NUCLEUS RESEARCH

ANALYTICS TECHNOLOGY VALUE MATRIX 2021

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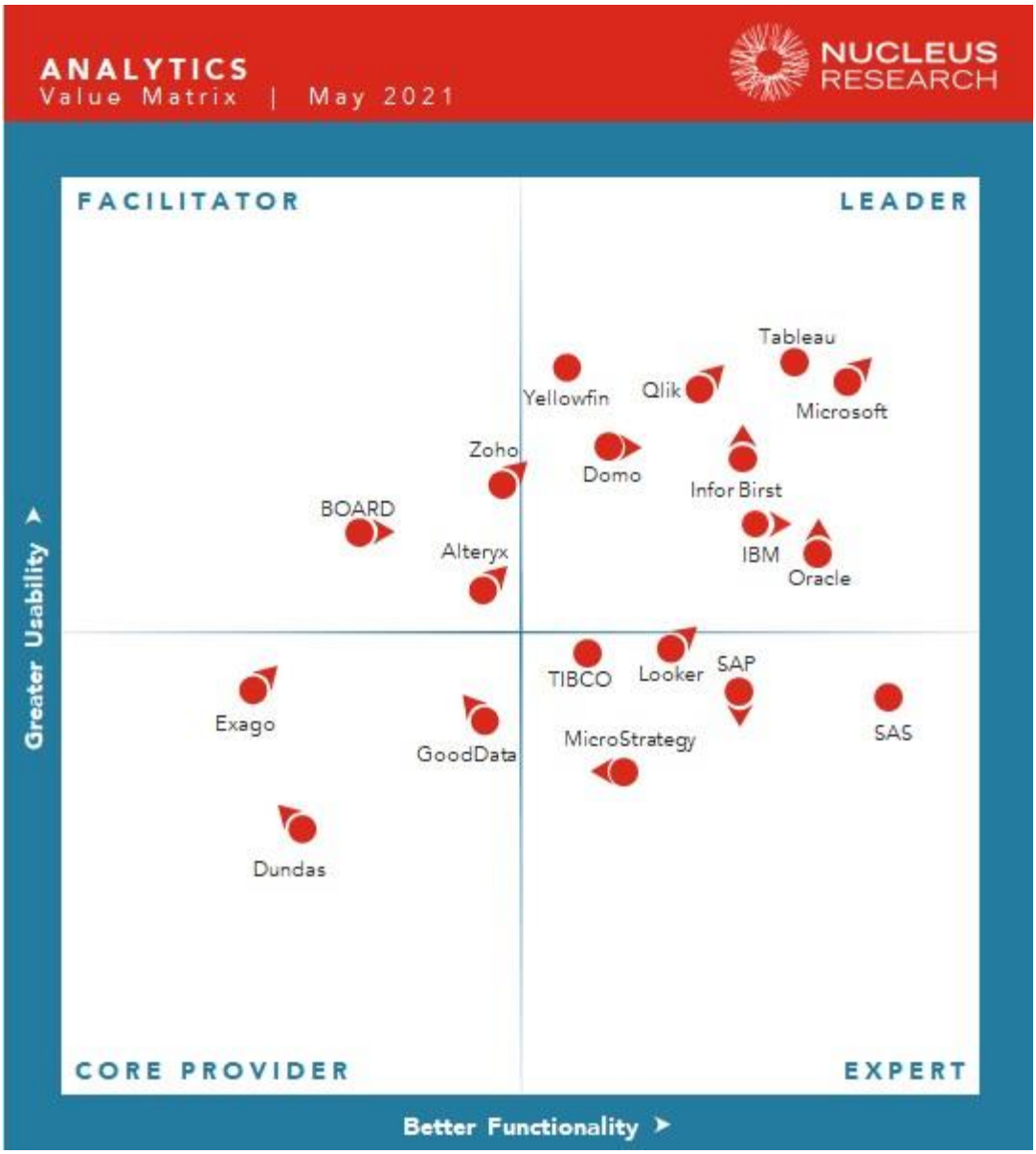
THE BOTTOM LINE

Investment in and adoption of analytics technology has only accelerated as companies leveraged the business disruptions of the past year to upgrade IT ecosystems, modernize processes and decision-making to become more data-driven, and consolidate overly expensive and complex application stacks in favor of more comprehensive platforms. Analytics technology has advanced to where systems can automatically analyze data, visualize it, and communicate value-add insights as augmented analytics has become table stakes technology. Vendors and customers are moving away from the best-of-breed stack with disparate components for various stages of the analytics pipeline in favor of an end-to-end data platform that can handle data storage, integration, preparation, governance, and collaboration, in addition to core analysis, visualization, and reporting capabilities.



OVERVIEW

Vendors on the Matrix are positioned according to the relative usability and functionality of their respective solutions and presented as a snapshot of the current market, rather than an empirical ranking of the vendors. The arrows indicate perceived momentum in a particular direction. Positioning and momentum are informed primarily by conversations with end users, along with the most recently released capabilities/features and areas of vendor

investment. In addition to the ease-of-use of the solutions themselves, the usability positioning is also informed by market prevalence/penetration, and typical speed of deployment/mass adoption. The functionality criteria is based on customer feedback regarding solution capabilities, breadth of use cases/processes supported by the solution, and vendor alignment with key analytics market trends and customer needs.

This year, analytics technology investment by organizations of all sizes saw a significant uptick. Companies used the shutdowns and stay-at-home orders to modernize their businesses to operate digital-first, which typically involved modernizing IT ecosystems and processes to become more analytics-based. As a result, speed of deployment was critical and vendors who could quickly deploy, connect to a company's disparate data sources, and deliver value were able to differentiate themselves.

