

# The Forrester Wave™: Data Preparation Solutions, Q4 2018

The 10 Providers That Matter Most And How They Stack Up

by Cinny Little

October 31, 2018

## Why Read This Report

In our 18-criterion evaluation of data preparation solution providers, we identified the 10 most significant ones — ClearStory Data, Datameer, Datawatch, Oracle, Paxata, SAP, SAS, TIBCO Software, Trifacta, and Unifi Software — and researched, analyzed, and scored them. This report shows how each provider measures up and helps customer insights (CI) professionals make the right choice.

## Key Takeaways

### **Data Prep Solutions Must Turbocharge Time-To-Insight From Data**

Forrester's research uncovered a market in which Trifacta, Paxata, Unifi Software, TIBCO Software, and SAP are Leaders; Oracle, ClearStory Data, and Datawatch are Strong Performers; Datameer is a Contender; and SAS is a Challenger.

### **Data Consumers Need Data They Can Trust And Activate Faster**

The data prep solutions market is growing and maturing to support enterprises' critical need to move at the speed of their customers by scaling more data faster with governed self-service.

### **Key Differentiators Are Machine Learning Automation, Collaboration, And Activation**

Providing machine learning (ML) to give business end users "do it for me" automation for preparing data will speed up insights and activation for business end users, analysts, and data scientists. Collaboration — including across organizational silos — improves tribal knowledge and creates efficiencies with the ability to reuse others' work, as appropriate.

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## The 10 Providers That Matter Most And How They Stack Up



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October 31, 2018

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## Data Preparation Solutions Are The Rocket Fuel For Data Activation

The four V's of big data (volume, variety, velocity, and veracity) may seem to be a cliché.<sup>1</sup> But they continue to outrun enterprises' ability to scale driving insights from data and then take actions that improve business outcomes. For example, the extent of firms' decision making using data didn't budge from 2017 to 2018: For two years running, global data and analytics decision makers have reported that only 45% of business decisions are based on quantitative information and analysis versus factors such as "gut feeling" or experience.<sup>2</sup> To remain competitive, enterprises must keep clawing their way to increasing data usage in decision making. That requires changing the way they work in ways that are simple but not easy: Operating models must be based on actionable insights from data, everywhere in the firm.<sup>3</sup> How do data prep solutions solve for this? They:

› **Put trusted data where the money is, with machine learning doing work for end users.**

Effective data management isn't a goal, or even an end in itself. As complex as it is, it's just a contributor to the true goal: using insights based on data to take actions. Enterprises need to put data for generating insights where the money gets generated: directly into the hands of more people in the firm whose organizational and individual goals depend on improving business outcomes. Data prep solutions achieve this with ML optimization for hands-on use by business end users and analysts, along with governance capabilities for data stewards, data engineers, and data ops users.

› **Deliver common process to activate data and insights across silos.** The two biggest challenges that global data and analytics decision makers report in using systems of insight are 1) building cross-functional teams that can collaborate and work with agility to develop, test, and implement insights; and 2) sourcing, gathering, managing, and governing the data as it grows.<sup>4</sup> There's little that's easy about working across organizational silos to win, serve, and retain customers, and data itself is siloed in separate data lakes, warehouses, or tools that may not "belong to" or even be accessible to business or operational areas. A data prep solution breaks down silo walls by delivering data processes that enable the rapid blending, transforming, and profiling of data across data types and sources, along with metadata management, collaboration features, and pipelining.

› **Play nicely with existing data sources, tools, and IT architecture to deliver more.** Enterprises have existing tools (such as business intelligence [BI]/analytics) and resources (such as data scientists) that are delivering value but would deliver more, and much faster, if they could significantly cut the time spent prepping and reprepping data. Data prep solutions deliver on that and also on another key element to turbocharging time-to-action: the ability to seamlessly use both enterprises' existing BI/analytics for reports and dashboards and the tools data scientists prefer.

› **Enable data preparation to be wherever it needs to be in the organization.** It's true that the responsibility for data preparation continues to move out of IT: In 2017, 70% of global data and analytics decision makers reported that IT (including a chief data officer in IT) had significant ownership of data preparation; that fell to 66% in 2018, with 15% of the responsibility for data

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prep now in lines of business.<sup>5</sup> That's a good thing. Professionals across firms need to activate data, wherever they are on the org chart: in customer insights, customer experience, digital, and marketing; in operational areas such as service and supply chain; and in corporate areas such as competitive intelligence, finance, and human resources. Data prep solutions make it possible for data to be where it needs to be.

