BARC

BARC Score

Enterprise BI & Analytics Platforms

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Abstract

This is the tenth edition of the BARC Score Enterprise Business Intelligence & Analytics Platforms vendor evaluation and ranking. This research compares enterprise BI & analytics platforms that fulfill a broad set of BI & analytics needs. The aim is to evaluate software that is not confined to a specific usage scenario or user type but allows a large number of different users to gain insights from data by using a variety of analysis methods and presentation formats.

Based on countless data points from various BARC surveys and numerous analyst interactions, vendors are rated on a variety of criteria, from portfolio capabilities and architecture to sales and marketing strategy, financial performance and customer feedback.

Table of contents

Overview

The market for enterprise business intelligence (BI) and analytics platforms is continuously evolving at pace. Most recently, Generative AI (GenAI) has had a major impact on the market as it has huge potential to make life easier for many software users. Therefore, literally every BI & analytics vendor has been researching how this fast-evolving trend can improve their software and setting up their own GenAI strategies.

Most of those BI & analytics vendors who take market trends seriously already offered natural language query processing (NLQ) capabilities aiming to help information consumers search for insights and to lower the barrier to analytics adoption. Therefore, for most vendors, NLQ was the first logical step to tap into GenAI development. Many improved their NLQ features by using pre-trained large language models (LLMs) to generate more precise responses for users. Most prominent is the family of ChatGPT LLMs used by many vendors already. However, the industry soon discovered that the more a LLM is trained with relevant data and given needed context (Retrieval Augmented Generation or RAG), the more it can generate useful answers. Even though most vendors are still in research and development of their LLM-based chatbots and GenAI features, many are starting to pursue an open strategy and letting customers decide which LLM they want to use. Some are even developing and training their own proprietary LLMs to save customers the effort of identifying the best LLM for their needs, helping them test this new technology quickly and gain quick benefits and insights without extensive research projects.

Alongside strategy and architecture, the most important topic to discuss in the context of GenAI is the people who use it. Currently, the most prominent use case is chatbots with NLQ functionality targeting business users. But other user types, such as power users and developers, will also benefit from further GenAI investment. The possibilities are wide-ranging and include searching for needed data, natural language explanations, automated insights, pointing users' attention to anomalies in data, and generating code to speed up development. This BARC Score analyzes the strengths and challenges of the leading vendors that offer significant value to customers wanting to implement an enterprise BI & analytics platform to support elevated needs across the entire organization rather than merely at team level.

A modern enterprise BI & analytics platform spans traditional and explorative BI & analytics requirements – both for standalone applications but also when embedded in operational applications. With the growing importance of data to support corporate decisions and boost the efficiency and effectiveness of operational processes, a modern enterprise BI & analytics platform is the indispensable backbone of any enterprise wanting to succeed in adapting to the digitalization of markets. Consequently, organizations need platforms that can fuel a growing number of data products, services and business models powered by data and analytics. They also need to be capable of serving a large number of users with different needs.

The increasing complexity of data analysis, growing data volumes and diversity of data have made data management and governance indispensable in the modern analytics landscape. The shift to the cloud has inevitably led to organizations storing valuable data in multiple clouds. Leading vendors have doubled down on their efforts to leverage that data by improving their live query, in-database analytics and multi-cloud capabilities to help companies provide access to all their data.

The technical backbone of an enterprise BI & analytics platform provides the capabilities to set up a governed and open semantic layer for all BI & analytics modules and third-party tools. It integrates the required data and offers additional functionality such as data lineage, impact analysis and data catalog features.

As content creation at large has shifted to business users, most vendors have started to provide more data preparation functionality and appropriate governance features that enable them to go beyond pure information consumption. A solid and innovative infrastructure as well as tightly integrated modules for different tasks are required as modern enterprise BI & analytics platforms must support a broad range of use cases.

Besides buying a modern enterprise BI & analytics platform, organizations should have a BI & analytics strategy that goes well beyond an architecture blueprint to include non-technical and emerging business-user-oriented requirements, alignment with corporate strategy, organizational models, outcome-based priority settings and a proper roadmap. The shift in data and analytics strategies towards data fabric and mesh, enhancing data culture and delivering self-service at enterprise scale is also reflected in the new features being added to leading platforms.

When it comes to kicking off or expanding a business intelligence and analytics program, the initial focus almost always lies on the required toolsets. While this may not always be the best starting point, a platform decision must be made at some stage. This document will help you when selecting software by providing evaluation results on the BI & analytics portfolios from all the leading vendors.

