

AI meets IT: a path to success

ABSTRACT

This white paper explores strategic considerations for organizations that are on the path to using artificial intelligence to transform business processes. The paper highlights the ways in which AI helps organizations streamline and automate processes, drive operational efficiencies, improve decision making, and compete more effectively in the era of the digitally driven enterprise.

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THE RISE OF AI

Artificial intelligence, AI, deep learning, machine learning — you hear these terms all the time, but what do they really mean for businesses and, more specifically, for IT?

AI technologies have come into the mainstream, allowing businesses with foresight to deploy them to gain valuable real-world benefits right now. Benefits that are driving business growth and advantages, such as:

- Experiencing greater value from IT investments
- Enhancing relationships with customers
- Eliminating countless hours of repetitive and mundane management tasks
- Helping to ensure that millions of everyday transactions are completed with both speed and accuracy

The truth is, the many of the world's most innovative companies, from small start-ups to large established enterprises, are well on their way with AI and its related technologies, gaining immediate and long-term benefits, from infrastructure management to product innovation. Are you one of them, and if not, how do you get started?

THE MAKING OF AN AI STRATEGY: LET THE JOURNEY BEGIN

Analysts agree: Organizations with an AI strategy in place realize benefits others can't.

The gap between ambition and execution is large at most companies. Three-quarters of executives believe AI will enable their companies to move into new revenue-generating areas. Almost 85 percent believe AI will allow their companies to achieve or sustain a competitive advantage, yet only about one in five companies has incorporated AI capabilities in offerings or processes.

According to an MIT Sloan Management Review report, the most advanced group of AI adopters comprises 19 percent of respondents, whom the report refers as “AI Pioneers.” These Pioneers overwhelmingly see the need for an AI strategy, with 85 percent agreeing they have an urgent need for an AI strategy and 90 percent saying they have a strategy in place already.

Early AI adopters in business have seen their pioneering efforts rewarded. Responses show 81 percent have seen revenues rise in three years, based on AI, and are intending to forge further forward, having gained both competence and a greater perspective on the possibilities. Based on the benefits of early applications, we see great enthusiasm — but also a clear-eyed understanding of the challenges of increasing AI investments and how to realize value at scale.

The key differences lie in recognizing the transformative value of data, defining a relevant AI use case, putting in place AI-enabled and AI-enabling infrastructure, and approaching the relationship to AI as an incremental journey, not a destination.



To learn more, read the MIT Sloan Management Review's report [“Artificial Intelligence in Business Gets Real.”](#)

USEFUL DEFINITIONS

BUSINESS INTELLIGENCE (BI) involves the process of collecting data from many sources and preparing it for Business Analytics.

BUSINESS ANALYTICS (BA) is the process of describing past performance to gain insights of the data through analysis, reporting, queries, or visualizations.

ARTIFICIAL INTELLIGENCE (AI) is the development of computer systems able to perform tasks normally requiring human intelligence (such as visual perception, speech recognition, and translation between languages, etc.).

MACHINE LEARNING (ML) is a sub-field of AI that provides systems the ability to learn from data and improve from experience without being explicitly programmed.

DEEP LEARNING (DL) is a type of ML built on a deep hierarchy of interconnected “neural network” layers, with ability to learn key “features” from data provided.

Clearly, the time to make AI part of your business strategy is now, but determining a path for getting started is not always as clear. To help your organization see the way forward, this paper offers a vision of the AI imperative, as well as a view of what the journey — first steps and long-term pace — looks like.

WHY AI? WHY NOW?

A first step in the AI journey begins with understanding where we are now, why the age of AI has begun and why this is the perfect time for organizations large and small to take steps toward becoming an AI-powered operation.

Generally speaking, three main technology advances are converging to make AI at scale more viable, accessible and imperative today.

These advances are:

- The never-ending march of Moore’s Law, delivering **compute** at scale, distributed across data centers, clouds, connected devices and embedded intelligence
- The emergence of the Internet of Things (IoT), cloud-native applications and new data storage methods that, when combined, generate, store and protect **massive amounts of data** at scale, with more and more new data from all that compute rapidly adding to historical data
- The maturation of more precise **algorithms** that can make sense of data and reveal powerful, actionable insights that enable next-generation customer experiences, enhanced business processes across all industries and continuously optimized infrastructure.