## Data Preparation Solutions Evaluation Overview

To assess the state of the data preparation solutions market and see how the vendors stack up against each other, Forrester evaluated the strengths and weaknesses of top data prep solutions vendors. After examining past research, user need assessments, and vendor and expert interviews, we developed a comprehensive set of 18 evaluation criteria, which we grouped into three high-level buckets:

- › **Current offering.** Each vendor's position on the vertical axis of the Forrester Wave graphic indicates the strength of its current offering. Key criteria for these solutions include the ability to access and profile, transform, and blend a broad variety of diverse data sources and types using significant "do it for me" functionality powered by machine learning; stewardship and governance; metadata management and cataloging; collaboration and data activation through integration with common BI and data science tools; and governance and security.
- › **Strategy.** Placement on the horizontal axis indicates the strength of the vendors' strategies. We evaluated vendors' planned enhancements, professional services they provide themselves, and their partner ecosystem.
- › **Market presence.** Represented by the size of the markers on the graphic, market presence reflects each vendor's number of customers, percentage of enterprise customers, growth, and global breadth.

### Evaluated Vendors And Inclusion Criteria

Forrester included 10 vendors in the assessment: ClearStory Data, Datameer, Datawatch, Oracle, Paxata, SAP, SAS, TIBCO Software, Trifacta, and Unifi Software (see Figure 1). Each of these vendors has:

- › **A data prep solution that was on the market for at least five months as of August 2018.** The evaluated version was generally available in August 2018 and on the market for more than five months.
- › **Focused support for multiple user personas, with emphasis on the business end user.** Each vendor's data preparation offering is a solution, not a feature, and it provides robust functionality for the business end user as well as for data steward and data engineer/data ops roles.

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- › **More than 60 customers (logos) and more than 30 enterprise-class customers.** The vendor meets these customer minimums.
- › **Diverse geographic exposure.** At least 10% of each vendor's customers are in a geographical region different from the vendor's primary headquarters country.
- › **Diverse vertical exposure.** Each evaluated vendor has a significant base of enterprise-class customers across at least three industry verticals.