Inclusion criteria

There are two categories of inclusion criteria for this BARC Score: The first is associated with a vendor's products and the other is linked to the financial results relating to those products. To be evaluated in this BARC Score, a vendor must have a strong focus on providing BI & analytics functionality and supply four out of five technologies from the following functional portfolio:

- Formatted reports
- Dashboards
- Analysis and ad hoc query
- Advanced and predictive analytics
- Self-service BI & analytics

In addition, the vendor must generate a minimum of €15 million in license revenue per year with the above product set, spread across at least two separate geographical regions. Furthermore, the product set must have a significant number of implementations and license revenues across different geographical regions to be considered as global.

We consider the following as individual geographical regions:

- Europe, Middle East and Africa
- North America
- Latin America
- Asia-Pacific

Evaluation criteria

Every vendor is evaluated on two dimensions, 'Portfolio capabilities' and 'Market execution', each of which represents an axis on the BARC Score chart and considers the sub-criteria described below.

Portfolio capabilities

In this BARC Score, vendors' portfolio capabilities were scored in several areas:

- Standardized content
- Data
- Infrastructure
- Analyses (including advanced analytics)
- Portfolio
- User support

The weightings for each of the categories and sub-categories are shown in Table 1. Each of the sub-categories also have detailed weightings and criteria.

Please note: Only vendor-distinct functionality is included in our vendor portfolio ratings. We do not consider OEM products or partner solutions.

Table 1: Portfolio capabilities - criteria and weighting

Category	Criteria	Criteria weighting	Category weighting
Standardized content	Dashboards and analytical applications	High	High
	Formatted reports (print-oriented)	High	
	Content distribution	Medium	
	Data stories	Low	
	Embedded BI & analytics	Low	
	Mobile BI & analytics	Low	
Data	Relational semantic model	High	Medium
	Connectivity	Medium	
	Data storage	Medium	
	Dimensional semantic model	Low	
	Data preparation	Low	
Infrastructure	System architecture	High	Medium
	Performance	High	
	Openness	High	
	Deployment	Low	
Analyses	Analyses and ad hoc query	High	Low
	Visual exploration (visual analysis)	Medium	
	Automated insights (ML)	Low	
	Natural language query (NLQ)	Low	
	Advanced analytics	Low	
Portfolio	Integration	High	Low
	Development	Medium	
	Maturity	Low	
User support	Ease of use	High	Low
	User guidance	Medium	
	GenAI	Low	

Standardized content

A modern BI & analytics platform must be able to serve users of all types with relevant and personalized information. Consumers consistently demand a range of content distribution formats served over a vast number of different channels to satisfy their diverse needs. Therefore, we assessed capabilities and support for the creation of various content formats and the information delivery capabilities of each platform.

- **Dashboards** (analytical applications): Dashboards provide a graphical overview of key performance indicators combined with the ability to intuitively drill down to details for consumption on all devices. Therefore, responsive design for all display types is vital. Modern BI & analytics platforms allow companies to build sophisticated guided apps to attract users of all skill levels in all business areas. Moreover, these apps can contain actions to execute tasks in operational systems.
- **Formatted reports**: Mostly page-oriented reports with a standardized format. They are run on regular schedules, triggered by alerts or on demand by user requests. Formatted reports include static (exported) as well as dynamic reports with filters and a predefined, reader-oriented layout. Precise control over layout components such as pixel-perfect placement and numerous printing options (e.g., page optimizations, hiding components for printing).
- **Content distribution**: Content created in all application types must be readily available to feed all communication channels. Distribution must include bursting static and page-oriented PDF reports as well as exports to various formats, such as Excel files, often delivered via email. Triggers for data-driven alerts, scheduling and bursting are required to reach a broad number of users. Also, integration with collaboration tools such as Microsoft Teams and Slack has grown in importance for customers and vendors alike.
- **Data stories**: These combine findings and visuals from analyses and reports into a compelling narrative presented in an interactive manner. Data stories help foster change grounded on evidence collected as they connect isolated findings with each other and provide valuable context for decision-making. Natural language generation, increasingly based on LLM, offers multiple capabilities to speed up their creation: it can help by describing patterns in data, explaining results and creating summaries.
- **Embedded BI & analytics**: Embedding BI & analytics in operational applications is steadily growing in popularity. From dashboards to prediction and optimization models, users get insights directly in their specific operational processes and can act on the findings – closing the classic management loop from information to action at operational level.
- **Mobile BI & analytics**: Prepare content from all application types such as reports, dashboards and data stories for mobile use without rebuilding or duplicating definitions. Responsive design with preview for mobile devices is required. Mobile consumption requires additional capabilities such as offline consumption, content push, extended security options and access to NLQ. Serving automated insights in a mobile-optimized way greatly enhances possibilities to analyze data on mobile devices.