Vendors have invested in developing end-to-end data management platforms that support the full data lifecycle from capture and storage to processing, analysis, visualization, and communication of results. As company IT landscapes have grown more complex with data being produced from exponentially more sources, beyond analyzing and displaying the data, vendors need to connect to data at disparate locations, both in the cloud and internally stored on-premises. This year saw many leading vendors invest in developing or acquiring iPaaS platforms or solutions to expand on this vision.

AI/ML-based capabilities for uncovering insights, automatically visualizing data, and explaining reasoning behind calculations have been long-promised but are finally being delivered in an accessible and value-add capacity. Explainable analytics are a key item with solutions being expected to present explanations and confidence estimates behind the insights it derives to help non-technical users leverage the platforms effectively. Beyond simple visualizations, systems are expected to automatically generate visualizations and graphics that optimally communicate the data, again magnifying the productivity and sophistication of non-technical business analysts. Additionally, natural language interfaces have matured to allow users to query the system in text and receive answers in calculations, graphics, and text depending on the input.

To minimize overall TCO and accelerate time-to-value, ensuring rapid deploying and mass adoption are critical to any vendor's long-term market success and increased penetration. Investing in out-of-the-box capabilities, templates, and data models shortens customer onboarding and reserves pre-start setup to more complex, specialized analytic tasks. The most successful vendors have created industry-specific data models, best practices, templates, and other analytic content to accelerate deployment and ensure value-add outcomes post-deployment.

LEADERS

Leaders in this year's Value Matrix include Domo, Infor, Microsoft, Oracle, Qlik, Tableau, and Yellowfin.

DOMO

Domo offers a cloud-based analytics platform that includes end-to-end functionality for data ingestion, transformation, preparation, governance, analysis, visualization, dashboarding, as well as embedded analytics and low-code/no-code app development and deployment. It has competed primarily in the mid-market, and since going public in 2018 its focus has shifted upmarket to enterprise customers. The product originated from the need for executives to have real-time visibility to granular data about how the company is operating, and so its intuitive custom dashboards are key differentiators and make up the DNA of the solution. Along with these dashboards, the platform supports traditional BI, data discovery, reporting, machine learning, and customizable analytical application design; it increasingly has added modules for data management, preparation, and pipelining, as well as integrations with data science tools and machine learning/AI capabilities. As the market is moving more toward a full-platform approach to data and analytics rather than a stack composed of best-of-breed components, Domo is well-positioned for the present and innovating to stay ahead of the market into the future.

Recent product updates and announcements include:

- In November 2020, Domo reached SAP-certified integration status with SAP HANA, and can now access, organize, and combine data from SAP HANA with other disparate data sources.
- In March, Domo announced new native integrations with Snowflake and Amazon Redshift as part of its multi-cloud data framework that enables customers to get more leverage from their investments in their cloud data platforms of choice, while still harnessing all the data integration, data management, and last mile capabilities of Domo.
- In March, Domo's platform achieved the AWS Machine Learning Competency designation in the Applied AI category for Domo AutoML, which is built with Amazon SageMaker Autopilot to deliver automatic machine learning (AutoML) capabilities, recommended action features, and drag-and-drop predictive model deployment directly to data in Domo, dramatically increasing time to value for customers.
- In March, Domo announced DDX Bricks, pre-built, reusable code blocks that enable anyone in an organization, including those with little-to-no coding experience, the

ability to build and deploy custom visualizations and apps with drag-and-drop simplicity on top of the Domo platform.

- In March 2021, Domo announced new embedded analytics capabilities that allow customers to OEM the full platform to their customers and suppliers and monetize high value data assets and improve the experience they deliver to their external stakeholders.
- In the area of augmented analytics, in March Domo announced Dataset Views and Analyzer for guided analysis to allow business users and data analysts alike to move through data analysis, exploration, manipulation and visualization more easily, in one easy-to-use interface. Domo also announced Natural Language (NLG) in Narrative Cards which generates easy-to-understand data stories in the language of the business through the use of artificial intelligence.

Despite a turbulent 2019 in the first year post-IPO, as of this report, Domo's stock price has more than doubled from its YTD. It has sharpened its focus upmarket to target enterprise accounts and support executive teams with real-time visibility to mission-critical analytics. By catering specifically to executives, Domo carved out a niche in the market, but it has also invested heavily in other areas like data science integration, custom analytic app development, and machine learning to ensure its viability as market conditions and customer preferences change. Domo is positioned in the Leaders' quadrant of this year's Value Matrix.

IBM

IBM provides a vast array of data management and analytics solutions for on-premise, cloud, and hybrid deployments across IT locations. IBM's main analytics product, Cognos, is an enterprise-level BI suite that provides users with reporting, analysis, and query tools in the form of Studios and components such as Framework Manager, Cube Designer, and Transformer. Cognos is also a highly mature product and has a variety of available learning resources and a large ecosystem of experienced users. The solution incorporates Watson, IBM's flagship AI assistant, that offers predictive analytics and unstructured data analysis for massive data sets and applications. Some of Watson's capabilities include data privacy management recommendations, a conversational interface for querying information and accessing insights, and process automation tools to eliminate low value-add tasks. With Cognos and the suite of Watson-powered capabilities like personality profiles, sentiment and tone analysis, speech-to-text, and natural language processes, IBM has the technology to serve essentially any data-related use case at enterprise scale. Additionally, it has significant data management, preparation, and privacy capabilities, packaged as a full suite offering that can allow customers to only pay for the services they consume; this allows IBM to handle data and analytics processes efficiently and securely from end-to-end.

