.

"Digitally mature companies are achieving success by increasing collaboration, scaling innovation and revamping their approach to talent."

MIT Sloan Management Review

Intelligent Mining is about understanding where waste is created in the business, ranging from inherent variability in the orebody, design and structural waste to management-induced variability. Digital solutions are designed to eliminate this waste by adopting best-of-breed technologies – many of which have been proven in multiple industries. The result is:

- A step-change in operational performance enabled by augmented decision-making

- Optimised resource management

- Deployment of the right skills and selection of alliance partnerships that support the new ways of working.

The journey to Intelligent Mining requires transformation in more dimensions than technology and include the following:

✓ **The way decisions are made**
Intelligent Mining is about making informed decisions through accurate, complete and timely information. Greater visibility and intelligence drives businesses to be:

- **Input driven and forward-looking -** Automated feedback loops on leading indicators will allow leadership teams to intervene proactively and solve issues before they occur.

- **Managed by exception -** Operating limits are defined for each of the input measures. A performance deviation triggers the required action and the intelligent workflow therefore becomes the basis of exception management.

- **Integrated and holistic -** A decision in relation to an unplanned event such as, 'do I move my mining equipment or use the opportunity to do maintenance?' becomes transparent, collaborative and fact based.

- **Prescriptive -** Increased decision-making based on predicted outcomes, driven by analytics and artificial intelligence (AI). Historical analysis and pattern recognition are driving the improvement of operational decisions, for example safety and risk mitigation, as well as commercial decisions such as where, and when to sell products.

- **Augmented -** Decisions of front-line operators and supervisors, are augmented by digital decision support that provide decision options, and real-time technical guidance through mechanisms, such as augmented reality engagement and the gamification of performance management.

How resources are managed

Intelligent Mining will make it possible to manage resources such as energy, labour, equipment, and infrastructure as a variable cost. For example, infrastructure such as conveyor systems can be integrated with energy monitoring across the value chain to optimise system utilisation. This in turn integrates with smart automation based on equipment capacity, availability and utilisation. Energy therefore becomes an input parameter that is subject to resource allocation similar to employees and material. Optimisation of this variable resource, across the value chain, will improve sustainability and reduce utility consumption.

Intelligent mining in action

Client: Global precious metals organisation

Capabilities and features delivered:
Smart infrastructure
The integration of solar, wind and other forms of renewable energy and the implementation of a smart electricity grid that measures and manages power consumption from both supply and demand across the value chain.

Benefits: Decrease in utility consumption and cost through optimisation in utilisation patterns.

What skills will be required and how resources are deployed

Intelligent mining will fundamentally change the way people work, the way jobs are designed and ultimately the working environment. The impact of digital transformation on people requires focused effort to understand and solve for each of the following areas:

- **The changing nature of work -** Manual and semi-skilled labour is at risk of digital augmentation. Almost every job will be re-invented, creating the "augmented workforce": working next to and with smart machines.

- **Future-fit skills and capabilities -** Acquiring new skills is non-negotiable to stay ahead of the curve. Proactive upskilling and reskilling of manual and semi-skilled labour is a business and social imperative for the mining industry.

- **Creating a shifting change culture that is self-fulfilling -** Organisations implementing systemic changes in how they organise and develop workforces smartly, will spur workplace innovation, and cultivate digital cultures and experiences.

- **Leadership commitment -** Securing leaders with the vision necessary to lead a digital strategy, and a willingness to commit dedicated resources to achieve this vision.

How value is shared

In many instances, adopting digital technology reduces the human input required, and in the minds of many role players, there is an immediate assumption that it will lead to increased job losses and a negative socio-economic impact on the surrounding communities. Mining organisations have choices that will define their own digital future. By adopting a shared value approach, the fourth industrial revolution is not necessarily a zero-sum game where mines win and communities lose, but rather a new opportunity for greater socio-economic impact. The key premise of shared value is that the competitiveness of a business and the health of the community in which it operates are interwoven. Digital strategies and choices approached from a shared value perspective would address:

- **Digital infrastructure -** Technology infrastructure investments create an opportunity to build and improve the digital infrastructure within local economic ecosystems, which the mines form part of. This leads to improved quality of life and creating conditions necessary for the accelerated development of communities.

- **Basic education -** Digital disruption has been lowering historical barriers of access to education with online learning platforms that provide valuable and useable skills development. Remote locations no longer require local expertise to transfer educational or specialised knowledge. Community oriented education projects become more affordable through digital platforms, creating impact and lending themselves to collaboration.

- **New skills development -** The changing skills requirement brought about by digital transformation presents an opportunity for investment in local development to cultivate 21st century skills. These include intangible skills such as EQ, curiosity, creativity, critical thinking, adaptability and resilience as well as technical skills based on data and algorithms. Shifts in education and skills development provide mining organisations with an opportunity to reskill employees as technology is deployed and invest in skills development in surrounding communities. This helps to address the deficiencies and strengthen local clusters over time.

- **Enterprise and supplier development -** Digital transformation provides advances in technology that can create entirely new business opportunities

by enhancing market accessibility for suppliers in the region. Opportunities include:

- Shared tender platforms

- Local supplier development partnerships with original equipment manufacturers (OEMs)

- Renewable energy partnerships and other opportunities linked to new skills developed in the communities.

Intelligent Mining in action

Client: Global precious metals organisation

Capabilities and features delivered:
Stakeholder engagement for shared value
A globally enabled, cloud-based solution was implemented to enable the organisation to engage more effectively in the communities in which it operates. The platform created transparency of key processes and enabled stakeholders to view real-time, accurate and complete information.

