accenture

# THE CLOUD IMPERATIVE FOR MINING

# Content


1. Executive Summary 3

2. Industry Context 4

3. State of Cloud in Mining Today 6

4. Value Case for Cloud Now 7

5. Moving to Action 8


© 2020 Accenture. All Rights Reserved.

# Executive Summary

The mining industry has envisioned a future where business, human and environmental interests are not competing priorities, but complementary strengths: a "Triple Zero" future of zero harm, zero loss and zero waste. In this Triple Zero future, where zero harm is lived out day-to-day, the health and well–being of the workforce acts as a fulcrum for sustainable business operations. Zero loss focuses on leveraging a manufacturing mindset and continuously identifying losses and leakages in operational processes. Zero waste is centered on approaching business through a circular economy model.

Realizing this future is not easy. It calls for digital technologies—including artificial intelligence (AI), analytics, connected supply chains, IoT and more—and central to successfully utilizing these technologies is cloud computing. The cloud is not new. It has long heralded lower costs, greater elasticity and innovation for organizations. And approximately 85 percent of mining and metals companies have adopted cloud in some form[1]. But most stopped short of embracing the full promise of cloud technology to accelerate business strategy and drive digital transformation. Then the COVID-19 pandemic hit, and suddenly, cloud has a clear and important role to play as companies work to outmaneuver uncertainty.

[1] Accenture Future Systems report, mining and metals survey results

© 2020 Accenture. All Rights Reserved.