Recent product updates and announcements include:

- In April, IBM announced the release of Cognos Analytics version 11.2.0, which focused primarily on updating the solution's user interface with a more modern look. Some notable improvements include a simplified home screen experience, new onboarding training tools that incorporate video tutorials and Accelerator content, as well as improved search capabilities. IBM also announced a new feature called Watson Moments. Through a natural language inquiry about a specific data field, the AI can detect, compare, and visualize a similar data match that can provide the user with new insights.
- In September, IBM partnered with Nielsen Global Consumer Business and announced the launch of Watson Advertising Weather Targeting, a new suite of triggers designed to help marketers make connections between weather and product sales without using third-party cookies or other identifiers. This solution's main focus is on providing relevant ads to consumers based on the weather's influence on consumer behavior and emotion according to zip code automatically and reduces media waste.
- In August, IBM announced a new mobile application for Cognos Analytics for cloud and IOS users. The mobile app gives users data on-the-go with an intuitive voice command feature to glean insights, manipulate data, and share content with other users. The mobile app was later released for Android users in February and on-premise users in March.
- In July, IBM announced the acquisition of RPA solutions provider WDG Automation to expand IBM's capabilities and help clients accelerate AI-infused automation across business processes and IT operations.
- In July, IBM also added REST API in its 11.1.7 update to give users the ability to connect to any API with a codeless configuration and intelligent sampling to reduce the volume of data when transferred.

IBM has circled the peak of functionality in the analytic technologies market for years and holds a top spot in cutting-edge enterprise AIs with Watson. The vendor's focus on augmented intelligence has assisted users with surfacing new insights, automating repetitive tasks, and overall facilitating continued business success. IBM has also become more flexible with the release of the Cognos Analytics Mobile application to fit in a greater variety of cases which increases its usability rating. With its expansive hardware, middleware, and cloud-based solutions for the entire data/analytics pipeline, as well as its in-house consulting network and cutting-edge research organization, IBM is well equipped to create highly custom deployments based on any customer's needs. Together with its analytics, AI, and

data management solutions, IBM is positioned in the Leaders' quadrant of this year's Value Matrix.

INFOR

Infor Birst is an enterprise-grade, cloud BI and analytics platform. It deploys on private and public clouds and supports connectors for various third-party data sources including other enterprise applications, databases, and local files. It automatically joins data from disparate sources and creates analytics-ready models with ADR (automated data refinement). Birst's Networked BI approach allows both centralized and decentralized teams to collaborate and share data and insights over a secure network, with support from AI, a native cloud multi-tenant architecture, machine learning, an adaptative UI and data visualizations. Birst's value-based design (VBD) methodology can accelerate deployments despite the level of customer-specific customization with industry best practice data models, orchestration pipelines, and pre-built metrics available out-of-the-box.

Infor Birst supports the entire end-to-end data pipeline process with ETL, data lake/warehousing, API gateways, self-service data prep, in addition to integrated dashboards, data discovery, reporting, and predictive capabilities with AI/ML. This allows customers to support a comprehensive analytics strategy with a lower TCO than a best-of-breed stack approach allows.

Recent product updates and announcements include:

- In March, Birst announced a partnership with Snowflake in which Birst will use its BI tools to allow customers to create automated data warehouses on Snowflake.
- In January 2021, Birst expanded to include InforOS to enable a modern data architecture on the platform. The SaaS platform includes the data integration, management, and preparation tools, as well as Coleman Machine Learning, federated security, and a single user experience.
- Infor enables in-context analytics with reusable analytic widgets that can be available outside the traditional Birst workflow. The widgets can be embedded in parent applications and are fully interactive with filter, pivot, and drill-down capabilities.

Infor Birst is prominent in the enterprise space and is complemented by Infor's ability to offer applications for every aspect of a business and across various industries. It is particularly appealing to companies looking to centralize their data and analytics strategy with a complete digital innovation platform combining the power of InforOS with Birst. We would expect it to acquire new market share as new enterprise customers increase analytics

adoption. Birst is a Leader in this year's Value Matrix for enabling modern data architecture with an end-to-end platform approach as well as its substantial enterprise penetration.

MICROSOFT

Microsoft Power BI is built on the Microsoft Power Platform, so it natively integrates with other Microsoft business applications like Dynamics 365. It is highly scalable and capable of serving organizations at any stage of the corporate lifecycle, from startup to global enterprise, although it has primarily become a widely used enterprise tool. It connects to data sources on the Web, databases (cloud and on-premises), and third-party software vendors, allowing businesses to eliminate silos and centralize data across the organization, and its native integration with Azure positions it as a natural choice for customers choosing Azure as their primary cloud provider as Power BI can be used to leverage that data with minimal configuration or setup needed. It is presented as a standalone free web-hosted application with varying price points based on the user role and permissions. It can also be hosted in cloud or embedded to add analytical capabilities to other applications. The product set includes Power BI Desktop, Power BI Pro, Power BI Premium, Power BI Mobile, Power BI Embedded, and Power BI Report Server. Microsoft pushes updates to the suite every month, and users can easily interact with the user community to influence product development and roadmap direction.

- In November, Microsoft included its "intelligent narratives" add-in for all Power BI users, featuring the ability to interpret and inform users on insights that it finds.
- In December, Microsoft added automatic template app installation automation allowing its publishers the ability to configure additional parameters to templates with ease.
- Also in December, Microsoft released full report attachments as PowerPoint or PDF attachments available to its premium subscribers.
- In December, Microsoft announced the integration of Azure Synapse, broadening the ability for users to span data warehousing, data lakes, and data integration within a cloud service.
- In May, Power BI announced Power BI Goals, a set of tools that lets customers leverage the platform's AI capabilities to make data-driven decisions to stay on top of team or individual targets.

Power BI is known for its functionality and ease of use, as well as its rapid penetration of the BI space in recent years. The ease-of-use from a familiar Microsoft interface combined with its rapid market penetration and natural cross sales opportunities within the massive Azure ecosystem position Power BI well to continue expanding in the future. Additionally, it releases regular monthly updates to product functionality driven in part by its active online

user network, including significant investment in computer vision, edge technologies like AI, strong performance on big data analytics. With the success of Microsoft Teams, another piece in the Microsoft ecosystem with native integrations to Power BI, an opportunity is emerging for Microsoft in productivity management/employee management as well as traditional BI/analytics use cases. For its continued strong performance in the market and strong future prospects, Microsoft is positioned as a Leader in this year's Value Matrix.

