



WHEN YOUR BUSINESS RELIES ON THE CLOUD,
YOU NEED AN AI-ENABLED CLOUD PLATFORM

Stratecast

F R O S T  S U L L I V A N

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INTRODUCTION

In the digital era, businesses in every industry are becoming technology companies. New business models such as “product as a service” (in which traditional manufacturers and distributors are driving new revenue streams by integrating software-based services into their offerings) and new operational models, such as collaboration, social business, and mobile platforms, mean that nearly every company is deriving at least part of its revenue from cloud-based solutions.

So, why are so many of these new cloud solution providers building their businesses on shaky foundations? The truth is, when your business is based in the cloud, you need more than on-demand leased compute and storage capacity. You need a cloud that is enterprise-grade, secure, and resilient. Equally important—and overlooked by too many cloud solution providers—you need a cloud platform that is able to grow your business into the future, supporting next-generation functionality like Artificial Intelligence (AI). No matter what industries you serve with your solutions, AI is already becoming a critical source of innovation and competitive differentiation.

In this paper, we look at how AI is transforming cloud solutions; and we provide tips for selecting a cloud service partner that can support your AI-enabled future.

ABOUT ARTIFICIAL INTELLIGENCE

Science fiction has fostered the association of AI with humanoid robots; for example, HAL 9000 in the movie *2001: A Space Odyssey*, or the appearance of IBM’s Watson as a contestant on *Jeopardy*. But today, we need a new way of thinking about AI, which is more advanced and accessible than previously imagined. Instead of considering AI to be a discrete entity—whether sentient robot or standalone application—we need to understand AI as an underlying capability or function that can be integrated into many applications to enhance their value and usefulness.

What is AI?

Artificial Intelligence, or AI, is a broad category of computing functionality that ranges from simple to complex, linear to meshed processing. This includes:

- **Rules engines** – Software that applies pre-specified rules to a vast number of contingencies (if/then sequences).
- **Machine learning** – Algorithms that run on hardware- or software-based neural networks, which allow computer code to change itself (without explicit programming) when exposed to new data.
- **Cognitive computing and deep learning** – Software that simulates human learning and reasoning, with a hierarchy of algorithms that are increasingly complex and abstract.

The complex algorithms that comprise AI functionality can be applied to any data set. The more data, the better the AI function performs. The better the AI performs, the greater the business insights to be derived. The greater the business insights, the greater the competitive differentiation—for the solution provider and the enterprise client.

INCREASING DEMAND FOR INTELLIGENCE IN BUSINESS OPERATIONS

Solution providers may already be seeing demand for more intelligent software and services from customers and partners. In a 2016 Frost & Sullivan survey of CEOs worldwide,

- 56% of CEOs say **“intelligent data analytics” will be the key driver of business growth** for their company
- 45% say competitors' use of **intelligent data analytics is a top competitive threat**
- 22% of CEOs say they plan to **leverage artificial intelligence**
- 82% of IT decision-makers say **integrated intelligence is an important decision-factor** in their choice of a cloud solution partner

Thus, the business leaders who represent *your* customers and partners are looking for solutions that enable them to leverage their own data for business growth and competitive differentiation. If your solution doesn't do that, they may turn to your competitors.

HOW AI CAN ENHANCE YOUR SOLUTIONS

Some of the most innovative products launched in the past few years rely on AI functionality. You may be familiar with these examples:

- **Self-driving cars** – Companies including Uber, Tesla, and Google rely on AI to analyze and respond to real-time driving conditions.
- **Voice recognition** – Functionality embedded in “digital assistants” like Apple's Siri and Microsoft's Cortana deploy AI capabilities to recognize and respond to standard (and imperfect) human speech.
- **Facial recognition** – Used in applications ranging from security and law enforcement to entertainment and social media, AI enables organizations to process, analyze, identify, and manage human images captured in video and still photographs.

But AI isn't just for flashy or disruptive solutions. Solution providers can leverage AI to enhance solutions serving nearly any vertical or horizontal business function. By doing so, the solution provider can differentiate itself from competitors serving the same market segment. Equally important, the AI-enhanced solution can enable the businesses that use it (customers) to differentiate themselves in their own markets.

Examples of how AI can enhance cloud-based solutions across a range of target industries and functions include:

Education and training: Solutions targeting educational and corporate training organizations can use AI functionality to bolster distance learning or online programs. AI functionality can provide assistance to students, using machine-learning to continually refine the ability to anticipate and respond to student issues. Incorporating AI can improve student satisfaction, while reducing costs associated with help desk staffing.

Customer Experience: “Intelligent virtual assistants” provide natural language interfaces via the internet to help customers engage with any business. Solution providers can even integrate their AI-enhanced solutions with Amazon's Alexa, enabling users to perform tasks such as placing orders, booking travel, and scheduling meetings via the interface.

Manufacturing Processes: In a “smart factory,” data is collected and analyzed from production lines and quality control processes. Solutions that incorporate AI to anticipate, predict, and forestall problems allow manufacturers to minimize downtime, increase productivity, and control costs.

E-Commerce: One of the oldest and most popular uses of AI is the customized “recommended products” feature of e-commerce or e-service sites. When e-commerce solutions incorporate AI to identify and present relevant products based on the customer’s past behavior and context, businesses can increase sales-per-customer, as well as enhance satisfaction.