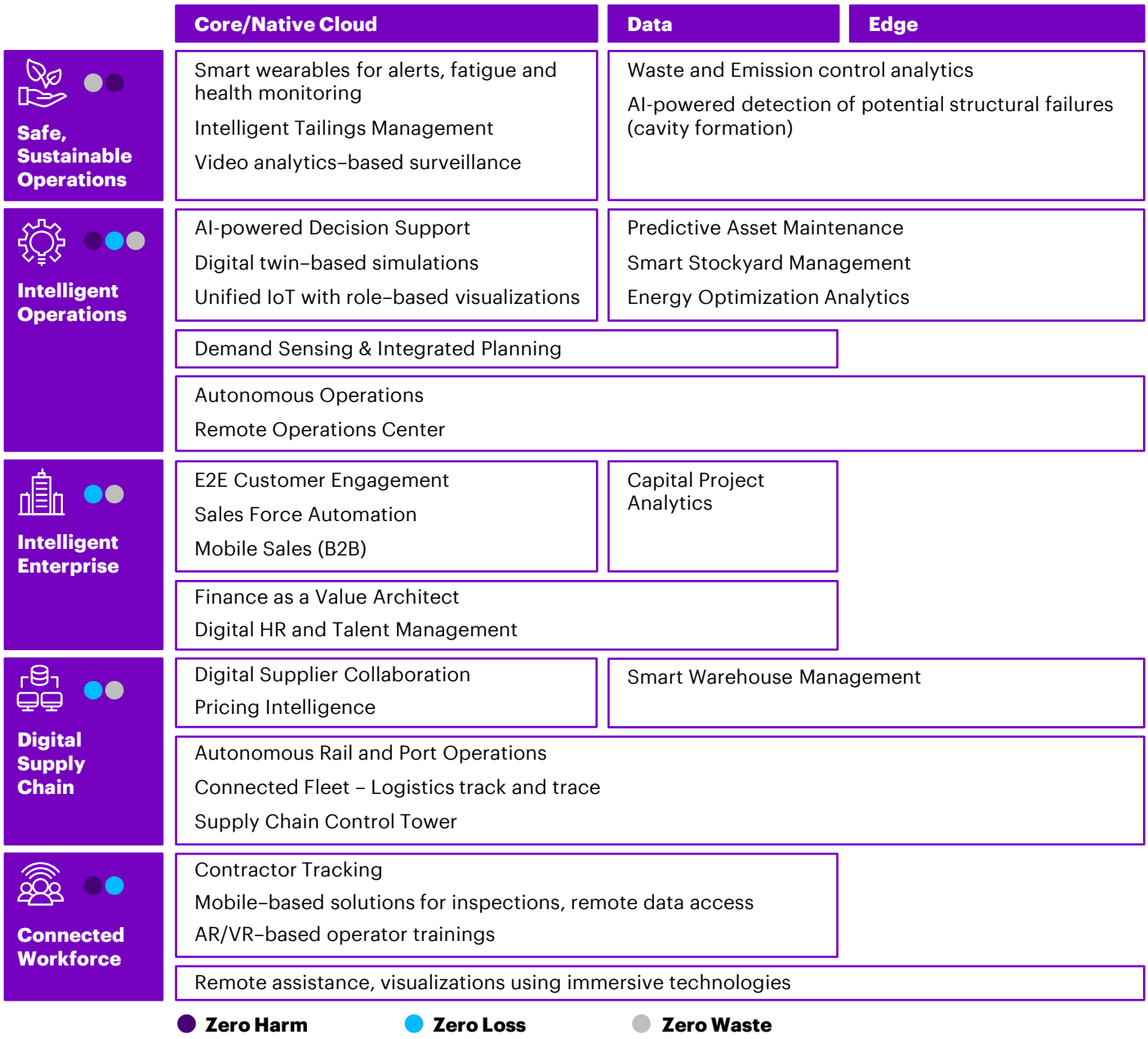
# Industry Context

If "business as usual" ever existed in the mining industry, those days are gone. Significant disruptions in logistics, supply chains, operations and more—COVID-19 is reshaping the landscape. This is in addition to well-known industry challenges, including volatile commodity prices, fast-changing international trade relations and compliance with new environmental and safety regulations.

A robust technology backbone enabled by cloud capabilities can help address these challenges. Cloud helps make new ways of working possible—from automated video analytics to pre-empt accidents, to optimizing processes intelligently through digital twins or smart sensors and integrated planning (Figure 1).

