IDC MarketScape

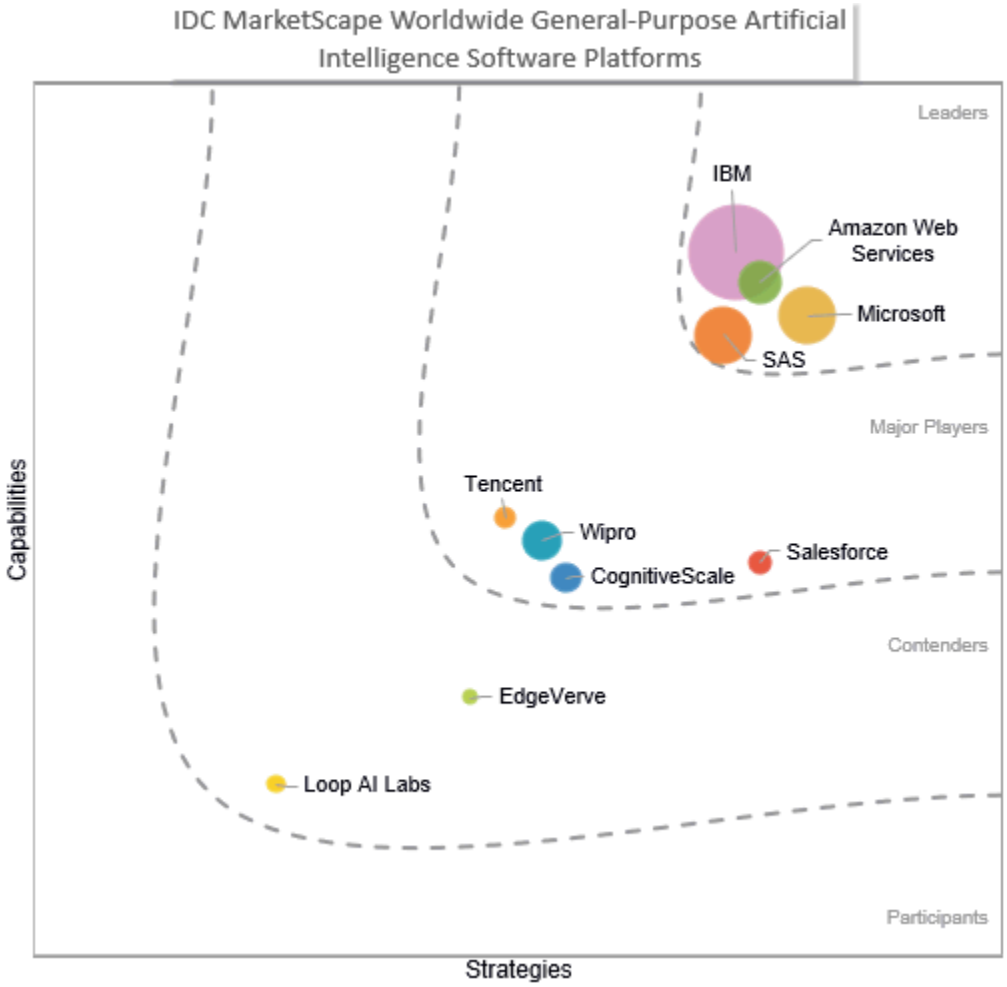
IDC MarketScape: Worldwide General-Purpose Artificial Intelligence Software Platforms 2019 Vendor Assessment

David Schubmehl Hayley Sutherland

IDC MARKETSCAPE FIGURE

FIGURE 1

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



Source: IDC, 2019

December 2019, IDC #US43065418

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

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 PROFILES

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 each vendor's strengths and challenges.

Amazon Web Services

Amazon Web Services (AWS) is positioned in the Leaders category in the 2019–2020 IDC MarketScape for general-purpose AI software platforms.

Amazon Web Services has distinguished itself as one of the key places that organizations turn to when they need developer services in the cloud. Over the past few years, AWS has developed set of AI/ML capabilities to meet the needs of its developer clients. Amazon offers a broad range of machine learning services, including AWS SageMaker as well as several APIs for performing speech recognition, computer vision, natural language processing, transcription, and other capabilities. In addition, it has begun to offer industry-specific solutions, such as HIPAA-compliant natural language processing capabilities like Amazon Textract. AWS AI software platforms are a popular choice with a large number of organizations and the flexibility and production characteristics for its services make a strong argument for ongoing use.