ORACLE

In addition to Analytics Cloud, Oracle provides cloud infrastructure and service, SaaS-based business applications for HCM, CX, ERP, and supply chain, as well as autonomous database and data management technology, low code application development, and other developer tools. It can support all major BI workloads such as connecting to data sources, visualization, insight discovery, and reporting, and can scale infinitely on Oracle Cloud Infrastructure (OCI). It also supports natural language querying; augmented and embedded analytics; semantic and predictive modeling; ML-powered data preparation; mobile authoring, notifications, and consumption; and analytic dashboards and reports. With industry-leading expertise in databases, Oracle is differentiated in its ability to manage and process massive quantities of data at enterprise scale. Leveraging its expertise with business applications it can offer use case-specific, and industry-specific analytics to accelerate customer outcomes. With Oracle's penetration into the data management space with its differentiated autonomous database, it logically has acquired significant market share among enterprise analytics customers and has ample opportunities for cross-sales from its other related lines of business.

As the analytics technology market has evolved, best-of-breed data visualization tools are being eschewed in favor of an end-to-end platform approach where the data can be stored, prepared, analyzed, and shared all from a single unified platform and user license. The past year and a half brought on significant changes to customer behavior and business environments as teams are now largely distributed and business is increasingly done via the cloud. Oracle is well-suited to benefit from this changing market topography with its existing offerings and capabilities, however it has also increased its investment supporting an active customer/user community. It has leveraged this direct line of communication to drive product development and address customer questions/issues more quickly

Recent updates and announcements include:

- Released in-memory data analytics engine to enable greater self-service functionality and accelerate ETL tasks.
- Announced the release of Oracle Analytics Cloud mobile application for consumption-based use cases to augment its existing mobile offering for BI

collaboration and social media-like analytics feed. Also announced a data storytelling feature for more flexible BI presentation options.

- Announced automated data preparation which is available out of the box but also extensible with customer catalogs or reference information. Also announced a data flow feature for data preparation and machine learning explainability which offers background context on individual predictions made by system AI.
- Announced new graph, text, affinity, and custom map analytics and natural language processing for search and graphic/table generation with support in 28 languages.

Being the industry leader in database technology, offering solutions to analyze and operationalize the data it stores is a logical area of competency for Oracle. Additionally, offering the full gamut of business applications, Oracle Analytics technology is well-positioned to benefit from cross-sales with other Oracle clouds and capitalize on existing enterprise relationships. As customers are looking to consolidate their data/analytics IT ecosystems, Oracle looks to be a likely beneficiary based on its current performance and customer feedback. It is positioned as a Leader for the first time in this year's Value Matrix.

QLIK

Qlik offers a SaaS-based, end-to-end data and analytics platform that joins cloud data management with data analysis, visualization, and reporting capabilities. Qlik's main analytics products is Qlik Sense that differentiates by utilizing Qlik's Associative Engine and Insight Advisor AI that can automatically correlate relationships within data sets to create report-ready data. In addition, Qlik also offers a portfolio of additional products with specialized use cases that mainly fall under data integration, data analytics, and developer platforms. With the acquisition of Knarr analytics, Blendr.io, and RoxAI, Qlik is fully committing to its vision of Active Intelligence. Customers can more easily eliminate their data silos and gain access to a continuous pipeline of live data-rich insights to actively make informed business decisions.

Recent product updates and announcements include:

- In January 2020, Qlik announced its acquisition of RoxAI for its Ping intelligent alerting solution, which allows users on email, mobile, and social channels to receive alerts aimed at preemptively managing and monitoring business data. The capabilities of Ping fully integrated into Qlik allow users to design advanced workflows and alerts based on live data without the need for a data administrator in order to deliver relevant insights when action is required.
- In March 2021, Qlik announced SAP Order to Cash, a new accelerator and also a new connector solution for SAP data to assist enterprise-level businesses in speeding up the value gained from analytics-ready business data. The SAP Order to Cash

analytics accelerator takes pre-built solution components to optimize SAP data projects for finance, sales order, and inventory management. The new unified connector allows Qlik Sense Enterprise users access to any SAP data source in real-time using an SAP Bex and InfoProvider joint connectivity and SAP SQL connector to extract SAP data more efficiently for analysis.

- In May 2020, Qlik released Qlik Alerting, the repackaged version of the Ping intelligent alerting solution that uses Qlik's Associative engine to deliver real-time analysis.
- In August, Qlik acquired Knarr Analytics to synergize with Qlik's data analytics platform. This move will allow Qlik users to collaborate within teams to generate and share insights simultaneously and better explore their data.
- In September 2020, Qlik released upgrades to its Insight Advisor AI, including automatically creating cluster and correlation charts based on data similarities and NLP chat features for generating searches, business rules, and metadata. The vendor also announced "Qlik DataTransfer," which assists organizations in migrating their on-premise and legacy data to the cloud. In February 2021 there were further updates to Insight Advisor allowing users to generate a dashboard for time base analysis and narratives on generated charts.
- In October 2020, Qlik acquired Blendr.io, an iPaaS solution that automates data integration and management within over 500 cloud data sources and applications. Blendr.io's technology will allow Qlik to increase the depth of its data integration and analytics offerings with automated trigger actions and improved analytics capabilities.
- In March 2021, Qlik added to its Active Intelligence vision with the addition of webhooks to trigger actions and events from analytics into business processes such as notifications into Microsoft Teams and Slack.
- In March 2021, integrated cataloging capabilities were added to Qlik Sense to enable users to quickly find, profile and analyze data.

Qlik's recent acquisitions and successful integration of the technologies into its ecosystem to build an end-to-end platform is a major step for the vendor and right in line with the growing industry preference for a platform-based approach to analytics rather than a patchwork of best-of-breed components. It is positioned as a Leader in this year's Value Matrix.