Benefits:
• Improved management of time-critical and sensitive complaints and grievances
• Transparent and more effective stakeholder engagement (two-way communication)
• Improved return on investment management concerning community-based initiatives.

Realising the potential
Realising the potential of Intelligent Mining requires an integrated, transparent and transformational approach. It is no longer enough for organisations to simply "do things better" they have to start "doing things differently".

"Digitally maturing companies are increasingly organised around cross-functional teams versus companies at early stages of digital development."
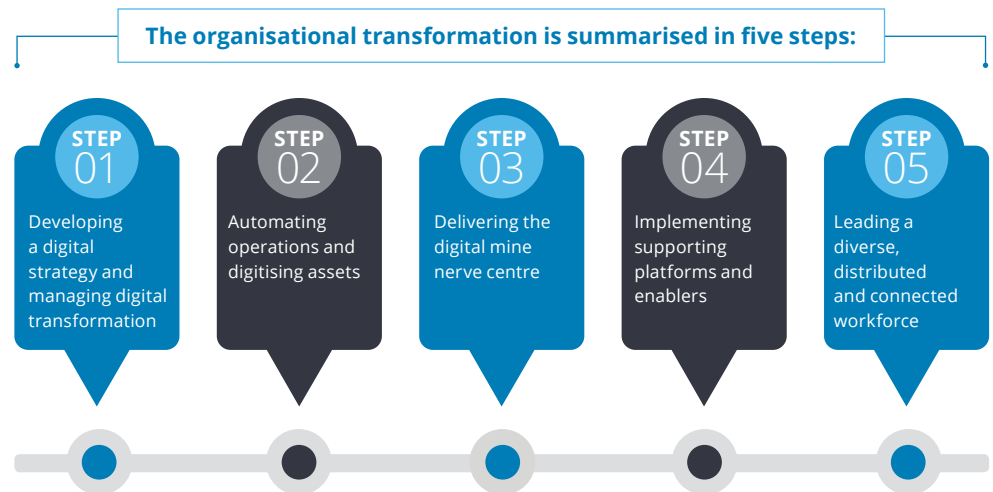
MIT Sloan Management Review[4]

Intelligent Mining requires organisational transformation

The transformation focuses on a shift from traditional, siloed models to a business value driven, agile operating model to ensure sustainable Intelligent Mining.

"Intelligent Mining is a transformation, whether organisation-wide or for a single discreet use case"

Deloitte Digital

The organisational transformation is summarised in five steps:

STEP
01
Developing a digital strategy and managing digital transformation

STEP
02
Automating operations and digitising assets

STEP
03
Delivering the digital mine nerve centre

STEP
04
Implementing supporting platforms and enablers

STEP
05
Leading a diverse, distributed and connected workforce

Every organisations' transformation will be unique in focus areas and scale, but generally encompasses the following three areas of the value chain:

• Automating physical operations and digitising assets

• Data-driven planning, decision-making and short interval control

• Re-imagined ERP: Automated and integrated support processes.

The ambition and chosen set of opportunities will dictate the scale of change. The transformation to Intelligent Mining will, however, always require some form of transformation, whether organisation-wide or for a single discreet use case. Transformation will result in changes to technology, processes and the ways of work.

A successful transformation is dependent on:

• **Integration of core and support processes** underpinned by a robust technology architecture

• A **transformed workforce** augmented by decision support and **real time performance management**

• **Resilient leadership** with a relentless **drive for value** realisation, coupled with **real endorsement** for **agile ways of work.**

Integration of core and support processes

To fully leverage the power of digital, miners need to integrate assets across the value chain. This will enable them to view information in multiple time horizons, improve planning, control and decision-making.

We believe that the pace of digital transformation is more about people than technology. We have, and will continue to invest in solutions that solve industry challenges. These pre-configured solutions are based on best-in-class platforms from our established partner network, integrated through a robust, but flexible technology architecture. Selected examples of these solutions include:

• **Integrated digital planning:**
Eliminates waste, creates value by obtaining a better understanding of the ore-body, and provides more complete, timely and integrated information to improve budget forecasting for optimal resource management. Market data, procurement, maintenance and workforce planning are integrated with mining and financial plans to provide optimal holistic forecasts

• **Digital short interval control:**
Facilitates the improved execution of the short-term mine plan through the adoption and use of digital measurement, communication and integration technologies. Through real-time or near real-time information updates, front-line supervisors and their managers are empowered by a more accurate and complete view of their areas of responsibility