**FIGURE 1** Evaluated Vendors And Product Information

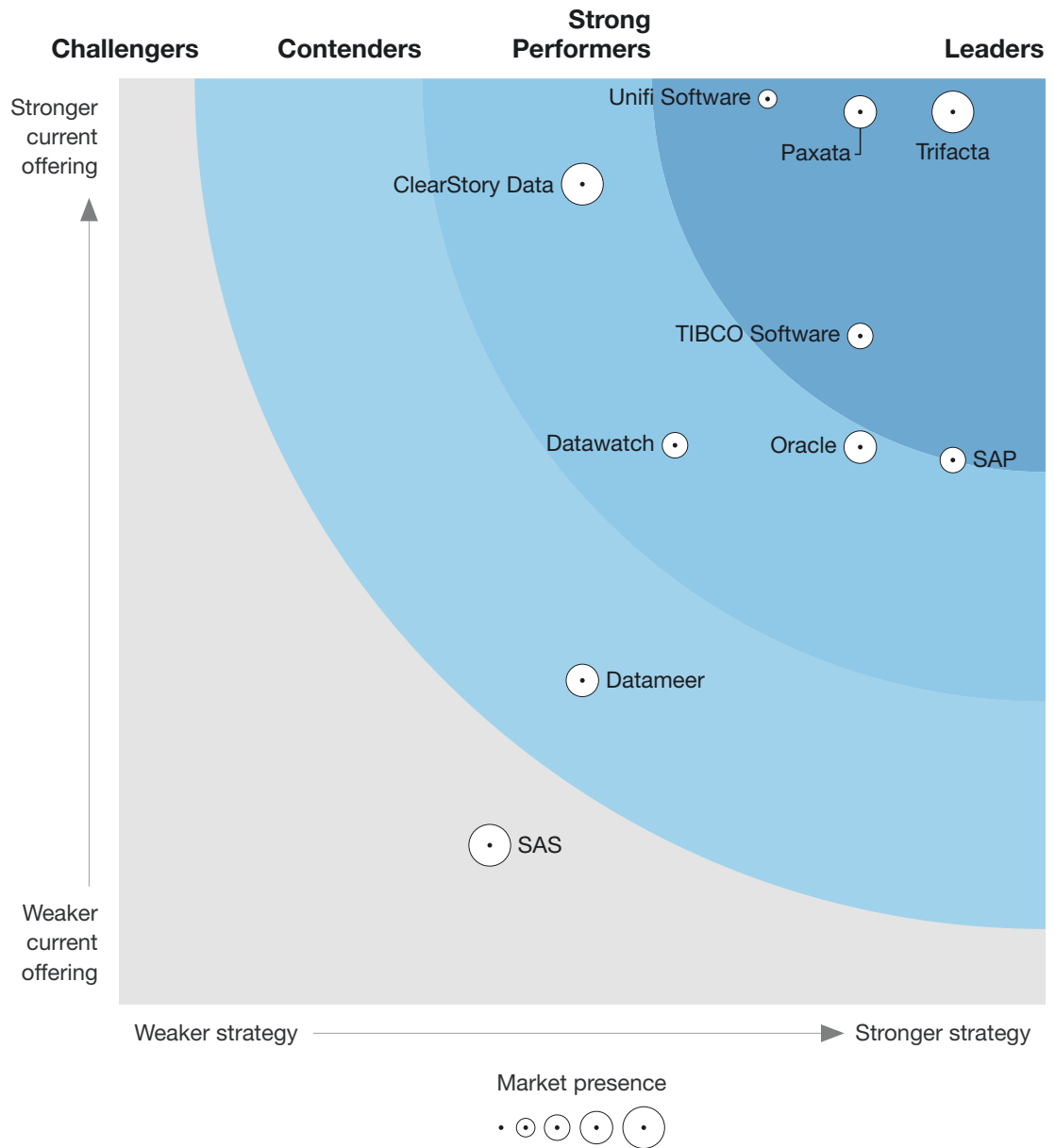
Vendor	Product and version evaluated
ClearStory Data	ClearStory Data 2.8
Datameer	Datameer 7.2
Datawatch	Datawatch Monarch Platform (Desktop 15.1, Server15.1, and Swarm — browser-based)
Oracle	Oracle Analytics Cloud (OAC) 18.3.3
Paxata	Paxata Self-Service Data Prep Fall 2018
SAP	SAP Agile Data Preparation 1.0SP24 SAP Data Hub 1.4 SAP Analytics Cloud 2018.12.0
SAS	SAS Data Loader For Hadoop 3.1.1
TIBCO Software	TIBCO Spotfire 7.13 TIBCO Data Virtualization TIBCO Statistica TIBCO Spotfire Data Science
Trifacta	Wrangler Enterprise 5.1
Unifi Software	Unifi Data Platform 2.9

## Vendor Profiles

We intend this evaluation of the data preparation solutions market to be a starting point only and encourage clients to view detailed product evaluations and adapt criteria weightings to fit their individual needs through the Forrester Wave Excel-based vendor comparison tool (see Figure 2 and see Figure 3). Click the link at the beginning of this report on Forrester.com to download the tool.

**FIGURE 2** Forrester Wave™: Data Preparation Solutions, Q4 2018

**THE FORRESTER WAVE™**  
**Data Preparation Solutions**  
 Q4 2018



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**FIGURE 3** Forrester Wave™: Data Preparation Solutions Scorecard, Q4 2018

	Forrester's weighting	ClearStory Data	Datameer	Datawatch	Oracle	Paxata	SAP	SAS	TIBCO Software	Trifacta	Unifi Software
<b>Current offering</b>	50%	4.43	1.75	3.02	3.01	4.82	2.94	0.86	3.61	4.82	4.89
Data	13%	5.00	3.00	3.00	4.90	5.00	3.10	1.00	4.90	5.00	5.00
Metadata management/cataloging	6%	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	5.00
Machine learning	50%	5.00	1.00	3.00	3.00	5.00	3.00	0.00	3.00	5.00	5.00
User experience (UX)	7%	2.10	1.20	3.00	3.00	4.10	3.00	1.90	3.00	4.10	4.10
Team collaboration features	15%	5.00	1.00	3.00	1.00	5.00	3.00	1.00	5.00	5.00	5.00
Data activation	6%	1.80	5.00	3.40	3.00	5.00	1.80	3.00	3.00	5.00	4.20
Security and governance	3%	3.00	5.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	5.00
<b>Strategy</b>	50%	2.50	2.50	3.00	4.00	4.00	4.50	2.00	4.00	4.50	3.50
Planned enhancements	50%	3.00	3.00	3.00	3.00	5.00	5.00	1.00	3.00	5.00	5.00
Professional services	25%	3.00	3.00	3.00	5.00	5.00	3.00	3.00	5.00	5.00	3.00
Partner ecosystem	25%	1.00	1.00	3.00	5.00	1.00	5.00	3.00	5.00	3.00	1.00
<b>Market presence</b>	0%	4.50	3.75	2.75	4.00	3.25	3.00	4.50	3.00	4.50	1.75
Number of customers	25%	4.00	2.00	5.00	4.00	1.00	1.00	4.00	4.00	5.00	3.00
Percentage of enterprise customers	25%	4.00	5.00	2.00	4.00	4.00	5.00	4.00	4.00	3.00	2.00
Growth	25%	5.00	3.00	3.00	3.00	5.00	1.00	5.00	1.00	5.00	1.00
Global breadth	25%	5.00	5.00	1.00	5.00	3.00	5.00	5.00	3.00	5.00	1.00