TABLEAU

Tableau offers a BI/analytics platform that specializes in data analysis and visualization but has expanded to include end-to-end data preparation and management capabilities. It is a component of the Salesforce application portfolio. Tableau specializes in making data digestible to non-technical users with rich visualizations and dashboards to convey insights graphically, while allowing users to drill-down into the underlying data. Tableau products can be embedded in third-party applications and reports, delivering data-backed insights directly where they are consumed, and have a reputation among customers as being highly usable, contributing to its strong adoption. Tableau has invested heavily in artificial intelligence over the past year with new capabilities to maximize user efficiency such as automatic data analysis which surfaces relevant insights to the user without being prompted to run a specific analysis, and improvements to its natural language interface for search, data explanation, and automatic graphic/visualization generation. Since being acquired by Salesforce, Tableau has invested in delivering CRM-specific capabilities for deal/opportunity analysis, pipeline forecasting, and other sales-related analytics and dashboards.

- In May 2020, the 2020.2 release included several new data modeling capabilities including Relationships, allowing users to visually create logical relationships between tables; Metrics, which can be defined from any dashboard to provide a curated and up-to-date view of important KPIs; and set control, which allows users to dynamically change the members of a set with a quick, filter-like interface to ensure data stays fresh and updated.
- In August 2020, Tableau unveiled its 2020.3 update highlighting its ability for users to output and update external databases directly from Tableau Prep Builder and Prep Conductor.
- Also in August 2020, Tableau added SQream's data connector to its extension gallery allowing its users the ability to in real-time analyze up to petabytes of data by using GPU accelerated methods.
- In October 2020, Tableau announced it will collaborate with Salesforce's Einstein Analytics with a rebranding to Tableau CRM to provide merged functionality for Tableau and Salesforce.
- Also in October 2020, Tableau launched a free data literacy training program named Data Literacy for All; this is expected to be a help for Tableau customers to enhance digital literacy and to expand its addressable market.
- In March 2021, Tableau added support for Einstein Discovery within Tableau to allow users to benefit from automated machine learning models analyzing data and

surfacing patterns without requiring the user to write code or have data science experience.

- Also in March 2021, Tableau launched Tableau Business Science to make data science capabilities more accessible to business users. It is a class of AI-powered analytics that allow business users to leverage advanced AI and predictive models using their domain expertise to quickly solve real-world problems. Users can control factors such as input data, variable selection, and threshold setting to create fully automated and guided analytic workflows to democratize data science for analytics teams.
- In May 2021, Tableau partnered with CData to expand its data connectivity offerings, in particular, looking to expand its real-time data connectivity capabilities to better enable data streaming analytics and other low latency use cases.

Tableau is widely considered by customers to be among the premier market participants in quality, intuitiveness, drill-down capabilities for data visualizations. Advancements in data processing and backend data management allow Tableau to broaden its scope of business to a more enterprise-level market allowing consumers with larger data caches to centralize and analyze data with greater efficiency. Tableau is also expanding its market through the education of digital literacy allowing more users to have the technical ability to manipulate data. As an established player in the market, Tableau has become an expected enterprise tool and should maintain its position based on user familiarity, cross sales from Salesforce, and cloud modernization projects as legacy customers modernize their instances. It is positioned as a Leader in this year's Value Matrix based on its maturity in the market, continued customer acquisition and success, and strong future prospects for new cloud deals.

YELLOWFIN

Yellowfin is an Australian BI provider that offers an analytics platform focused on action-based dashboards, automated business monitoring, and data storytelling. Traditionally known for its user-friendly design, it has made recent efforts in improving the scope of use to include a developer-centric approach, interactive algorithms and API integration. Users are able to provide a unique UI experience as personalization features facilitate embeddable plugins, adding to the platform's functionality. Significant strides in visualization have also been made with imaging quality, text editing experience, and presentation capabilities all improving the platform's usability. Recent updates and announcements include:

- Dashboards: Functionality improvements such as Dashboard Signals Code Widgets promotes the integration of external applications/capabilities into user dashboards. Used with Yellowfin's Assisted Insights, users can continue to leverage embeddable

augmented analytics to specifically identify best practices or discern operational bottlenecks. The availability of a mobile dashboard allows for a proactive approach to active monitoring of critical changes in data followed by real-time alerts; all powered by Yellowfin Signals.

- Visualization: Improvements in visual quality and text editing functionality enhances the data storytelling feature; making up-to-date operational insights easily comprehensible for users. These advanced visualization features also enable users to assess data points on a geographical, simple tabular or cross tabular illustration. The intelligence gained can then be communicated using Yellowfin Present solution, which focuses on making simple but impactful business presentations.
- Automation: Cross-analysis between current user performance and business milestones is optimized through automation to identify operational shortcomings and inefficiencies. Efficiency in analytic computing can be facilitated through the new Step Change algorithm, which is designed to find more patterns in data. Reports and visualizations can then be auto-generated and distributed company-wide, optimizing collaboration efforts. Users can benefit from embeddable API that include JsAPI, REST API, Iframe, Full Application Integration. Notable of which include JavaScript API, which promotes fine-grained user control that is insertable directly into the platform. The addition of REST API cultivates a custom UI experience through a series of pixel-perfect screens, pages, and visual elements, which are all backed by automated data integration.

In summary, Yellowfin continues to be a major market influencer through its focus on creating an intuitive platform built on anticipating user needs. Over the last year the company has widened its focus on improving functionality capabilities through the integration of interactive visuals, insightful dashboards and API features. Users can now personalize their dashboards through the inclusion of external plugins while still leveraging the platform's visual aesthetic. Nucleus believes design flexibility, automated analytics and individualization through API justifies its positioning in the Leaders' quadrant of this Matrix.

FACILITATORS

Facilitators in this year's Value Matrix include Alteryx, BOARD, and Zoho.