Most of all, there can be no AI without data. Data is the fuel for the modern era. The deeper, larger and more complex our data stores and streams become, the more critical the role of AI becomes. Using data, AI is helping organizations accelerate outcomes, drive business growth and make smarter, more accurate decisions across an endless number of industries and use cases.



According to IDC's findings, the amount of data created and replicated experienced unusually high growth in 2020 due to the dramatic increase in the number of people working, learning and entertaining themselves from home. However, less than 2 percent of this new data was saved and retained into 2021.

Source: IDC, "[Data Creation and Replication Will Grow at a Faster Rate than Installed Storage Capacity, According to the IDC Global DataSphere and StorageSphere Forecasts](#)," March 24, 2021.

IMPORTANCE OF AI TO LIFE — AND BUSINESS — AND PROCESSES

Let's get aspirational for a moment: How might AI transform the way people live and work? The possibilities are as endless as the infinite volumes and varieties of data being created all around us at every moment.

Much like the printing press, which unlocked the vaults of human knowledge, freeing it from the libraries of monasteries and placing it in the hands of the masses, igniting an era of unprecedented creativity and innovation that laid the foundation for the modern age, AI too will usher in an era of explosive innovation, igniting the next major epoch of human experience.

This new epoch will be driven by the realization that the value of AI is less about artificial intelligence that replaces human experience and more about augmenting human intelligence, freeing humans to focus on higher-order challenges and helping us make better decisions faster. This human-AI partnership will unleash creativity and innovation not possible by humans or machines alone. This is why studies suggest that AI will create more jobs than it eliminates, and organizations of all kinds will benefit from these new human-machine partnerships.

AI BENEFITS

The driving force behind AI is its power to accelerate human progress, from the everyday to the life-altering.

AI has broad applicability, spanning both public and private sectors and markets of all kinds, from industrial to medical, from education to finance.

Here is a sampling of the impacts AI is already having:

- **Bionic vision:** The Computer Vision Group at [CSIRO](#) (Commonwealth Scientific and Industrial Research Organisation) has developed software for a bionic vision solution designed to restore sight for people with profound vision loss. This life-changing advance uses large-scale image datasets to learn to recognize more types of images.
- **Safer surgeries:** A [study](#) that involved 379 orthopedic patients found that AI-assisted robotic procedures resulted in five times fewer complications compared to surgeons operating alone.
- **Better-dressed, less stressed human beings:** [Stitch Fix](#) uses AI to enhance the company's personal styling services.
- **Enhanced credit card fraud protection:** [Mastercard](#) uses machine learning algorithms to examine 160 million transactions per hour by applying 1.9 million rules each transaction — all in a matter of milliseconds.
- **Better identity verification:** [Mastercard](#) goes beyond facial recognition to learn motions unique to each user and determine if "you're really you" by, for example, how you hold your phone while using it.

AI CHALLENGES

As with every new technology, AI comes with unique challenges, especially in the realm of data and compute. Data is the raw material of AI; it feeds the systems that glean the insights and make the predictions, and the more data the more accurate AI can become.

But all data is not good data. Data is often messy — it's duplicated, incomplete, geo-biased and requires data engineering — so simplifying data acquisition, management, access and protection are all critical. It's all about separating the signal from the noise and ensuring you have the right skills, tools and use cases in place to do so.

In addressing your data challenges, keep these points in mind:

- Data is everywhere, but not always where you need it, so it's becoming more and more essential, in the age of IoT, for example, to move compute capabilities to where the data resides.
- Data is overwhelming in that it touches every part of modern business and is endlessly and exponentially growing. This makes it all the more important to identify specific areas in which to begin AI implementations and ensure those implementations allow you the ability to seamlessly scale as your AI focus grows.

Further, massive data sets and modern algorithms require powerful compute and cost-efficient and performance-optimized storage. These solutions are often accelerated with graphics processing units (GPUs), which are efficient at processing large blocks of data in parallel, and field programmable gate arrays (FPGAs), a type of semiconductor that can be programmed or reprogrammed after manufacturing.

