

NUCLEUS
RESEARCH

IPAAS TECHNOLOGY VALUE MATRIX 2020

ANALYST

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THE BOTTOM LINE

As more companies adopt software-based solutions than ever before, Integration Platform-as-a-Service (iPaaS) offerings are increasing the availability of the integration solutions from enterprise-level organizations to small businesses. Nucleus saw an increase in iPaaS solutions implementing low to no code environments to not only support developers by saving time and resources but also promote non-technical users. Artificial Intelligence (AI) and machine learning continue to see investments to further streamline automation processes surrounding workflows, data, and communication. As the functionality of iPaaS solutions increase, users will look towards greater usability through the simplification of integrations and the reduction in manual processes. Microservice architectures, data quality, and the ability to connect any user or data to any endpoint are other key themes.



OVERVIEW

2020 continues to show a significant change in workplace culture centered around working from home on software-based solutions. As these business processes begin to move towards software-based solutions, many companies will soon adopt extensive cloud

infrastructures. In recent years, cloud solutions have increased in both security and performance capabilities, and with iPaaS solutions connecting hundreds of applications and systems, it has never been easier to establish a cloud infrastructure. One factor holding companies back from a transition to cloud-based solutions is the IT personnel usually required to implement a full-scale integration. While cloud-based solutions save costs related to on-premises deployments, fully integrating applications within the cloud can be a lengthy task requiring months of planning, testing, and reconfiguration. Companies that are new to the iPaaS space most likely will not employ advanced developers and will instead rely on business-level users to create integrations. Leading iPaaS solutions in 2020 will be the platforms that not only support enterprise-level organizations but also provide tools to promote non-technical users to explore and deploy integrations without the need for advanced skill sets. iPaaS systems in 2020 are looking to simplify integration processes through reduced coding policies, increased AI and machine learning capabilities, and a focus on automation.

For non-technical users, iPaaS solutions can now enable users to learn its functionalities without prior knowledge of coding or integration processes. Web-based platforms support low to no code environments with drag-and-drop features that only require a few clicks to configure workflow processes and full integration of applications. Some platforms will automatically capture data insights from connected applications and create automated workflows to continually process future data, which eliminates most of the time spent monitoring these solutions. All of this is not to say iPaaS vendors no longer support developers. We still see iPaaS solutions enabling advanced users with support for programming languages such as Python, JavaScript, Ruby, and SQL as well as on-premises connectivity to connect data center applications with cloud applications.

Additionally, all users benefit from further integration of AI and machine learning functionalities to enable efficient automation workflows and processes. Advancements in AI are enabling the automation of processes such as populating cloud data warehouses and synchronizing data across on-premises and multi-cloud environments. To ensure this data is suitable for usage across a company, AI and machine learning support data quality solutions to protect and monitor data quality issues as well as execute user-defined data quality rules to remedy any ongoing issues. These features help accelerate the time-to-live of data-centric projects and further increase the availability of iPaaS solutions for integrators of all skill sets.

There are countless facets of iPaaS solutions that aim to reduce monitoring and manual processes allowing developers and non-technical users (or citizen integrators) to focus resources elsewhere within a company. With an efficient iPaaS solution, a small team can integrate all applications and data streams to reach new insights and develop a full view of the company and its users. Cloud-based solutions continue to be the driving force behind business processes and business analytics. Organizations will look towards iPaaS solutions to

fill the gap between new software to create a single source of truth for streamlined integration across multiple applications, platforms, and hosting environments.

LEADERS

Leaders in the Value Matrix include Informatica, Dell Boomi, Microsoft, Oracle, and Tray.io.

INFORMATICA

Informatica offers a suite of cloud data and application management solutions, including iPaaS, for connecting disparate applications and data deployed in diverse environments. Informatica Intelligent Cloud Services (IICS) is a comprehensive iPaaS using a zero-code environment consisting of data integration, application integration, data quality, API management, and data management services on the CLAIRE engine for multi-cloud, hybrid environments. IICS automates integration processes using artificial intelligence (AI) metadata-driven recommendations. IICS capabilities aim to bring a unified solution to support any integration pattern covering all users, data, and endpoints—including mobile, Internet of Things (IoT), business-to-business (B2B), and more. IICS is a hybrid multi-cloud iPaaS with the flexibility to integrate both cloud-based and on-premises data and applications either in batch or in real-time. IICS is used by customers to support a variety of use cases such as integration between cloud to cloud and cloud to an on-premises application, data synchronization, data integration, cloud data warehousing, and data lakes along with other data management use cases.

Informatica's suite of iPaaS solutions creates a single source of truth with a complete view of customers, products, suppliers, data, and applications through the collection of data from multiple systems. The platform supports data management patterns, such as B2B, integration hubs, data quality, master data management (MDM), ingestion, data catalog, and streaming. With IICS, a combination of, among others, Informatica Cloud Data Integration, Cloud Data Integration elastic, Cloud Integration Hub, Cloud Application Integration, API Management, Informatica Cloud Data Quality, Cloud Mass Ingestion, Cloud MDM, Cloud Connectivity, Partner Integrations, and EDI, and B2B solutions, data can be unified between applications to create a full view of databases, data lakes, and data warehouses. The solutions save organizations significant time and resources typically devoted to building and coding integration applications, business processes, APIs, and connectors.