Strengths

Buyers and IDC both rate AWS well for its flexible pricing models and reliable delivery of services and support. Buyers also appreciated the quality of AWS' features, such as the accuracy of Amazon Transcribe. In general, the buyers we spoke to find this vendor's AI software platform quick and easy to set up, reliable, and well supported. In a recent survey of organizations using AI software platforms, nearly 60% of respondents said AWS helps them uncover new insights and 55% of respondents indicated that AWS helps them increase process automation.

Challenges

In our AI adoption survey, 40% of AWS respondents identified moving models to production as their biggest challenge with the AWS platform. In addition, more than 35% of respondents said the cost of development and production is too high, and more than one-third of organizations using AWS AI software platform services said they could not find experienced developers.

Finally, AWS may want to consider containerizing some of its AI offerings as the cloud-only deployment model can be limiting for some industries, though the fact that it is HIPAA compliant for its healthcare-related offerings is a mitigating factor.

Consider AWS When

Given the breadth of AWS' offerings, consider this vendor whether you are looking for a cloud-based AI development solution, a single API, or an advanced ML development environment. Amazon continues to add new capabilities and services for organizations looking to develop AI models and solutions in the cloud. For cloud-native organizations, AWS' strength in the rest of the company's cloud services is also an appealing factor.

CognitiveScale

CognitiveScale is positioned in the Major Players category in the 2019–2020 IDC MarketScape for general-purpose AI software platforms.

CognitiveScale helps enterprises deliver differentiated customer value through accelerated digital business transformation with intelligent, transparent, and trusted AI. Its Cortex software helps organizations leverage their data to transform customer engagement and lifetime value, boost employee expertise and operational productivity, and protect digital infrastructure and brand reputation from AI business risks. Its Cortex platform is a fully featured AI software development environment incorporating the entire development and production life cycle. It also offers capabilities to tie in open source and commercial frameworks to use best-of-breed components and models.

CognitiveScale's Cortex is a full-featured AI development platform that includes the whole life cycle from AI application experimentation and development to testing and production. It includes capabilities for AI orchestration and composition, automated trust and explainability as well as providing prebuilt AI "skills" and industry AI application accelerators to speed up development. It also can integrate with other machine learning platforms such as TensorFlow, PyTorch, and OpenCV, as well as popular tools like Jupyter Notebooks and Kubernetes. In addition, it recently formalized its existing capabilities for monitoring, bias detection, and explainability as an external product with its Certifai offering.

Strengths

Buyers and IDC both rate CognitiveScale's Cortex highly for the breadth of its functionality/offering, including the quality of predictive models and types of applications that can be built, which is strong for an AI software platform vendor of its size. This is particularly apparent with the addition of features like Certifai to address trust/explainability issues, in line with what major vendors in this space are starting to offer. Customers also rated CognitiveScale highly for its B2B support, expertise, and technical support provided.

Challenges

Some buyers suggested CognitiveScale would benefit from an increased focus on data latency and processing speeds. Both IDC and buyers recommend CognitiveScale expand its flexibility in pricing, ideally with consumption-based or even outcomes-based pricing options, particularly as usage of the platform scales up.

Consider CognitiveScale When

CognitiveScale is a good choice for those looking to build integrated apps rapidly using their visual designer. This vendor's expertise in healthcare and finance provides a strong starting point for organizations developing AI solutions for these industries. Overall, CognitiveScale is a solid midmarket option with a breadth of features comparable with some of the major players.

EdgeVerve

EdgeVerve is positioned in the Contenders category in the 2019–2020 IDC MarketScape for general-purpose AI software platforms.

EdgeVerve's Infosys Nia is an enterprise-grade AI software platform covering the entire AI/ML development life cycle. It was built to help businesses streamline data management and automate complex processes. Infosys Nia also helps automate inefficient or redundant business processes, saving time and money.

Infosys Nia is an open AI software platform built on a combination of open source components and custom-developed APIs for handling functions like natural language processing. Organizations can make use of the Nia platform at almost any stage of AI application development and deployment, ranging from data integration and model experimentation to model execution and monitoring. Nia can operate either in the cloud, on-premises or in a hybrid model. In addition, EdgeVerve offers a range of packaged solutions built on top of Nia such as AIOps, AI for Docs, Search, and other business apps that can be customized and implemented for organizations that want to minimize development.

Strengths

IDC rates EdgeVerve highly on its pricing flexibility, which is advanced for its size and market maturity. EdgeVerve also has demonstrated strengths in partnering with customers to build out tools for specific business use cases, such as contract management.