However, where analytics operations are executed varies based on workload.

- For real-time decisions, the high cost of transport and the need to minimize latency means that being able to move the algorithms and the compute to the data is essential for success.
- For workloads that require direct access to massive amounts of data across a variety of data sources, moving data to compute makes sense.
- Sometimes it's a combination of the two, where data can be analyzed and acted on against locally but still benefit from federated insights across multiple similar locations.

In short, all three of the core elements (algorithms, data, compute) need to be fluid and movable. We must be able to take any two of these key elements to the other depending on the use case, where it matters, and when it matters, to the business.

OPPORTUNITIES AND USE CASES

So, how do you, in your current situation, start doing more with AI and ML technologies to influence the future arc of your organization?

The first step is identifying a use case, or a series of use cases that will help deliver the outcomes you have in mind. Are there "adjacent spaces" you might do well to explore? That is, concurrent business models, somewhat removed from your own but with service synergies and demographic or logistical overlaps that might lead you to tap into vast new revenue streams? What new product and service innovation secrets are buried inside customer feedback data? AI and ML may help you answer those questions.

RECOGNIZE THAT IT'S A JOURNEY

Data is at the heart of the AI journey. Data is fundamental for AI and its subfields, including machine learning and deep learning. Given this reality, the AI journey begins with the consolidation of data for analytics and then builds from there, creating analytics-based applications to drive the intelligence, modeling and inferencing that is driven by data.

While the path to AI is different for all organizations, here are some common steps in the AI journey:

- Outline the business goals and align the company's AI strategy to define the use case(s)
- Determine data availability and prepare the data for AI analysis and action
- Understand and integrate infrastructure requirements
- Determine steps to build models with validation methodologies
- Establish tracking tools and systems
- Adapt and scale the strategy over time

TIPS FROM IDC

Based on a study of the characteristics of leading IT organizations, IDC offers these recommendations for organizations that want to create a stable foundation for unlocking data capital:

- Embrace autonomous infrastructure that will eliminate tedious maintenance and management tasks and allow IT staff to focus on more strategic initiatives.
- Invest in modernized infrastructure that enables your organization to capitalize on the value of your data.
- Implement software-defined networking capabilities to automate the provisioning of workloads across internal, colocation and cloud data centers.
- Standardize on a single management platform or enable integration between multiple platforms to improve collaboration and oversight among organizational silos.¹

A COMPREHENSIVE PORTFOLIO

As you determine your best next steps on the journey to adopting AI solutions, modern infrastructure is an imperative — and Dell Technologies delivers. By offering the industry's most comprehensive portfolio of AI-capable systems, servers, storage, solutions and services, Dell Technologies enables your organization to take control of data to accelerate time to faster, better, deeper insights.

With the intelligent technologies in modern infrastructures with AI capabilities, and with corresponding AI services, Dell Technologies makes AI adoption faster, easier and more collaborative. Dell Technologies gives you a choice of flexible and scalable solutions, small and large, opening the AI market to organizations of every size. Purpose-built workstations, servers, storage and Dell EMC Ready Solutions for AI provide opportunities to address AI-focused use cases that advance business goals.

For years, Dell Technologies has been the undisputed leader in data management, data protection, data storage and compute — the infrastructure building blocks necessary to store, protect and execute against the valuable data that is the fuel for AI. We continue to aggressively innovate in these areas. In addition, we are ourselves an early adopter and advisor when it comes to AI strategy and best practices.