With 2020 being the year of integration solutions, it is hard to know which solution fits within a use case. Informatica tackles the issue by supporting every use case for data and

application integration projects. Some of the flagship solutions consist of Informatica Cloud MDM, Informatica Cloud Mass Ingestion, Informatica Cloud Data Integration, Informatica Cloud Data Quality, and Informatica Cloud Application Integration. The solutions automate, analyze, integrate, cleanse, master, and process varying types of data and applications to provide users with a full view of customer behavior, data integration automation, real-time application integration, mass ingestion of datasets, real-time processing and streaming for IoT and weblog data, profiling, cleansing, and monitoring of data quality.

Informatica already filled 2020 with key updates, innovations, and integration capabilities to improve the platform:

- In July 2020, Informatica acquired Compact Solutions, a provider of metadata solutions. The in-depth capabilities of metadata connectivity and data lineage will expand the Informatica Enterprise Data Catalog. The combination of Compact Solutions' MetaDex offerings with existing Informatica solutions will create the Enterprise Data Catalog (EDC) Advanced Scanners to support automatic lineage extraction from both static and dynamic code, automatic lineage extraction from code embedded in ETL processes, and metadata extraction from complex sources.
- In July 2020, Informatica announced a partnership with THE ADAPT Centre to pursue R&D for AI and natural language processing (NLP). The partnership accelerates the deployment of AI and machine learning to automate Informatica's portfolio of enterprise cloud data management offerings. By leveraging ADAPT's knowledge of AI and NLP, Informatica can further enrich a 360-degree view of their customers by mining consumer comments and product ratings to better understand consumer sentiment. Furthermore, new and revised regulations can be parsed to create and update data governance policies automatically.
- In June 2020, Informatica announced updates to the platform's Cloud Native Data Management solution, including new intelligence and automation capabilities powered by the CLAIRE engine to accelerate ROI on cloud data warehouse and data lake investments. New capabilities include automation of cloud mass ingestion for files, databases, and streaming as well as automating end-to-end management with AI/machine learning to build and refine data integrations.
- In May 2020, Informatica announced further updates to the Intelligent Data Platform through an initiative called Data 4.0. Through AI and automation capabilities, Data 4.0 transformations will deliver high levels of scalability and flexibility without increasing overall complexity. The Intelligent Data Platform provides AI and machine learning-powered intelligence and automation capabilities for areas surrounding data cataloging, ingestion, integration, quality, mastering, governance, protection, and deployment.

- In May 2020, Informatica announced new capabilities for its Cloud Data Quality solution. New capabilities include profiling intelligence and automation powered by the CLAIRE engine to deliver enhancements to parsing and deduplication. Intelligent data profiling automates the processes of assigning best practice data quality rules based on cloud application data sources.
- In March 2020, Informatica launched updates for the Intelligent Data Platform with new features for areas such as Cloud Data Integration (CDI) and Cloud Data Integration Elastic (CDI-E), Cloud Data Quality, and Cloud Mass Ingestion. CDI and CDI-E saw features creating a more scalable and flexible data integration solution with support for AWS and integration with Informatica Operational Insights. CDI-E supports hierarchical data types, Spark auto-tuning, debugging with midstream profiling, and enhanced Azure support. Cloud Data Quality saw additions such as parsing and deduplication and expanded data profiling for cleansing and connectivity to Salesforce and Microsoft Common Data Model. Cloud Mass Ingestion saw increased support for DevOps with improved integration to GitHub for mass ingestion streaming. Also, the solution improved connectivity with Databricks delta support for files, AWS Kinesis, and ADLS Gen2.

Informatica IICS provides the most comprehensive solution for iPaaS use cases on the market, covering services for multi-cloud and hybrid environments. The microservice architecture, coupled with the capabilities of the CLAIRE engine, allows users from architects to application integrators to citizen integrators to extract value from the platform making Informatica a Leader in this year's Value Matrix.

DELL BOOMI

Dell Boomi provides a cloud-based platform to support flexibility, scalability, and availability within diverse organizations. Dell Boomi offers solutions for integration, MDM, B2B/EDI Management, API, workflow automation, and data unification. When deploying Dell Boomi, users can expect a large selection of application and technology integrators as well as prebuilt starter processes. Drag and drop UI, data mapping tools, and an extensive list of connectors support for a variety of integration patterns. Dell Boomi runs off the Boomi Atom, which is a lightweight runtime engine powering digital connection throughout on-premises and multi-cloud environments as well as IoT and edge devices. Multiple Atoms can be clustered to create a Boomi Molecule to support a scalable and distributed architecture. With this engine, Dell Boomi offers the freedom to deploy integrations either behind a firewall, in a private cloud, or in a public cloud, which could save money associated with switching costs. Dell Boomi supports both novice and advanced developers with a low code environment where most integrations can be handled with the out-of-the-box drag and drop interface. For more advanced projects, Boomi provides complex developer tools.

To further streamline business processes, Dell Boomi utilizes anonymized metadata to provide automated data mapping, automated connector configuration, simplified error resolution, and automated regression testing. Using just two clicks, Filter Suggest automates connector configuration saving developers time spent building out integrations. Boomi Suggest supports automated data mapping by generating maps and functions to eliminate errors and challenges faced when undertaking this process manually. The platform continues to save time spent on error resolution with Boomi Resolve, which automatically suggests remedies for common errors. With Boomi Assure, Dell ensures all updates are stable and will not disrupt existing integration processes by performing crowd-sourced regression testing. The platform provides data flow recommendations, operational intelligence, and reusable business logic to streamline the integration process and help users save time by avoiding errors. Templates, process libraries, and custom scripting give users flexibility across business use cases to improve productivity and breakdown IT complexity.