• **Gamified performance management:**
Enabled by short-interval tracking and capturing of operational metrics from the edge. The solution allows for individual and team-based performan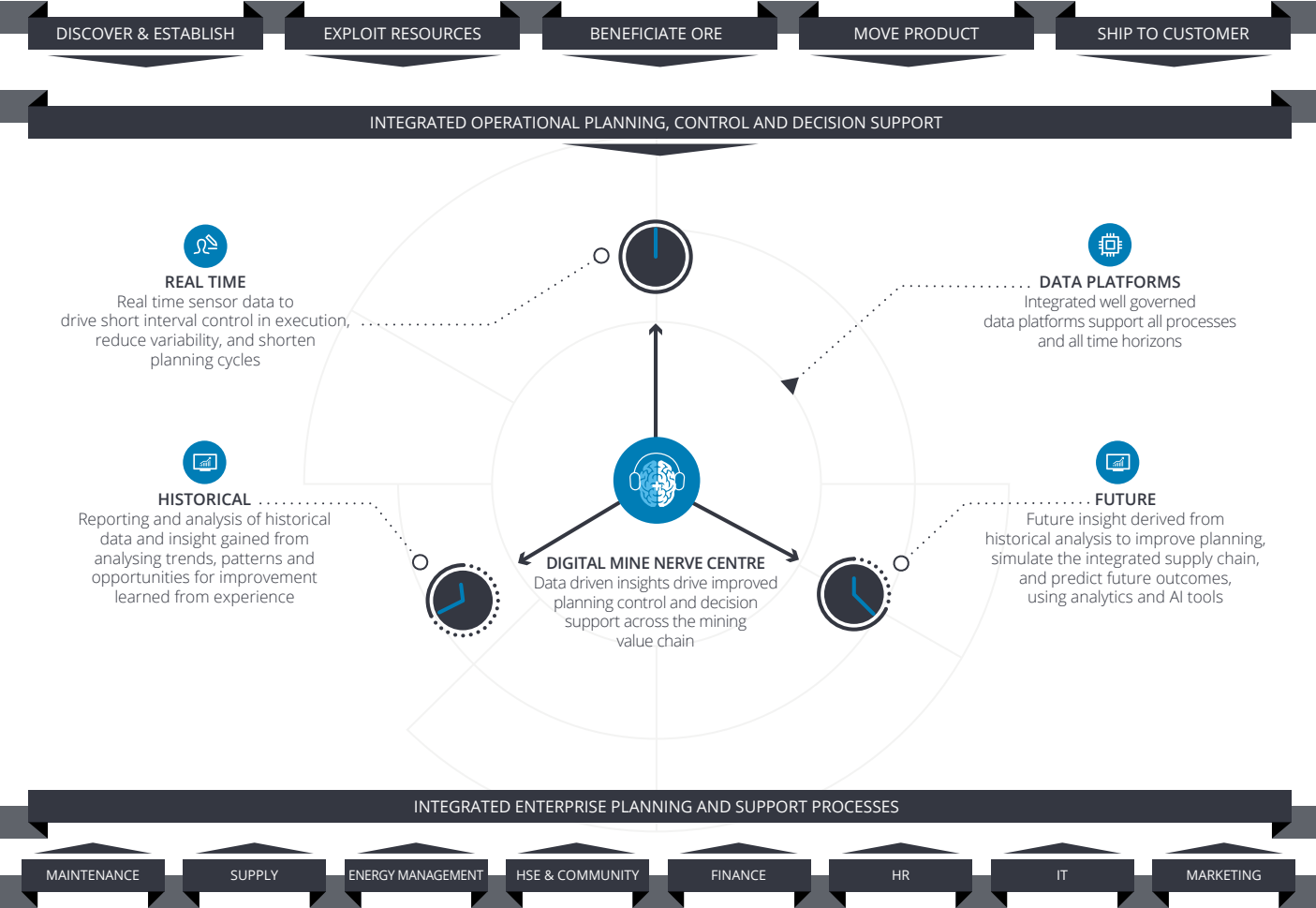ce to be measured and fed back in an interactive game-based context to stimulate healthy competition and motivation supported by near real-time incentivisation

• **Smart Predictive Maintenance:**
Combines a series of IoT devices on key mining equipment – sending real-time operational metrics such as temperature, vibration, load factors, oil analysis and more to predictive monitoring algorithms, flagging imminent failures, for a manage-by-exception way of work. Automatic workflows trigger work orders and purchase orders where specific parts are required for the repair.

These four use cases embody the logical and practical first steps in establishing the digital mine nerve centre, unlocking immediate business value. The nerve centre ultimately builds up over time through focus on operational improvements based on analytics in three frames:

• Analysis of historic trends and patterns

• Real-time data derived from sensors during operation

• Deriving future insight from predictive analytics and scenario modelling.

We believe in accelerated technology implementations through minimum viable products that quickly surface insights. These insights inform the overall transformation requirements.
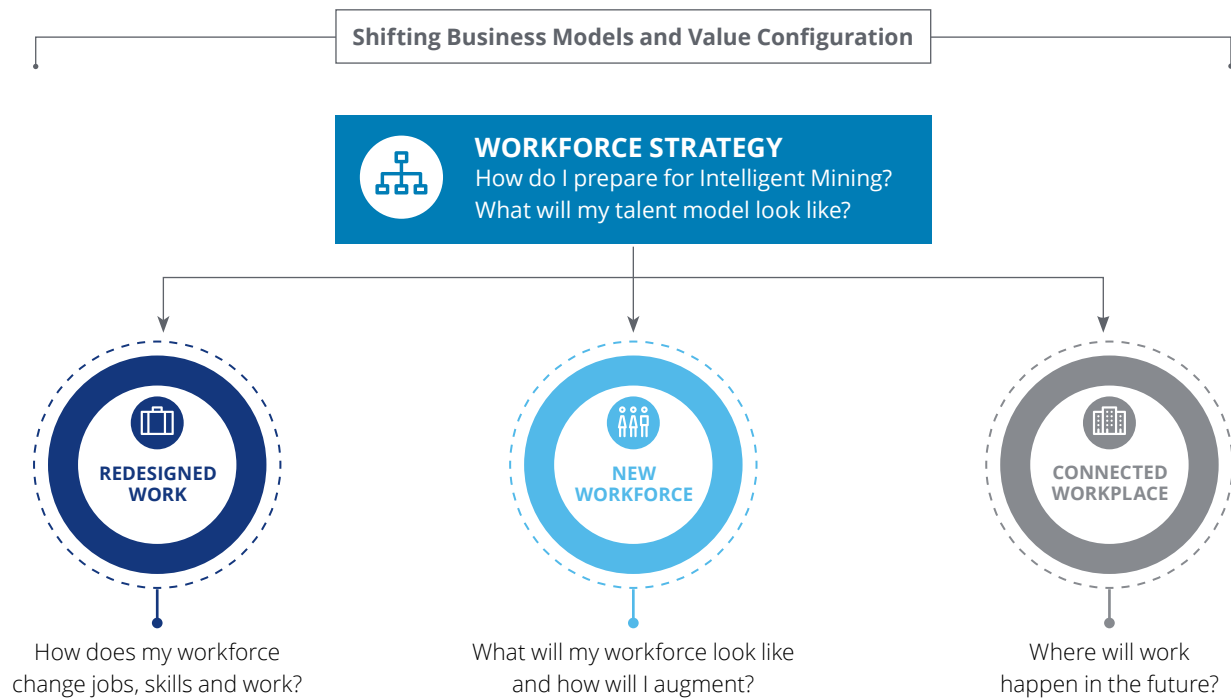
DISCOVER & ESTABLISH	EXPLOIT RESOURCES	BENEFICIATE ORE	MOVE PRODUCT	SHIP TO CUSTOMER