Data

Modern BI & analytics platforms require sophisticated and integrated data handling capabilities ranging from connectivity to preparing data for use in analytics to storage and modeling.

- **Relational semantic model**: A shared and trusted description of master data and measures is key to governed data sources. It allows users to retrieve data from all sources quickly for analysis and report creation. The creation and support of relational semantic models is assessed in this category. Recently, providing live access to data residing in multiple clouds has become an important area for improvement. As most data sources used in BI & analytics are relational, we attribute high importance to this criterion.
- **Connectivity**: Tools must effortlessly connect to all types of data sources such as a data warehouse, a cloud data lake, business applications and unstructured data. Predefined connectors help to leverage data from the growing number of business applications in use. Good performance, traceability and monitoring help users to ingest data from everywhere.
- **Data storage**: An integrated and performance-optimized data store helps to improve query performance (cached data). Many vendors leverage in-memory data sets or build on open-source technology such as Apache Parquet to support this. Direct access to multiple data sources either on-premises or in one or multiple cloud environments should be available too. This increases the scope of possible use cases and helps leverage existing data governance measures.
- **Dimensional semantic model**: Dimensional models are easy to understand and use, allowing users of all skill levels to dig into data. They offer a huge advantage by organizing data in dimensions. Dimensional models can be implemented as an abstraction layer on top of a relational data source (ROLAP), as a distinct multidimensional, often in-memory, storage (MOLAP) or as a hybrid (HOLAP). As enterprises typically have requirements that benefit from both relational and dimensional types of models, a modern BI & analytics platform should be able to query both.
- **Data preparation**: Allowing business users to shape, enrich and publish data for all analytical purposes must be supported to increase the flexibility and reach of a platform. Combining data from different sources is as important as combining cached and live data. Good data profiling speeds up data preparation significantly and helps to enhance data quality.

Infrastructure

A modern enterprise BI & analytics platform must serve numerous usage scenarios and expanding user numbers as well as growing data sources and volumes. In terms of infrastructure, we evaluate a broad range of technical criteria including architecture and openness as well as other technical features such as performance optimization techniques and security settings.

- **System architecture**: A sophisticated system architecture allows for efficient scaling if the data volume or the number of users increases without compromising performance or requiring huge hardware investments. Moreover, modern software is based on micro services and containers, making platforms easier to scale up with demand and simplifying maintenance and operation.
- **Performance**: The time it takes to retrieve data and content after a user interaction (e.g., a query). Despite growing data volumes, users increasingly expect instant results from all

operations. Even in mature markets, the differences between the tools available are huge. Performance plays an important role in user satisfaction, acceptance and perceived usability, and ultimately in the value created from data. We access performance using the *Performance Satisfaction* KPI from The BI & Analytics Survey as well as taking into consideration vendors' functions to accelerate performance if needed (caching mechanisms and so on).

- **Openness**: The average number of BI & analytics tools in use is growing in most companies. With that comes the need to integrate these tools. The APIs available to support interaction with third-party products play an important role in opening platforms and reaching more users. Providing access to the semantic layer and data from the internal storage (cached data) is key for many companies when connecting multiple tools.
- **Deployment**: Customers expect a range of deployment options to support their individual needs driven by where data is generated and consumed as well as by data governance requirements. Typical deployment options for BI & analytics platforms are hosted cloud environments (SaaS) in the vendor's cloud or with other popular PaaS providers (e.g., AWS, Azure, GCP). Public, shared, often multi-tenant deployments as well as private cloud deployments are offered by many vendors. On-premises deployments are still requested by many companies, often as part of hybrid scenarios, which are becoming increasingly popular.

Analyses

The evergrowing number of data sources to consider and the variety of analytics questions to answer based on them raises the demand for methods to analyze data in-depth and quickly. Business users need a powerful toolkit of methods to analyze data as distinct questions and data structures require tailored approaches to reveal its hidden secrets with little effort.