ALTERYX

Alteryx specializes in data science and analytics with the stated goal of making advanced analytics accessible to any data worker. The platform enables users to connect to disparate

data sources, prepare and analyze data, and deploy scalable analytics with dashboards and reports. Alteryx helps address bottlenecks within an organization's analytical operations without extensive involvement from IT or data professionals. Alteryx equips non-technical users with end-to-end tools that allow them to access data at the source, perform low-code or no-code analytics and model building, and can allow users to deploy these models at scale. Its main products are Alteryx Designer, Alteryx Analytics Hub, and Alteryx Server.

Recent product updates and announcements include:

- In October, Alteryx announced its partnership with Adobe to provide customers access to new data analysis solutions through Adobe Exchange.
- In August, Alteryx and UiPath formed a partnership to speed up end-to-end automation across data-driven processes.
- In June 2019, Alteryx introduced Alteryx Analytics Hub and Alteryx Intelligence Suite. The Alteryx Analytics Hub integrates analytic assets into a single intuitive secure platform and allows users to share and collaborate with other users. The Alteryx Intelligence Suite helps users without a data science background by allowing them to easily build predictive models with an end-to-to machine learning pipeline.
- In May 2019, Alteryx announced its end-to-end analytic process automation (APA) platform, which combines data analytics, data science and, business process automation.

Alteryx helps to make data accessible to native data scientists with extensive low-code and code-free creation options. In particular, it is useful at the top of the BI stack for data preparation and, for also creating and embedding graphics and visualizations. For the ease-of-use and focus on making complex analytic processes accessible to non-technical users, Alteryx is a Facilitator in this year's Value Matrix.

BOARD

BOARD International is a technology vendor that offers a single product (the Board Toolkit) for corporate performance management (CPM), BI, and predictive analytics. It is very adaptable and is deployed to the cloud but can also be deployed on-premises or to a hybrid environment. The toolkit supports key BI functionality like data exploration and discovery, data visualizations and reporting, and scenario planning. BOARD International operates primarily in the enterprise space, so the optimized solution can manage the complexity of larger organizations.

Recent product updates and announcements include:

- In April, BOARD International announced board marketplace, an online hub that offers a range of prebuilt analysis, forecasting, and planning solutions.

For customers looking to simplify their technology stacks, BOARD and its Toolkit is an attractive offer as it can support BI and corporate performance management (CPM) on one platform. This year's Value Matrix puts Board International in the Facilitator quadrant.

ZOHO

Zoho's Business Intelligence is made up of two components, Zoho Analytics and Zoho Dataprep. Each are available on a standalone basis or together depending on the customer use case. The platform focuses on the following core areas: data management, visualization/analytics, and insights/actions. It is built to support data and analytics processes from end to end and like all Zoho apps, is built on the Zoho Cloud which ensures users' data will stay completely private and will not be used for advertising or sold to third-parties. It is built with in a modular framework with components including Self-Service BI, Embedded BI, and Self-Service DataPrep. Zoho's AI assistant Zia is integrated throughout to allow for automation and other AI capabilities on the platform. Customers can also extend their deployments with industry-specific functionality or other add-ons with apps from the Zoho Marketplace.

With the Self-Service DataPrep module, Zoho is building out a full-scale data management and integration platform with capabilities for integration, transformation, modeling, cleansing, enrichment, and cataloging, among others. This looks to be a major driver of the solutions overall low total cost; by unifying data management and analytics on Zoho, customers will have a simpler path to achieving modern business analytics.

Its analytical and visualization capabilities are in line with the present-day trends. Augmented analytics and AI capabilities are the focus with capabilities including natural language generation/processing with Zia Insights and Zia Conversation, and other capabilities including cognitive analysis, what-if analytics, and forecasting. The user interface is easy-to-use and customizable to customer needs. Dashboards, graphics, and visualizations can be configured and offer filtering and other drill-down capabilities for self-service ad hoc analyses. To communicate the insights it serves, Zoho Analytics includes slideshows, reporting, and analytics portals and can be embedded within third-party applications or webpages.

Recent announcements and updates include new business application connectors, an immersive dashboard mobile app, new visualizations and granularity functions, tabbed dashboards for more complex storytelling with metrics/KPIs, and export-as template to share reports, slideshows, and other analytics content outside of Zoho Analytics.

For the low TCO and rapid deployment potential, Zoho Analytics has the potential to usurp many incumbent analytics/BI vendors, particularly as customers increasingly demand rapid

deployments and quick time to value. It is positioned as a Facilitator in this year's Value Matrix with significant upside potential going forward.

EXPERTS

Experts in this year's Value Matrix include Looker, MicroStrategy, SAP, SAS, and TIBCO.

LOOKER

Looker is a cloud-based BI and data analytics platform that helps companies perform a variety of data analyses, reports, and visualizations, from BI and embedded analytics to data-driven workflows and custom applications. It is primarily deployed in the cloud, but it also offers the option of an on-premise deployment. Looker can connect to any SQL database and generate an automatic data model based on the specific data needs of a given user. It is widely adopted in the enterprise, particularly in organizations that leverages SQL databases as the primary data storage modality. This centralized and version-controlled data model gives companies a unique definition of all business rules, delivering trusted data across the organization. Looker has self-service capabilities for less technical users with the ability to give power users and developers an extensive and flexible framework for building data applications and querying data with LookML.

Recent product updates and announcements include:

- In February 2020, Looker announced Looker 7.0, with some notable features such as improvements to the integrated development environment (IDE) user interface (UI), the ability to edit in bulk within the IDE, enhanced PDT rebuilds, and enhancements to its system activity dashboard.
- In August 2020, Looker announced some additional enhancements to its BI and analytics platform, such as support for the Google Marketing Platform, upgrades for application builders, the ability to cross-filter data and to drag and drop filters.
- In October 2020, Looker announced its beta for the Looker mobile app for Android and iOS to allow users to easily open and view dashboards and looks.

