



NUCLEUS
RESEARCH

EMBEDDED ANALYTICS TECHNOLOGY VALUE MATRIX 2021

ANALYST

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THE BOTTOM LINE

Analytics capabilities are increasingly becoming must-haves in both consumer and business applications. The level of complexity and sophistication varies, from simply hosting a visualization or dashboard on a web page or portal to a cloud service delivered within an application enabling data discovery, modeling, report, and visualization creation. Vendor positioning is based on the respective usability and functionality of each offering, informed by customer feedback. Specific to embedded analytics technology, we consider the respective solutions' embedding options, ease-of-use for end consumers of analytics, ease-of-use for creator/analyst, and the breadth of the platform to support the data pipeline from end to end. This year's Value Matrix include leaders Domo, Infor, Looker, Oracle, Sisense, and Tableau.



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 vendors. The arrows indicate perceived momentum in the indicated direction with respect to usability and functionality. Positioning and momentum are informed primarily by conversations with end-users, along with most recently released

capabilities/features and areas of vendor investment. In addition to the ease-of-use of the solutions for end-users or consumers of analytics, we also consider the ease of embedding and creating analytical content by analysts/developers. Usability considers market prevalence and enterprise penetration, as well as the typical speed of deployment and reaching mass adoption once deployed. The functionality criteria are 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.

Embedded technology has emerged from a nice-to-have, niche offering to an essential capability for many ISVs and consumer-facing businesses as business as a whole has become more data-driven, and more are looking to operationalize their data. We can look no further than our smartphones to examples in consumer-facing businesses such as appliances and utilities with dashboards and visualizations in the user applications for internet and electricity as well as refrigerators and ovens, to name a few. In the race to deliver this capability to consumers, corporate IT departments need to decide whether to build or buy the analytical capabilities in many cases embedding a solution from a technology vendor significantly reduces time-to-market and is lower total cost than paying for complete internal technology development and integration cycle.

On a usability basis, we considered the depth and variety of API integration available, as well as the typical complexity of use cases (from web portal to analytical service within an application) and ease of use for both analytics consumers and creators/developers. Automated and self-service capabilities such as low-code visualization or data model creation, triggers and action-based workflows, and data explainability options are among the usability-focused investment areas vendors are concentration attention.

In the case of both embedded analytics as well as standalone analytics, vendors are looking to differentiate themselves versus competitors and reduce the total cost of enterprise analytics by handling more and more of the tasks associated with the data lifecycle from end to end. Rather than simply offering capabilities for data visualization and reporting, leading vendors look to offer platforms built with modules for data management, preparation, integration, and governance, as well as core analytics, visualization, and reporting capabilities.

Capabilities for enterprise search, natural language interaction, and drill-downs into charts and reports improve platform usability and enhance end-user productivity/understanding of data. This is particularly important in use cases with untrained or non-technical users who may not be familiar with statistical methods but can be taught to turn data to value-add insight with the correct tools.

AI/ML-based capabilities for predictive modeling, explaining insights or anomalies, and producing data visualizations, among other uses, are enabled for the most sophisticated platforms. Additionally, vendors offer tools for building, training, and selecting custom AI

models for tasks such as forecasting and lead scoring/identification. We expect to see the market follow suit in this area and deliver additional automated and predictive capabilities in future product updates and releases.

In the future, we anticipate embedded analytics technology to be integrated with RPA (robotic process automation) technology to allow for automated action or alerting users to take action based on system data. This would enable truly automated, proactive monitoring and maintenance of physical systems such as appliances and utility networks, as well as digital systems such as banking and package tracking. In any system empowered to act, building and maintaining user trust is imperative, so the most successful platforms will include sophisticated tooling for data governance, user authentication and permissioning, and attribution. We already see platform-focused vendors such as Tableau, Domo, Infor, and Oracle investing in these areas and expect to see others follow suit in the future.

LEADERS

Leaders in this year's Value Matrix include Domo, Infor, Looker, Oracle, Sisense, and Tableau.

DOMO

Forming the foundation of Domo's value proposition is its cloud-based analytics platform featuring end-to-end data management capabilities, including data ingestion, preparation, transformation, and governance. Domo creates a single source of truth for all users by bringing data together from across the organization enabling self-service analytics and collaborative insights. Using Domo's Magic ETL tool, customers can leverage Domo's visual drag-and-drop tools or more traditional SQL-like syntax to merge data from various sources, edit data relationships, and load into Domo. Domo offers security and accessibility controls with Domo Governance as users can set permissions for specific data access, change auditing, and built-in certification workflows. With Domo's embedded analytics, users can share data, deliver live metrics and real-time visualizations, and integrate their own proprietary data directly within customer applications, where they generate the most value. These embedded functionalities provide customers with real-time granular visibility into company operations with custom dashboards and apps for data-driven insights.

