How Artificial Intelligence (AI) is Transforming Cloud Computing | NetApp

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In a world where technology is changing our everyday lives, digital transformation remains top of mind for executives. To successfully transform, data must become the lifeblood of an organization and be seen as a business accelerator. Data-driven digital transformations accelerate business outcomes. How can you unleash the power of your data and drive transformation? In the cloud.

The cloud affects every facet of data: how it's stored; how it's accessed; how it's managed; and, most importantly, how it's used. With unprecedented amounts of data moving into the cloud, many companies recognize the potential for a partnership with another data-driven technology: artificial intelligence (AI).

IBM, like many other public cloud providers, specifically calls out the potential power of merging AI with the cloud.

"The next big technology shift is the fusion of artificial intelligence and cloud computing, which promises to be both a source of innovation and a means to accelerate change. With pervasive AI and cognitive capabilities underpinned by the cloud, digital pioneers in today's data-intensive world have the potential to harvest and build value from this unprecedented amount of data."

Source: IBM, *The future is all cloud and AI,* December 2016

This new combination of AI and cloud computing poses two questions for data-driven organizations. First, why does AI matter for my organization? And second, why should AI be in the cloud? Let's explore the business impact of AI development and implementation and how a cloud environment helps AI thrive.
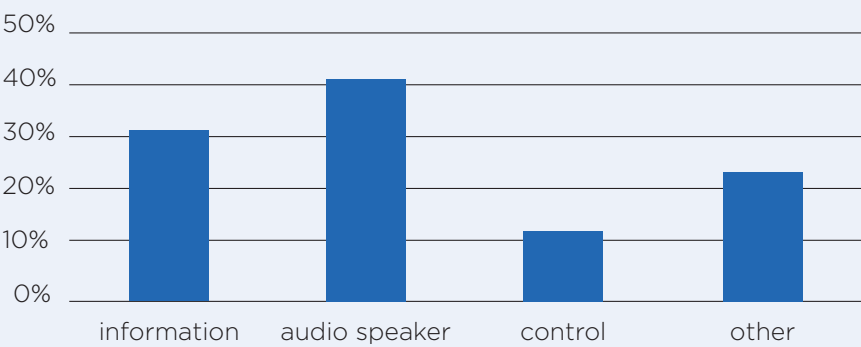
I. Why Does AI Matter?

Most businesses agree that AI provides incredible tech insights, efficiency, and even a reduction in human errors. But is there a business case for wider AI implementation? The answer is yes. AI directly affects both businesses and their customers, from the interfaces they use to engage with your product or company to the customization of business insights derived from those engagements. AI affects the entire customer journey with your business and benefits your organization as much as it benefits your customers.

Simplified Technology Experiences

AI makes technology easier to use, thanks to intuitive interfaces built to provide quick and easy access for users. Thanks to AI, more and more technology recognizes speech patterns and voices. Now we can ask our phones or smart devices to remind us of appointments or make a call, instead of writing a list or dialing a number ourselves. Thanks to AI, users can use the same exact device to accomplish a number of different tasks without having to scan through different interfaces.

**HOW CONSUMERS USE AMAZON ECHO
(MULTIPLE RESPONSES ALLOWED, PERCENTAGES
SUM TO OVER 100%)**

Source: HuffPost, *Amazon Echo — What We Know Now (Updated),* December 2017

This technology extends outside of our homes and workplaces too. For example, increasingly, cars are developing features that learn from our driving patterns and react accordingly. They help us stay in a lane when we might accidentally start to drift or even parallel park when we can't do it ourselves. With AI, using technology becomes increasingly effortless. The tech does the tedious work, so humans don't have to.

Personalized Content

For data-driven organizations, the opportunity for personalization through AI is particularly compelling. AI can make recommendations based on customer engagement patterns, and with those personalized offerings, customers might become more loyal to your brand.

This personalization approach is already in practice in the auto insurance industry. Many providers use AI to develop quotes based on personalized risk assessments, not based on typical criteria such as car specs or zip code. With these tailored quotes, each customer has uniquely tailored offerings to best suit the customer's needs, cutting out the noise or ill-fitting offerings from traditional data sourcing.

AI can provide businesses with tailoring for every individual customer rather than just market trends or predictions based on customer segments. This personalization catches the attention of customers and makes those businesses stand out from all the noise in the market.