Dell continues to work towards improving the Boomi platform with acquisitions and new releases in 2020. In May 2020, Dell announced an integration with Amazon EventBridge and the Boomi platform. EventBridge enables an efficient connection between application data, integrated SaaS applications, and AWS services. The announcement makes Boomi the first platform to provide out-of-the-box support for Amazon EventBridge and provides additional connectivity and integration capabilities. Users can now connect new and existing Boomi integrations to other AWS services through Amazon EventBridge. In January 2020, Dell Boomi announced Retail 360, a solution to aid retailers in connecting business data and applications to create personalized customer experiences. The new solutions will connect items, products, customers, payments, and fulfillment data regardless of pre-existing applications, catalogs, markets, or channels. With a streamlined omni-channel, unified business operations, and accelerated B2B transactions, users can cut costs by increasing operational efficiency. In January 2020, Dell Boomi acquired Unifi Software to expand Boomi capabilities by strengthening data-driven insights for customers. Unifi Software is a provider of market data through data discovery, catalog, and preparation offerings. Unifi works to eliminate data bottlenecks and efficiently deliver critical business insights. Additionally, Unifi Software deploys workflow automation processes to help users create repeatable reporting and analysis. The acquisition and updates in 2020 show that Dell commits to increasing the overall availability and performance of the Boomi platform. The Boomi platform supports an extensive list of use cases, and for this reason, Dell Boomi is a Leader in this year's Value Matrix.

MICROSOFT

Microsoft Azure Integration Services (AIS) centers around four components: logic apps, API management, service bus, and event grid. The focus on key performance and availability areas allows the platform to refine the user experience and create more efficient processes.

Logic apps utilize if statements, loops, and other logical functions to facilitate business processes such as system-to-system by connecting two or more applications or user-to-system by connecting users to the software. Logic apps can access varying types of software operating in different environments such as cloud applications (Office 365, Dynamics 365, B2B and EDI), Azure Services (API Management, Service Bus, Azure functions), and on-premises applications (Share Point, Oracle, SAP). With over 200 connectors, developers can use logic apps to integrate diverse solutions from on-premises to cloud-based software. The integrations are achieved in a no-code environment with triggers to automate workflows and invoke Azure functions allowing developers to save time when creating workflows.

The Service Bus feature fills the gap with API Management, where some integrations run at different times and may not be able to communicate. To solve this issue, AIS enables non-blocking interactions between software to create a queue for message exchange. This asynchronous approach to communication creates high availability, geo-replications, and built-in disaster recovery for applications deployed in cloud-based and on-premises environments. Additionally, Service Bus allows for queue semantics, atomic transactions, and poison message handling to control message traffic and message quality, ensuring loops remain free of errors.

AIS API Management provides solutions to control exposure to traffic, control public access, improve speed and efficiency, monitor API patterns, and create key insights for developers. API Management extension supports backend API availability for clients and API owners to develop a route for between backend applications. The solution also deploys analytics and policy controls to monitor usage and API functions.

For Event Grid, AIS eliminates the need for polling, the software for monitoring new message arrivals. Event Grid removes the receiver from polling for new messages, and instead, the receiver creates an event handler for the event source it is seeking. For example, when an event occurs, such as a Service Bus message, Event Grid sends a message to start Logic App. Both Event Grid and Service Bus are included with AIS and share similar features but think of Event Grid as a 'lite' alternative providing a simpler and faster way to send events while Service Bus supports enterprise messaging. Event Grid can provide more scalability than Service Bus, but message blocks lack the same organization and structure. Since use cases vary within organizations, Microsoft provides both solutions.

In 2020, Microsoft AIS announced key updates in the following areas:

- In January 2020, Azure API Management saw the introduction of support for OpenAPI Specification v3, an open-source standard of describing APIs. OpenAPI Specification lets users more easily understand APIs and their implementation. An extensive tool ecosystem has resulted from the continued support of OpenAPI Specification with tools to generate client SDKs and facilitate the designing of APIs automatically.
- In April 2020, Azure Cognitive Search added a new feature for incremental enrichment to improve indexing data. Incremental enrichment provides a low-cost solution for document enrichment with indexers to add documents to a search index from a data source. The process improves the efficiency of an enrichment pipeline by removing unnecessary steps associated with re-enriching, updating, or dealing with version drift for documents.
- In May 2020, Service Bus Explorer was released in preview on the Azure portal. The tool provides management operations like CRUD (create, read, update, and delete) on Service Bus namespaces, queues, topics, subscriptions, and filters. The tool also enables data operations such as to send, receive, and peek on queues, topics, and subscriptions.
- In June 2020, Microsoft released updates to Azure API Management consisting of new features, bug fixes, and changes to improve the platform. New features include support for RSA-signed and RSA-encrypted JWT validation, decompression of zlib-wrapped deflate streams and logging of JSON to the standard output.

Microsoft is positioned in the Leaders' quadrant for this year's Value Matrix. It offers enterprise-scale performance, availability, and flexibility across verticals and use cases. Microsoft presents a focus on key performance areas to refine its iPaaS system, which will prove to be a good ROI not only for Microsoft AIS but also their customers.

ORACLE

Oracle Integration Cloud provides an iPaaS solution data and applications deployed in hybrid landscapes. Prebuilt connectors for SaaS and on-premises applications, process automation templates, and a simple UI helps developers focus attention on business innovation instead of managing manual processes. The solution supports connecting ERP, HCM, and CS solutions through application adapters, drag-and-drop capabilities, B2B capabilities for electronic data interchange (EDI), business process management that supports BPMN and DNN (dynamic) process models and business insights for end-to-end digital processes. Oracle Integration Cloud also includes low code tools for visual development of mobile and web applications. Oracle Integration Cloud supports a hybrid integration architecture where the orchestrations can run in a multi cloud environment.