INTEGRATED OPERATIONAL PLANNING, CONTROL AND DECISION SUPPORT

REAL TIME
Real time sensor data to drive short interval control in execution, reduce variability, and shorten planning cycles

DATA PLATFORMS
Integrated well governed data platforms support all processes and all time horizons

HISTORICAL
Reporting and analysis of historical data and insight gained from analysing trends, patterns and opportunities for improvement learned from experience

DIGITAL MINE NERVE CENTRE
Data driven insights drive improved planning control and decision support across the mining value chain

FUTURE
Future insight derived from historical analysis to improve planning, simulate the integrated supply chain, and predict future outcomes, using analytics and AI tools

INTEGRATED ENTERPRISE PLANNING AND SUPPORT PROCESSES

MAINTENANCE	SUPPLY	ENERGY MANAGEMENT	HSE & COMMUNITY	FINANCE	HR	IT	MARKETING

*Integration of core and support processes

13

Transformation of the work, workforce and workplace

The workforce strategy must support the digital agenda to ensure successful digital strategy execution. Workforce strategy focuses on ensuring that the right people are at the right place at the right time. This requires a focus across the following three dimensions: redesigned work, augmented workforce and connected workplace.

Shifting Business Models and Value Configuration

WORKFORCE STRATEGY
How do I prepare for Intelligent Mining?
What will my talent model look like?

REDESIGNED WORK

NEW WORKFORCE

CONNECTED WORKPLACE

How does my workforce change jobs, skills and work?

What will my workforce look like and how will I augment?

Where will work happen in the future?

*Workforce transformation

- **Workforce Strategy**
  Strategic decisions that shape the organisation.

Not to be confused with operational workforce or capacity planning, strategic workforce planning is the ability to pro-actively determine the shape, size and profile of the workforce to meet the digital strategy. This will require an accurate prediction of the speed and scale of disruption to certain jobs and future skill requirements. As these future skills are in demand, the cost to fill these roles will determine the priority, feasibility and employment model (employee, contractor, partner, crowdsourced, etc.)

- **Redesigned Work**
  The type of work people will do in the Intelligent Mine.

  Jobs will generally be more knowledge-based and the nature of work will change. The workforce will need to interact with technology and make complex decisions based on data and insights. An example of this is a specialised engineer that can support an on-site supervisor remotely in fault-finding. The engineer can visually see an exploded view of the sub-assembly on a HoloLens[6] and then provide guidance on corrective actions.

- **New Workforce**
  The interaction between people and machines as the "new workforce".

  The digital workplace enables a more flexible, agile and decision-driven workforce. A hybrid approach is needed where employees with a new set of skills and competencies will work alongside machines and interact with digital technology. To ensure efficient implementation and adoption of these digital technologies, organisations need to bring stakeholders along on the journey ensuring continuous engagement and transparency on:

  - The employees experience

  - The upskilling, reskilling and redeployment of resources

  - Training and development requirements

  - Recruitment of new skills and alternative employment models

Gamified performance management enables real-time performance information linked to incentive and reward programmes, as well as mitigation mechanisms for poor performance. This is further supported by the ability to track and measure operational performance against the plan in real-time and made visible to employees on dashboards across various engagement platforms.

Intelligent Mining in action

Client: Global bulk commodity mining organisation

Capabilities and features delivered:
Digital transformation programme
The organisation embarked on a holistic digital transformation programme for their entire operational portfolio. The digital use case impact was assessed on three primary dimensions that included information management, technology enablement and organisational readiness. The organisational transformation focused on the required changes in ways of work, ranging from management systems and decision-making to the required skills and impact on the performance management process.

Benefits:
Complete transformation roadmap with in excess of 100 use cases that include:
• Value realisation and assurance
• Operating model change
• Technology enablement
• Changes in core and support
  processes and functions

- **Connected Workplace**
  The structure and practices that enable people to create value on the Intelligent Mine.

  Intelligent Mining deliberately constructs its workplace to incorporate everything from the physical to digital workspaces. As the lines between physical locations and the place where work happens become more blurred, a diverse workforce will become more involved in what was traditionally considered core mining.