Over the past year, Domo has expanded the value of its BI and analytics platform with various new and extended capabilities.

- In March 2021, Domo released Adrenaline DataFlows allowing users to summarize and aggregate massive datasets into smaller ones making data more accessible, improving speed while maintaining performance.
- In March 2021, Domo held its annual Domopalooza where it introduced multiple new tools. This includes a dataset view and analyzer tool that streamlines data analysis, exploration, manipulation, and visualization within an intuitive interface, natural language narrative cards enabling digestible analytics with understandable data stories, and Domo Data Experience (DDX) bricks bringing users reusable code-blocks to build custom visualizations and apps to modernize business workflows with a drag-and-drop interface.
- In June 2021, Domo rolled out its Domo Everywhere offering bringing customers various tools to rapidly implement modern embedded analytics and offer the Domo platform as a service to their customers and partners. Domo Everywhere combines Domo Publish and Domo Embed to streamline the creation, delivery, and monetization of embedded analytics.
- In June 2021, Domo also expanded its Snowflake integration by adding support for Snowpark, Snowflake's new developer experience facilitating the use of custom-built user-defined functions (UDFs) in Java or Scala. This release extends the joint capabilities of Domo and Snowflake and builds upon previous connectors between the cloud data and analytics platforms.
- In September 2021, Domo introduced a new integrated development and testing environment, Domo Sandbox, providing customers with flexibility and extensibility in creating BI and analytics content (Nucleus Research v157 – Domo offers scalable BI and analytics with Domo Sandbox, October 2021).

Domo has continued to invest heavily in areas such as data science integration, custom analytic app development, and machine learning to ensure its viability as market conditions and customer preferences shift. Due to significant enterprise adoption, ease of embedding advanced capabilities, and the comprehensive, end-to-end nature of the platform spanning the full data pipeline, Domo is positioned in the Leaders' quadrant of this year's Value Matrix.

INFOR

Infor Birst is a leader in this year's Embedded Analytics Value Matrix. The cloud BI and analytics platform provides organizations the tools to create robust data visualizations directly embedded in the end-user's host application without the need to switch back and forth between applications. One of the core value propositions of Birst is its unified design that consolidates comprehensive data integration and management, visualization, and

reporting capabilities into one platform. Infor Birst's cloud architecture can be deployed in a public, private, and hybrid cloud environment. Birst can be connected to numerous third-party data sources, such as data lakes, and third-party applications, such as ERP and CRM systems via API connectors.

The platform's data management layer, offers an intuitive user interface (UI), enabling organizations to transform and merge data sources without using any scripting language, such as SQL. Users can customize the input data in a variety of ways by changing columns, adding new fields, and linking spreadsheets together, for example, or utilizing the automated data refinement (ADR) capabilities and pre-built transformation templates based on suggested AI modeling.

Birst Visualizer, the platform's data visualization layer, equips users with a drag-and-drop UI to create sophisticated graphs and charts that can be shared with stakeholders across the entire network. Visualizer is built from the ground up as a web-based function and can be completely embedded in an organization's host application, providing all the comprehensive Ad-hoc capabilities without giving up functionality for usability. This enables users to create and update data illustrations, configure share settings, and set up drill-down paths directly within the host application.

With Birst Dashboard, the platform's layout design layer, users can implement various components, such as graphs, charts, reports, and web components, which provide a dynamic interactive experience.

Infor recently released new product updates, including the consolidation of reporting and analytics, new bi-directional embedded widgets, and an open client interface.

- Infor combined analytics and reporting to provide a single user experience. Users can convert their custom ad-hoc analysis into a report that is ready to be printed and shared with stakeholders. The new feature includes various report customization options, such as banding, sub-reports, custom headers, footers, which can be incorporated into the interactive dashboards.
- Infor released reusable analytic widgets that can be embedded in the organization's work environment to provide contextual data and bi-directional drill-down capabilities. This allows users to discover new insights and take corrective actions to optimize performance.
- This year Infor created an open client interface, which allows users to share their data and analytics, through a common semantic layer, with the entire enterprise space. This is particularly useful to centralize an organization's data and analytics strategy with a complete digital innovation platform combining the power of InforOS with Birst.

Infor's continued investments in its data management and embedded capabilities create a strong positioning in functionality and usability. We expect Infor will continue to release additional embedded capabilities, such as data management within the host application. Nucleus believes Infor will continue to be one of the leaders driving the space and will acquire more market share in the future.