The Oracle Integration Cloud delivers an efficient yet in-depth solution to integration processes with drag-and-drop features, business object drop-down fields, and triggers, enabling users to create a connector between two applications in a matter of seconds and integrate the two solutions in a matter of minutes. Oracle Cloud Infrastructure Data Integration simplifies data extract, transform, and load (ETL) processes into data lakes and data warehouses to help organizations reach unknown data insights and analytics capabilities. With a graphical interface and visual preview of data flow before load, users can achieve real-time change data capture, distribution, and delivery between heterogeneous databases. The Oracle Data Integrator takes ETL a step further with bulk ETL capabilities to support integration performance. Oracle Data Integrator goes in-depth for ETL processes with complex dimension and cube-loading support as well as pushdown technology to reduce performance impacts.

Oracle API Management solutions enable accelerated design and build cycles with mock testing environments, REST and JSON standards, and low to no-code policies. Oracle API gateway is fully managed by Oracle, allowing users to save costs with no servers to provision or maintain. Flexibility across deployments allows users to securely implement an API in Oracle Cloud, Amazon, Azure, or on-premises and create serverless APIs with Oracle Functions for RESTful APIs. The API can integrate with existing enterprise identity management systems ensuring fewer headaches for integration teams.

Oracle SOA Cloud Service and Oracle SOA Suite bring enterprise service bus, managed file transfer (MFT), B2B and EDI, and analytics to the Oracle Cloud for advanced integration capabilities. Oracle SOA Cloud Service utilizes automated provisioning to manage cloud services and help organizations migrate to a cloud infrastructure. SOA orchestrates the design and flow of data across applications and services by connecting SaaS, on-premises applications, and B2B Partners for enterprise integration. Automation is a necessity for iPaaS solutions, and Oracle SOA Cloud Service provides an automatic application to application communication to eliminate manual processes.

In 2020, Oracle Integration Cloud received multiple updates and new features covering these key areas:

- Oracle created new adapters as well as updated and simplified old ones to streamline integrations for applications and solutions such as Oracle Autonomous Data Warehouse, Oracle Autonomous Transaction Processing, REST, SAP Commerce Cloud, Oracle Responsys, Oracle ERP Cloud, Oracle HCM Cloud, Box, Slack, Apache Kafka, Marketo, and many more.
- Business Object REST Endpoint. The ability to add or remove the endpoints that the business objects in your visual application expose.

- OpenAPI 3. Visual Builder now supports the use of REST services described by the OpenAPI 3 specification. Visual Builder continues to support the use of REST services that are described by JSON files using the Swagger v2 specification.
- Web form events. Oracle added support for looping in web forms allowing users to execute the same action multiple times to dynamically populate information about a current logged user's data such as name, email, and user ID.
- Oracle Integration Generation 2 monitoring metrics in the One Console of Oracle Cloud Infrastructure. Users can view charts that show the total number of message requests received, message requests that succeeded, and message requests that failed for each instance.
- Wider availability for File Server in Oracle Integration to provide SFTP-compliant repository for storing and retrieving files.

For high-performance capabilities and robust functionalities, Oracle is positioned as a Leader in this year's Value Matrix. With the continued pace to provide innovations and updated to the Oracle Integration Cloud, the platform will remain a Leader among iPaaS offerings.

TRAY.IO

Tray.io provides the Tray Platform, a modern low code API-first integration and automation solution that is both easy enough for non-technical users and flexible enough for technologists to build complex integrations at scale within organizations.

The Tray Platform enables non-technical users to be productive without having prior knowledge of coding or integration processes. The entirely web-based experience provides modern drag-and-drop functionality that allows users to configure workflows, automations, and integrations across their applications. Business users get access to a comprehensive connector library, and can connect to REST, SOAP, and GraphQL endpoints should they need to do so. The workflow builder provides flexible logical operators for managing workflow processes such as conditionals and loops, and helpers for common data transformations to minimize code. A CSV editor and reader are provided for users to process large flat files. The platform also includes triggers to launch automated workflows based on any app, database, tool, or business event. For example, email triggers allow workflows to be triggered by sending an email, and form triggers allow users to create custom web forms, and trigger workflows once submitted. Manual triggers, scheduled triggers, callable triggers, and Webhook support are also provided to give the user more freedom to launch workflows.

For developers and technologists, the Tray Platform offers advanced capabilities for deeper integrations within medium to enterprise-level organizations. Advanced capabilities include

rollback history to revert workflow changes, on-premise connectivity to connect data center applications with cloud applications, and governance management. The platform optionally allows JavaScript for manual coding, and to further support developers, the solution supports automatic translation of Extensible Markup Language (XML) into JavaScript Object Notation (JSON) file format. This is crucial because JSON is a heavily used open-standard file format for business use cases and enable streamlined extract, transfer, and load operations.

The simplicity of the platform gives business users the ability to utilize more technical concepts and skills to build workflows and integration in a way typically reserved for developers. If a company's required integrations are reasonably straightforward, the benefits will range from significant time savings to reducing labor costs with the possibility of removing developers or not hiring one altogether.

The platform provides a full collaborative experience that enables business users, technologists, and developers to build together, in real-time. Tray.io continues to expand its support of all skill levels for automation and integration with the recently launched Tray Academy that provides full courses, quizzes, videos, and summaries to help new users learn the basics of automation and integration.