All scores are based on a scale of 0 (weak) to 5 (strong).

**Leaders**

- › **Trifacta delivers “predictive transformation” for end user data preparation.** Trifacta is a standalone data prep solution that delivers on its focus on ML-enabled data prep and ease of use while maintaining neutrality that provides enterprises with the flexibility to complement elements of their existing IT architecture. That includes a range of deployment models across cloud and on-premises, plus the ability to integrate with existing catalogs, BI/analytics, visualization, and data science solutions.

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Customer references can't say enough about Trifacta's ease of use, citing that "a beginner is typically using Trifacta after 2 to 3 hours of training," that the tool is "intuitive to use," and that it "profiles the data automatically and . . . enables us to identify outliers easily." Customer references cited concerns that the solution lacks extensive support for XML, but they also noted that Trifacta is "evolving" this capability and had been prompt in helping with an alternative approach that worked.

- › **Paxata enables business users to prep enterprise-scale data for diverse use cases.** Paxata is a standalone data preparation solution that delivers ease of use for end users, including smart recommendations and one-click data profiling that generates a summary scorecard assessing the content and quality of the full data set. Customers value Paxata's scale; enterprises move high volumes of data into the solution or choose to ingest subsets.

Customer references give high praise to the solution's ease of use, including for nontechnical business users; to its connectivity to data sources; and to "its one-click profiling of the full data set." Customer references also cited the following concerns: "difficulty in integrations with SaaS applications," "less machine learning capabilities," and the "time it takes to load data into the library."<sup>6</sup> Paxata's spring 2018 release ingests data in parallel using a Spark engine to accelerate loading. The fall 2018 release and road map provide additional connectors. ML enhancements are on Paxata's road map.

- › **Unifi Software democratizes data prep along with strong cataloging and governance.** Unifi combines data prep, integrated cataloging, and ML capabilities to feed analytics. It supports self-service by differentiating the governance of sensitive data across the platform. The user interface features natural language search, presented as a single search field that operates like a commercial search engine, enabling users to not only find data but ask questions the way they'd ask a search engine, as in, "What was Q1's average order size?"

Customer references (data professionals in this case) praise the accessibility of the solution for nontechnical users and its "greater simplicity and flexibility versus more traditional methods," as well as its data governance, which one reference said "helped us become GDPR compliant in a breeze."<sup>7</sup> References said they'd like to see Unifi include functions that other solutions may provide, such as a "business user" view of prepped data for nonusers and a formula or function library.

- › **TIBCO Spotfire's data prep powers up high-value enterprise use cases.** TIBCO Spotfire's data prep helps the visual exploration and discovery of data issues while the workflow is automatically built. Coupled with other Spotfire offerings, it serves BI/analytics and data science and advanced analytics use cases as well as business end user reporting, which is also valuable to enterprises. TIBCO Spotfire also helps firms leverage their IT investments by enabling them to source data from other platform application providers, such as SAP Hana, SAP Business Warehouse (BW), and Oracle E-Business.



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Customer references cite the solution's easy-to-use data blending, transforming, and enrichment capabilities. One customer reference reported being "perfectly happy" with TIBCO Spotfire's data prep. Another praised the ability of the firm's data scientists and BI developers to create advanced models and deploy them easily into Spotfire for their full-stack products.

- › **SAP's Agile Data Preparation (ADP) serves users of multiple SAP platforms.** SAP's ADP, launched in 2015, is relatively new compared to other evaluated vendors' data prep solutions. ADP serves SAP Analytics Cloud, SAP Data Hub, and SAP HANA Data Management Suite and leverages additional applications from the vendor, including SAP Data Quality and Data Services. SAP's robust list of planned enhancements for ADP focus on embedding machine learning to move its data prep capabilities in the direction of today's standalone solutions.