LOOKER

Looker is positioned as a leader in the 2021 edition of this Value Matrix. While Looker is typically deployed in the cloud, it also offers on-premises implementations to fit the user's system and database requirements. Looker helps companies leverage data for various use-cases, from BI and embedded analytics to data-driven workflows and custom applications. It is widely adopted by enterprise customers, particularly in organizations that leverage SQL databases for primary data storage; as a key differentiator, Looker can connect to any SQL database and generate an automatic data model based on the user's specific data needs. With Looker's centralized and version-controlled data model, companies gain unique definitions of all business rules, delivering trusted data across the organization. Less technical users can leverage Looker's self-service capabilities, while experienced developers and power users can build data applications and query data with LookML.

Over the past year, Looker has brought multiple updates extending the value of its BI and analytics platform with the Looker 21 release.

- In July 2021, Looker brought numerous new and extended features with its 21.12 platform update. Improvements include quick calculations over grouped data, automatic installation of Looker-built Marketplace applications, and greater visibility into persistent derived table (PDT) development.
- In August 2021, Looker 21.12 was rolled out, adding token authentication for all Git operations, the Looker API Explorer to test API calls against a live server and forecasting of charts and data tables with adjustable seasonality impacts.
- In September 2021, Looker released version 21.16 of its platform with improvements, including more easily transferable dashboards with touchscreen-enabled cross-filtering, enhanced data exploration with quick calculations over pivoted data, better organized dashboards with access controls for the associated folder location, and improved rankings of content search.
- In October 2021, Looker released the 21.18 version of its BI and analytics platform. In this update, Looker added notable features, including URL links within Looker dashboards, and extended governance with default developer permission and access to Google OAuth and OpenID Connect authentication flows to authenticate users.

Following its acquisition by Google, Looker has continued to gain market share among customers as an enterprise-grade analytics tool for its current functionalities and accelerated roadmap. Looker is typically used on top of SQL data to analyze application design and leverage extensive investments in SQL systems. Given the ubiquity of SQL data and legacy systems, Looker is among the most prevalent enterprise analytics tools available; it is not as simple to use as other leading solutions, but there are ample low-code and graphics-based tools to assist users of varying technical backgrounds. Based on its prevalence and differentiated functionality, Looker is positioned as a Leader in this Value Matrix.

ORACLE

Oracle is recognized as a leader in the 2021 edition of this Value Matrix due to the embedded functionalities of its Analytics Cloud. Beyond the Analytics Cloud, Oracle provides its flagship autonomous database and data management technology, cloud infrastructure and service, and SaaS-based solutions for HCM, ERP, CX, and supply chain. Benefiting from Oracle's industry-leading expertise in database technology and its ability to process massive quantities of data at enterprise scale, Oracle's application suite delivers differentiated speed and efficiency across transactional and analytical tasks. The Analytics Cloud supports a wide range of BI tasks, such as connecting data sources, insight discovery, visualization, and reporting. Content created with the Oracle Analytics Cloud can be easily embedded using either an iFrame or the JavaScript embedding framework, and analytic functionality can be enabled in an application via API. Oracle Analytics Cloud delivers confidential applications with controlled access as users attempting to view embedded content must be authenticated via Oracle Identity Cloud Service (IDCS).

Oracle has released multiple recent updates to its Analytics Cloud over the past year.

- In April 2021, Oracle released Analytics Cloud 6.0 with new capabilities for exporting data from embedded visualizations and scheduled dataset reloads with adjustable frequency, forecasting of time series data directly from data flows, connectivity with remote JDBC data sources via the Data Gateway, and self-service modeling for datasets containing tables from multiple relational data source connections.
- In July 2021, Oracle Analytics Cloud 6.1 brought various new features, including conditional formatting of data events within user visualizations, increased visualization to CSV export limits, and automated joins for datasets with multiple tables.
- Oracle Analytics Cloud 6.2 delivered further improvements such as support for Oracle Database Analytic Views, connectivity with data from Microsoft Azure Synapse, expression filters for datasets with multiple tables, and content enrichment recommendations that refresh following additions or updates to custom knowledge.

- The Oracle Analytics Cloud 6.3 update brought additional capabilities, including a built-in performance tool to analyze query time, server time, and streaming time for visualization components, feedback sharing within the user-profile menu, enhanced pivot tables, and table positioning, improved query performance for datasets written to Data Set Storage (DSS), and compatibility with tables from Oracle Transactional Business Intelligence (OTBI) and the remote Oracle Analytics Server.