Customers report automating a wide range of use cases with Tray. Examples include using the platform to monitor customer activity and update customer records to enable customer service teams to derive additional value from customer insights. Growth teams can use the platform to track product usage and customer communications, and to automate actions based on behavior. Reporting and analytics processes can also be automated, turning work that would typically require multiple employees, into daily automated reporting.

Allowing non-technical users and developers to build and scale workflows collaboratively is further enabled by Tray's pricing, which includes unlimited users and connectors, and elastic scalability throughout its serverless architecture, as standard. For example, purchasing a license for the Tray Platform, users gain access to all connectors to databases, tools, as well as a library of sales, marketing, financial, and service applications.

Over 2,000 customers of all sizes now utilize the Tray Platform. Additionally, Tray.io provides Tray Embedded, a solution built on the Tray Platform that enables software and services companies to accelerate their delivery of integrations for their customers by embedding and white-labeling Tray's powerful integration and automation capabilities versus building themselves.

Tray.io has a wide range of partnerships across the sales, marketing, service, and technology landscape, and they recently partnered with Bynder, a digital asset management (DAM) company, to automate asset management and bi-directionally sync content.

In 2020, Tray.io will continue to focus on providing a platform that is easy to use and flexible for all users to rapidly scale automation while further expanding their extensive platform in terms of capabilities and performance. Nucleus anticipates that Tray.io will see continued growth as iPaaS solutions see an increase in adoption rates in 2020. New or experienced users will value a modern platform that is ready to assist in the learning stages while also providing scalability and flexibility as they develop their integration skills further. For this reason, Tray.io is a Leader in this year's Value Matrix.

EXPERTS

Experts in the Value Matrix include IBM, SAP, MuleSoft, and Jitterbit.

IBM

IBM Cloud Integration combines best-of-breed capabilities for API lifecycle and management, security gateway, application integration, data integration, high speed file transfer and cloud messaging and events into a complete eiPaaS platform offering end-to-end capabilities and with integration across all levels. The capabilities are available as a single package with flexibility to choose which capabilities to use and to change the capabilities being used without further costs, or as separate packaged offerings that can be purchased individually branded as IBM API Connect, IBM App Connect, IBM MQ, IBM Event Streams, IBM Aspera, IBM Secure Gateway Service and IBM DataPower Gateway. IBM Cloud Integration provides a single, unified hybrid agile integration platform that supports an agile approach to integration. It allows teams to quickly build and deploy secure, reusable integrations, increasing overall productivity while reducing risks and costs.

IBM is taking a step ahead of the curve with innovations to pursue digital transformation as the key to building connected experiences across a network of applications. IBM is bringing microservice architecture principles to integration to enable greater agility, elastic scalability, and discrete resilience. This agile integration microservice architecture help users build applications that are composed of smaller, independent components allowing them to be managed by an integration team. Elastic scalability ensures that resource usage can be tied to the business model enabling individual flows to be scaled on their own. Discrete resilience utilizes suitable decoupling to protect individual microservices from changes applied to single microservice. Users deploying a microservice architecture can automatically scale, load-balance, deploy, and route internally on container orchestration platforms such as Kubernetes.

Additionally, IBM has heavily invested in revamping its development interfaces to offer a skill appropriate developer experience for all users across the entire business to IT developer spectrum. For customers within the IBM ecosystem, user can leverage larger IBM solution ecosystems as IBM solutions are rapidly partnering with larger IBM ecosystem such as IBM Security, IBM Watson, IBM Blockchain, IBM Weather, and multiple other IBM initiatives delivering end-to-end enterprise solutions to customers. IBM integration solution offers a highly flexible pricing and licensing option ranging from pay-as-you-go, usage and capacity based monthly subscription and perpetual licensing models suitable for LoB to IT buyers and enabling both existing and new customers to start small and expand their use as they grow addressing needs of SMBs as well as Enterprise market customers.

IBM continues to invest in Cloud Pak for Integration and wider middleware Cloud Pak strategy driving synergy between products and capabilities and simplifying licensing and deployment. The IBM Cloud Pak for Integration offers a single unified platform for integration needs. The platform provides a consolidated and powerful set of integration capabilities for API lifecycle management, application and data integration, enterprise messaging, event streaming, high-speed data transfer, and secure gateway. Users can build intelligent and responsive application ecosystems on moving data of any volume through connected applications and data sources. IBM helps protect integrations by deploying into Red Hat OpenShift container environments giving users the freedom to run their containers while auto-scaling. The IBM Cloud Pak delivers an agile solution for essential integration processes allowing organizations to save money and increase overall performance.

In 2020, IBM is investing heavily to unify its Enterprise Application Integration, cloud integration, API management and life cycle, enterprise gateway, enterprise messaging, high-speed file transfer, and related integration offerings into the IBM Cloud Integration platform to support customers as they shift to the cloud. Key IBM innovations and investments for 2020 include:

- IBM plans to leverage IBM Watson to provide the first cognitive integration platform deploying AI solutions across hybrid deployments and reinforcement learning. Furthermore, investments in AI will aim to reduce integration build time and optimize operations.
- Converging and unifying multiple integration technologies, styles, and patterns under a single offering to cover all domains of integration.
- Extend market and thought leadership for event-driven patterns in integration by extending API management of Kafka and messaging endpoints.
- Native support for continuous Integration DevOps powered by native Red Hat OpenShift Container Platform to offer a native and integrated DevOps experience that will help improve developer productivity and operational efficiency. The native

supports will increase efficiency in terms of delivery updates and finding and addressing bug fixes in production code.