Enabled Business Intelligence

Traditional business intelligence calls for massive, static reports generated by software systems. These insights are not customizable on a mass scale, nor are they typically actionable. Or at least, that used to be the case. AI is completely transforming business intelligence, moving to a proactive analytic structure than enables businesses to predict trends, respond to business insights, and engage with customers in real time.

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Dataconomy notes that AI has enabled business intelligence software to evolve into three different areas of analytics:

Descriptive analytics - The most straightforward BI system that summarizes data and informs what happened. It does precisely what the name implies: description. It summarizes raw data and breaks it down into something that can be interpreted by humans. Descriptive analytics enables companies to understand past behaviors and learn how it can influence future outcomes.

Predictive analytics - This "predicts" the future. Predictive analytics enables companies to have future insights. Although no statistical algorithm can give 100% prediction, organizations are using these analytics to forecast future events. This system relies on "best guesses" since its foundation is based on probabilities.

Prescriptive analytics - A relatively new but robust field that enables users to prescribe various possible actions and advise accordingly towards viable solutions. Prescriptive analytics is all about providing advice. These AI-powered analytics not only predict what will happen but also explain why it will happen.

Source: Dataconomy.com, *How AI is Transforming Business Intelligence,* February 2018

With the scalability and real-time analytics available through AI, you have unprecedented insights from your data, enabling you to make data-driven decisions quickly and efficiently. With faster response times and data tailored to individual interactions, both you and your customer are happier in the end.

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II. What Are the Benefits of Running AI in the Cloud?

In the era of digital transformation, data-driven industry leaders are looking to AI for the future of data management and analysis. In many ways, AI and cloud computing make the perfect match for digital innovation. AI's cognitive capabilities and machine learning thrive on massive volumes of data, which become scalable and instantly accessible in a cloud environment. Companies that leverage AI in the cloud set themselves up with a huge critical advantage.

Unprecedented Data Access

AI feeds off data, and the more data it accesses, the smarter it gets. Compared to traditional on-premises data storage, cloud environments support enormous volumes of data, without traditional silos or delayed accessibility. A cloud environment with AI learns from the data it gathers, makes predictions, and troubleshoots potential problems before they occur.

AI and machine learning can also be used to seamlessly move data between on-premises infrastructures and cloud environments. In a cloud environment, seamless movement, accessibility, and connectivity are crucial. With AI attached to the cloud, organizations will be able to manage and control data unlike ever before.

Organizations that partner AI with cloud data solutions have the data insights and scalability to set industry standards and drive innovation, all by maximizing assets they already possess.
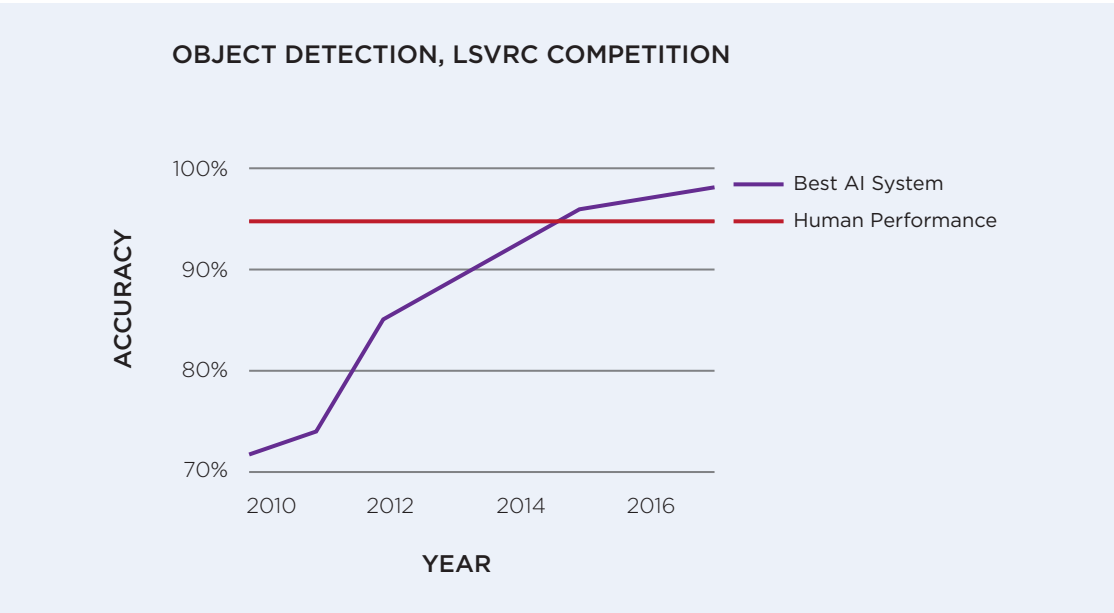
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Smarter Decision Making