Leveraging its expertise as an industry leader in database technology, Oracle delivers solutions to analyze and operationalize stored data as a logical area of competency. Furthermore, by offering a comprehensive variety of business applications, Oracle positions its Analytics Cloud to benefit from cross-sales with other Oracle offerings. As organizations of all sizes continue to transition from best-of-breed point solutions to more consolidated data/analytics IT ecosystems, Oracle presents increasing value for its current performance and customer success. Due to its expertise and proven technology stack across the entire data pipeline, as well as significant enterprise penetration, Oracle is positioned as a Leader in this Matrix. On a technical level, the Oracle platform is as comprehensive as any on the market with differentiated expertise managing data; we found it is most commonly deployed to existing Oracle customers and was less frequently selected outside of that context.

SISENSE

Sisense is recognized as a leader in the 2021 embedded analytics value matrix for its Sisense Fusion Embed platform. Using Sisense Fusion Embed, customers can build custom analytic experiences with interactive visualizations in a code-free environment to explore operational data in granular detail. Featuring extensive API connections and end-to-end governance, Sisense gives customers a secure and integrated framework to deliver analytics at scale. Although Sisense offers many no-code features, technical users can also write and edit JavaScript code to embed custom widgets and applications. Running within the Sisense Fusion Embed platform is the Sisense Embedded Playground bringing customers the ability to integrate analytics directly into their products regardless of IT infrastructure (cloud or on-premises) or tenant architecture. With Sisense Embedded Playground, customers can embed white-label analytical applications, UI customizations, and extensions using an intuitive point and click user interface. Sisense offers various paths to embedding custom content, including iframes, Sisense.JS, or the embed SDK.

Over the past year, Sisense has expanded the value of its embedded BI and analytics platform with various new and extended capabilities.

- In February 2021, Sisense announced the release of Sisense Fusion, an AI-powered analytics platform designed to deliver customized analytic experiences inside

customer and employee-facing applications to bring actionable insights when and where they are needed.

- In June 2021, Sisense attained premier partner status with Snowflake. This upgraded partnership follows the certification of Sisense's real-time Snowflake connector, which reduces the time and cost of real-time queries by converting live data functions into optimized SQL code. This Snowflake connector also brings Sisense users code-free and code-first editors to create, join, and clean data held within Snowflake.
- In July 2021, Sisense released the Sisense Extense Framework connecting Sisense analytic Instances to common user applications such as Slack, Salesforce, Google Slides, and Google Sheets. This Sisense Extense Framework also offers analytics within Google Chrome by infusing Sisense's natural language query capabilities into a Google Chrome Extension.

Sisense continues to deliver on its vision of going beyond traditional BI by infusing analytics in employee and customer applications and workflows. As Sisense continues to build upon its core competencies in data integration, custom analytic app development, and AI-driven analytics, the vendor's analytics cloud platform proposes increasing value. Sisense is positioned as a Leader in this year's Value Matrix for significant enterprise penetration, end-to-end functionality, and ease-of-use relative to other embedded offerings, according to Sisense customers.

TABLEAU

Tableau is a leader in the 2021 edition of the Embedded Analytics Technology Value Matrix following improvements to the BI/analytics platform's embeddable analytics and visualizations. Specialized in making data accessible and understandable, Tableau provides rich visualizations and dashboards to make data-driven insights easily digestible. Tableau boasts an intuitive user experience allowing users to leverage their data with various no-code tools, including drag and drop data visualization design, single-click AI-driven statistical modeling, visual data preparation, and natural language queries. Users can easily embed Tableau products in third-party applications allowing insights to be delivered where they are consumed with prebuilt KPIs and drill-down capabilities for faceted data visualizations.

Over the past year, Tableau delivered various improvements to its BI and analytics platform many of which extend to embedded environments. These new and extended features include the following:

- In June 2021, Tableau announced that both Ask Data - a natural language interface for answering questions related to a specific data source or dashboard - and Explain

Data - which automatically identifies potential explanations behind the value of specific data points using statistical models - will now be available to all licensed Tableau users.

- In August 2021, Tableau introduced Tableau for Slack bringing contextualized, predictive, and actionable data-driven insights to all users within Slack's real-time communication platform.
- In September 2021, Tableau announced its redesigned platform with new governance and security capabilities and new subscription plans. The new enterprise subscription plan bundles Data Management and Server Management, empowering all users with the full technology stack. In terms of governance, Tableau customers now access admin controls for row-level security of data tables applied across connected Tableau flows, data sources, and workbooks which are dependent on that data.
- In September 2021, Tableau announced a partnership with AI automation provider dotData to expand the AI/ML capabilities of Tableau's visual analytics platform (Nucleus Research v155 – Tableau and dotData empower no-code predictive modeling, October 2021).
- In October 2021, Tableau announced an enhanced partnership with Google Cloud and a new integration with Google Looker ML, allowing customers to connect directly with Looker's semantic layer. This helps customers to connect to governed data and flexible data environments that scale and adapt.