Post-acquisition by Google, Looker has accelerated its roadmap and continued to gain market share and buzz among customers as an enterprise analytics tool. It is typically used on top of SQL data for more sophisticated developers to analyze and leverage for application design. While it is not exclusively a SQL-centric tool, its differentiator and common use as a more advanced tool justifies Looker's positioning in the Expert quadrant of this year's Value Matrix.

MICROSTRATEGY

MicroStrategy brings an intuitive enterprise BI solution with end-to-end capabilities supporting the full data lifecycle, from data ingestion and management to analysis, visualization, and reporting. Most legacy deployments are still hosted on-premises, although the company is migrating to more cloud-based deployments through AWS and Microsoft Azure. The MicroStrategy platform offers deep functionality for a variety of analytical processes, including big data analytics, simple visualizations, and machine learning to handle more robust data sets. With analytical tools at the disposal, MicroStrategy's assets are completely comprised of bitcoin to bring a bigger sense of stability to its shareholders. Being able to support the full breadth of an organizations data-based and analytical needs is central to MicroStrategy's value message, as the platform enables traditional data preparation and BI but further integrates with third-party statistical programs like R and PMML (predictive model markup language) to support more advanced data science projects on the same central platform bolstering its functionality. MicroStrategy also connects to other popular BI tools like Tableau, Qlik, and Microsoft Power BI, to enable users to optimize its data strategy across platforms to fit the wide-ranging end-user needs.

- In April, MicroStrategy released 2020 Update 1 which features predictive mobile caching and deeper integration in Microsoft Excel, Power BI, and Azure. The update includes predictive mobile caching to make often-viewed dossiers run faster on mobile devices.
- In September, MicroStrategy completed an acquisition of 38,250 bitcoins from the belief that bitcoins can provide a more stable treasury asset with a greater potential to the dollar.

MicroStrategy provides a high-performing, enterprise-grade platform for BI and analytics that is highly functional for complex use cases. Predictive mobile caching enhances user experience with smoother and faster task completion rates. While MicroStrategy still offers strong functionality and a robust customer ecosystem, it has been seen as more difficult to use and implement than some competitors. This, with the tendency for customers to choose the vendor for complex or large-scale analytics deployments justifies MicroStrategy's positioning in the Experts' quadrant of this year's Value Matrix.

SAP

SAP offers enterprise-level solutions for the full range of business functions, including supply chain management (SCM), ERP, HCM, CRM, and BI. Most customers are deployed in large-scale on-premises instances, although the company is evolving to offer fully cloud-based and hybrid-cloud solutions. Its BI offerings include SAP BusinessObjects, Business Intelligence, Suite, and SAP Analytics Cloud. BusinessObjects is an on-premises BI solution

that offers data connectors for accessing third-party data sources, ETL, and data sharing capabilities to ensure decision-makers have access to the properly formatted data for analysis in real-time. It also includes analysis, visualization, and reporting capabilities and is integrated with Microsoft Office. Analytics Cloud is a fully cloud-based, column-oriented end-to-end analytics solution. It includes automated machine learning from SAP Leonardo to automatically surface connections between data and key drivers of KPIs; it offers predictive analysis and alerting, and users can query data with natural language to automatically produce intuitive graphics and visualizations.

- In November, SAP expands its partnership with Dynatrace to allow AI-powered monitoring capabilities in SAP commerce cloud for end-users to optimize first click on mobile or websites and performance insights on a code-level.
- In November, SAP announced PartnerEdge program enhancements to be released in 2021. PartnerEdge's enhancements include Partner Grouping Agreements (PGAs), cross-border certification, and the ability for partners to use SAP's internal sales tools. Primarily Partner Finder which uses AI to help connect partners to customers.

With a broad range of mature products, SAP's customers using SAP products in other areas of business are in good stead to seamless use SAP's BI and analytics tools. Its solution is quite functional relative to other competitors and continues to have an initial investment in configuration that customers might not find viable when compared to other analytical technologies. SAP is placed as an Expert in this year's Value Matrix.

SAS

SAS is an industry-leading, advanced data analytics software company based in Cary, North Carolina that offers a broad range of data analytics solutions. It includes end-to-end data management and analytics solutions that support everything from data ingestion and transformation to analysis and visualization. The technology is functionally mature, with extensive capabilities for statistical analysis that have made it widely adopted across industry and academia. Other products for specific use cases like fraud detection, risk assessment, and KPI monitoring deliver value out-of-the-box; however, the core offerings for general data management and analysis are enterprise-grade and require significant configuration and onboarding but it provides 8 monthly articles to educate customers, although the deep functionality justifies the investment. SAS is looking to change this perception with recent investments in ease-of-use and ease-of-implementation.

- In June, SAS partnered with Microsoft to further shape and develop the future of AI and Analytics as SAS opens the UK and German data centers and more deeply integrates with Microsoft Azure by allowing end-users to run SAS workloads in the cloud.

- In September, SAS accelerated its development of analytics and data science talent with new academic programs. SAS specialized with Universities to offer institutions a higher level of accreditation including 3 tiers representing various levels of engagement with SAS.
- In September, SAS partnered with RTI to give government agencies a greater ability to create insights and use analytical technologies. SAS gained greater multi-domain expertise in myriad areas of government research and public policy.

SAS sustains its committed long-term user base and market popularity as an advanced analytics tool. It is also making new advancements in academia to ensure there is a steady stream of trained users on the platform and is combatting the long learning process it is known to have. Being one of the top functional firms in the analytic technology market, SAS is more suited for large enterprise customers with large knowledge bases to control its BI software. Nucleus positions SAS as an Expert in this year's Value Matrix.