When an organization connects data in a cloud environment, it can more easily identify trends and patterns in various datasets. AI takes data analysis to the next level. In a cloud environment, AI learns from historical data, identifies current patterns, and makes recommendations. This automated process completely eliminates human error during data analysis.
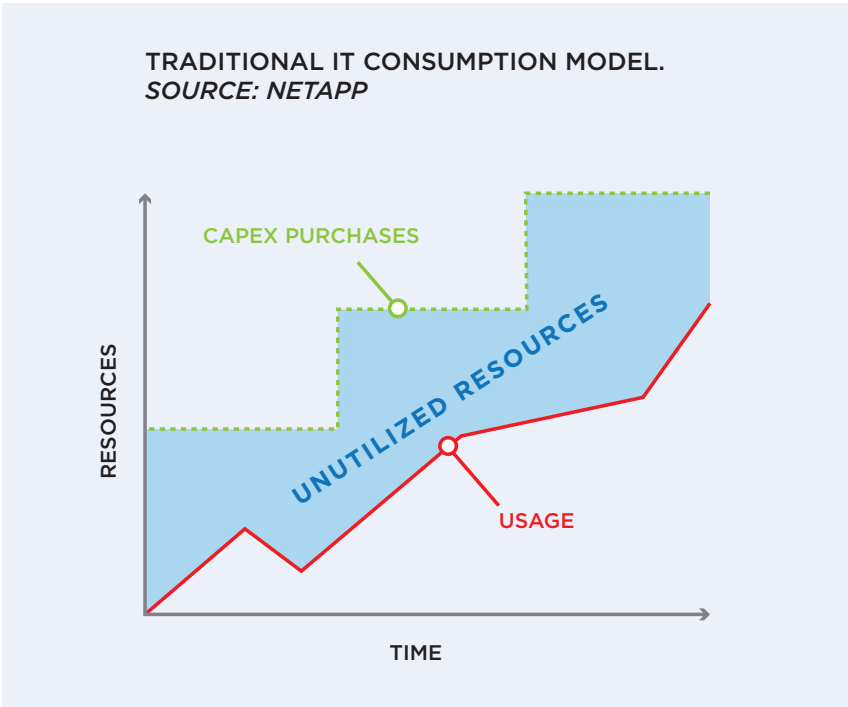

OBJECT DETECTION, LSVRC COMPETITION

— Best AI System
— Human Performance

Source: Forbes, *10 Charts That Will Change Your Perspective On Artificial Intelligence's Growth,* January 2018

Error rates for image labeling have fallen from 28.5% to below 2.5% since 2010. AI's inflection point for the object detection task of the Large Scale Visual Recognition Challenge (LSVRC) Competition occurred in 2014. On this specific test, AI is now more accurate than humans. These findings are from the competition data from the leaderboards for each LSVRC competition hosted on the ImageNet website.