  Deloitte's digital mine nerve centre enables data-driven decision-making by accumulating, integrating and simplifying information from across the organisation in an environment that simulates a digital twin of the mine.
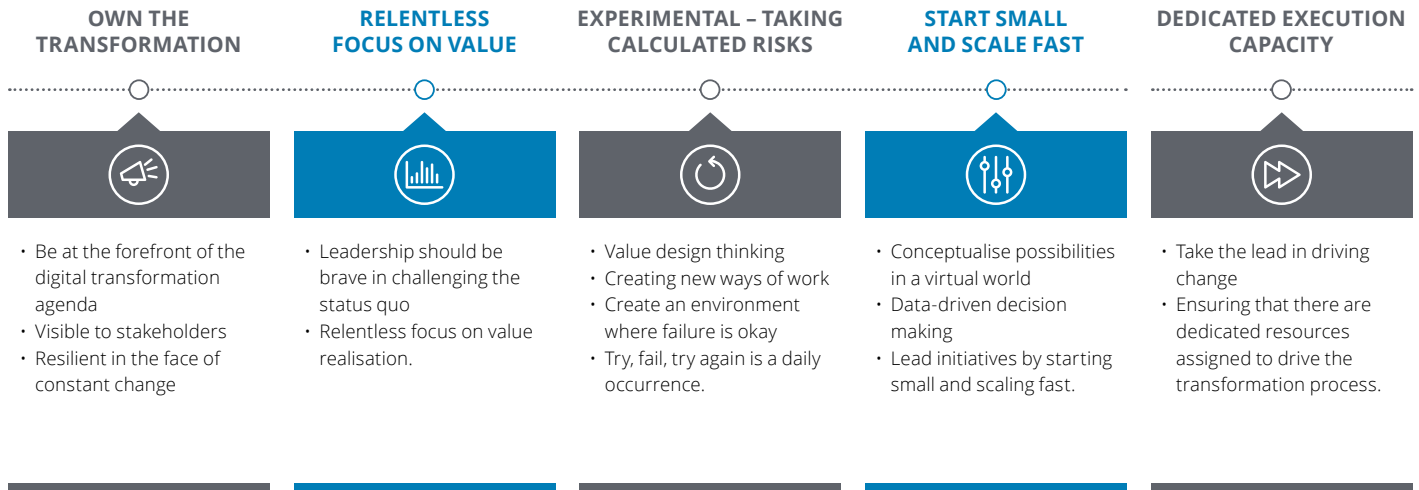
"The ability to digitally reimagine the business is determined by a clear digital strategy supported by leaders who foster a culture able to change and invent the new."

MIT Sloan Management Review[3]

Leadership is the key to success

In order to adapt and respond to the demands of a rapidly changing environment, the leaders in the digital organisation need to change the way they think, act and react. To facilitate this transition, leaders need to focus on the following principles:

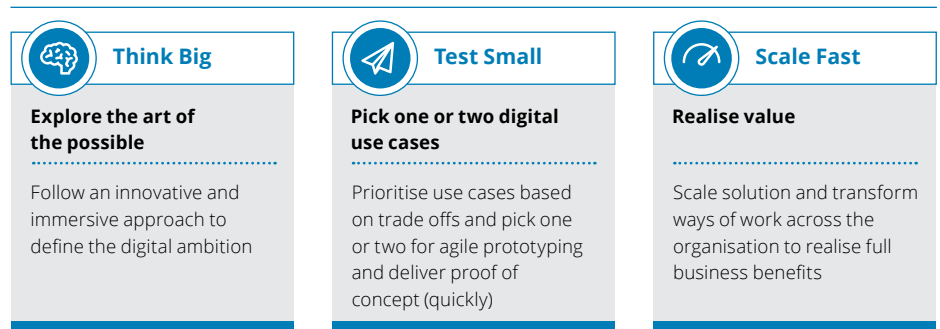| OWN THE TRANSFORMATION	RELENTLESS FOCUS ON VALUE	EXPERIMENTAL – TAKING CALCULATED RISKS	START SMALL AND SCALE FAST	DEDICATED EXECUTION CAPACITY
• Be at the forefront of the digital transformation agenda • Visible to stakeholders • Resilient in the face of constant change	• Leadership should be brave in challenging the status quo • Relentless focus on value realisation.	• Value design thinking • Creating new ways of work • Create an environment where failure is okay • Try, fail, try again is a daily occurrence.	• Conceptualise possibilities in a virtual world • Data-driven decision making • Lead initiatives by starting small and scaling fast.	• Take the lead in driving change • Ensuring that there are dedicated resources assigned to drive the transformation process.

* Leadership is the key to success

Where to start

An effective digital transformation programme should be self-funding and not a make-or-break proposition. Identifying and prioritising opportunities should be consistent with the key theme of speed and agility. Deloitte's pre-configured use cases and Digital Value Office (DVO) can incubate the transformation journey by enabling rapid value realisation through collaboration, transparency and the right partnerships.

Pre-configured use cases

Pre-configured use cases enable organisations to rapidly transition from "the art of the possible" to a working prototype that confirms value. The prioritisation of use cases considers the trade-off between the potential business value and feasibility of implementation.

Delivering value quickly will create momentum for the overall programme as a change catalyst. The steps in getting started are to think big in terms of digital ambition, test small by providing a proof of concept for one or two use cases, and scale fast to maximise value realisation across the organisation.