**Figure 1. Visualizing a Triple Zero Future for Mining through Digital-, Edge- and Cloud-enabled Capabilities.**

## Cloud will no Longer be an Option, but a Necessity



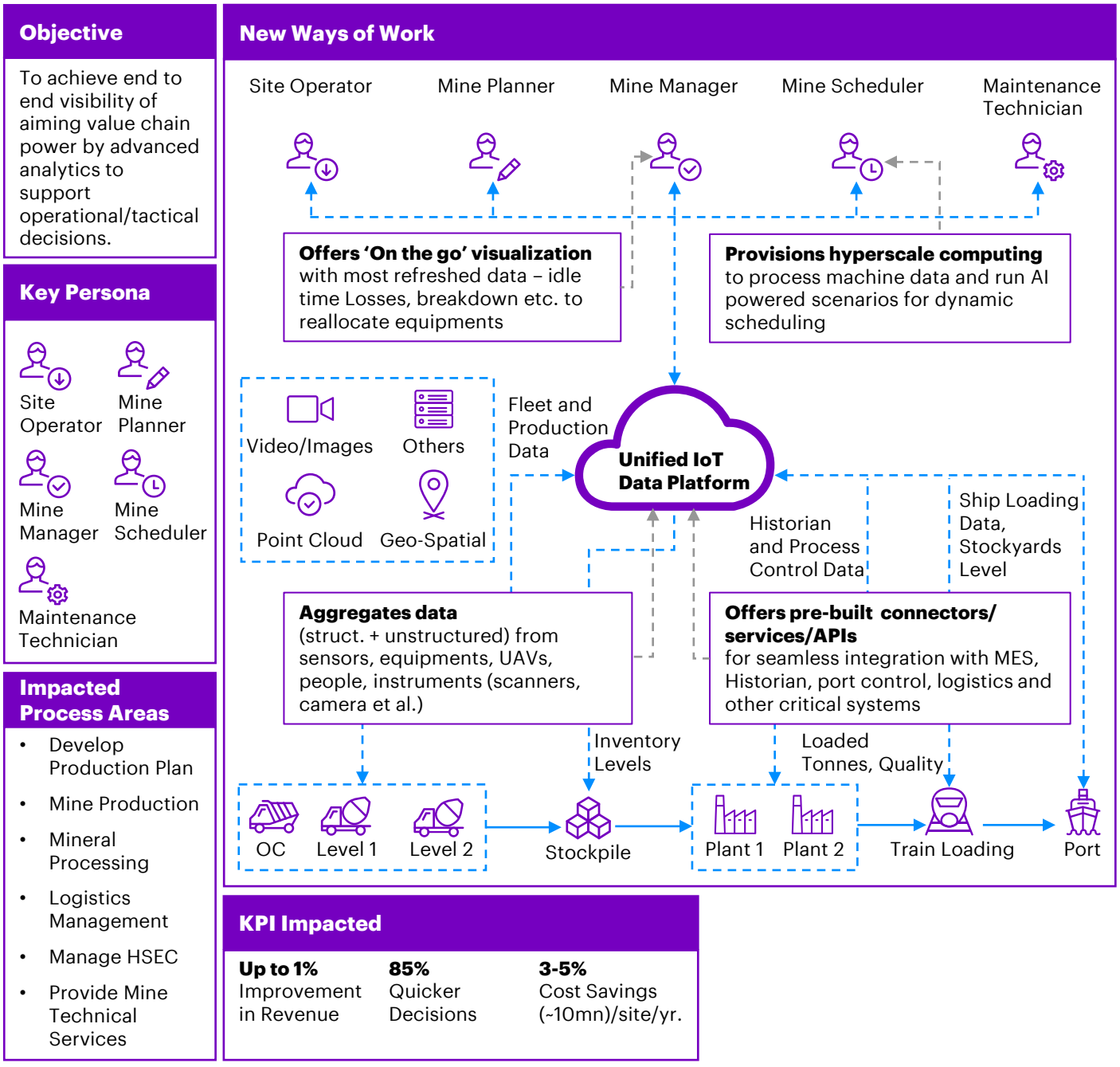

© 2020 Accenture. All Rights Reserved.

# Path Forward

The new ways of working in a digital world rest on fit-for-purpose cloud instances and applications that can unlock latent value and secure the greatest benefits from these investments.

A smartly deployed cloud can host a combination of digital technologies, giving enterprises and workers full visibility across their mining operations on demand and laying a foundation for analytics, artificial intelligence (AI) and machine learning (ML) (Figure 2). This can translate into cost savings of approximately 3 to 5 percent in operating costs (for a mid-sized miner), realized from data harmonization, improved on-time decision making, optimized inventory and workforce allocations at a tactical level. Real-time device data (from IoTs, sensors) is aggregated with context data (IT) and applied to industry-specific analytical models to determine actionable insights. This increased visibility helps achieve better production throughput, asset utilization and operator performance.

**Figure 2. Cloud-Based IOT Platform Enabling Operational Intelligence and Visibility Across Mining Processes**




© 2020 Accenture. All Rights Reserved.

# State of Cloud in Mining Today

According to Accenture research, the mining industry is still in the early stages of cloud adoption relative to peers[2]. Today, the industry utilizes cloud largely for support and enablement functions like shared services. But the COVID-19 pandemic has created a sense of urgency to leverage cloud to cover business critical processes.

The move to hybrid cloud models like Platform as a Service/Software as a Service (PaaS/SaaS) will be prominent across processes like health, safety and environment (HSE), supply chain, manufacturing execution systems (MES) and legacy plant and operational systems. Adoption of cloud PaaS, SaaS and IaaS (Infrastructure as a Service) is all roughly the same at around 85 percent. And more than three-quarters are investing in cloud technologies at least annually[3].

## Some mining industry leaders are already on an accelerated cloud journey.

A leading global miner has started to utilize cloud and robotics to disrupt existing workings and innovate new ways for maintenance operations in order to maintain competitive advantage. Others like Freeport-McMoRan[4] are building cloud-based IoT platforms to perform analytics real-time, while a global steel major is deploying cloud-based services for data, enterprise applications and infrastructure management.

A carefully orchestrated cloud adoption strategy is critical to attaining all of cloud's benefits. For example, a typical journey for most miners running SAP would involve building out the foundation of an intelligent enterprise in three steps: migrate SAP ECC to public cloud; migrate SAP ECC to S/4 HANA; and apply industry templates followed by implementation of automation initiatives. This transformation path offers additional value benefits—a flexible, operational excellence-based, low-risk approach for data conversion and simplified greenfield implementation of new industry template processes and SAP SaaS solutions like Ariba and SuccessFactors. With initiatives like SAP HEC 2.0 gaining ground, more miners are looking to execute cloud-based digital transformation programs on their legacy SAP environments.

[2] Accenture Future Systems report – Mining and Metals results
[3] Ibid
[4] Connected Mine solution delivered by Accenture

© 2020 Accenture. All Rights Reserved.

# Value Case for Cloud Now

The mining industry has begun to realize that cloud is not restricted to cost optimization but also can drive business agility and innovation. As per our analysis for an average mining company with $40 billion revenue, a holistic digital transformation program—with key building blocks enabled through cloud—can generate incremental value, from cost savings and revenue gains, of up to 15 to 20 percent of total IT spend over the investment period.