Challenges

EdgeVerve's Nia platform is still in its early stages in terms of building out its customer base, and this is reflected in the low number of dedicated resources for the AI solution, although EdgeVerve has access to a large AI Services division through its parent Infosys. EdgeVerve will need to scale up appropriately to grow its customer base, particularly if it expands into more regulated industries in the future. Adding more capabilities for explainable AI will also be important for these industries.

Consider EdgeVerve When

Consider EdgeVerve for specific business use cases aligned to Nia's capabilities, or if you need guidance/assistance in developing your AI solution. EdgeVerve also provides several prebuilt solutions for areas such as contract analysis, document applications, AI-enabled search, and customer service conversational AI solutions that customers find attractive.

IBM

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

IBM offers a wide range of AI and machine learning software platform offerings as part of its Watson portfolio on a worldwide level. IBM has been providing access to APIs and services ranging from

natural language processing, recommendation tools, speech recognition, and computer vision for a number of years. The services offered as public cloud offerings are available on IBM's public cloud as well as those of Amazon Web Services, Microsoft, and Google and also as on-premises services that organizations can embed in their applications directly. IBM continues to add to its AI platform capabilities as with the recent Watson OpenScale offering that monitors models in production against business KPIs and technical metrics, as well as to detect and correct model drift and bias.

As part of its corporate mission, IBM provides a wide range of assistance to help organizations get the most from their AI/ML development and models including services, education, and training. IBM continues to be a leader in research around the fields of artificial intelligence and machine learning, with an extensive number of patents and patent applications being granted and filed on an annual basis.

Strengths

IBM Watson scored well in its dedicated resources for AI, and this is reflected in customer impressions of support. Customers rated IBM's AI support highly, impressed by both the level of support and the number of channels where support is available, including Slack and IBM chat forums. Buyers and IDC both rate IBM well for its "run anywhere" deployment flexibility, which provides flexibility in development and deployment using the major cloud vendors. In addition, customers indicated that they can white label IBM's AI services into their own products relatively easily. Finally, IBM's strong research partnership with MIT translates to a strong innovation pipeline.

Challenges

Because of its long running involvement in AI, IBM may need to work to change market perception around the Watson brand in terms of its current technological and support capabilities in this space. Similarly, given its history working with C-level business leaders, IBM would do well to shift its marketing to focus more on the channel of the developer, which is increasingly becoming the buyer of these platforms. Finally, some customers found IBM's pricing options challenging to understand, unaware that they could opt for entirely usage-based pricing as opposed to one that also includes a fixed component.

Consider IBM When

Consider IBM when you need to develop an AI solution that can handle a variety of vertical markets, scale to high volume, and connect to various sources, with the flexibility to change on a daily basis. IBM also offers a wealth of options and capabilities to software organizations that would like to partner with IBM in the development, marketing, and sales of AI applications beyond just the APIs and services themselves. Given IBM's focus on robustness and enterprise readiness, its AI software platform appeals to a wide variety of customers looking to deploy AI/ML models into large-scale production.

Loop AI Labs

Loop AI Labs is positioned in the Contenders category in the 2019–2020 IDC MarketScape for general-purpose AI software platforms.

Loop AI Labs has developed an unsupervised machine learning platform that can handle a wide variety of data including both structured and unstructured data. With offices across the United States and Europe, Loop AI Labs has developed relationships with universities and research institutes in Italy to extend the functionality of its AI software platform. Loop AI Labs partners with services firms, hardware, and RPA vendors to provide AI-based applications and solutions that enable digital transformation of organizational business processes such as insurance claim processing in the

property insurance industry. The creation of the Knowledge Model (Loop Cortex) is executed autonomously (i.e., without any software coding or writing rules) by the platform, starting from the client's data set once uploaded on Loop Q.

Strengths

Buyers liked the fact that Loop AI Labs offers fully unsupervised AI, mentioning that this approach allowed them to significantly reduce time to market for implementing new use cases/maintaining established use cases. The customers we spoke to also felt that Loop AI Labs had a good understanding of their industry. Loop AI Labs starts each customer engagement with the co-creation of a "cognitive road map" to support the implementation of a business case, validate customer investment, and highlight benefits achieved by the AI platform.