- **Analyses and ad hoc query**: Analyses allow business users to intuitively dig deep into the available data. OLAP provides dimensions and measures to structure data in a multidimensional format geared at business users. While not discussed much these days, dimensional analyses are still widely used and extremely valuable to many. Ad hoc analyses can also leverage relational semantic models to quickly produce simple reports (often limited to a single query). Augmenting the experience of users when analyzing data through automated insights, NLG and NLQ are rated in other criteria.
- **Visual exploration (visual analysis)**: Visual exploration allows users to quickly scan significant amounts of data for patterns, outliers and clusters, or even to quickly understand what is in a data set in an engaging way. Interactive graphical representations facilitate gleaning insights by making use of the human ability to detect patterns. Visual analyses benefit from tight integration with data preparation and can deliver insights into data sets that do not fit the constraints of dimensional analyses.
- **Automated insights (ML-based)**: Automated insights speed up time to insight by making use of machine learning to highlight the most important insights in data, guiding users through possible analysis steps and giving answers beyond questions asked explicitly. Patterns and outliers are detected in the background and are presented to users in a meaningful way. Natural language generation describes patterns of interest in data to help users understand the visualizations they are presented with and interesting findings and trends that lie beneath the surface.
- **Natural language queries (NLQ)**: The interaction between humans and the BI application via natural language queries makes data analytics more accessible for casual users, speeds up time

to insight and reduces time spent on repetitive tasks. Natural language is especially used to ask questions around data, create metrics and even visualizations. NLQ is also used to derive information from metadata and business knowledge. LLM-based technology makes it possible to have conversations with data and the BI engine to iterate on results. Leading vendors in this area stand out by offering high quality results, speech input and output capabilities, support for multiple languages and proper synonym handling.

- **Advanced analytics**: Enables users to analyze large amounts of data quickly and creates valuable predictions that can inform decisions on all levels – often powered by machine learning. Modern platforms must provide the facilities to integrate analytical models created in popular languages (e.g., Python, R) in the presentation as well as in the data loading stage. Jupyter Notebook integration allows users to leverage modeled and enriched data for advanced analytics and integrate the resulting visualizations into interactive dashboards. Recently, investments in GenAI have made it possible to apply advanced techniques to the analysis of unstructured data (e.g., for sentiment analysis).

Portfolio

The perspective of power users and casual users is important when rating BI & analytics platforms. Therefore, we analyze the integration between the system components comprising the platform as well as the consistency of user interfaces and the experience across all modules. The product's lifecycle and maturity are also assessed as this offers insight into quality and stability. Sometimes, vendors offer mature products that are no longer being enhanced with innovative, new features. Consequently, they may fail to fulfill new and emerging requirements.

- **Integration**: A state-of-the-art business intelligence and analytics platform must have consistent user interfaces for publishing, consuming and interacting with data and reports. Consistency should not only apply to user interfaces but also to objects used to present and interact with data (e.g., tables and graphs) at report level and to data access (e.g., common semantic layer, joint data access standards and security, reusable objects).
- **Development**: The development criterion evaluates whether the tool is undergoing strategic development and whether the vendor is investing in the ongoing enhancement of the platform. It evaluates the introduction of new features within the past 12 months, highlighting the tool's adaptability and commitment to evolving market requirements and technological advances.
- **Maturity**: Maturity describes how long a tool has been on the market with a continuous development record or if significant changes to the front end or underlying architecture have been introduced recently. Mature products are typically more stable and offer a comprehensive set of functions under the hood that are important to facilitate daily use but are often not obvious at first glance.

User support

We assessed overarching criteria related to the end-user experience, such as ease of use, guidance capabilities and the availability of a conversational UI to help content consumers to gain insights.

- **Usability (ease of use):** Unified interfaces with a clear and modern design are required to attract business users. Good integration between all components and reliable performance are vital for

productivity in content creation – from reports to dashboards and beyond. In business-user-oriented modules, coding must be optional and guided navigation should be available rather than expecting users to locate and open wizards and menus. Personalization of interfaces helps to present users with what they really need and lets them focus on what matters most.

- **User guidance:** Increases usability by active support throughout analysis, content creation and consumption. Suggestions for suitable visualizations based on selected data help users to make sense of data quickly. ML is increasingly used in data preparation and modeling for suggesting data transformation steps or highlighting data quality issues. Automated insights also guide users through their analyses by highlighting possible outliers and showing interesting patterns.
- **Generative AI:** LLMs are tightly integrated into the architectures of modern BI applications at multiple points of user interaction. The hosting and choice of specific foundation models and the way these models are integrated into the software is important and determines enterprise readiness. The use of RAG significantly increases the quality (i.e., the accuracy and trustworthiness) of the output, while avoiding hallucinations. Leading vendors have invested in partnerships or building their own code to interact with LLMs, vector DBs and semantic layers to make the difference around retrieving the right data and generating high quality output.

Criteria weighting

We do not consider all categories and sub-categories to be equally important in this BARC Score. Weightings are based on BARC's own view of current user focus and buying patterns.

Market execution

On the market execution axis, we rate the business intelligence vendors in this BARC Score using the following criteria and their corresponding weighting (see Table 2).

