



# Accenture

posted a video on YouTube earlier this year entitled, [Artificial Intelligence: Delivering in the New](#), that provides a glimpse of what lies ahead for procurement organizations. It's 95 seconds of a digital procurement market intelligence advisor explaining how "she" can help your company buy materials and services at the lowest price by supplying "accurate information on your suppliers, commodity pricing and access to market trends across a broad range of categories."

"I work with procurement analysts," she says, "and help identify which suppliers we should be evaluating, who are the leading suppliers in the region, and what may happen that could impact future buying decisions, such as potential market consolidation, and mergers and acquisitions. I can search and extract relevant information across thousands of digital sources and utilize my contextual training on procurement market intelligence to quickly understand and sort information into categories."

Not only is she thorough but she's quick. "I can complete these tasks more than 10 times faster than a human expert with my qualifications," she boasts.

The digital advisor's purpose is clear: To help companies "buy what they need to deliver services and products at the best price so that they can stay competitive and grow."

Virtual cognitive tools such as Accenture's are starting to gain traction, powered by artificial intelligence (AI) technologies. Indeed, AI has been a faint glimmer on the horizon for a while, but the technology has evolved to the point where innovative companies are operationalizing it to improve business performance and deliver cost savings and new revenue opportunities.

In the realm of procurement, the benefits of AI can be significant. They include providing actionable, near-real-time insights about the cost, availability and lead times of materials, and operational risk of their suppliers and the geographies they operate in. With the right leadership and decision-making skills, this information can boost organizational

agility and supply-chain flexibility.

It's not hyperbole to suggest that AI has the potential to rapidly transform business processes and disrupt industries. If your company is not getting on the AI bandwagon already, it will be soon.



*Accenture's AI-enabled procurement market intelligence advisor can complete tasks "more than 10 times faster than a human expert with my qualifications."*

## The AI Imperative

A recent McKinsey & Company survey<sup>1</sup> of 3,000 AI-aware C-level executives from around the world found that AI investment is growing fast, led by global tech giants, such as Google and Baidu as well as global automotive and financial services companies. Still, the McKinsey survey suggests that AI adoption outside the tech sector is in the early, experimental stage of development and few firms have deployed AI at scale. In fact, only 20% of respondents said they currently use any AI-related technology at scale or in a core part of their businesses.

Focus areas for AI span many corporate functions including the potential to improve forecasts, optimize and automate operations, develop targeted marketing and pricing initiatives, and enhance the user experience, according to McKinsey.

Hardly a surprise, the study found a correlation between tech-savvy companies that are deeply engaged in digital transformation and those that are investing heavily in AI. The message is that companies should not delay jumping on the digital transformation bandwagon, including the adoption of AI technologies. “Early adopters are already creating competitive advantages, and the gap with the laggards looks set to grow,” McKinsey warns.

There’s evidence that chief procurement officers (CPOs) see the value of stepping up to the AI challenge. A separate [McKinsey](#) survey found CPOs believe that adopting digital procurement practices can deliver significant business value, including the potential to increase annual savings by 40%, spend 30 to 50% less time on transactional sourcing, and reduce “value leakage” by 50%.

A [recent Deloitte global survey](#) of CPOs was a bit more sobering. It revealed an acknowledgement that while their procurement organizations need to become more digitally innovative, many lack staff with relevant digital talent. The Deloitte survey results include:

- 60% of CPOs do not believe their teams have the skills to deliver on their procurement strategy
- 75% of CPOs believe that procurement’s role in delivering digital strategy will increase in the future
- 65% of CPOs believe that analytics will have the largest impact on future organizational performance

The most significant and immediate application of AI in procurement organizations is to improve the forecasting accuracy of end-customer demand for finished goods and material requirements from the supply chain. AI can discern trends and patterns that are not evident using traditional forecasting methods, which still rely largely on historical data. Using AI tools to accurately anticipate future sales trends, based on a variety of data sources, it’s possible for procurement organizations to confidently order materials to satisfy demand for as-yet-to-be-ordered finished goods.

