

As AI breakthroughs abound, businesses look to score benefits

By Jennifer Langston

When Arccos Golf launched its first performance tracking system for golfers, it combined the telemetry from sensors and a smartphone app to give players detailed data and feedback about every shot.

Knowing how far and how accurately they could hit the ball under different conditions helped players uncover weaknesses and improve their game. But there was so much more that could be done.

“We had an ‘a-ha moment’ about providing a virtual caddie for every player. Just like a human caddie, ours would know the player, know the course, know the weather and provide the player with a club recommendation,” said Jack Brown, senior vice president of product & software at Arccos Golf. “So we thought, ‘Why don’t we use AI to create a virtual caddie?’”

Arccos had access to huge volumes of data to help choose a winning strategy: the player’s shot history, the experience and behavioral patterns of the platform’s other users, weather conditions such as wind speed and direction, elevation changes and the hole layout.

At that point, the two-year-old startup faced two questions that a growing number of companies now find themselves asking: Where do we start with AI? And how do we use it to our best business advantage?

Industry analysts have predicted an explosion of experimentation, adoption and use of AI over the next few years. [Gartner estimates](#) that by 2020, 85 percent of CIOs will be piloting AI programs through a combination of buy, build and outsource efforts¹ and that AI-generated [business value will more than triple](#) from \$1.2 trillion in 2018 to \$3.9 trillion by 2022.²

But many companies still face internal barriers to AI adoption. Data from Gartner's most recent CIO survey reveals that about 4 percent of CIOs have AI deployed now, while another 21 percent are piloting it or have it in short-term planning.¹ The survey also found that as many as 70 percent of companies had limited or no skills and understanding needed of AI technologies, strategies and markets.³

“A lot of companies don’t know where to start or how to pick the right use cases,” said [Tony Baer](#), principal analyst for Ovum who leads its big data research. “It’s like suddenly wandering into a store and being surrounded by a lot of shiny new toys. You don’t know where to start but you do have a sense that some of these toys are going to require a lot of knowledge to use. It’s bewildering.”

Microsoft says it has the products to help. The company says its AI offerings — which span tools in [Azure Machine Learning](#) for building deeply customized solutions to [Azure Cognitive Services](#) that allow developers to add AI capabilities with a few lines of code — are designed to help businesses of any size easily deploy AI solutions.

And, Microsoft says, it also has the expertise to help other companies work through challenges in figuring out how to use AI to build solutions with differentiated advantage.

Microsoft begins those conversations with an assessment of a customer's "AI maturity," or an honest look at the organization's preparedness to embrace, implement and benefit from AI, said Norm Judah, Microsoft's chief technical officer for Enterprise. Based on the client's readiness, it then offers solutions that it thinks the client can successfully build and run with their level of expertise.

Only one of the four pillars of competencies in that assessment involves technical depth or how many data scientists a company employs. With decades of experience in helping companies navigate new technologies, Judah said, Microsoft has a deep understanding of how other dimensions of a business — strategy, culture and how an organization makes decisions — can be equally important.

"One question is, 'Does your company make intuitive decisions or data-driven decisions?'" Judah said. "If I'm just going to give you more data to ignore rather than data that you can act on to improve the way you interact with customers, AI is not going to matter."

Understanding an enterprise's AI maturity is often the difference between a company that aims too high with AI and fails, versus a company that finds the best entry point to start with AI — one that delivers real business value — and expands from there, Judah said.

Arccos reached that conclusion early on. The golf startup had some natural advantages in adopting AI: it was already a data-intensive company, its information already lived in the cloud and leaders had articulated a strong business case.

But, importantly, the executive and technical team also resisted the impulse to try to answer every question and use every piece of data out of the gate, Brown said.

The first iteration of the [Arccos Caddie](#) used data about a golfer's shot history and the layout of the course to give recommendations about how to play a hole straight from the tee. The second incorporated real-time environmental data such as elevation and wind speed, Brown said. The third

version [released earlier this year](#) is able to readjust after each shot — if a player makes a mistake and winds up in the rough, the AI caddie offers recommendations based on that new reality.

“Probably the biggest hurdle right off the bat — because we are so data rich and we can always pull more — was to figure out how to keep things simple. Initially you think ‘Hey I want to know how much it rained yesterday because the grass will be wet and the ball won’t roll as much,’ and then you have to say, ‘No, stop. Don’t grab everything just yet,’” Brown said. “Let’s do something that works first and really shows value to our customers. Then we can build on that success.”

When choosing the technical tools to build the AI platform, Arccos also clearly defined the system’s most important performance criteria: speed. It decided to use [Azure Machine Learning](#), [Azure Kubernetes Service](#) and the [Azure Cosmos DB](#) database service because those tools delivered recommendations faster than anything else, Brown said.

“That’s really important when a user is out there on the course pinging the AI. You’ve got other golfers in your group and the ones behind you, and no one wants to sit around waiting for your virtual caddie to respond,” Brown said.

‘AI should go wherever the data is’

Even within an industry or a single company, Microsoft says it is finding that the use of AI today may be inconsistent. Banks, for instance, commonly employ machine learning tools to detect fraud and secure accounts. Far fewer are using them to analyze and interpret customer interactions, deliver better experiences and enhance brand loyalty, Judah said.