Cloud-enabled technologies can help to:

- Create throughput improvement of up to 5 percent with increased revenue per ton by almost 2 percent via data aggregation, virtualization of roles and responsibilities, and scaling AI/ML services for operational decision making.
- Increase productivity by 10 percent while reducing lifecycle overheads by almost 75 percent via the use of virtual assistants and collaborative platforms rendered through mixed reality (augmented reality/virtual reality).
- Reduce logistics costs by up to 12 percent while improving key performance indicators like On Time, In Full (OTIF) by approximately 10 percent and fleet load factor by over 30 percent via a digital supply chain. Achieving 'On Time' in full delivery will also ensure that we need sales commitments of time and quality. Generate new insights and build market intelligence capabilities through integration and exchange data with new commodity trading platforms to optimize trading decisions; e.g. achieving the right price premiums for spot contracts leading to a revenue uplift.
- Lower Lost Time Injury Frequency Rate (LTIFR) by up to 10 percent, reduce near-miss incidents by more than 80 percent and reduce emissions via accelerated cloud adoption across shop floors.
- Help achieve sustainability goals and enable circularity in the value chain via automated intelligence and cost modelling of emissions, as well as emerging technologies (like IoT, sensors and edge devices) which run on a cloud environment.
- Ensure sustainable maintenance and assess technical compatibility for future cloud deployment through application modernization. The technology roadmap for this modernization can be achieved through a thorough and rational analysis of the application landscape.

© 2020 Accenture. All Rights Reserved.

## Why Now?

While standard functionalities can be achieved by existing on-premises data center and servers, there are disadvantages to this approach. For example, an on-premises data center requires a significant investment in infrastructure and capital costs. In contrast, cloud services provide flexible subscription models. With an on-premises approach, both responsibility and accountability for maintenance of data security and recovery are in-house, resulting in higher overhead for non-core activities like technical support.

Furthermore, growth in data volume is expected to dramatically increase. To continuously run a single use case like predictive asset maintenance, for example, terabytes (TBs) of data processing and computation power—which is expensive to sustain in the long term—will be required. Additionally, on-premises integration efforts are significantly more complex than an integration architecture that is cloud enabled.

Cloud adoption makes data analytics scalable, easier and allows for a geographic distribution of infrastructure and applications for fault tolerance and business continuity. The ability to duplicate and bring to life virtual operations, with a few clicks, to remote locations and users, ensuring smooth operational continuity is more important than ever.

# Moving to Action

## One size does not fit all

Moving to the cloud is not a technology decision alone. It is guided by business priorities and expectations and driven by technology enterprise architecture guardrails.