Challenges

While buyers were pleased with Loop AI's unsupervised learning capabilities, they also expressed concerns that this approach can be a "black box" and would like to see Loop AI focus on building out more explainable AI. While Loop AI Labs is very flexible in its ability to add this capability if needed, explainability is not a standard part of the platform. Overall, Loop AI Labs is comparatively on the early end of maturity in this market and would benefit from building out greater functionality for its offering. While buyers appreciate the ability to customize for their use case, some also cited a desire for more ready-to-use or partially prebuilt models to further speed time to market and reduce the amount of work required. Both buyers and IDC would like to see more advanced pricing options from Loop AI Labs, ideally fully consumption-based or even outcomes-based pricing.

Consider Loop AI Labs When

Consider Loop AI Labs when you have a significant amount of data needed to build an AI solution and are looking for a vendor to partner with you in building out an unsupervised AI solution to solve a specific business problem. Loop AI Labs is a good choice when implementing an enterprisewide reengineering of core business processes infused with AI.

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.

Salesforce

Salesforce is positioned in the Major Players category in the 2019-2020 IDC MarketScape for general-purpose AI software platforms.

Salesforce has been focusing on AI and Einstein as a platform for several years now. It has made some significant acquisitions in the space (MetaMind and Bonobo) and has enabled Einstein as a set of tools that allow business analysts and non-developers to build and add predictive and prescriptive capabilities to Salesforce applications. In addition, Salesforce has been working to add AI/ML functionality to its base offerings as well such as providing AI-enabled search as a standard Salesforce feature. Overall, Salesforce has applied the use of its AI software platform to the challenges and opportunities that are unique to its CRM and customer service applications.

Strengths

Salesforce's AI marketing message and sales enablement strategy around Einstein are clearly defined and well executed. This is reflected in strong growth rates for its AI software platform. Salesforce also has proven strengths in developing predictive and prescriptive solutions for applications in the sales/CRM pipeline.

Challenges

Salesforce's Einstein offering has a limited scope compared with some other AI software platforms, and this can be confusing for buyers in terms of understanding how best to apply the technology. While Einstein can handle basic CRM information, including unstructured text from emails, some customers struggled to successfully use Einstein Vision capabilities for advanced use cases. This may be an area to strengthen in the future.

Consider Salesforce When

Consider Salesforce Einstein when applying AI to text-based or structured information across the Salesforce stack. Organizations developing predictive and prescriptive solutions for applications in the sales/CRM pipeline should strongly consider Einstein, particularly if info is in Salesforce.

SAS

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

SAS has been delivering software for analytics for decades and the vendor believes that data doesn't drive an organization, decisions do. SAS believes that for organizations to realize the benefits of digital transformation, they will need to improve the accuracy and velocity of both transactional and strategic decisions.

With the introduction of SAS Viya, its general-purpose AI platform, SAS has combined decisioning, data access, data preparation, AI/ML model building, selection, and experimentation together with capabilities for putting AI applications into production and running them at scale. SAS Viya is available across any cloud platform from AWS, Azure, Google, and Alibaba. Organizations can build artificial intelligence solutions by leveraging machine learning, deep learning, natural language processing (NLP), computer vision, forecasting, and statistics, using a visual interface to do so. In addition, SAS has embraced and incorporated open source languages and tools such as R, Python, and Jupyter Notebooks and integrated them into the SAS Viya product so that AI/ML developers and data scientists can utilize their learning and skills with these open source frameworks and languages.

Strengths

Customers liked that they could increase process automation and employee productivity with SAS Viya. SAS offers robust NLP capabilities based on its acquisition of Teragram in 2008 that has been enhanced and integrated into the SAS Viya platform. In addition, in a recent survey of AI software platform users, 46% of the respondents using SAS Viya indicated that they chose the platform due to lower cost. Finally, 61% of those users indicated that they were deploying their SAS AI application in the cloud.

Challenges

In a recent survey of AI software platform users, 37% of respondents using SAS Viya indicated that development can be time consuming and 34% found it challenging to get data into the SAS Viya platform. In addition, prebuilt and AutoML models are becoming more popular. Offering pretrained models would open SAS Viya to new types of customers.

Consider SAS When

Organizations that are already using SAS for analytics are natural customers for SAS Viya as they already have an ongoing relationship with the company. In addition, for applications that require the building of models that require both structured data and NLP or computer vision, SAS Viya should be considered. Finally, SAS Viya's visual interface makes it easier for non-data scientists to work with and develop AI/ML models.

Tencent

Tencent is positioned in the Major Players category in the 2019-2020 IDC MarketScape for general-purpose AI software platforms.