AI dramatically accelerates data analysis, benefiting both an organization and its customers. Organizations quickly receive data insights and can generate recommended solutions for customers based specifically on data characteristics and insights. In turn, customers get recommendations best suited to their individual needs, with quick and efficient turnaround time. When AI works in a cloud environment, everyone benefits.
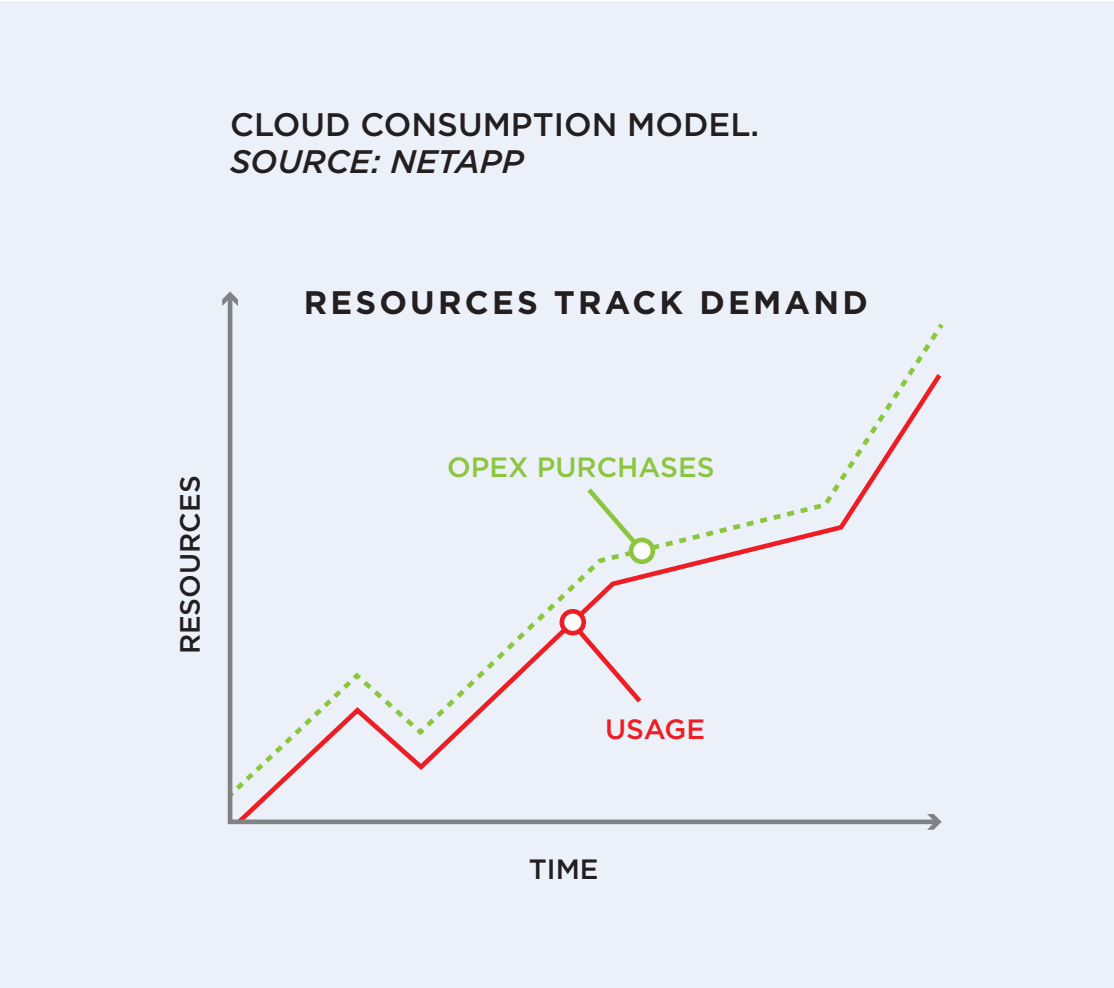
Cost Savings

The ultimate incentive for joining AI and cloud is simple economics. A cloud model allows organizations to purchase only the storage they need when they need it, eliminating traditional infrastructure expenses. With this model, an organization can use these cost savings for AI development. And without expenses for physical data centers, the cost of AI projects drops overall.

TRADITIONAL IT CONSUMPTION MODEL.
SOURCE: NETAPP

CAPEX PURCHASES

UNUTILIZED RESOURCES

USAGE

RESOURCES

TIME

CLOUD CONSUMPTION MODEL.
SOURCE: NETAPP

RESOURCES TRACK DEMAND

OPEX PURCHASES

USAGE

RESOURCES

TIME

Source: NetApp, *Will Your Data Benefit from a Cloud Consumption Model?,* 2018

Cloud environments also eliminate the need for many organizations to invest in research and development. With major cloud vendors constantly rolling out new AI features, organizations accessing the cloud can leverage this research at no added cost.

Cloud solutions are not one size fits all, and organizations create environments based on individual business needs. Each environment might look slightly different, but all provide cost savings that foster AI development and growth.

In summary, a cloud environment enables you to make smarter decisions with data you already have at no added cost. The future of AI is in your cloud.

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III. Inspire Innovation with the Cloud

Integrate, protect, and optimize on all the biggest clouds. Continually fuel business growth by delivering data-rich customer experiences through new application deployments that easily use data and services regardless of where they reside or in what form.

NetApp® cloud data services enable you to put your data-centric vision into practice so you can respond faster to market changes and rapidly advance new ideas from concept to production. We can help you transform your data into a strategic asset so you can advance your business and change the world with data.

NetApp Cloud Volumes support multiple file access across protocols (NFS, SMB), provide rich features that enable you to better manage your data, and provide consistently high performance delivered as a simple native cloud service. Get an exclusive first look at the new Cloud Volumes for AWS. Register now for an exclusive preview.

Discover how you can inspire innovation with the cloud.

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