Digital value office

In a digital transformation journey, a DVO is the incubation engine that drives transformation through digital technology roll out, and change in work, workforce and workplace. The DVO reports directly into the office of the Chief Executive Officer (CEO). CEO sponsorship is critical as the impact of the transformation journey means that the DVO needs to

Think Big	**Test Small**	**Scale Fast**
Explore the art of the possible	**Pick one or two digital use cases**	**Realise value**
Follow an innovative and immersive approach to define the digital ambition	Prioritise use cases based on trade offs and pick one or two for agile prototyping and deliver proof of concept (quickly)	Scale solution and transform ways of work across the organisation to realise full business benefits

* Getting started using an Agile methodology

challenge current operating and business model paradigms. The DVO should be accountable for providing five main deliverables:

- Manage the programme and integration across business units
- Manage the pipeline of digital use cases and initiatives
- Implement use cases
- Organisational change management
- Technology architecture integration
- To deliver these outcomes, in a digital environment, the DVO requires more competencies (encompassing people,

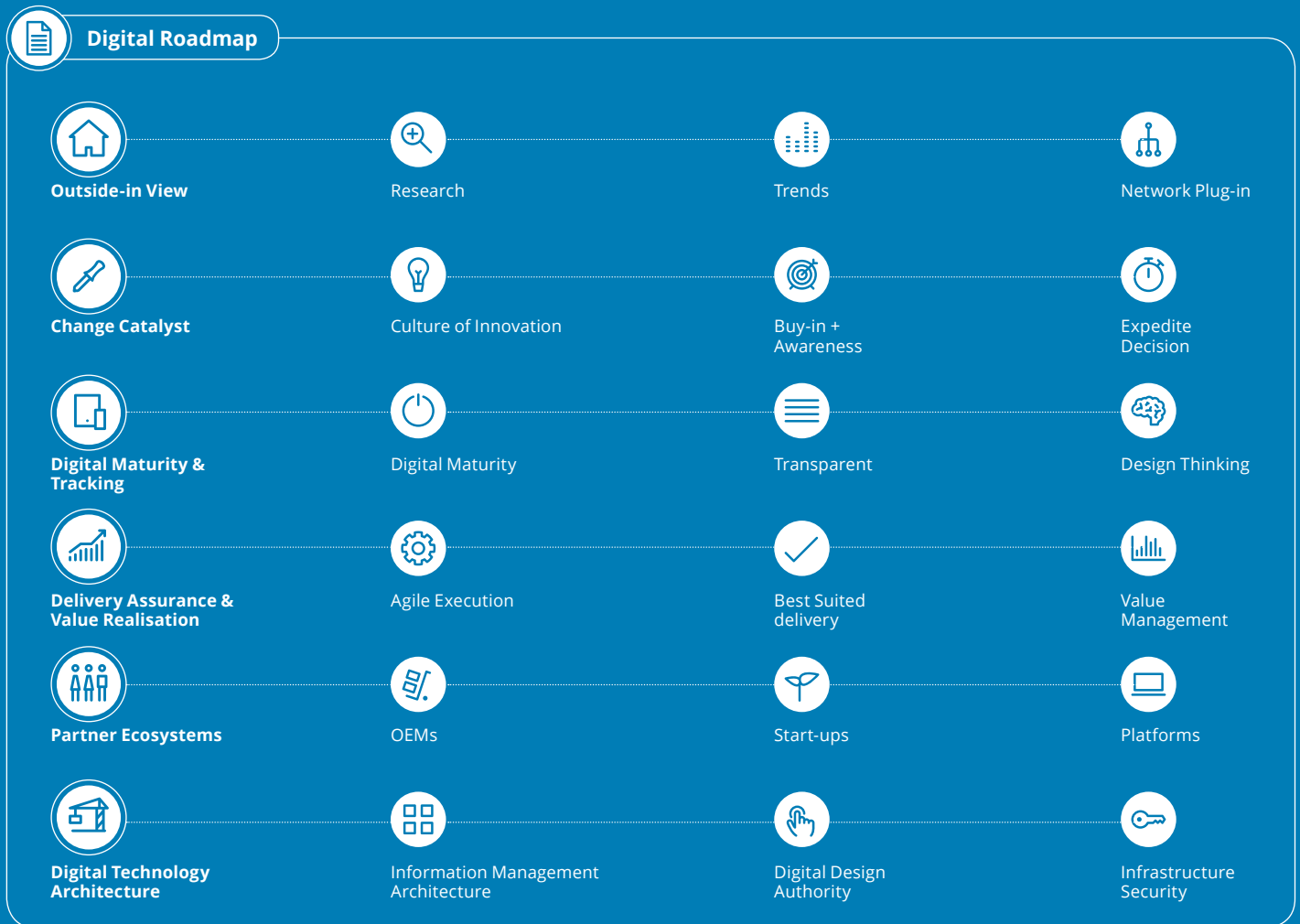process and technology) than the typical Programme Management Office (PMO). These include:

- Having an outside-in view
- Being a change catalyst
- Being a custodian for digital maturity and tracking
- Taking responsibility for the delivery of assurance and value realisation
- Enabling partner ecosystems
- Reinforcing the digital technology architecture.

These competencies are depicted in the figure below:

Digital Value Office
The DVO will continually seek to unlock business value through the adoption of relevant digital technologies.

Digital Roadmap

Outside-in View	Research	Trends	Network Plug-in
Change Catalyst	Culture of Innovation	Buy-in + Awareness	Expedite Decision
Digital Maturity & Tracking	Digital Maturity	Transparent	Design Thinking
Delivery Assurance & Value Realisation	Agile Execution	Best Suited delivery	Value Management
Partner Ecosystems	OEMs	Start-ups	Platforms
Digital Technology Architecture	Information Management Architecture	Digital Design Authority	Infrastructure Security

Outside-in view

The 'outside-in view' can be enabled by taking a few practical steps to 'plug-in' to the external network that include:

- Establishing an AI engine that continuously scans databases for megatrends and disruptive technologies

- Attending relevant conferences and subscribing to publications that track cross-industry views of how digital developments are being adopted

- Establishing strategic partnerships with third-party suppliers that are market leaders in digital transformation.