- Bringing a serverless technology stack through native components built on top of Red Hat Kubernetes OpenShift Container Platform to increase the productivity of integration developers and reduce the cost of running integrations.

As more companies adopt cloud-based solutions, the deployment landscapes of application ecosystems will become increasingly diverse. Currently, IBM integration solutions support more extensive capabilities for users operating across the IBM ecosystem. With the key investments listed, Nucleus expects IBM to migrate to the Leader quadrant in next year's Value Matrix as the investments aim to increase availability, performance, and functionalities throughout the IBM ecosystem and external solutions. IBM is positioned as an Expert in this year's Value Matrix.

SAP

The SAP Cloud Platform Integration Suite follows three pillars of integration: versatile integration with an API-first approach, dynamic integration, and enterprise-grade integration. With these pillars in mind, SAP can focus on driving more efficient integrations, providing deeper connections between applications both in the cloud and on-premises, allowing non-technical users to achieve full-level integrations, and providing secured and certified data centers for SAP customers to exchange best practices for effective integration. An API-first approach can support both modern application architectures and legacy systems. The SAP API Business Hub gives users access to various SAP and third-party APIs to speed up the project lifecycle. SAP focuses on improving the user experience by refining existing capabilities before adding unnecessary features. The platform enables processes for B2B, business-to-government (B2G), application-to-application, IoT, and mobile application integration.

The SAP Cloud Platform Integration Suite connects people and technology across organizations to create a synergy between the user-experience and integrations. The platform remains supportive of more traditional integration methods allowing the solution to be deployed both in modern architectures and legacy environments. To support modern architectures, SAP provides enterprise-grade technology with best-practice methodologies and secure data centers. Predefined integration flows enable dynamic integration through intuitive tools to assist both non-technical users and developers. SAP aims to increase positive integration outcomes with integration solution advisory methodology, enterprise-class governance, comprehensive security, and professionally managed infrastructure scalability and reliability.

In 2020, SAP emphasized improving the user experience and supporting customers within the SAP ecosystem. In June 2020, SAP announced significant changes to the platform, improving the user experience in areas such as onboarding and provisioning, metering and pricing, and a redesigned Integration Solution Advisory Methodology (ISA-M). SAP also introduced a common launchpad for all the Integration Suite capabilities allowing users to access services from a single home screen. With many years of knowledge orchestrating integration solutions and with a focus on driving value through API solutions, dynamic integrations, and enterprise-level performance, SAP has positioned itself as an Expert among iPaaS providers.

MULESOFT

The MuleSoft Anypoint Platform is a leader in API focused connectivity and integration of applications and data across on-premises and cloud environments. Users can expect full capabilities across diverse environments and deploy APIs and integrations directly to MuleSoft's CloudHub infrastructure, a private cloud, a private data center with Runtime Fabric, or on-premises through frameworks such as Docker, Kubernetes, and Istio. MuleSoft provides solutions for business automation, eCommerce, legacy system modernization, cloud migrations, omnichannel support, B2B EDI, IoT, DevOps, and SaaS integration. MuleSoft also offers paths for organizations deploying legacy solutions with prebuilt connectors for systems such as AS/400.

MuleSoft iPaaS solutions center around four core pillars: a platform that enables all user skillsets to accelerate innovation and project execution, a globally available and flexible iPaaS, a unique set of application network capabilities, and a continuous drive to innovate and enhance the core capabilities of the Anypoint Platform. Users can extend full lifecycle API management to domains such as event-driven architectures and GraphQL. With support for all users such as integration specialists, ad hoc, and citizen integrators, MuleSoft can offer a variety of business and technical use cases like APIs, IoT, CDC, and orchestration. The users can accelerate time to live of projects with reusable and prebuilt resources like industry Catalyst Accelerators, connectors, and templates. In addition, AI and machine learning tools will help users build applications with no integration required, and operational incidents are fixed proactively and automatically.

With out-of-the-box connectors, drag-and-drop features, prebuilt APIs, integration templates, and a graphical development environment, MuleSoft enables rapid business automation. The connectors, drag-and-drop data mapper, and data transformation templates standardize customer information pulled from MDM, ERP, and CRM systems creating a full view of customer behaviors. MuleSoft supports non-technical users by taking a low code approach to provide a simplified drag-and-drop approach for a web-based interface to integrate applications.

Developers can still expect extensive support for complex integrations with advanced capabilities such as creating APIs and integration graphically or in XML using Anypoint Studio. MuleSoft deploys DataWeave and Anypoint Templates to drive developer productivity and accelerate time to market for projects. Both non-technical users and developers can connect applications, systems, and data with prebuilt connectors or customize prebuilt templates to build individualized integrations through MuleSoft's SDK. The integration platform also supports integration testing, support for CI/CD pipelines, and a marketplace for discovering and reusing APIs, templates, and connectors to speed up development cycles.

To support future growth and innovation for the Anypoint Platform, MuleSoft utilizes the capabilities of the application network graph, which captures and digests data to provide visualizations and insights. The graph is the database underlying the Anypoint Platform and contains all metadata within an application network and provides users with insights, recommendations for automapping, and visualization of endpoint relationships with Anypoint Visualizer. The application network graph helps the platform prepare for growth in areas such as anomaly detection, AI operations, and support for languages and frameworks.