Table 2: Market execution - criteria and weighting

Criteria	Weighting
BI & analytics platform offering	High
Market distribution of product	High
Product strategy	High
Customer satisfaction	High
Financials	Medium
Development	Medium
Geographical coverage	Medium
Ecosystem	Medium
Sales strategy	Medium
Organizational strength	Low
Marketing strategy	Low

BI & analytics platform offering

The vendor's strategy for helping companies to create a secure, governed, analytical decision-making system as the backbone to cover a broad scope of use cases and cater for a vast number of different users is rated. Additionally, the visibility of the vendor in the market for modern BI & analytics platforms and related uses is judged.

Market distribution of product

This criterion covers an estimation of BI & analytics revenues for each BI & analytics product evaluated in this BARC Score and aims to show the overall market distribution of a particular product. We weight this criterion more heavily than the company's financial performance (see 'Financials' below).

Product strategy

Vendors are rated on the clarity and completeness of vision for their BI & analytics offering, product roadmap and innovation, as well as the alignment of the company portfolio with current market trends and demands.

Customer satisfaction

In this year's BARC Score, we have included the *Customer Satisfaction* KPI from The BI & Analytics Survey. This considers product satisfaction, vendor support, implementer support, recommendation and price to value ratings reported by customers.

Financials

This criterion covers the financial position of the vendor, from market capitalization, cash position and EBITDA to profitability, burn rate and investment rounds. For vendors that are private companies or do not break out the numbers for individual product lines, estimated figures are used. This category includes a scaled overall assessment of the vendor's financial performance.

Development

We examine the development record of the tool and whether it is still strategic in a vendor's portfolio for the market segment in question. The roadmap for development must show a clear vision and feasible path and significant new features must have been implemented in the course of a continued development effort by the vendor.

Geographical coverage

Vendors are evaluated on their global presence. We look at the various regions and major countries in which the company conducts business with both a sales and marketing presence as well as development and support functions.

Ecosystem

In this category, we evaluate the extended ecosystem in which the vendor participates. This includes business partner networks, hardware or cloud infrastructure providers, consulting firms and systems integrators, and other technology alliances. We also evaluate whether each vendor has a dedicated team looking after and recruiting partners.

Sales strategy

To rate a vendor's sales strategy, we look at the various channels through which the company goes to market: with both direct and indirect sales teams, through distributors, value-added resellers (VARs), online channels as well as OEM relationships. We also evaluate the vendor's product pricing and its various sales models, such as perpetual licensing, support subscription, open source and freemium.