The 'outside-in view' should also be used as a platform to continuously review and refresh the technology alliance partnership ecosystem.

Change catalyst

The change processes are initiated and managed by means of a few practical processes that ensure that new technologies are adopted and that skills profile of the organisation evolves as digital maturity grows. The DVO should support this transformation through the following support capabilities:

- **A formal agile coaching programme –** Agile ways of working is a fundamental shift from traditional implementation methodologies. Certified agile coaches will guide the implementation teams on, and instilling an agile way of working.

- **Digital fluency training -** Understanding digital technology and the impact it has on traditional business and operating models is an important pre-requisite to digital transformation. Preparing for the fourth industrial revolution requires both leaders and employees to develop a basic understanding of the opportunities and vulnerabilities to their business. A compulsory digital fluency programme will assist the leadership and staff to understand the disruptive technologies and their implications better.

- **Change management through hype development -** Change management is the single most important driver of success, an enabler to open the door for employees to embrace the change rather than oppose it. Dynamic change management is therefore about delivering change in a leaner, collaborative, flexible and iterative way by creating hype and a 'movement' for change across the organisation. A number of factors to consider in creating a hype or movement for change across the organisation:

  - Focus on the moments that matter

  - The DVO as the catalyst for change

  - Integrate change with agility

  - Understand and define the minimal viable change (MVC)

  - Embrace the agile way of working, help the organisation 'get it.'

- **Managing the skills pipeline and future of work requirements –** Address digital implications across the dimensions of space, place, talent and technology to define the workplace strategy holistically. Strategic workforce planning within the DVO will typically comprise of the following elements:

  - Predictive talent optimisation tools

  - Technology augmented professionals

  - Gig workers

  - Crowdsourcing platforms

  - Bots.

Digital maturity

The DVO is the custodian of digital maturity for the organisation. Digital maturity should be assessed against a digital maturity reference model that ranges from smart assets to cognitive/AI. Maturity, while not a direct indicator of business value, allows articulation of simplified digital use cases that, when implemented and integrated across the value chain, eliminate waste and therefore support the creation of business value. This also allows for a more holistic view of digital transformation based on maturity as the leading indicator.

Delivery assurance and value realisation

The effective use of a minimum viable product or prototype (MVP) to assess the potential value of a digital solution is critical for approach to value realisation. The value potential guides the DVO in terms of prioritising the funding of initiatives. Thereafter, by assessing the outcomes of an MVP a business case for scaling needs to be developed. The business case is informed by technology, organisational readiness and data integration costs. Our experience is that digital solutions that are built on cloud-based flexible platforms, are intuitive to use and are reusable across mine operations have the most potential to demonstrate value.

The DVO should facilitate delivery assurance by establishing, and facilitating appropriate governance structures and functional forums to ensure internal functional alignment and decision support. Risk and quality management are subsets of delivery assurance, and appropriate agile decision-making processes are used to support managing these aspects.

Partner ecosystem

A range of alliance partners is required to provide the full suite of advisory, technology and integration capabilities to deliver use cases defined during a digitalisation programme. These alliance partnerships cover the full breadth of digital services, across a broad range of emerging technologies, from strategy to execution. Digital transformation is a journey from working with inflexible platforms, products and workflows to embedding agility in the everyday 'way of work'. The same agility is required to develop and sustain the partner ecosystem. The DVO facilitates integration and cross-functional implementation between the information management team, third-party suppliers and business unit personnel.

Digital technology architecture

To realise the vision of digital evolution a DVO would typically include a Design Authority (DA) function. The DA can be established as a function that sits within Information Technology (IT) and operates within a more agile governance framework where the business requirements are more dynamic. It is recommended that the DVO competencies include a digital architect that will be responsible for systems of innovation that include:

- Experimental new technology

- Small scale, point solutions

- Agile delivery methods

- Mobile, cloud dominant technologies.


Intelligent Mining in action

Client: Global mining and metals organisation

Capabilities and features delivered:
Digital delivery centre
The global mining organisation established a digital delivery office to drive the transformation and serve as a catalyst for the implementation of digital use cases. The digital delivery centre housed eleven programmes focusing on end-to-end optimisation of the mining value chain.