Tencent is an internet technology company founded in Shenzhen, China, in 1998, and listed on the Hong Kong Stock Exchange since June 2004. It has been helping organizations develop internet-based solutions for years and has developed an AI software platform for customer use called Ti Matrix. The Ti Matrix platform is an AI software development and delivery platform that combines algorithm experimentation, model development, data collection, and integration into an AI application. The Ti Matrix platform provides AI application developers with tools and algorithms to accelerate the development process. Besides the prebuilt algorithms and models from all Tencent Labs — including Tencent Youtu, WeChat AI, Tencent AI Lab, and Big Data Dept. — the Ti Matrix platform is also backed up by Ti-one, an optimized deep learning toolset with comprehensive model training and inferencing capabilities. The platform provides a full life cycle of data collection, data integration, data quality management, experimentation, algorithm selection, parameterization, production, and model monitoring, and it is available via both cloud deployment and on-premises.

Strengths

Given its strong background in cloud services, buyers rated Tencent highly on its capabilities at the intersection of cloud and AI. However, other customers with greater security concerns appreciated the flexibility to deploy on-premises if desired. Buyers also appreciated Tencent's willingness and ability to customize the AI solution as needed.

Challenges

Buyers we spoke to suggested Tencent could be more streamlined in its processes, saying there was a clear end goal but not a detailed plan for execution. Buyers would also like to see more integration of open source capabilities for greater development flexibility. In addition, most of Tencent's resources are in Asia, which could make it challenging for organizations considering the Ti Matrix platform outside of Asia.

Consider Tencent When

Consider Tencent if your primary use case or related data is based in Asia and/or China, as Tencent has strong local resources to help customers develop their AI application.

Wipro

Wipro is positioned in the Major Players category in the 2019–2020 IDC MarketScape for general-purpose AI software platforms.

Wipro's focus for AI is to help the company's customers build what Wipro calls the "Intelligent Enterprise." Wipro helps customers reimagine their business processes by adopting design thinking approach, where decision making is augmented by AI using actionable insights and powered by curated data. To do this, Wipro has developed its Data Discovery Platform (DDP), which is Wipro's platform to build AI applications. It includes capabilities such as natural language processing, knowledge extraction, and machine learning as well as the tools needed to create and operate these applications. It has industry-focused AI apps that have their own set of prebuilt data models, analytical models, and variable repository as well.

The Wipro Data Discovery Platform offers a full life cycle of AI platform development and production with a view to enable intelligent enterprises. DDP provides a platform where data can be collected from disparate sources. The core of the AI on DDP is the engine that consists of machine learning algorithms, deep learning frameworks, neural networks, and natural language processing techniques

to derive insights from audio, pictures, video, and unstructured content. Actionable insights and models are delivered as alerts, dashboards, REST API publisher, Search BI, and web apps.

Strengths

Buyers rated Wipro highly on its AI software platform's flexibility, particularly in terms of its ability to integrate with custom applications. Buyers also appreciate the level of local support provided by the Wipro team, which went beyond simply supporting the technology's functionality and extended to helping its customers identify new use cases and ways to incorporate AI use across the organization.

Challenges

Wipro would benefit from bolstering its marketing channels to increase its visibility in this market. Buyers would also like to see Wipro building out more capabilities for non-data scientists to work with the platform and adjust the models.

Consider Wipro When

Organizations that are looking for assistance and guidance as well as the implementation and insertion of AI/ML into their business processes should consider Wipro. Wipro offers a full suite of capabilities and services to help enterprises conceptualize, design, develop, and implement AI-based solutions that help achieve digital transformation and increase ROI.

Vendors to Watch

Google

Earlier this year, Google brought together all its AI and ML capabilities into a single platform that it calls the AI Platform. As such, it was not evaluated since the inclusion requirements specified that the product being evaluated had to have been in the market for at least one year. Google Cloud's AI Platform offers a wide range of services and tools for machine learning developers, data scientists, and data engineers to take their ML projects from ideation to production and deployment, quickly and cost effectively. From data engineering to "no lock-in" flexibility, AI Platform's integrated tool chain helps organizations develop, build, and operate their own machine learning applications.

The AI Platform supports Kubeflow, Google's open source platform, which lets organizations build portable machine learning pipelines that can run on-premises or on Google Cloud without significant code changes. In addition, the AI Platform offers other open source tools such as Google's TensorFlow and Jupyter Notebooks for developing applications as well as the AI Hub and APIs for natural language processing, conversational AI, document AI, and computer vision as well as a number of Cloud AutoML tools for low-code and no-code environments.

