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## INTELLIGENT MINING

by Deloitte

Lessons learnt in digital transformation

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The evolution of digital solutions, from simple visualisation to data analytics and artificial intelligence, will transform industries. This also holds true for the mining industry. Digital transformation has the potential to improve productivity and safety, empower employees to do more meaningful work and allow communities to be more prosperous.

It is no surprise that many companies are embracing intelligent mining. But this transformation journey has not been easy. Companies are not deriving the full benefit from their digital investments, quickly realising that simply deploying technology is not a silver bullet.

Deloitte has identified key foundational building blocks for sustainable digital transformation and asked subject matter experts about the lessons they have learnt.



**// // Much of the value of the intelligent mine is delivered by ensuring the foundational building blocks are in place. // //**

– Rhyno Jacobs, South Africa Intelligent Mining Leader

*Tracking the Trends 2020, Deloitte Insights*

**Technology has disrupted the mining industry, with companies embarking on digital journeys for multiple reasons...**



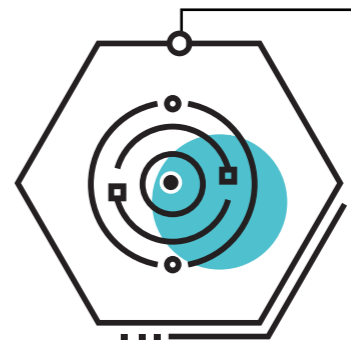
Some mining companies are simply embarking on digital journeys out of a fear that, by not doing so, they will miss out

**...expecting various benefits from it...**



- Improving productivity
- Reducing costs
- Improving safety
- Enhancing the employee experience
- Managing risks
- Improving sustainability

**...and taking different focus areas as their starting points**

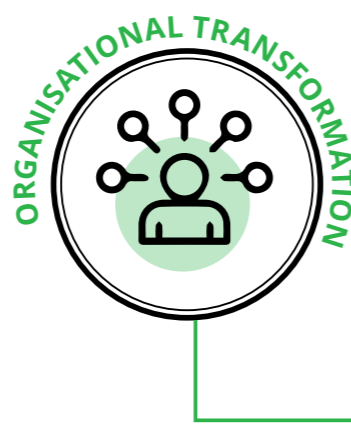


Many companies do not start by defining clear digital strategies, instead starting with ad hoc use cases to see what digital can do

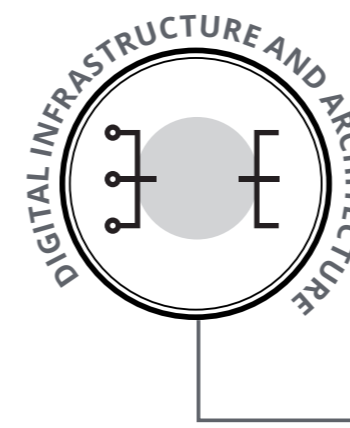
**However, mining companies are not deriving the expected value and should focus on key foundational building blocks:**



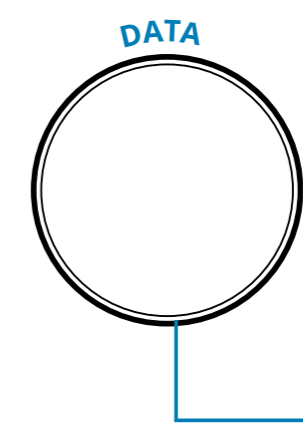
Underlying processes and structures have to be redesigned



The right leadership, end-user adoption and new talent models are critical for success



Upgrading technology infrastructure and adopting the right platforms are often underestimated



Companies should spend enough time understanding what data is required to support decision-making and how it links to value drivers

**Critical success factors include:**

**OPERATING MODEL**

More progressive companies have a **dedicated custodian**, such as a CTO/CDO, and follow an integrated approach

**Many companies find it challenging to:**

- understand the **complexity** and interdependencies across the value chain
- overcome legacy **structural dynamics** and ways of work
- reorganise themselves to deliver **value** from their **digital strategies**
- rigorously **assess** and **justify** the investment in **digital solutions**
- avoid **duplication** of **efforts** and **investments**
- receive support for **agile ways of working** through alignment of funding governance and support functions, like procurement
- overcome the **fragmented ownership** of their digital transformation agenda

**Some are aiming to develop** digital fluency, data analytics, design-thinking and agile skillsets

**ORGANISATIONAL TRANSFORMATION**

Few companies focus on an end-state, impeding a **holistic approach** to the changing ways of work and future skill requirements

Leadership's response to change is a critical driver for digital adoption – many companies that have had some success have focussed on **buy-in** and **adoption** across the organisation

**Challenges surrounding workforce transformation include:**

- a lack of vision and strategy
- underestimating the changes required to future talent models
- leadership buy-in across the organisation
- realigning structures, KPIs and incentives
- not taking end-users on the journey
- underestimating the operational disruption

**DIGITAL INFRASTRUCTURE AND ARCHITECTURE**

Although there is a trend towards greater integration, it is still insufficient – technology choices often remain **bespoke** without an **end-state reference** architecture that supports investment decisions

Many mining companies have **underestimated** the investment required to upgrade their technology infrastructure, i.e. connectivity, on-premise vs cloud hosting etc.

Companies need to understand what to enable and be **intentional** – many struggle to fully understand the **interdependencies** and what digital solutions **can, and can't provide**

Communications infrastructure and **network availability** is essential for mine operations to be fully integrated, with many remote operations not in the **cloud** due to **network availability risk**

**DATA**

The investment required to organise, clean and govern data is often **underestimated**, deterring digital platforms from **integrating data**, and thus discouraging robust insights needed to sustainably unlock value

Companies do not put **enough effort** into understanding what data is needed to provide insights or to enable use cases

Data capturing is often conducted in **silos** or per **use case** which inhibits the true value of data and has the potential to further **entrench legacy systems**

There seems to be **insufficient investment** upfront to create an integrated system, limiting:

- the integration of data across the value chain
- the identification of value opportunities across the organisation and within certain functions
- the ability to develop and deploy new solutions in an agile manner

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