Organizational strength

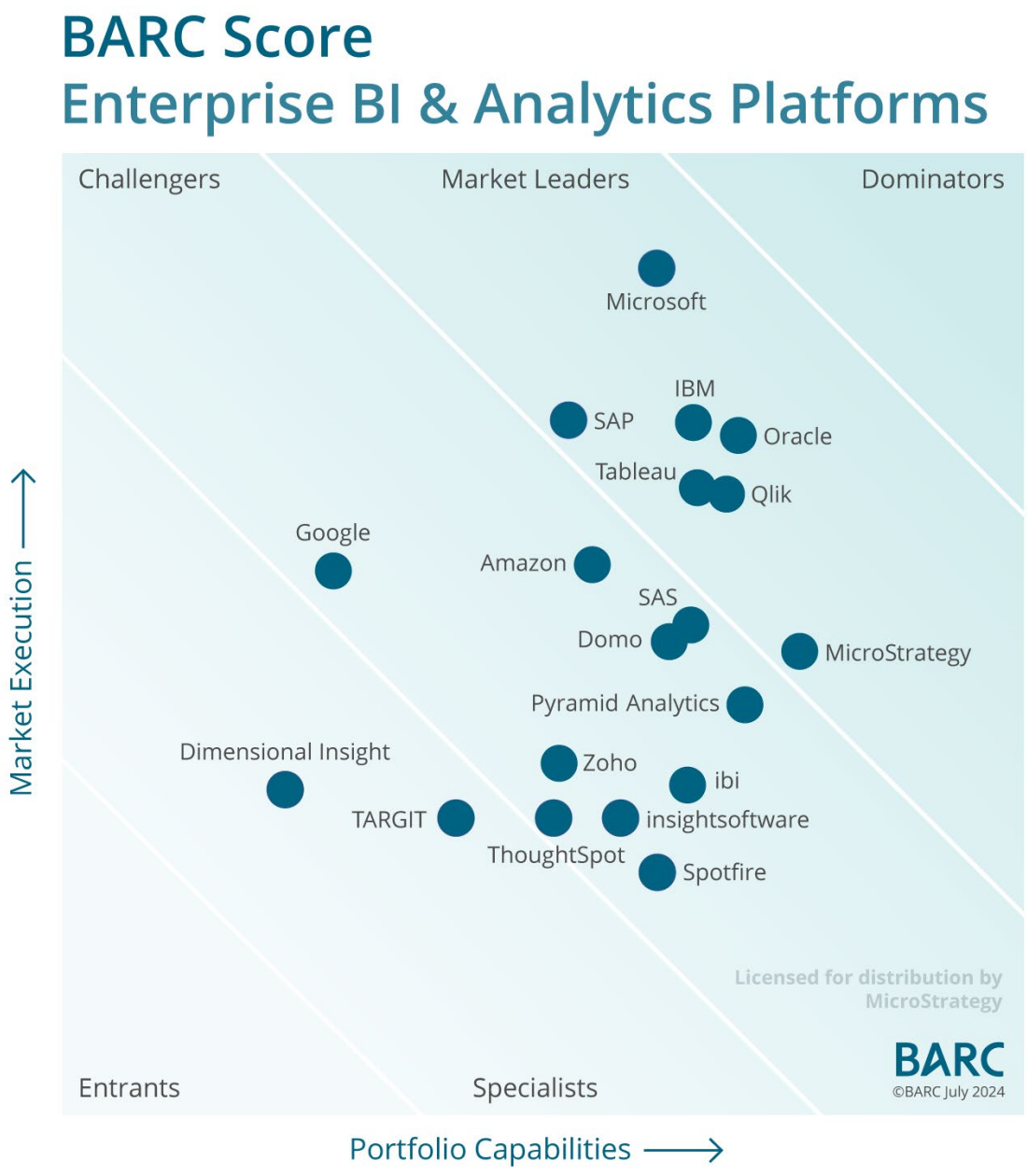
Vendors are rated on their organizational stability, which is influenced by consistency of corporate strategy, continuity of executive leadership, but also staff turnover, reorganization and layoffs.

Marketing strategy

A vendor's marketing strategy is evaluated by rating its corporate and product messaging, the company's presence in printed media, advertising and social networks, as well as its ability to run events, such as conferences, seminars, roadshows and webinars.

Score

Calculating the individual ratings for all criteria and all vendors produces two scores per company: the 'Portfolio capabilities' score and the 'Market execution' score, each being plotted on the corresponding axis, resulting in the vendor's dot on the following BARC Score chart.



Disclaimer: BARC Score is published by BARC GmbH (BARC). This chart is part of a larger research document, which contains explanations of the methodology and criteria behind the chart, and should be viewed in the context of the full document. BARC does not endorse any of the vendors featured in its research documents, and does not advise readers to select only those vendors with the highest ratings. Vendors appearing in the bottom left corner of this chart are market entrants or specialists and should not be interpreted as inferior. Those vendors in the top right area are not necessarily superior, but have strong portfolio capabilities and market execution.

Score regions

Vendors can be positioned in one of five regions, depending on their total score on each of the two axes.

Dominators

Dominators are vendors that drive both technology and market adoption in a highly influential manner. They possess both a broad portfolio of market-leading and dominating products with a strong brand as well as a robust commercial prowess through best-in-class sales and marketing programs, an extensive ecosystem of business partners and alliances, and a rock-solid financial position. Dominators are considered a contender in virtually every planned implementation.

Market Leaders

Market leaders are well established vendors that drive strong market adoption, supported by technology innovation and strategic acquisitions and by leveraging robust account management and a solid track record. Their portfolio enjoys high brand awareness in the market and covers an extensive range of technologies and services with only few gaps. Market leaders typically have a large market share, making them a viable contender in almost all implementation scenarios.

Challengers

Challengers come in various shapes and sizes. They can be large vendors tapping into a new market by acquisition and pushing their way in with force, small innovative companies with a promising portfolio but limited sales and marketing resources, or vendors that attempt to disrupt a market with a new technology approach or different business model.

Specialists

Specialists are often smaller vendors with a portfolio focused on a specific market segment. They can be either limited in their technical capabilities by concentrating on certain features and functions, or they may only focus on selected geographical regions rather than the global marketplace.

Entrants

Entrants are usually startups with limited reach and visibility in the market. Their product capabilities are incomplete when compared to competitors, and their long-term market potential is still unproven.

Evaluated vendors and products

In this BARC Score, we have evaluated the latest versions of the following products (see Table 3).