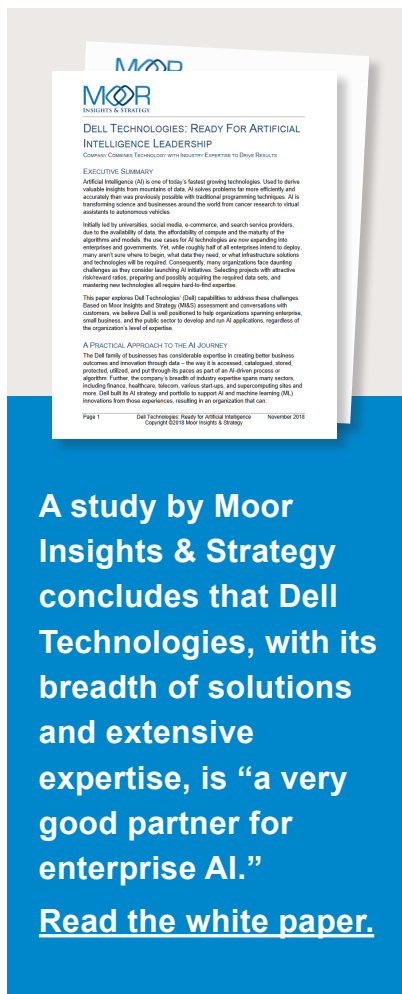
CUSTOMER RESULTS

Here are a few examples of the ways in which Dell Technologies customers are capitalizing on AI solutions to drive their businesses forward.

¹ IDC, "[Emerging Technology and Modern IT: The Key to Unlocking Your Data Capital](#)," an IDC white paper sponsored by Dell Technologies and Intel, 2018.

Explore Moor Insights & Strategy's perspective on how Dell EMC Ready Solutions for AI take the guesswork out of AI initiatives — while decreasing time to market and time to learning. [Watch the video.](#)





IMPROVE OPERATIONAL EFFICIENCIES

The best time to solve a problem is before it happens. That's a goal of [Dell SupportAssist that is enabled by AI](#). This automated proactive and predictive technology helps you reduce your steps and time to resolution, often detecting issues well before they become a crisis.

Using real-time data and predictive modeling for accelerating time to resolution, Dell SupportAssist actively monitors the health of your IT infrastructure. If an issue is detected, Support Assist notifies your organization and Dell Technologies. In some cases, SupportAssist can even predict a failure and resolve the issue before a failure occurs.

SupportAssist is available to all customers at no additional charge. It's included with all support plans, but features vary based on service level agreements. [Explore Dell SupportAssist](#).

TRANSFORM DECISION MAKING

Zenuity, a joint venture of Volvo Cars and Veoneer, is using AI to develop advanced driver-assist systems and autonomous-driving technologies that promise to take vehicle safety systems to a new level. The company is expected to have its first driver-assistance products available for sale by 2019, with autonomous-driving technologies following shortly thereafter.²

Zenuity's entire end-to-end solution is managed by solutions from Dell Technologies. [Read the case study](#).

DISCOVER NEW REVENUE STREAMS TO GROW THE BUSINESS

Dell Technologies solutions for AI don't just speed set up time for data scientists; they also provide faster, deeper AI insights — in some cases, instantaneous insights.

For example, a [Dell Technologies white paper](#) on fraud detection notes that Mastercard completes 165 million financial transactions per hour while employing a model that verifies each transaction against 1.9 million rules to protect customers from fraud in real time using Dell Technologies machine learning with Hadoop.

Drawing on this expertise in data analytics, Mastercard launched Mastercard Advisors — an entirely new business and new revenue stream based on AI and data analytics solutions.

KEY TAKEAWAYS

Today, AI is fundamentally transforming business by enabling organizations to deliver faster, better, deeper and unforeseen insights that streamline and automate processes that drive operational efficiencies, deliver the speed and accuracy of insights to transform decision making, and drive the results, revenues and customer experiences that deliver strong business growth. Organizations that capitalize fully on the AI opportunity will be positioned for greater competitiveness and success in the era of the digitally driven enterprise.

If you're on, or about to begin your journey to AI, Dell Technologies is an ideal partner. Dell Technologies provides the expertise, along with a broad, innovative portfolio of technologies, to deliver the data-driven solutions that underpin successful AI implementations. Organizations, right now, are using the insights from data, and the power of Dell Technologies AI products and solutions, to differentiate themselves from the competition.

2 Volvo Cars news release, "[Volvo Cars and Autoliv announce the launch of Zenuity](#)," January 03, 2017.

To learn more, visit DellTechnologies.com/AI.