Tableau has leveraged its position as one of the premier analytics technology market participants in quality, intuitiveness, and drill-down capabilities for data visualizations to offer highly accessible and performance embedded analytics. As Tableau continues to advance its backend data management and data processing, the vendor can offer larger data caches to centralize and analyze more data with greater efficiency providing increasing value to enterprise-scale customers. Because of its maturity in the market, continued customer acquisition and success, and strong prospects for new cloud deals Nucleus has positioned Tableau as a Leader in this year's Value Matrix.

EXPERTS

Experts in this year's Value Matrix include GoodData and Logi Analytics.

GOODDATA

GoodData is a cloud-optimized end-to-end analytics platform that specializes in driving contextual insights at the point of work, most commonly embedded in internal tools or third-party applications. It allows users to create custom targeted reporting and dashboards to enable in-context analytic capabilities across a wide variety of business functions, including sales, marketing, and social metrics. These features harness existing data to help users make more efficient and educated business decisions, enhancing data-driven business processes. GoodData Spectrum is the core platform with capabilities to enable no-code and low-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.

Recent product updates and announcements include:

- In April, Good Data launched GoodData Cloud Native, a new data as a service (DasS) analytics platform. This first step into the DasS category presents users with a free Community Edition to evaluate the functionalities and benefits before scaling to Production Editions. GoodData Cloud Native is designed to be developer-friendly with an API-first build, providing UI flexibility and efficiency, and the ability to deploy analytics based on modern frameworks such as Docker, React, Helm and Kubernetes.
- In July, GoodData announced a strategic partnership with Vertica, a unified analytics platform provider. This integrated product offering will connect GoodData's Cloud Native analytics platform with Vertica's data warehouse to provide a more robust and scalable solution to enhance analysis capabilities throughout organizations.
- In July, GoodData announced the closing of a \$45 million credit facility from J.P. Morgan. GoodData plans to use this financing to grow its global engineering and sales teams, scale current product operations, and accelerate the creation of modern, enterprise-grade solutions.

GoodData is positioned as an expert in this year's Value Matrix. It offers a comprehensive platform with enterprise capability for data management, governance, analysis, and visualization. It lends itself particularly well to ISVs looking to enable analytics within third-party applications with its cloud-native, multi-tenant architecture. It should benefit from strong demand as application vendors across industries look to enable more data-driven

decision-making. As the platform gains further mindshare and enterprise adoption, we anticipate GoodData's positioning to advance toward the Leader quadrant.

LOGI ANALYTICS

Logi Analytics is an expert in this Value Matrix, recognized for its analytics offering, Logi Symphony. Customers who purchase Logi Symphony gain end-to-end analytics and reporting capabilities with access to all of Logi's products, including Logi Info, Logi Report, and Logi Composer. This Logi composer accelerates time-to-value with low-code development tools to rapidly deliver embedded analytic experiences. The low-code tools offered by Logi Composer enable users of all skill levels to embed content without the need for iframes by automatically generating JavaScript code using a point-and-click user interface. Logi also offers extensive customization via embedded user self-service with configurable visual and dashboard interactivity featuring filter, zoom, and drill-down capabilities. With over 50 out-of-the-box smart data connectors, Logi unifies data from siloed systems across the organization, including data from cloud-based warehouses, document databases, and real-time streaming.

Over the past year, Logi Analytics has expanded the capabilities of its embedded analytics offering with new functionalities and synergistic acquisitions.

- In April 2021, Logi Analytics' parent company, insightsoftware, acquired Izenda extending Logi's portfolio of low-code embedded analytics to deliver more powerful dashboards, visualizations, and operational reporting within their applications.
- In May 2021, Logi launched new functionalities for Logi Composer, including improved self-service, dashboard interactivity, pervasive enterprise-grade security, and control over the user experience with expanded event listeners.
- In October 2021, Logi Analytics' parent company, insightsoftware, announced the acquisition of Exago pairing Logi's analytics layer with Exago's renowned platform, presenting a cross-selling opportunity for both embedded analytic providers.

Following the acquisition of Logi Analytics in April 2021, insightsoftware has continued to build upon its vision of simplifying data access, manipulation, and analytics for users of all technical expertise with further acquisitions of Izenda and Exago. With impressive investments in new and extended embedded analytics, Logi Analytics has continued to deliver on its goal of infusing analytics where they provide the most value. Logi is positioned as an expert in this year's Value Matrix for the platform breadth and focus on sophisticated analytics, reporting, and developer tooling.

FACILITATORS

Facilitators in this year's Value Matrix include Dundas, Microsoft, Yellowfin, and Zoho.