Table 3: Evaluated vendors and products

Vendor	Product(s)
Amazon Web Services (AWS)	Amazon QuickSight AWS Glue DataBrew Analytics-related services such as SageMaker
Dimensional Insight	Diver Platform
Domo	Domo Data Experience Platform
Google Cloud Platform (Google)	Looker Looker Studio Analytics-related services such as Vertex AI
ibi	WebFOCUS
IBM	IBM Cognos Analytics IBM Cloud Pak for Data IBM Watson Studio IBM watsonx
insightsoftware	Logi Symphony
Microsoft	Power BI Power BI Paginated Reports Analytics-related services such as Data Fabric
MicroStrategy	MicroStrategy ONE
Oracle	Oracle Analytics Cloud Oracle Analytics Server OCI Data Science

Vendor	Product(s)
Pyramid Analytics	Pyramid
Qlik	Qlik Cloud® (esp. Qlik Sense®)
SAP	SAP Analytics Cloud
SAS	SAS Viya and its analytics-related modules, especially SAS Visual Analytics
Spotfire	Spotfire
Tableau	Tableau Cloud
TARGIT	TARGIT Decision Suite
ThoughtSpot	ThoughtSpot
Zoho	Zoho Analytics

Vendor evaluations

In the following section, we discuss each vendor in the BARC Score and highlight their strengths and weaknesses based on customer surveys and market research by the authors.

Each vendor description includes vendor-related information, products covered in the BARC Score and strengths and challenges.

Amazon Web Services (AWS)

Seattle, WA, USA

www.aws.amazon.com

Amazon Web Services (AWS) is a subsidiary of Amazon, best known for its e-commerce platform. It is a provider of cloud infrastructure and services, offering hundreds of services for data & analytics aimed at meeting diverse needs and enabling customers to charge their business with data. These services range from databases, data integration, data storage, data lakes, big data analytics, log analytics, streaming analytics and BI to machine learning (ML) and artificial intelligence (AI).

The most important BI, analytics and ML services on AWS are Amazon QuickSight and SageMaker (for business analysts, SageMaker is primarily used for creating, training and deploying ML models).

Launched in 2016, Amazon QuickSight is a fully managed SaaS platform hosted in the AWS cloud and targeted at customers who want to empower every member of their organization with insights. QuickSight's BI capabilities span from dashboards, ad hoc query and reporting to analysis features. All content is created using the web-based authoring interface and can be consumed on a web browser via the Amazon QuickSight portal, as an embedded dashboard in a third-party app, in email reports or on a mobile app. Its dashboard and authoring interfaces can be embedded in external apps as well. Moreover, QuickSight content can be created programmatically using APIs.

Besides interactive dashboards, QuickSight supports highly formatted, regularly scheduled paginated reports. Alerts can be used to prompt users to take immediate actions and make decisions based on insights generated by forecasting and anomaly detection ML algorithms. Ad hoc users can use a point-and-click interface to analyze data or Amazon Q to ask questions in natural language (NLQ) and retrieve information. Amazon Q in QuickSight (which replaced QuickSight Q) is AWS's future generative BI assistant, helping users not only with data analysis, but also with the creation of content by providing natural language summaries (NLG), creating calculations, fine-tuning visuals and creating entire dashboards and data stories using natural language.

Amazon QuickSight is a serverless BI service that leverages a cloud-native architecture to scale to hundreds of thousands of users without the need for infrastructure management and capacity planning. QuickSight offers a fixed price Reader role and usage-based pricing (capacity-based pricing for Reader sessions) so customers can choose the option that best fits their use case.

It supports different data sources through services in AWS as well as through native QuickSight connectivity. Besides storing data in its in-memory engine (SPICE), it also supports a direct query option to connect and visualize data from data sources in AWS, third-party clouds or on premises without replicating it.

Amazon SageMaker is a service targeted at companies that want to implement advanced machine learning and analytics using AWS. QuickSight can connect with ML models from Amazon SageMaker, analyze augmented data and use it in dashboards. Using Amazon SageMaker notebook with pre-installed kernels, customers can use Python and R natively.