Customer references cite the value of ADP's "fully cloud and secure solution" as well as the "easy interface, agility, and speed." Customers also reported "bugs, as the solution is early in development."

**Strong Performers**

- › **Oracle Analytics Cloud's integrated data prep extends the platform's value.** Oracle integrates its data prep into its BI/analytics and visualization platform, Oracle Analytics Cloud (OAC), rather than going to market as a standalone offering. OAC can access data from any cloud as well as a wide array of on-premises and desktop data sources. Customers can publish prepared data to OAC-supported databases and stores. With the data prep feature, users can search for data sets that have been introduced to the catalog, and its transform/blend functions are strong. Though the OAC native catalog does track data sources and transformations, some key governance capabilities required for managing access to data sets and permissioning are available only as an add-on.

Customer feedback, which came from data engineers, gives high marks to OAC's ease of getting up and running and time-to-value. Feedback also indicated that the data prep solution could benefit from improved documentation and training.

- › **ClearStory Data's interactive data stories speed time-to-insights.** ClearStory's approach to BI/analytics with robust data prep delivers insight to a breadth of user personas. Business analysts and data stewards collaboratively work in and with data with "Intelligent Data Harmonization" and "Interactive Storyboards," iterating data with appropriate governance, including role-based permissions.<sup>8</sup> Automated data masking, not currently available, is on ClearStory's near-term road map.

ClearStory customers value the speed of data discovery and the acceleration they get in putting data to work. One customer praised "the simple elegance of the data we now present" to stakeholders in an operational area of the firm. Another customer expressed a desire for improvements to "the front-end representation of prepared data."

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- › **Datawatch's Swarm Enterprise up-levels the vendor's land-and-expand approach.** Datawatch was in the data prep business before data prep was a category, and its large customer base reflects that. Customers particularly value its strength in turning unstructured data (e.g., PDFs and text files) into rows and columns to blend with other sources. Datawatch Swarm is the next-generation edition of the desktop edition and enables end user functions such as search across folders and more ML recommendations. For the enterprise, the solution provides multitenant deployment and metering for total cost of ownership management. Though the solution has native catalog functions, Datawatch plans a Q4 2018 launch of integrations with third-party catalogs. It will be important for Datawatch to ensure clarity on the native capabilities versus potential overlap or conflict with other solutions.

End user customers passionately value the solution's ease of use and time-to-value. Flagging of personally identifiable information data, not currently available, is planned for the Q4 2018 launch.

**Contender**

- › **Datameer delivers on its scale and security roots.** Datameer excels at building and managing pipelines for data lake curation and exploration, feeding cloud analytics, and enabling prep and pipelines for machine learning and data science. Customers value Datameer's scale: Multiple customers run on clusters of a thousand or more nodes and value the "fast performance" in supporting billions of rows of data, including its scheduling and automation capabilities. Datameer provides multiuser-persona interfaces: visual exploration for end users looking for data anomalies; a spreadsheet-style interface for analysts and data scientists; and an "SQL sheet" for those who prefer to write code.

Datameer customers praise the "fast performance of working with large amounts of data" and the "scheduling/automation capabilities." Datameer's road map reflects areas that need attention compared with other evaluated vendors. Areas of focus are enabling ML automation and including a "learning engine."

**Challenger**

- › **SAS Data Loader for Hadoop knows its job and performs it well.** SAS's brand speaks for itself as a leader in advanced analytics, so SAS's uptick in focus on self-service data preparation is no surprise — both with the traditional SAS platform and via its cloud-ready SAS Viya in-memory grid. The solution never aimed for the breadth of offering of other evaluated vendors; since 2014, SAS Data Loader for Hadoop has been ably filling a key niche role in helping users, especially data scientists, shorten their data-to-insights cycle and require less IT involvement when using relational data sources or SAS data sets. Later in 2018 and through 2019, SAS Data Loader for Hadoop will merge into the SAS Viya environment's broader SAS Data Preparation solution, which launched earlier this year.

Customers commented on the value of SAS's solution, including the enablement of newly hired data engineers to contribute immediately, even if they don't have a strong SAS background.

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## Supplemental Material

### Online Resource

The online version of Figure 2 is an Excel-based vendor comparison tool that provides detailed product evaluations and customizable rankings. Click the link at the beginning of this report on Forrester.com to download the tool.