DUNDAS

Dundas BI is a browser-based end-to-end business intelligence and data visualization software that provides users with data analytics, interactive dashboards, and visual reporting tools. The enterprise-level, self-service dashboards in Dundas BI enable organizations to monitor and measure performance metrics in real-time, with features that allow for filtering, sorting, and data revisualizations on a single interface. Ease of implementation, an intuitive user interface, and high-level customization are consistently highlighted by customers as key benefits of the Dundas BI platform. Deployment as a main data platform or the ability to be embedded into existing applications offers additional flexibility for both software vendors looking for embedded analytics solutions and midsized companies to utilize the Dundas BI capabilities to best suit their specific needs.

Recent product updates and announcements include:

- In September, Dundas announced that its latest BI solution release with Dundas 9. Dundas 9 provides several new administration capabilities with the inclusion of a new Data Cubes screen, additional account export configuration settings, and the ability to import and export more custom items between Dundas BI instances. The Data Cubes screen enables users to easily find data cubes, set up storage and schedules, and features the option to automatically build referenced data cubes. With data security in mind, new Enforce Recipient Account Export settings ensure that all notification content is exported separately to each user with regards to their security privileges.

Dundas is positioned as a facilitator in this year's Value Matrix. Customers consistently cited the ease-of-use and quick deployment as key value drivers, and the solution includes all core functionality for reporting, dashboards, and tracking KPIs, and other common analytical tasks.

MICROSOFT

Microsoft Power BI is positioned as a facilitator in this year's Embedded Analytics Technology Value Matrix. Power BI is a cloud-based data management and analytics platform that connects with a wide range of data sources and applications. When used in combination with Azure, it provides the most functionality and can utilize the complete suite of the Microsoft ecosystem, such as the Power Platform, Dynamics 365, and Microsoft Office.

The analytics solution is highly scalable and can be used for a variety of use cases. The product set includes Power BI Desktop, Power BI Pro, Power BI Premium, Power BI Mobile, Power BI Embedded, and Power BI Report Server. It is presented as a standalone free web-hosted application with varying price points based on the user role and permissions. All analytics and reports can be viewed and annotated on mobile devices with Power BI Mobile.

Power BI Desktop is a free version that provides key analytics capabilities, such as data integration, transformation, pre-built visual templates, smart search options, and interactive reporting, which cover most use cases.

Power BI Pro and Premium include more collaboration tools, which allow reports and insights to be shared with other stakeholders inside and outside the organization. BI Pro and Premium offer comprehensive data governance features, such as role-specific data access, industry-specific data storage standards, and local regulation validation with national cloud servers, covering the US government, German, and Chinese markets.

Power BI Embedded enables organizations to embed visuals, dashboards, and reports on host applications for external customers and internal users within the organization. Microsoft Power BI offers its JavaScript software development kit (SDK) to configure more embedding options, such as brand color visuals, dashboard customization features, and analytics menu updates.

Recent product updates include more streaming dataflows, a preview of insights, and automatic aggregations.

- In October, Microsoft updated its “streaming dataflows” and added Azure Blob as an additional source, on top of Azure Event Hub and Azure IoT Hub, to ingest data in real-time. Including Azure Blob enables log analytics and combines static data with streaming data to get more context. For example, an IoT device that measures the number of items leaving a manufacturing facility includes static data, such as sensor ID and location, and streaming data, such as the number of items. By combining the two data points, organizations can get better insights, such as which facility has the highest output at any given time.
- In September, Power BI released a new “Insights” feature, which explores anomalies, trends, and KPIs and automatically displays them on top of reports created. Insights is an out-of-the-box solution and does not require any setup. It proactively informs users of notable insights and provides detailed explanations within the report. The top insights are based on various factors, such as recency and significance. This enables users to discover previously unknown relationships between seemingly unrelated factors and optimize operations accordingly.
- In August, Microsoft released an automatic aggregations feature, which analyzes query logs to create and manage data aggregations automatically. The integrated AI

enables users to combine large data sets from different warehouses without first manually writing and optimizing queries. Automatic aggregations can be run on Azure Synapse Analytics, Snowflake, and Google BigQuery, with more data sources planned in the future.

Microsoft's familiar interface and ease-of-use are spread throughout the ecosystem and establish a strong leadership positioning in usability. When Power BI is combined with Azure and other Microsoft solutions, such as Microsoft Office, Teams, and SharePoint, customers can experience the full benefits of embedding Power BI in day-to-day workflows. With Microsoft's continued enhancements in functionality and usability, we expect the Power BI platform to remain highly prevalent in the market. Nucleus believes Microsoft will release more no-code embedding options that do not require programming skills and that will close the gap between BI and host applications while enabling more complex, value-add use cases.