SAP

Earlier this year, SAP launched a new general-purpose AI software platform offering called SAP Data Intelligence. As such, it was not evaluated since the inclusion requirements specified that the product being evaluated had to have been in the market for at least one year. SAP Data Intelligence combines SAP Data Hub with SAP Leonardo Machine Learning Foundation in one next-generation cloud service.

SAP Data Intelligence can work with data from many sources: SAP HANA, SAP HANA Cloud Services, SAP Business Warehouse, third-party databases, and data lakes based on Hadoop and the major cloud platform providers. Users can prepare their data and build processing pipelines graphically and quickly, as well as deep dive into data science with notebooks, such as Jupyter. SAP Data

Intelligence supports Python, Scikit, TensorFlow, R, and an open container architecture. It also includes tools and capabilities for model deployment, monitoring, and integration.

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).

Strategies and Capabilities Criteria

Tables 1 and 2 provide key strategy and capability measures, respectively, for the success of general-purpose AI software platforms. The assessment criteria are divided into two primary categories: capabilities and strategy. IDC analysts look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market. In the strategy category, IDC evaluates whether a supplier's strategies in various areas are aligned with customer requirements over a defined future time period and their business and go-to-market plans. The factors were weighted because IDC believes that some are more important than others in maximizing market opportunity and realizing market success.

TABLE 1

Key Strategy Measures for Success: Worldwide General-Purpose Artificial Intelligence Software Platforms

Strategies Criteria	Definition	Weight (%)
Functionality or offering strategy	Excellence is marked by plans to increase resources and knowledge of the AI software platform practice.	20.0
Cost management strategy	Superior service calls for ways by which the vendor can help clients justify expenditures including ROI models and by providing clear paths by which the client can lower costs.	10.0
Delivery	A strong portfolio strategy dictates that well thought-out plans are in place to ensure development of offerings across entire life cycle of AI software platform.	20.0
Sales/distribution strategy	Excellence is demonstrated by plans to improve sales efforts.	10.0
Marketing strategy	Successful firms have an eye toward a well-articulated plan for how they will market their capabilities in the future.	10.0
Customer service strategy	Superior firms have a well-articulated plan for lowering client churn in the future.	10.0
	Superior firms have a well-articulated plan for increasing delivery consistency in the future.	
Growth strategy	Firm has strategic plans for both organic and inorganic growth and ones that align well with the overall IT trends in the next one to three years.	10.0
R&D pace and productivity	Firm has strategic plans for attaining or retaining functional superiority over competition by improving innovation in AI software platform delivery methodologies and tools.	10.0
Total		100.0

Source: IDC, 2019

TABLE 2

Key Capabilities Measures for Success: Worldwide General-Purpose Artificial Intelligence Software Platforms

Capabilities Criteria	Definition	Weight (%)
Functionality/offering delivered	Analyst evaluation of firm's current AI software platform offerings	20.0
Pricing model options and alignment	Analyst evaluation of the types of pricing models offered to clients	10.0
Range of resources	Analyst evaluation of the size of the firm's sales professionals dedicated to selling AI software platform	10.0
Marketing	Analyst evaluation of the various marketing channels used related to AI software platform	10.0
Customer service delivery	Analyst evaluation of the firm's ability to retain customers	17.0
Growth strategy execution	Analyst evaluation of revenue growth rates for AI software platform	10.0
Innovation — capabilities	Success measured, in part, by the vendor's creation of protected IP related to AI technology solutions and/or deployment methodologies	5.0
Employee management	Success measured, in part, by the head count associated with the AI software platform business	7.0
Customer engagement	Success measured, in part, by the breadth and depth of the vendor's current and historical AI software platform customer engagements	11.0
Total		100.0

Source: IDC, 2019

LEARN MORE

Related Research

- *IDC FutureScape: Worldwide Artificial Intelligence 2020 Predictions* (IDC #US45576319, October 2019)
- *Market Analysis Perspective: Worldwide AI Software Platforms, 2019* (IDC #US45487219, September 2019)
- *Worldwide Artificial Intelligence Software Platforms Market Shares, 2018: Steady Growth - Moving Toward Production* (IDC #US45262419, June 2019)
- *Worldwide Artificial Intelligence Software Platforms Forecast, 2019-2023* (IDC #US44170119, June 2019)
- *IDC's Worldwide Artificial Intelligence Taxonomy, 2019* (IDC #US45013419, April 2019)
- *IDC Market Glance: Artificial Intelligence, 1Q19* (IDC #US44808719, February 2019)

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."

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