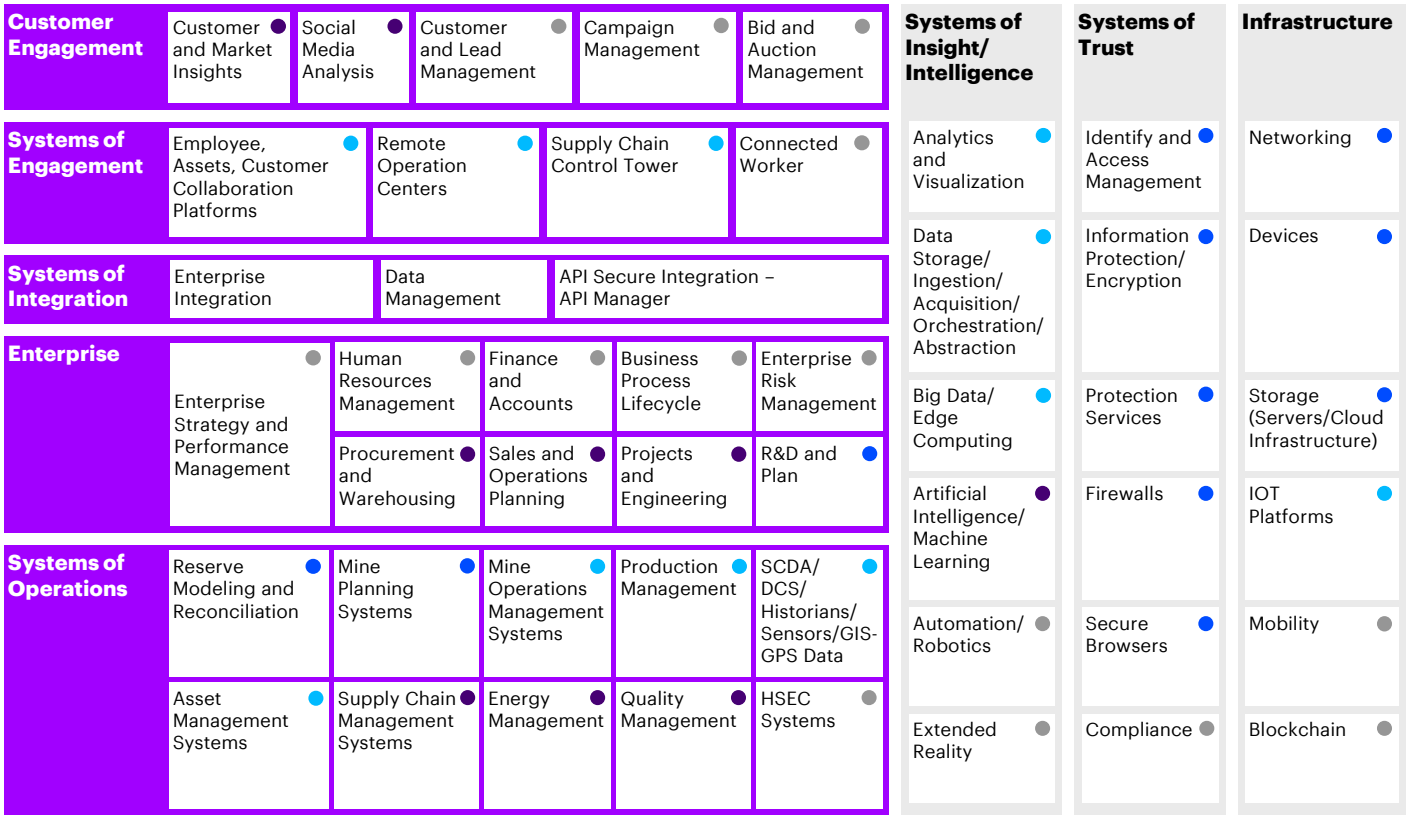
Choosing the right cloud deployment model (private, public or hybrid) is vital. While private clouds provide security, privacy and high-computation requirements, they come with higher costs for implementation and maintenance. A public cloud is recommended for lowering costs, simplifying business processes and for small- to medium-scale enterprises. However, both sensitive data and control and management of the data and technology infrastructure might not be within the bounds of the enterprise. A hybrid cloud can offset some of the costs but introduces higher maintenance complexities and responsibilities on the hosting provider.

A hybrid approach, with private clouds for fixed workloads and public clouds for elastic workloads, allows continuance of on-premises systems and data centers to derive value from fixed investments while allowing flexibility for services that require varied performance at scale. A data center estate typically hosts thousands of applications which may need to be refactored and rehosted in a distributed manner combing private and public deployments, depending on the pattern of consumption of its data and services. See Figure 3 for an illustrative approach to designing cloud consumption services for a mining company.

© 2020 Accenture. All Rights Reserved.

**Figure 3. Reference Digital Architecture for Mining Organizations**

## Consumption of Cloud




The journey to the cloud will differ for each mining company depending on its existing technology architecture and maturity state in modernization—a single cloud journey or transformation roadmap may not fit all.

© 2020 Accenture. All Rights Reserved.

# Contacts

**Peter Yuan**
Managing Director
Global Technology Lead –
Natural Resources

**Priyadarshi Mishra**
Managing Director
Technology Delivery Lead –
Natural Resources

**Bhudeep Hathi**
Business & Integration Associate Director –
Chemicals and Natural Resources

**Vivek Vaidyanathan**
Business & Integration Manager –
Natural Resources

**Narendra Kumar**
Business & Integration Associate Manager –
Natural Resources


© 2020 Accenture. All Rights Reserved.

# About Accenture

Accenture is a leading global professional services company, providing a broad range of services in strategy and consulting, interactive, technology and operations, with digital capabilities across all of these services. We combine unmatched experience and specialized capabilities across more than 40 industries—powered by the world's largest network of Advanced Technology and Intelligent Operations centers. With 513,000 people serving clients in more than 120 countries, Accenture brings continuous innovation to help clients improve their performance and create lasting value across their enterprises. Visit us at **www.accenture.com**

DISCLAIMER: This document is intended for general informational purposes only and does not take into account the reader's specific circumstances and may not reflect the most current developments. Accenture disclaims, to the fullest extent permitted by applicable law, any and all liability for the accuracy and completeness of the information in this presentation and for any acts or omissions made based on such information. Accenture does not provide legal, regulatory, audit, or tax advice. Readers are responsible for obtaining such advice from their own legal counsel or other licensed professionals.

Copyright © 2020 Accenture All rights reserved.

Accenture, its logo, and New Applied Now are trademarks of Accenture.