One of the most common roadblocks customers cite is poorly organized data that exists in silos across a company. Many find it difficult to divert time and brainpower away from day-to-day business functions. All want assurances that AI tools can be trusted, said Microsoft’s David Carmona, general manager for AI marketing.

“We hear constantly from companies that it’s very difficult for them because they have a very siloed and unstructured data state, and in order to apply AI on top of that they need to put it in order,” Carmona said. “We believe that AI should go wherever the data is — not the other way around.”

To help solve that problem, Microsoft says it is the first to [enable cognitive services to be used in containers](#), which means people can take advantage of AI tools without sending their data to the cloud.

Customers can use these pre-built AI services to analyze data wherever it lives — on the intelligent edge, in remote environments or in networks that a company maintains onsite.

Let's say a hospital wants to track how patients with the same set of conditions respond to different medications, or to adjust staffing levels based on how long each new patient is predicted to stay.

The information needed to make those insights could be scattered in dozens of formats both digital and analog: electronic records, diagnostic videos, intake forms, family histories, emails and call logs with nurses.

Microsoft Azure [Cognitive Services](#) uses AI to uncover useful information hiding in this type of unstructured data, with tools that can recognize words in images, extract key phrases and rate whether feedback is positive or negative. They allow developers who aren't data science experts to take advantage of machine learning with a few lines of code and solve common problems that AI is particularly well suited to handle.

But until now, the hospital would have had to upload all of its forms to the cloud to use those tools, which isn't ideal for users who have constrained internet bandwidth, need nearly instantaneous results or who prefer their data to remain onsite.

The first Microsoft containerized cognitive services include APIs that use optical character recognition to find words in images; are able to detect language, extract key phrases and analyze sentiment in text; and can recognize faces in images. Those initial containerized services are now [available in preview](#), and more will follow.

"In the same way that packing products in containers has enabled cargo ships, trains and trucks to deliver goods around the world with a common set of infrastructure, containers can do the same thing for software," said Lance Olson, Microsoft's director of program management for applied AI. "It gives you massive flexibility."

Microsoft also has other offerings that can help companies make sense of their data. With new tools from [Microsoft Dynamics 365 AI](#), companies can also use out-of-the-box solutions to enhance sales, marketing or customer service efforts. They can be up and running — using AI tools to determine which sales leads are likely to be most productive or what products to offer — within a matter of days or weeks.

“What really becomes powerful is when a company can start bringing AI to every business process and every person within that company,” Carmona said.

Identify the right AI opportunities

One of the most important responsibilities CEOs will have in charting a company’s AI strategy is aligning the business with a set of beliefs around how it will be developed and managed, Judah said. To lead employees and earn customers’ trust on the use of responsible AI, a company must transparently outline the organization’s position on issues of trust, fairness, transparency, privacy, safety, inclusiveness and more.

“Our advice to other businesses is exactly the same advice that we followed — every company in one way or another needs to develop their own [AI and ethics manifesto](#),” Judah said.

Executives also need to ensure that both the technical and business sides of a company are involved in identifying the right opportunities for AI and scenarios to test — whether that’s enhancing customer service through a conversational agent, improving efficiencies, reducing manufacturing defects or something unique.

“You see lots of experimentation today but not as many systems going into production because there’s still a lack of sophistication and understanding from the business folks about what AI can do for them,” Judah said.

Again, that starts with data. Anheuser-Busch InBev (ABI), for instance, undertook a massive [digital transformation effort](#) to overhaul its siloed data state and build a worldwide analytics platform on the Microsoft Azure cloud. That’s also enabled and accelerated the use of AI to drive growth and innovation across different dimensions of the global brewer’s business, from sales and sustainability to human resources and supply chain management.

For example, ABI uses data and AI to help barley growers worldwide improve productivity and environmental performance through its [Smart Barley](#) program, which benchmarks and develops analytics for crop, weather and market data. The brewing company also uses AI to detect patterns in successful sales efforts and generate insights that other stores can use to their benefit.

“You have to understand that AI is an enabling tool to solve problems and close gaps in ways that weren’t previously possible. You can’t say ‘Oh, now I have AI, let’s go look for problems for AI to solve’ — it needs to be the other way around,” said Patricio Prini, ABI’s global vice president, innovations.

Most of the early, simpler AI deployments focused on internal uses, using machine learning to optimize logistics in warehouses or along delivery routes, Prini said. Now ABI is employing AI tools in more sophisticated and public-facing ways, like using conversational agents to meet consumer needs and driving growth across the brewer's entire operations, from seed to sip.

"If I think about it, AI was at first a bottom line technology for us — helping us find improvements and efficiencies— and now it's become much more of a revenue generator," Prini said. "But we always start with the business case first. That helps you see how AI can enable a huge transformation."

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Jennifer Langston writes about Microsoft research and innovation. Follow her on [Twitter](#).

¹Gartner Research, Predicts 2018: Artificial Intelligence, 13 November 2017

²Gartner Press Release, Gartner Says Global Artificial Intelligence Business Value to Reach \$1.2 Trillion in 2018, April 25, 2018, Table 1, <https://www.gartner.com/newsroom/id/3872933>

³Gartner Event Presentation, Key Trends in AI Applications, Bern Elliot, Symposium/ITXpo 14-18 October 2018, Orlando Florida