YELLOWFIN

Yellowfin is a data and analytics suite that enables small to medium-sized businesses primarily in the computer software and information technology industries to extract value from their data through action-based dashboards, automated business monitoring, and data storytelling. The Australian BI provider is among the only analytics vendors that combines data storytelling and action-based dashboards. It has made efforts to improve the scope of use with a developer-centric approach and API integrations, while maintaining a user-friendly design for which it has a reputation. With Yellowfin, users are equipped with enterprise analytics that gives customers the ability to migrate data from spreadsheets to a modern analytics platform, embed analytics into operational workflows, and replace legacy BI applications.

Recent product updates and announcements include:

- In March, Yellowfin released version 9.5. Enhancements in metadata caching, CSS scoping, and image management are key areas of improvement from this update. This version enables faster data modeling and preparation with over 15 supported image formats to aid advancements in visual quality for the data storytelling feature, making operational insights easily understandable for users.
- In July, Yellowfin further expanded its product offering with the release of Yellowfin version 9.6. This update focuses on creating a unique analytics experience for users with new capabilities that unify actionable dashboards, data storytelling, and automated business monitoring. New Story Templates and a Data Storytelling Feed enable the creation of customized stories without the need to start from scratch and then incorporate relevant stories directly into a dashboard.

Yellowfin is positioned as a facilitator in this Value Matrix. It is an easy-to-use solution that focuses on data storytelling and actionable dashboards. It has invested lately in more significant developer tools, but it lacks some of the end-to-end capabilities for data management, integration, and governance compared to the Leaders in this Matrix.

ZOHO

The Zoho Analytics platform focuses on the following core areas: data management, visualization, analytics, and insight generation. Zoho Analytics is built within Zoho Cloud using a modular framework with components including Self-Service BI, Self-Service DataPrep, and Embedded BI. With Zoho's Self-Service DataPrep module, customers gain full-scale data management and integration platform featuring capabilities for data integration, transformation, cleansing, enrichment, modeling, and cataloging. By unifying data integration, management, and analytics on Zoho, customers simplify their path to achieving modern business analytics, promoting faster return-on-data. Integrated throughout these offerings is Zia, Zoho's AI-powered assistant, which streamlines dataflow analysis and removes expertise bottlenecks to the platform's automation and predictive AI capabilities. Using Zia Insights and Zia Conversation, customers gain actionable insights from their reports and dashboards in the form of digestible natural language narrations.

Additionally, Zoho customers can extend their deployments with functionality for key verticals or other apps from the Zoho Marketplace. Furthermore, by embedding Zoho Analytics, customers can integrate a full-featured analytics platform within their applications rather than build a BI module or solution from scratch. With embedded analytics from Zoho, customers can outsource the creation and deployment of analytical content, improving the consistency of their release schedule with fewer unforeseen delays and deployment issues. Zoho's full-featured analytics platform is also accessible within an embedded framework that brings customers rich visualizations, metrics, cognitive analysis, what-if analytics, forecasting, and AI-powered insights featuring natural language explanations where they provide optimal end-user value. Embedded within third-party applications or webpages, Zoho Analytics also offers slideshows, analytics, and reporting portals to communicate insights uncovered with the platform.

Over the past year, Zoho has brought various new and updated functionalities to its Analytics Cloud platform with the release of Zoho Analytics 5.0, extending Zoho's embedded analytics in parallel. Improvements include self-service and AI-powered data preparation, AI-powered data exploration with Zia Insights, embeddable conversational analytics with Ask Zia, what-if analysis, enhanced data storytelling, new map charts, and an Immersive Dashboard App accessibility to enable mobile BI. With customer reports of rapid deployment potential and low TCO, Zoho is regularly considered in competitive deals with many incumbent analytics and BI vendors. Furthermore, Zoho Analytics possesses a

significant cross-sell opportunity resulting from Zoho's strong following in the CRM space. Recognized for its rapid deployments and quick time to value, Zoho is positioned as a Facilitator in this Value Matrix.

CORE PROVIDERS

Core Providers in this year's Value Matrix include Cumul.io, Qrvey, and Toucan Toco.

CUMUL.IO

Cumul.io offers a cloud-based platform specializing in low-code/no-code embedded deployment of custom dashboarding and analysis tools into existing platforms or applications. Founded in 2015, Cumul.io is a Belgian based company that allows users to build and manage dashboards and add interactive analytics to SaaS applications for various business mediums such as marketing, logistics, HR, education, and healthcare. It provides non-technical users with a solution to easily capture business insights with features like drag and drop dashb. This capability reduces IT involvement to create and manage embedded analysis tools to help SaaS companies monetize their data and bring value to their users.

