IDC MarketScape

IDC MarketScape: Worldwide General-Purpose Artificial Intelligence Software Platforms 2019 Vendor Assessment

David Schubmehl       Hayley Sutherland

THIS IDC MARKETSCAPE EXCERPT FEATURES MICROSOFT

IDC MARKETSCAPE FIGURE

FIGURE 1

IDC MarketScape Worldwide General-Purpose Artificial Intelligence Software Platforms Vendor Assessment

Source: IDC, 2019

Please see the Appendix for detailed methodology, market definition, and scoring criteria.

December 2019, IDC #US43065418e
IN THIS EXCERPT

The content for this excerpt was taken directly from IDC MarketScape: Worldwide General-Purpose Artificial Intelligence Software Platforms 2019 Vendor Assessment (Doc # US43065418). All or parts of the following sections are included in this excerpt: IDC Opinion, IDC MarketScape Vendor Inclusion Criteria, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

IDC OPINION

General-purpose artificial intelligence (AI) software platforms are helping organizations with their use in developing predictive and prescriptive applications that offer predictions, recommendations, and advisory opinions. Using general-purpose AI software platforms, organizations are developing and putting into production process and industry applications that automatically learn, discover, and make recommendations or predictions. The disciplines where artificial intelligence/machine learning (ML) algorithms and technologies can significantly impact and organization may span a variety of areas include finance, sales, risk management, R&D, procurement, HR, marketing, and performance management. Anti-money laundering, patient outcomes, telco churn, retail pricing, asset management, and logistics are just some examples of industry applications where AI/ML technologies have proven to be useful.

A number of vendors have developed suites of APIs and microservices covering a wide range of AI/ML capabilities and have made them available to client as on-premises, public cloud, and hybrid cloud offerings. These vendors also have developed tools and frameworks that allow developers to collect and integrate data, do analysis, perform experimentation, develop models, and then test and deploy them into production. This IDC MarketScape is IDC’s effort to identify and evaluate these general-purpose AI software platforms that have been in the market since the beginning of 2018.

In conducting this exercise, we have talked to many vendors and their customers and have learned a great deal about the state of operational AI maturity. Overall, customers are getting excellent value from their AI software platforms and see their vendors as partners in helping develop and put these applications in production as well as providing tools to help measure the effectiveness and return on investment of these applications. Customers are excited about the future of AI/ML applications and most we spoke are looking forward to developing new solutions and capabilities to help their organization in the near future. We hope that readers of this evaluation find it useful and we look forward to future updates on other categories of AI software platforms and on a future version of this category.

IDC MARKETSCAPE VENDOR INCLUSION CRITERIA

This IDC MarketScape evaluated general-purpose artificial intelligence platforms. General-purpose artificial intelligence software platforms provide the functionality to analyze, organize, access, and provide advisory services based on a range of structured and unstructured information. These platforms offer APIs and microservices to build AI applications. These services break down into three primary categories:
▪ **User/data interaction.** The services in this category include speech recognition, natural language processing, image and video analysis and extraction, natural language generation, text to speech, and question and answer processing.

▪ **Knowledge representation.** The services in this category include automated content aggregation, knowledge extraction, knowledge models and ontologies, relationship mining, knowledge base curation, and other similar capabilities.

▪ **Learning.** The services in this category include the tools, models, and algorithms used to build machine learning capabilities using approaches such as supervised and unsupervised machine learning, reinforcement learning, general-purpose neural networks, and adversarial networks.

Vendors offer these services along with the tools and methodologies to incorporate these capabilities into AI applications. For this evaluation, vendors had to offer capabilities in all three categories. In addition to offering these services, vendors had to adhere to the following:

▪ The offering had to be commercially available for use and purchase by customers for at least one year.

▪ It must include APIs or microservices that developers can include in their applications.

▪ It must include APIs or microservices for user-data interaction, knowledge representation, and machine learning (see the Market Definition section).

▪ The product must have at least 10 commercial customers that used this product in 2018.

▪ The product must be offered and available on a worldwide basis.

▪ The offering must include development tools for creating, developing, testing, and operationalizing AI applications and models.