TIBCO

TIBCO Software provides users with a visual analytics, data science, and streaming analytics business intelligence platform that is integrated, enables inline data preparation, is interoperable, and offers broad flexibility and reliability for data visualization and analytics. TIBCO enables end users to self-serve high-value, actionable insights, and enables advanced analytics professionals and data scientists to support those self-service needs. The TIBCO platform can connect directly with big data in real-time, and can enable analytics on streaming and events data, making TIBCO well-suited for a wide range of enterprise use cases. Specific products within the platform include TIBCO Spotfire®, TIBCO Data Science, TIBCO Streaming and TIBCO Cloud Data Streams. TIBCO Spotfire has been widely adopted for a variety of data analytics and visualization use cases across industries, including manufacturing optimization, energy optimization, and pharmaceutical research. Beyond its analytics portfolio, TIBCO also offers considerable depth in data management through its integration, master data management, data virtualization, and API management offerings.

Recent product updates and announcements include:

- In January 2021, TIBCO completed its acquisition of Information Builders, Inc.,
- which is a data and analytics software company, for its data quality, integration, and preparation products.
- In November 2020, TIBCO released TIBCO Spotfire Mods, a lightweight Javascript-based framework for building scalable, highly custom analytics applications directly within the Spotfire environment.

- In September 2020, TIBCO announced its new Hyperconverged Analytics experience incorporating TIBCO Spotfire 11, TIBCO Data Science, and TIBCO Cloud Data Streams.
- In September, TIBCO also announced the launch of the TIBCO Any Data Hub, an all-encompassing data management blueprint that embraces distributed data environments.
- In June, TIBCO announced the TIBCO Responsive Application Mesh which allows users to register, discover, and reuse composable fragments like microservices, APIs within the TIBCO Cloud.
- In June, TIBCO also announced that TIBCO Spotfire and TIBCO Data Science now support Microsoft Azure Cognitive Services.

TIBCO continues to adapt to the changing analytics environment with mutually beneficial partnerships, more refined data solutions, and timely strategic acquisitions. TIBCO platform capabilities are in direct competition with other key players in the industry and it support major analytics and data preparation processes from end-to-end. It is positioned as an Expert in this year's Value Matrix based on its functional completeness and extensibility.

CORE PROVIDERS

Core Providers in this year's Value Matrix include Dundas, Exago, and GoodData.

DUNDAS

Dundas BI is a browser-based business intelligence and data visualization software that provides users with interactive dashboards, data analytics, and visual reporting tools. Customers consistently note its ease of implementation, user interface, and customization. Dundas BI is flexible for its users and is deployable as the main data platform or embedded into existing applications.

Recent product updates and announcements include:

- In September, Dundas announced its latest BI solution release with Dundas 8. Dundas 8 is now able to use Docker containers, coordinate deployments with Kubernetes clusters, allow customers to connect directly to data housed in Microsoft Azure Table storage or Azure Cosmos DB tables, and the ability to divide the calendar year into thirteen periods of four weeks using a "time dimension" for easier monthly comparisons.

With the announcement of Dundas 8 and its new features, Dundas is showing that it can and will innovate based on its customer feedback and industry trends. Dundas in its current position is primarily focused to help software vendors with its embedded analytics solutions, but its platform is also flexible to be an analytics solution for midsized companies. Dundas is positioned as a Core Provider in this year's Value Matrix.

EXAGO

Exago is an embedded BI solution delivered via SaaS that specializes in reporting and dashboarding with differentiated capabilities for handling tabular data. The solution is internally deployed to provide BI from within business apps or white-labeled in another solution to add reporting capabilities. It supports insight discovery, data visualization, and reporting. Many customers choose to embed Exago in their software products, which dramatically reduces the initial expenses from avoided internal development and ongoing product support. Additionally, it offers pre-packaged report templates and scheduling capabilities to automate regular reporting and streamline BI user's workflows. Exago's main products are Exago Start, Exago Smart, and Exago Open.

Recent product updates and announcements include:

- In September, EXAGO released EXAGO BI v 2020.1. This new version has updated dashboard visualizations, enhanced the performance of the SQL generation engine, and renovated its storage management system.

This year's Value Matrix positions Exago in the Core Provider quadrant. As a small vendor carving a niche in the greater market, Exago focuses on helping software vendors that need an embedded BI and reporting solution. The solution offers differentiated reporting and dashboarding for tabular data, which is the most common format, but for the most part, it needs a BI stack with other products to address its limited capabilities as well as other steps in the analytic workflow that are not met. By capitalizing on what it does best, Exago has attracted a solid portfolio of enterprise customers and looks to remain as a viable solution for the future.

GOODDATA

GoodData is a cloud-optimized, end-to-end analytics platform that specializes in driving contextual insights at the point of work. It is most commonly embedded third-party applications or internal tools to enable analytic capability in-context. It allows users to create custom targeted reporting and dashboards for a variety of business mediums: sales, marketing, and social metrics. It allows non-technical users to glean insights easily with intuitive controls, reducing the need for advanced IT help. GoodData Spectrum, released in 2018, is the core platform, with capabilities for low-code and no-code creation of

applications, visualizations, and dashboards. Its multi-tenant architecture was awarded a patent and serves as a differentiator for embedding GoodData in unique applications and workflows for predicting subsequent user actions in context.

- In August, GoodData used Docker to contain microservices using monolithic architecture with a focus on automated testing to catch issues faster for developers.
- In September, GoodData expanded its partnership with Reggora to provide mortgage lenders a faster and more streamlined way to analyze residential appraisal reports.
- In December, GoodData announced that it based its new data center out of Germany to convey stringent and uncompromised data protection to stakeholders.

GoodData offers flexibility through its ability to be embedded in business applications or third-party software that require an additional subscription. It is a great enterprise-level software that delivers concise value with out-of-the-box embeddable analytics and developer support, effectively superseding the need for custom software builds. It is positioned as a Core Provider in the Value Matrix for delivering core analytic functionality in, primarily, the embedded context.