Recent product updates and announcements include:

- In November 2020, Cumul.io raised over \$4 million in funding to grow its market presence focused on Europe and the US and further accelerate the product roadmap to continue the delivery of new features and capabilities for users.
- In May, Cumul.io achieved SOC2 Type 1 compliance, ensuring that users have advanced data security to protect against cyber-attacks and breaches.
- In July, Cumul.io added the capability for users to choose between the US and Europe for their data tenancy region, improving latency and guarantying that data storage is compliant and will meet any subjected regulations.
- In July, Cumul.io launched a new default native web component for embedding to give developers using frameworks other than Vue, React, and Angular the ability to leverage Cumul.io's libraries, reducing the lines of code needed and increased flexibility.
- In July, Cumul.io announced new integration capabilities giving non-technical users the option to manage embedded dashboards from within the Cumul.io UI without code.

Cumul.io offers core embedded analytics and reporting functionality for ISVs looking to enable analytics within third-party applications and tools. It is a viable offering for vendors looking to implement analytics/dashboarding functionality within a SaaS application for a feasible cost. For this reason, Cumul.io is positioned as a core provider in this year's Value Matrix.

QRVEY

Qrvey is a cloud-based, self-service business analytics platform that provides enterprises hosted on Amazon web services (AWS) with data collection, analysis, visualization, and automation tools. Built for the embedded analytics needs for small to medium sized SaaS application vendors, Qrvey enables analysts to gather and supplement unstructured or semi-structured business data, including photos, videos, and files from multiple sources from third-party applications or web forms. The serverless, microservices-based architecture is highly flexible and facilitates the automatic integration and categorization of in-house data for phrase detection, text analysis, and natural language processing. The consolidation of data management, automation, and embedded analytics into one platform allows analysts to quickly move beyond traditional visualizations with the inclusion of the entire data pipeline.

Recent product updates and announcements include:

- In February, Qrvey announced that \$8.5 million was raised from existing investors to scale marketing, sales, and customer service operations. This follows the \$7.5 million Series A from 2020, bringing the cumulative capital raised to \$19.5 million.

Qrvey is positioned as a core provider in this year's Value Matrix for offering essential analytic functionality in an easy-to-access and easy-to-use manner. It is viable for businesses of all sizes and doesn't require extensive IT overhead to adopt.

TOUCAN TOCO

Toucan Toco is a core provider in this year's Embedded Analytics Value Matrix. The analytics platform is entirely cloud-based and combines data integration, data management, analytics, visualization, and reporting capabilities into one unified platform. Toucan's platform connects with a wide range of data sources, via pre-built API connectors. A blend of live and stored data can be integrated from any source in a cloud or on-premises environment. This enables organizations to adopt an active insights strategy and analyze metrics in real-time.

One of the core value propositions of Toucan Toco is its intuitive user interface (UI), which allows non-data scientists to deploy powerful visualizations and reports, without having any

coding experience. With Toucan YouPrep, Toucan's no-code data preparation feature, business analysts are able to transform, link, filter, aggregate, and calculate datasets with a point-and-click UI, without dealing with tedious excel manipulations. After all data points have been integrated and transformed to the specific requirements, business analysts are able to create comprehensive dashboards, graphs, and reports with the Storytelling Studio feature. The created visuals can be shared with other stakeholders with specific read and write privileges, based on user roles. All visuals are available to be viewed on any mobile device automatically, following Toucan's "build once deploy anywhere approach". The custom reports can be added to a user's home screen for instant access. Organizations are able to embed the insightful stories they created into their host application and share them with external customers and internal users. The analytics and visuals are also white-labeled, which means they are not only embedded but also adapt to a user's work environment to give the same look and feel of the host application. Data governance is facilitated with Toucan's authentication function protocols, such as SSO, SAML, and OpenID. This provides the necessary capabilities to trace data points, ensure data quality, and limit access to designated users.

Recent Q2 product updates include plug-and-play reports, device previews, and guided self-service capabilities.

- Toucan Toco enhanced its reporting capabilities to include more customization options, such as drag-and-drop, which enable users to change the dashboard layout to their preference.
- Device previews, lets users validate the design and toggle between mobile, tablet, and desktop views, which creates a faster report deployment time.
- Guided self-service enables every end-user, without data science expertise, to create their own customized story, by offering pre-build visualization templates.

Toucan's intuitive interface makes the platform a solid choice for customers who do not have prior data science experience, which is why the platform has a strong positioning in usability. Nucleus believes Toucan will have to provide more capabilities, such as integrated AI for data management and visualization, and embedded options to compete with larger analytics vendors.