**ADVICE FOR TECHNOLOGY BUYERS**

IDC believes there are several steps organizations can take to get started developing AI applications:

▪ **Start small.** Focus on the automation of processes where your organization has enough data to produce accurate models. For many organizations, finding, organizing, and utilizing that data is a major challenge. For example, to create a predictive maintenance application, the data required includes detailed parts information as well as enough past failure history to develop accurate learning models. An automated customer service agent application needs CRM information about customers, their past purchases, and quality information about the products they're buying. It will also need data from FAQs and other customer-related publications.

▪ **Create an information access and analysis strategy to utilize all important data sources.** It is surprising how few organizations have mapped out an information architecture showing the linkages between individual pieces of data and an organization’s overall purpose or mission. This mapping involves understanding how data/information supports a decision to be made, which supports a given business process/function in support of an organization's purpose. With this architecture in place, you can develop an information access plan and strategy and identify whether you have access to all the critical data needed to support more effective decision making.

▪ **Ensure that the AI/ML application that you plan to develop will be able to help achieve the desired business outcome and/or issue that you plan to overcome utilizing AI and ML.** Engage in-house subject matter experts, the right stakeholders, and consulting partners with the
germane skill sets to help develop the use cases that align with the desired business outcome. Make sure to include past project experiences in your design thinking approach, and, if available, include predefined use cases that have been developed for peers within your industry to help develop the optimal use cases for the desired outcome. This process should involve continuous innovation and prototyping until the right use cases have been developed.

- **Short list a set of AI software platform providers and informally discuss with them your plans and proposed outcomes for the AI applications you're developing.** Seek their feedback and determine whether modifying your plans is justified and whether their AI platform provides the services needed to produce the desired outcome.

- **Use the right tools for the job.** Many vendors are developing full AI/ML life-cycle products that can use open source technologies in concert with vendor-supplied technologies and tools to accelerate experimentation, development, and production of AI applications.

- **Develop KPIs to measure the success of your AI applications.** Many organizations never set benchmarks for before and after implementing AI applications, so it's hard to determine what the return on investment is.

- **Build trust and explainability in from the start.** Given the issues around privacy and transparency, organizations should build digital trust and explainability into their AI applications from the beginning and monitor them to ensure that they stay trustworthy. At some point in the near future, organizations will have to adhere to regulations around their use of AI and developing this now will give them a head start.

**VENDOR SUMMARY PROFILE**

This section briefly explains IDC's key observations resulting in a vendor's position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of the vendor's strengths and challenges.

**Microsoft**

Microsoft is positioned in the Leaders category in the 2019-2020 IDC MarketScape for general-purpose AI software platforms.

Microsoft offers one of the broadest range of AI software platform capabilities in the market, including services for user/data interaction such as speech recognition, text analytics, and computer vision as well knowledge representation capabilities like Microsoft Graph in addition to a wide array of machine learning APIs and services. Its machine learning tools can be embedded in products like Microsoft SQL Server and Power BI and become part of an enterprise application or add cognitive services to that application.

Microsoft continues to perform extensive research in artificial intelligence and machine learning and has made several significant acquisitions in this space including Maluuba for general unstructured document learning and Bonsai for autonomous AI and what Microsoft calls "machine teaching." It also publishes extensively on AI/ML research as part of its Microsoft Research organization. In addition, Microsoft has been working to integrate its AI and ML capabilities into its commercial products and is providing tools that allow partners to customize and enhance their enterprise software products.
**Strengths**

IDC rated Microsoft well in its marketing efforts and sales enablement, and its success in this area is reflected in its high growth in AI usage and revenue. Buyers and IDC both rate Microsoft well for its capabilities in deriving insights from unstructured enterprise information, including building out conversational AI applications that function across multiple channels. In a recent survey of organizations using AI software platforms, nearly 60% of Microsoft customers indicated that they believed the platform increased employee productivity.

**Challenges**

The breadth of Microsoft's offering is a strength, but also can present a challenge, as this makes it difficult to "go deep" on the business issues of any specific vertical. Some customers we spoke to felt that they had to do some up-front work to educate Microsoft on their specific business issues. Buyers also cited a need for more transparency and explainability in Microsoft's AI models, as they did not feel comfortable taking advantage of parameterization features without greater understanding. In a recent survey of organizations using AI software platforms, over 30% of the respondents using Microsoft reported that they believed that moving applications to production was challenging and that the cost of development and production was high.