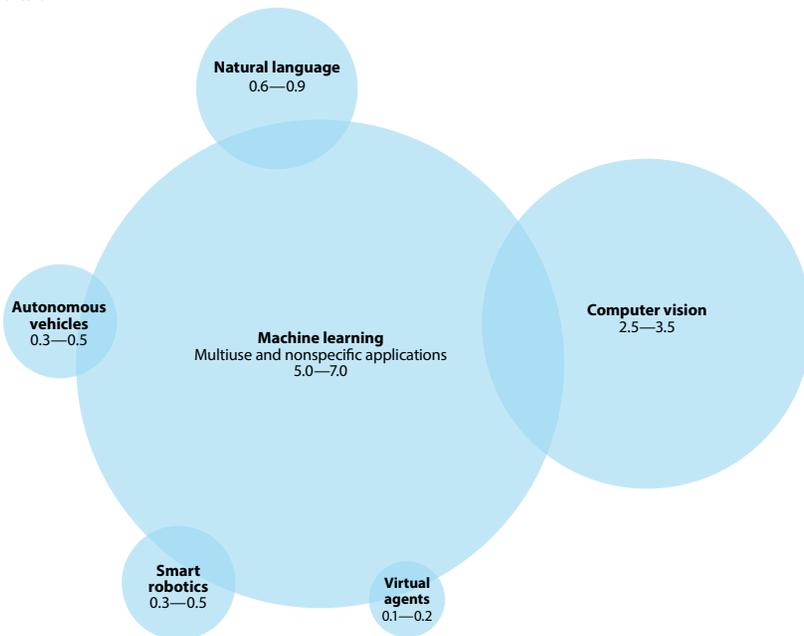
Such accurate and repeatable projections of inventory will create a clear competitive advantage. Traditional forecasting sources are incapable of processing the vast quantity of data and analyze the number of relevant variables that AI systems can. Data such as product introductions, distribution inventory, weather, seasonality, changes in customer perception, advertising campaigns, regional conflict and local labor strikes, media coverage, and a variety of social sentiment databases can be harnessed by AI systems to iteratively improve the performance of the supply chain.

## Assembling the AI Toolbox

There are a number of technologies encapsulated by the term artificial intelligence. These include machine learning (ML) and deep learning (DL)—also called deep neural networks—natural language processing and natural language understanding (NLP and NGU) and computer vision. AI technology systems—the combination of various AI technologies and the essential raw material of data—include robotics, autonomous vehicles, and virtual agents. *Figure 1* captures McKinsey’s estimate of the relative investment in AI technologies and systems. (Continued on page 5.)

### Machine learning received the most investment, although boundaries between technologies are not clear-cut

External investment in AI-focused companies by technology category. 2016<sup>1</sup>  
\$billion



<sup>1</sup> Estimates consist of annual VC investment in AI-focused companies, PE investment in AI-related companies, and M&A by corporations. Includes only disclosed data available in database, and assumes that all registered deals were completed within the year of transaction.

SOURCE: Capital IQ; Pitchbook; Dealogic; McKinsey Global Institute analysis

## It’s About the Data

Artificial intelligence systems are only as good as the data they consume. A priority for procurement executives is to gain access to as many sources of relevant data as possible to feed into their AI engines. Gartner has identified four categories of data and provides insight into how to maximize the value.<sup>1</sup>

**Supplier data:** Procurement applications and networks can be used to gather supplier data efficiently by enabling suppliers to submit this information on a self-service basis. Ideally, supplier information is shared across multiple buyers on a permissions-basis to avoid repetitive data entry and enable scalability for suppliers.

**Internal data:** For spend analytics and supplier performance management, data from internal systems—such as ERP, supply chain management, quality management and even CRM systems—can be leveraged to provide data for insights and classification.

**Subscription data:** As reliable data becomes more valuable, credible data aggregators becomes more relevant. Vendors such as Dun & Bradstreet and Bureau van Dijk already provide financial information that can be used in supplier evaluations and scorecards. There are other types of external data sources that should be explored, such as weather services or commodity price indexes.

**Public data:** External public data is without doubt the largest and most complex source of data. Different sites have different levels of reliability. Even within sites, reliability can vary and the data can be unstructured. This is the area that puts the greatest requirements on the smart procurement solutions and on the procurement analysts using them. Understanding the technology is important to understand the reliability of its alerts and recommendations. ■

1. “Start Preparing Now for the Impact of AI on Procurement,” March 2017

By far, the most popular and essential AI tool today is ML, of which DL is a variant. As the name suggests, these are machines that can “learn” without being programmed. Instead of providing explicit instructions—if X, then Y—ML algorithms process vast quantities of structured and unstructured data to determine patterns that allows them to provide a statistically accurate answer to a question or to execute a task. DL systems need thousands of examples to recognize an object—a dog for example—and must “look” at those examples hundreds of thousands or millions of times before getting it right, according to Gartner.

ML and DL are enablers for natural language processing (NLP). The result is the evolution of sophisticated virtual cognitive expert advisors and digital agents able to communicate conversationally with humans, which is a much more pleasant user experience.