Benefits:
- Development of detailed KPI trees for each element in the organisations value chain created the required focus at all stakeholder levels and ensured that overall objectives are achieved
- Clear focus on sustainable value delivery by ensuring the workforce was taken along the transformation journey
- Aligned governance in the organisation and in all functions to enable agile implementation of digital solutions.
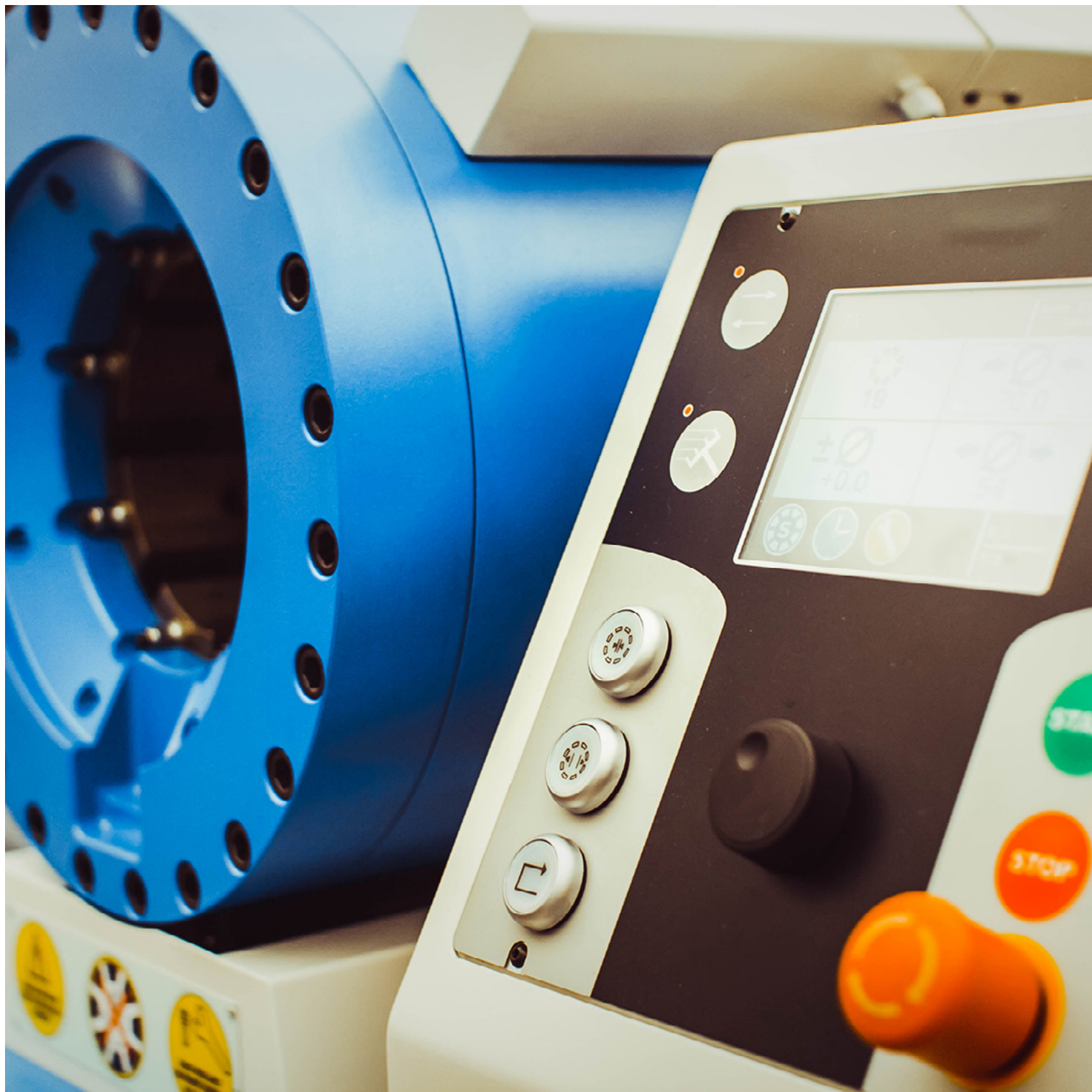
Why partner with Deloitte

Digital partners often take a siloed or 'technology first' approach, which can lead to confusion and disconnected initiatives that do not realise full potential. Deloitte assists our clients to implement sustainable transformation, providing the required multidisciplinary skills and deep industry experience.

We are the leaders in Digital innovation and business transformation

Digital encompasses a broad range of Deloitte services and we bring a multidisciplinary point of view. We harness the best-in-class resources and capabilities available at Deloitte, bringing differing perspectives to answer tomorrow's questions and challenges. Analysts acknowledge Deloitte as a model-consulting firm and leader in digital innovation[5] and business transformation.[7] Our industry leading Human Capital practice rethinks the business operating model and talent solutions required for the digital age thus clearing the path for new ways of working.

We have developed pre-configured solutions

Deloitte has designed and implemented many digital solutions within Energy and Resources, covering a broad spectrum of issues and use cases for these. Through this experience, we have developed a library of preconfigured use cases with related Intellectual

Property (IP). Deloitte has invested in the development of deployable solutions that create tangible business value, thus reducing our clients' cost of pioneering new technologies. We will continue to assess improvements in technology, and develop bankable solutions that address mining industry challenges.

Our alliances create technical depth

Deloitte creates solutions in collaboration with clients and carefully selected alliance partners. Deloitte has developed both local and global partnerships with major technology vendors. Many of Deloitte's alliance partners have already invested significantly in research and development to prove their solutions, which effectively reduces the pioneering costs that organisations may incur when embarking on their digital transformation journey.

We have done this before and learned the lessons

Deloitte has developed a full transformation toolkit covering all

the required process, workforce and technology building blocks for a successful transformation. This toolkit also covers best practices in mining operations across the globe. This includes underground and open cast use cases, approaches, methods and tools, which could be customised to fulfil a range of digital requirements. The toolkit can be applied to transformations of differing scales and complexity, from organisations that undertake a complete digital transformation to small-scale transformations focused on selected areas in the value chain.

Deloitte understands that technology and markets will continue to evolve and change, however, the work that needs to take place across the mining life cycle will not change fundamentally. The demands of stakeholders will transform and become tougher as they too become smarter. At Deloitte, we partner with mines to focus on the things that really matter – embarking on a transformation journey with joint-accountability to deliver real value.

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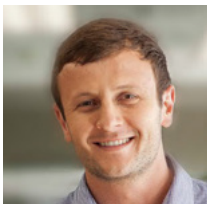
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