**Consider Microsoft When**

Microsoft is a good choice for AI use cases that integrate structured and unstructured information across the enterprise. Organizations should consider Microsoft when they are looking to infuse AI across their enterprise software stack – particularly if that software is also owned and operated by Microsoft.

**APPENDIX**

**Reading an IDC MarketScape Graph**

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor's current capabilities and menu of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis, or strategies axis, indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represents the market share of each individual vendor within the specific market segment being assessed.

**IDC MarketScape Methodology**

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users. Market weightings are based on user interviews, buyer surveys, and
the input of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information, and end-user experiences in an effort to provide an accurate and consistent assessment of each vendor’s characteristics, behavior, and capability.

**Market Definition**

**General-Purpose Artificial Intelligence Software Platforms**

General-purpose artificial intelligence software platforms provide the functionality to analyze, organize, access, and provide advisory services based on a range of structured and unstructured information. These platforms facilitate the development of intelligent, advisory, and AI-enabled applications, including intelligent assistants that may mimic human cognitive abilities. The technology components of AI software platforms include text analytics, rich media analytics (such as audio, video, and image), tagging, searching, machine learning, categorization, clustering, hypothesis generation, question answering, visualization, filtering, alerting, and navigation.

General-purpose artificial intelligence software platforms are a subset of the overall AI software platforms. Other subsets include conversational AI platforms and advanced machine learning platforms. The artificial intelligence (AI) software platforms market has experienced steady growth over the past several years and most recently growing 26.6% to $2.6 billion in calendar year 2018.

General-purpose AI software platforms typically include knowledge representation tools such as knowledge graphs, triple stores, or other types of NoSQL data stores. These platforms also provide for knowledge curation and continuous automatic learning based on tracking past experiences. When these individual technology components are sold standalone, they are accounted for in other software functional markets such as content analytics and search, advanced and predictive analytics, and nonrelational database management systems (NDBMSs).
Synopsis

This IDC study represents a vendor assessment of the general-purpose artificial intelligence (AI) software platforms market through the IDC MarketScape model. This evaluation does not include more specialized AI software platforms such as conversational AI platforms or advanced machine learning platforms. This assessment discusses both quantitative and qualitative characteristics that provide guidance about general-purpose AI software platform vendors and their offerings. This IDC MarketScape covers a variety of vendors participating in the general-purpose AI software platforms market. The evaluation is based on a comprehensive and rigorous framework that assesses vendors relative to the criteria and to one another and highlights the factors expected to be the most influential for success in the market in both the short term and the long term.

"As the AI software platforms market continues to mature, customers are looking for vendors that offer a wide range of APIs and services as well as tools to help them identify, develop, and productionize AI applications. Success in this rapidly evolving space requires AI software platform vendors to continue to innovate and provide production-ready AI APIs and microservices, tools to help customers accelerate development and deployment as well as continuing to invest in people, skills, IP, and partnerships to remain competitive," says David Schubmehl, research director, AI Software Platforms at IDC. "As more organizations move their use of AI from pilots and POCs to production, customers are increasingly looking for vendors to partner closely with them to ensure AI success," adds Hayley Sutherland, senior research analyst for AI Software Platforms. "This includes vendor capabilities like outcomes-based pricing, co-creation of use cases, and the development of accompanying KPIs and ROI models that reflect a deep understanding of the customer's business."

Related Research

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-community.com
www.idc.com

Copyright and Trademark Notice

This IDC research document was published as part of an IDC continuous intelligence service, providing written research, analyst interactions, telebriefings, and conferences. Visit www.idc.com to learn more about IDC subscription and consulting services. To view a list of IDC offices worldwide, visit www.idc.com/offices. Please contact the IDC Hotline at 800.343.4952, ext. 7988 (or +1.508.988.7988) or sales@idc.com for information on applying the price of this document toward the purchase of an IDC service or for information on additional copies or web rights. IDC and IDC MarketScape are trademarks of International Data Group, Inc.

Copyright 2019 IDC. Reproduction is forbidden unless authorized. All rights reserved.