The more these advisors and agents engage with users and the data, the faster they learn and improve the quality of their responses. As they become more human-like in their ability to provide specific information they become a more potent competitor of apps and websites—never mind humans—for how organizations digitally interact with their customers and supply chain partners. With time, these advisors and agents will assume responsibility for a variety of day-to-day functions.

Access to the massive datasets required for AI systems is made possible by recent advances in cloud computing, storage, and new processor technologies. For example, [Google’s Tensor Processing Unit](#) (and its TensorFlow ML framework) are optimized for AI applications, reportedly faster than graphics processors and CPUs, and more energy efficient. [IBM’s Watson](#) employs a cluster of 90 IBM Power 750 servers, powered by 2,880 3.5 GHz POWER7 eight-core processors and 16 terabytes of RAM.

The availability of data to feed these powerful systems will increase rapidly in coming years as more and more machine-to-machine (M2M)

devices—including internet of things (IoT) devices—come on line. Within a few years, these billions of devices will connect to global networks and transmit data at ultra-high speed across 5G networks.

As a consequence, annual global IP traffic is projected to almost triple, reaching an annual run rate of 3.3 zettabytes per year by 2021 up from 1.2 ZB in 2016, according to June 2017 data from [Cisco](#). That’s a compound annual growth rate of 24%. Not only will the quantity of data explode, but the combination of M2M data and 5G’s low latency will make AI systems such as autonomous vehicle viable, which will transform transportation, including land and sea logistics, and potentially air as well.

## The Human Factor

Of course, applying the technology requires human leadership. Yes, the tools of the trade can be assembled but to take full advantage of their potential requires leaders and managers who understand the value of the technologies and have experience applying the tools.

Bottom line, procurement leaders must become AI-conversant so they can onboard and direct the professionals who possess the skills to leverage the tools. Without competent staff, it’s widely believed it will be nearly impossible for companies to build next-generation strategic sourcing and procurement organizations. Perhaps the most important skillset for new hires will be data scientists and engineers who are experienced in applying AI and have domain experience.

Not surprisingly, demand currently exceed supply for top-flight data scientists. A [recent survey by Glassdoor](#) ranked data scientists as the “best” job in the US for the second year in a row commanding a median base salary of \$110,000. Data engineers also ranked highly. Despite the shortage of talent today, the supply of data scientists is expected to increase in the coming years to meet the demand.

At the same time, leaders need to build more agile organizations so they can make quick course corrections in response to increasingly dynamic supply chains and the emergence of new powerful digital marketplaces. They also face the challenge of keeping pace with the quantity and types of data that they will be able to utilize in the future.

In a recent interview, Graham Wright, IBM's vice president of global procurement, identified three corporate imperatives for IBM's own procurement transformation; two are outcome-driven and the third is an enabler.<sup>2</sup>

- **Drive insights.** “Enriching data for analytics and cognitive insights to make more informed decisions.”
- **Amplify the talent.** “Elevating the procurement capabilities and intelligence to ‘extraordinary’, and enabling people to drive the level of change and influence on the business that can come from those insights.”
- **Cognify, automate and ultimately digitalize the processes.** “Try to think about those processes differently as you uncouple them from the applications that sit on them today to truly move things from analog to digital in a seamless responsive procurement organization.”

According to Wright, IBM is moving from *reacting* to customer demand based on historic data toward *predicting* demand driven by dynamic forecasting, market insights and industry expertise. All three of his objectives stand as worthy goals for any procurement organization that is setting out on the journey toward an AI-driven cognitive and digital future.

1. “Artificial Intelligence: The Next Digital Frontier?” June 2017, McKinsey Global Institute, McKinsey & Company.
2. Taraz Berezowsky “Q&A With Graham Wright, IBM's VP of Global Procurement: It's Not the 80s Anymore,” Spend Matters, September 19, 2017.

## ACTION ITEMS

**Learn.** Get up to speed on AI procurement tools by attending conferences, studying best practices, and engaging with industry leaders and AI tool vendors. There are plenty of open-source online resources available to explore.

**Add AI to new-hire qualifications.** Most procurement professionals have a background that does not include a concentration in computer science, data science, or AI. To succeed in an AI-centric world, some new hires—specifically procurement analysts—should have a working knowledge of and experience with AI.

**Seek out new data sources.** Catalog and analyze the types of procurement data the organization uses now and identify new, external data sources to acquire or subscribe to that will support your AI tools.

By Bruce Rayner, Contributing Editor

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