Inventory Management: To compete against online retailers, brick-and-mortar stores need to maximize sales by ensuring they have the right selection of inventory in stock, at the time customers want to buy. At the same time, they must minimize costs associated with unsold inventory. AI applied to supply chain, distribution, and inventory management solutions can ensure that retail customers have the optimal mix of products at each retail outlet.

Weather: Artificial intelligence has long been used in weather forecasting. But weather conditions impact business operations and revenues across many industries. Solution providers may find many innovative uses for incorporating AI-enhanced weather data to help their customers optimize decision-making. Examples include fleet management solutions (e.g., moving airplanes ahead of a storm; rerouting delivery trucks); inventory management (stocking retail shelves with umbrellas, snow shovels, bread and milk); and staffing (increasing mall staff and decreasing amusement park staff for a rainy day at the beach; deploying remote contact center staff when travel is hazardous).

Internet of Things (IoT): IoT is a broad term applied to any use case involving collection of data from sensors or devices other than traditional computers. When AI is applied to the data, the value is magnified. For example, a solution provider serving the agricultural industry may integrate AI with data about soil and air humidity collected from in-field hygrometers, to trigger irrigation devices. For even greater value, the provider may utilize an AI platform to combine real-time temperatures and humidity metrics with visual images or chemical data to indicate crop ripeness. The resulting insights can enable customers to more precisely target the distribution of precious water resources, while minimizing crop spoilage. Similarly, a retail solution may collect location-based data from the cellphones of customers who have “opted-in” to the retailer’s loyalty program. With an AI platform supporting the solution, the geo-location data can be combined with historical data about the customer’s preferences and behavior to deliver a customized promotion or reward. The AI insights can increase revenue, while enhancing customer satisfaction and loyalty.

HOW YOUR CLOUD PLATFORM DRIVES INTELLIGENT SOLUTIONS

Many public cloud service providers say they support intelligence functionality. In most cases, however, they are referring to standalone analytics solutions that are delivered through partners. But deploying an analytics application on a commercial grade cloud infrastructure is not the same as running an AI-enabled business on an enterprise-grade platform. When so much of your business is literally riding on the cloud platform, you need to ensure the platform is up to the task—starting with the infrastructure and extending into the AI-embedded platform.

To ensure your cloud solutions have the optimal foundation, look for a cloud partner that offers:

- **Enterprise-grade infrastructure**, able to support high performance workloads. High performance workloads require consistent access to high-speed processors—something that is not available from cloud service providers that require GPU or AI computing on shared, virtual servers. Choose a partner that allows you to run AI workloads on dedicated or bare metal servers in your cloud environment. Furthermore, be sure your provider offers GPUs that are specifically designed to support AI workloads, such as NVIDIA Tesla P100.
- Access to **high volumes of data** and data streaming, without loss of performance. The platform should support access to the escalating volumes, formats, and sources of data you and your clients will rely on for AI-enabled insights.
- **On-demand solutions**, supporting efficient infrastructure utilization, and allowing you to spin up and scale out workloads as needed. Ensure your platform supports auto-scaling, enabling resources to be automatically adjusted as traffic flow varies—thus ensuring consistent application performance without overpaying for unused capacity. Features such as load balancing across multiple servers will also maintain consistent workload performance.
- The full range of **features and functionality** needed to develop, enhance, update, and deliver intelligent software solutions to customers. Your cloud partner should support your development activity with a full range of open Application Programming Interfaces (APIs) for web-based or cloud-native applications. Look for a strong developer community, as well as SDKs and “sandboxes” to build and test your new intelligent applications.
- **Embedded data analytics and AI**. Ensure the platform supports your ability to easily and continually enhance your solutions, by incorporating next-generation AI functionality, including visual recognition, natural language understanding, tone analysis, and speech-to-text and text-to-speech conversion.
- A path forward, with support for **next-generation capabilities and technologies**; e.g., containers, microservices, APIs and templates, and advanced cognitive intelligence. Your partner should be a market leader with a proven track record of providing secure, reliable, high-performance cloud services for the world’s most visionary companies.

Control Over Your Data

Furthermore, the right partner gives you **control over your own data** on the platform. This is an important point that is often overlooked by enterprises and solution providers. The data you store and create on the cloud platform is highly valuable, and should represent a key source of differentiation for your company. But thanks to fuzzy terms and conditions, many cloud service and platform providers are able to appropriate data or metadata from their customers to enhance their own learning and insights (as mentioned, AI thrives on data; the more data, the better the results). Of course, that means your competitors can benefit from the insights derived from your data as much as you do. Don’t give away your data or your competitive advantage. Ensure that your chosen cloud partner respects your right to control your data.

THE LAST WORD

Not long ago, AI was considered a future technology—not something businesses needed to take seriously today. But the future is now. Businesses in all industries are utilizing AI to derive business insights and gain an edge on competitors.

For many enterprises, AI is fast becoming a necessity. By making AI the cornerstone of your cloud-based solutions, you enhance their value to users. Today, your AI-enhanced solutions may help you differentiate yourself in the market. Tomorrow, businesses that do *not* incorporate AI may find themselves left behind.

When your business is based in the cloud, you need a strong and trustworthy foundation, beginning with the right infrastructure and continuing into the intelligent platform. By choosing a robust, resilient, and secure enterprise-grade cloud platform with embedded AI, your business is prepared for success.

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