Furthermore, MuleSoft plans to invest in these key areas to drive growth and innovation throughout the platform:

- A focus on citizen integrators and driving simplified integration, application, collaboration, and automation capabilities for non-technical users. MuleSoft aims to deliver the flexibility of a clicks not code platform allowing citizen integrators to integrate applications and data.
- Investments in API Federation to enable data exploration through the development of data graph models of customer application networks and enable automatic data access and connectivity to systems without code through federated queries. Additionally, allow Salesforce customers to achieve wall-to-wall Single Source of Trust (SSoT) of their customers across the organization.
- Enhance Anypoint Platform with batch scheduling, restart/recovery, and monitoring of mission-critical ETL use cases such as long-running processes, large datasets, and ETL sequencing.
- Additional MuleSoft Accelerators for healthcare, banking, and SAP, along with establishing Anypoint Exchange as a global marketplace for ISV solutions and best practices.
- New application network graph and metadata capabilities such as advanced search functionality across application network graph metadata, metadata governance, and simplify the visual UI with open-source first modeling tooling (Semantic modeler and API/data modeler).

- Expansions into new regions including Japan, Germany, France, Spain, Italy, Belgium, Finland, Brazil, Argentina, and Mexico to support sales, pre-sales, services, customer success, support, and leadership.

As the platform continues to adjust packaging and pricing to appeal to a wider market covering enterprise-level customers and mid-market customers, Nucleus predicts MuleSoft will become a leader among iPaaS providers. With the key investments and innovations slated for 2020, MuleSoft is set to outperform competitors in next year's Value Matrix as the platform increase availability, usability, and performance in critical areas. Currently, MuleSoft is positioned as an Expert in this year's Value Matrix.

JITTERBIT

The Jitterbit Harmony Platform is an iPaaS solution for integrating applications and data with prebuilt templates, workflow automation tools, API management tools, and AI capabilities to support business processes. Jitterbit deploys a graphical yet intuitive point-and-click interface to enable fast integrations between applications. The Cloud Studio supports the re-use of existing code and business logic to build and maintain integration flows more smoothly. Additionally, Cloud Studio supports developers allowing for deep code-based connectivity with Connector SDK to implement custom request and response workflows and proprietary logic as well as customize the user experience.

Jitterbit's capabilities extend from ETL and data cleansing to API and B2B integrations to support a variety of use cases across organizations. The ETL processes allow for parallel processing capabilities to move large amounts of data efficiently. To simplify the user experience, automation tools like data cleansing help reduce errors associated with data and manual processes. Furthermore, an alert system within the platform will monitor your integrations and assist users in remedying the situation before it becomes a more significant issue. The Jitterbit API platform takes simplification a step further with support for existing APIs and efficiently creating new ones. Users can generate APIs or microservices with a few clicks in REST, SOAP, JSON, and OData formats. The increased performance and availability help accelerate API Lifecycle Management processes to reduce the time to live for projects.

In 2020, Jitterbit made updates to the platform and facilitated critical partnerships to improve the overall functionality of the platform. In February 2020, Jitterbit partnered with Fortimize to enable the financial service company to integrate and fast track solutions for banks and credit unions to utilize the Salesforce Financial Services Cloud. Again, in February 2020, Jitterbit partnered with Navint to deliver solutions to connect Salesforce CPQ & Billing to ERP platforms. Navint is an advisory and technology firm that will combine with the Jitterbit API Integration Platform to speed the implementation of recurring-revenue billing systems. In June 2020, Jitterbit announced API360, a series of use-case-driven process integration templates aimed at reducing the deployment time of integration projects. The

efficiency gains are achieved through a combination of prebuilt application connectors, integration recipes, and best practices-based process templates and delivery services. Jitterbit continues its trend of adding innovative capabilities to the platform coupled with critical partnerships to strengthen use cases. Jitterbit is positioned as an Expert in the 2020 Value Matrix.

FACILITATORS

Facilitators in the Value Matrix include SnapLogic, Workato, and Zapier.

SNAPLOGIC

SnapLogic brings full-scale data and application integration to non-technical users while maintaining the flexibility of open-source coding for developers with support for languages such as Python, JavaScript, and Ruby. SnapLogic centralizes all processes on a single platform meaning new users only need to train for integration through SnapLogic. The solution covers end-to-end business solutions such as integrating databases, APIs, and flat file ingestions. SnapLogic may lack solutions for areas such as MDM and mass data ingestion. Still, the platform refined the process for cloud-based integrations, making it a perfect solution for small to medium-sized businesses.

SnapLogic is ideal for companies fully migrated to the cloud or companies looking to migrate all operations to cloud-based solutions. SnapLogic's simplicity relies on the company's prebuilt connectors, known as Snaps. Snaps execute tasks ranging from inputting data files to connecting applications and analyzing the data or objects within the application. SnapLogic uses Snaps to remain a simple platform for new users and an advanced platform for technical users by allowing IT engineers to create customized Snaps. With this freedom, Snaps are as complex as full-scale connectors seen in more extensive iPaaS solutions or as simple as dragging and dropping the necessary Snaps into a data pipeline. Additionally, SnapLogic allows users to select Snaps specific to their use cases instead of purchasing the entire package of prebuilt connectors. This modular approach to connectors can reduce the total cost for a company deploying SnapLogic. SnapLogic's stable development and high performance and availability platform position it as a Facilitator in the 2020 Value Matrix.

WORKATO

Workato is an iPaaS solution focused on business process and business workflow automation functionalities to connect applications and data through a series of triggers,

connectors, and actions. Users can take an application like Salesforce, for example, and use a callable trigger that will start an automated process to undergo an action that is specified by the user, such as create an invoice or send an email. The platform extends to a variety of use cases with support for API management, RPA, AI and machine learning data services, ETL, B2B, and IoT.