### Data Sources Used In This Forrester Wave

Forrester used a combination of three data sources to assess the strengths and weaknesses of each solution. We evaluated the vendors participating in this Forrester Wave, in part, using materials that they provided to us by October 17, 2018.

- › **Vendor surveys.** Forrester surveyed vendors on their capabilities as they relate to the evaluation criteria.

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- › **Product demos.** We asked vendors to conduct demonstrations of their products' functionality. We used findings from these product demos to validate details of each vendor's product capabilities.
- › **Customer reference surveys.** To validate product and vendor qualifications, Forrester also conducted reference calls with at least two of each vendor's current customers.

**The Forrester Wave Methodology**

We conduct primary research to develop a list of vendors that meet our criteria for evaluation in this market. From that initial pool of vendors, we narrow our final list. We choose these vendors based on 1) product fit, 2) customer success, and 3) Forrester client demand. We eliminate vendors that have limited customer references and products that don't fit the scope of our evaluation. Vendors marked as incomplete participants met our defined inclusion criteria but declined to participate or contributed only partially to the evaluation.

After examining past research, user need assessments, and vendor and expert interviews, we develop the initial evaluation criteria. To evaluate the vendors and their products against our set of criteria, we gather details of product qualifications through a combination of lab evaluations, questionnaires, demos, and/or discussions with client references. We send evaluations to the vendors for their review, and we adjust the evaluations to provide the most accurate view of vendor offerings and strategies.

We set default weightings to reflect our analysis of the needs of large user companies — and/or other scenarios as outlined in the Forrester Wave evaluation — and then score the vendors based on a clearly defined scale. We intend these default weightings to serve only as a starting point and encourage readers to adapt the weightings to fit their individual needs through the Excel-based tool. The final scores generate the graphical depiction of the market based on current offering, strategy, and market presence. Forrester intends to update vendor evaluations regularly as product capabilities and vendor strategies evolve. Vendors marked as incomplete participants met our defined inclusion criteria but declined to participate in or contributed only partially to the evaluation. For more information on the methodology that every Forrester Wave follows, please visit [The Forrester Wave™ Methodology Guide](#) on our website.

**Integrity Policy**

We conduct all our research, including Forrester Wave evaluations, in accordance with the [Integrity Policy](#) posted on our website.

**Survey Methodology**

The Forrester Analytics Global Business Technographics® Data And Analytics Survey, 2018, was fielded between February and March 2018. This online survey included 2,879 respondents in Australia, Canada, China, France, Germany, India, the UK, and the US from companies with 100 or more employees.

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Forrester Analytics Business Technographics ensures that the final survey population contains only those with significant involvement in the planning, funding, and purchasing of business and technology products and services. Research Now fielded this survey on behalf of Forrester. Survey respondent incentives include points redeemable for gift certificates.

Please note that the brand questions included in this survey should not be used to measure market share. The purpose of Forrester Analytics Business Technographics brand questions is to show usage of a brand by a specific target audience at one point in time.

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Forrester Analytics Global Business Technographics Data And Analytics Survey of 2,879 respondents in Australia, Canada, China, France, Germany, India, the UK, and the US from companies with 100 or more employees includes many additional questions and parameters by which you can analyze the data contained in this report.

We can provide additional insights about the consumers highlighted in this report:

- › Who they are (e.g., demographics, lifestyle, and interests).
- › What they do (e.g., digital, mobile, social behaviors).
- › Affiliations they have (e.g., brands used, products owned).
- › How they feel (e.g., attitudes, interests).

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## Endnotes

<sup>1</sup> See the Forrester report "[The Forrester Wave™: Machine Learning Data Catalogs, Q2 2018.](#)"

<sup>2</sup> Source: Forrester Analytics Global Business Technographics Data And Analytics Survey, 2018 and 2017.

<sup>3</sup> See the Forrester report "[Four Essential Steps To Transform To An Insights-Driven Business.](#)"

<sup>4</sup> Base: Global data and analytics decision makers whose firms are adopting systems of insight. Source: Forrester Analytics Global Business Technographics Data And Analytics Survey, 2018.

<sup>5</sup> Source: Forrester Analytics Global Business Technographics Data And Analytics Survey, 2018 and 2017.

<sup>6</sup> SaaS: software-as-a-service.

<sup>7</sup> GDPR: General Data Protection Regulation.

<sup>8</sup> "Intelligent Data Harmonization" and "Interactive Storyboards" are registered trademarks of ClearStory Data.

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