With an intuitive interface and support for a low code environment, Workato can enable non-technical users to create integrations and automation workflows with a few clicks. The platform deploys machine learning algorithms to assist users in building integrations while also offering extensive capabilities for developers. Developers can deploy process integrations to connect on-premises applications and databases to automate business workflows. With multiple interaction models, Workato is flexible enough to meet use cases from polling, real-time webhooks, scheduled events, and on-demand input-based interaction. For API management, Workato SDK allows users to build connectors for REST or SOAP API applications. Workato provides advanced usability capabilities when compared to most iPaaS solutions. The platform focuses on delivering in-depth integration capabilities without cutting out non-technical users from building application integrations. Currently, there have been no significant updates or innovations to the platform in 2020. Moving forward in 2020, the iPaaS solutions that support all sets of integrator skill levels will continue to grow the user base and become leaders in the iPaaS space. Workato is positioned as a Facilitator in the 2020 Value Matrix.

ZAPIER

Zapier is an integration platform connecting numerous web applications, workflows, and automated tasks through a set of 'Zaps', triggers, actions, and tasks. By using just a few clicks to build integrations, the automation tool eliminates repetitive manual tasks without the need for coding or developers, which saves organizations both time and money. Zapier denotes automated workflows as Zaps, which consist of at least one trigger and one action to connect and process data communications between applications. Users can combine several services to connect and work together without needing knowledge of coding or deep integration processes. While Zapier mainly supports non-technical users, more advanced users can still utilize the Paths tool to create conditional logic between dataflows.

While Zapier may not support the extensive architecture of other iPaaS solutions on this Value Matrix, it makes up for this shortcoming by refining a solution that is usable by everyone. The solution is an effective and powerful automation tool enabling 'citizen developers' to achieve synergy between the applications and workflows within their organization. Since the start of 2020, Zapier released over 50 new integrations for the platform ranging from marketing automation tools, e-commerce platforms, communication tools, learning applications, and many more. The platform continues to solidify the

dedication to providing a simplified experience for non-technical users to connect business applications and data to achieve a full view of operations and data insights. With few companies fully supporting citizen developers, Nucleus predicts Zapier will see growth in 2020 as more companies adopt software-based solutions amidst new work cultures. Companies that previously avoided extensive software architectures will soon adopt these solutions moving forward, and companies like Zapier will be there to help them get started. Zapier is positioned as a Facilitator in this year's Value Matrix.

CORE PROVIDERS

Core providers in the Value Matrix include Cloud Elements, Talend, and TIBCO.

CLOUD ELEMENTS

Cloud Elements provides a simplified approach to integration services for companies deployed entirely in the cloud. The solution uses a single API to streamline the integration process for developers working with multiple cloud-based solutions. Users can build integrations with major platforms such as Salesforce, Oracle, HubSpot, and Microsoft Dynamics 365 for real-time connections to client systems. Using a single API, Cloud Elements enables integration between multiple cloud-based solutions allowing developers to save time with centralized coding and use one API integration to access many systems. Cloud Elements uses a 'one-to-many' approach to improve efficiency in the integration process and continuously update unified APIs, known as Elements. Elements are prebuilt API integrations for connecting cloud solutions or link users to a cloud application or cloud service endpoint. With more companies moving entirely to cloud-based solutions, Cloud Elements will see a surge in growth and user adoption moving forward. Cloud Elements is a Core Provider in this year's Value Matrix.

TALEND

Talend Cloud Integration provides a cost-effective solution for integrating applications, data, B2B, and APIs in scalable and diverse deployment environments. Talend supports integrations for both on-premises and cloud-based applications with built-in data quality functionalities. Cloud-to-cloud and hybrid integration workflows support platforms such as AWS and Azure. The connectivity of the platform extends to the provisioning of cloud data warehouses with support for provision automation for solutions such as AWS Redshift, Snowflake, Google BigQuery, and Azure SQL Data Warehouse. The Talend Cloud Integration platform has seen updates in 2020, surrounding improved availability, security,

and performance. In February 2020, Talend announced its qualification as a business associate under the Health Insurance Portability and Accountability Act (HIPAA) and a certification under the EU-U.S. Privacy Shield. In March 2020, Talend expanded the availability of the platform by entering the Microsoft Azure Marketplace to increase visibility to new customers. In April 2020, Talend announced support for Delta Lake as a part of its partnership with Databricks. The partnership will enable data ingestion into lakehouse environments to combine data warehouse management features with low-cost storage. With continued innovations and developments following current trends for Talen Cloud Integration, Nucleus expects the platform to become a Facilitator in the iPaaS market. Currently, Talend is a Core Provider in the 2020 Value Matrix.

TIBCO

TIBCO Cloud Integration takes an API-led approach to integration to support, create, and analyze API products as well as give you the control to create a connected network throughout your organization. TIBCO enables integrations for databases and applications in areas such as CRM, ERP, and marketing automation systems. A browser-based, drag-and-drop interface enables customizable and scalable integrations to deliver insights to help an organization better understand the connection between customers and data. For IoT, developers can use embedded open-source Project Flogo software for real-time event capture. With hundreds of connectors supporting various applications, systems, databases, and standards like REST, OData, and XML, TIBCO proves to be a stable and effective iPaaS solution. Since the start of 2020, there have been no significant updates to the platform. TIBCO Cloud Integration is positioned as a Core Provider in this year's Value Matrix.