Strengths

- Consumption-based pricing allows cost-effective use of BI & analytics and encourages greater BI & analytics usage
- Modern, serverless architecture eases the rollout to further users and offers room for implementation of additional usage scenarios such as embedding
- High number of data & analytics services on AWS that can also be used for different purposes such as storing IoT data, integration of further data sources or implementing advanced analytics scenarios
- ML-generated insights are aimed at helping analysts and developers from business departments uncover anomalies and trends in data. Moreover, Amazon Q offers AI-based support for building and configuring visuals or calculations to offer less trained users more self-service.
- End users are equipped with integrated natural language query capabilities, which facilitate data exploration without overwhelming them with complex data structures

Challenges

- Amazon QuickSight only runs on the vendor's own AWS cloud infrastructure. Deploying it on premises or on other popular clouds is not possible. However, customers can get insights from all their data, wherever it is stored.
- Although the breadth of the product has grown in recent years, QuickSight lacks certain code-free complex functions, for example, in the area of application and dashboard building to create a custom guided experience for end users
- Data preparation guidance in QuickSight could be improved to help business analysts with functions such as data profiling and recommendations for joins or transformation steps. However, for more advanced data preparation needs, other AWS services such as AWS Glue and AWS Glue DataBrew can be used.

Dimensional Insight

Burlington, MA, USA

www.dimins.com

Dimensional Insight is a privately held company based in Burlington, MA, which started in 1989. The software company aims to provide trusted analytics, KPIs and the industry expertise people need to make informed business decisions. The vendor targets and supports all markets, but has competencies in the healthcare, beverages, cannabis, utilities and manufacturing sectors in the United States, as well as higher education, government, logistics and transportation in international markets.

Dimensional Insight provides its customers with vertical expertise as well as predefined industry applications. These are aimed at giving customers a trusted view of their enterprise data and supporting them in finding answers to their business-critical questions.

Following this strategy, the vendor states that it provides customers with an Industry Analytics Solution rather than a standalone platform. The creation of the Industry Analytics (predefined content) takes place in Dimensional Insight's Diver Platform. The product includes ETL, data modeling, administration, dashboard development, analysis and reporting capabilities, as well as a columnar database technology for data storage. Recently, the list of file input types has been extended to include Excel, JSON, Datagen and PostgreSQL. Although its engine is proprietary and designed to ingest data, Dimensional Insight allows ODBC access to its data model.

The Diver platform consists of multiple web and installed clients to meet the needs of different user types. Developers use Workbench, an integrated development environment (IDE), to organize and transform raw data into data sources that can be used by business users for further analysis. They can also design how to present the data in dashboards, and in graphical and tabular displays. Moreover, the vendor's Measure Factory add-on enables developers to create business rules and KPIs that can be used by other clients. Information delivery to business users can be done using one of three clients: ProDiver, DivePort or DiveTab.

The first is an installed client designed for business analysts who are focused on 'information leaping' or 'diving'. Technically savvy dashboard creators use DivePort to create content for end users. The latter use the same DivePort client to access it. In comparison to other products on the market, DivePort is unlike the usual type of client that only displays predefined content. With Measure Factory, which also offers predefined content, end users can choose from predefined 'Stamps' (preconfigured visualizations) and assemble them on self-service pages. They can do this without any prior knowledge of how to build a chart, for instance. The third client, DiveTab, is a mobile app to display Diver content.

Although Diver Platform is built to support navigation and analysis of data, its visual exploration functionality is limited to predefined interactive dashboard applications. The product integrates predefined advanced analytics models in its applications and offers an R integration in the Workbench which, however, lacks ML-based guidance for less-trained business users.

Last year, the vendor introduced Diver Gateway, an executable client, which acts as a single point of access to all Diver platform clients. Dimensional Insight has also improved its schedule for online tutorials and has launched a YouTube channel for how-to videos.

Strengths

- Industry expertise and packaged solutions designed to facilitate and accelerate access to data and its analysis
- In delivering content, ETL, in-memory data storage and front ends, Dimensional Insight focuses on providing an end-to-end solution to its customers
- Strong industry orientation for targeted marketing and business understanding
- Measure Factory offers predefined, governed content for selected industries based on common business rules and logic, which can be customized
- End users are offered multiple predefined self-service capabilities, such as creation of visuals to monitor needed metrics using preconfigured chart objects called 'Stamps'. They can also create personal dashboards by assembling predefined content/measures.

Challenges

- Front ends for data integration and analysis require technical, well-trained users
- Limited visibility and brand awareness outside core markets
- Data exploration ('diving') targeted at business users is not as visual as competing products and offers limited guidance (e.g., recommendations for transformation, analysis steps and so on)

Domo

American Fork, UT, USA

www.domo.com

Founded in 2010 in American Fork, Utah, Domo launched its first BI product in 2012 as a cloud-native, full-stack BI platform. After 2015, Domo quickly earned attention in the market and went public in June 2018. The vendor currently has over 965 employees and serves more than 2,600 customers.

Domo's BI & analytics platform (Domo Data Experience Platform) aims to supply customers with modern, end-to-end capabilities such as data integration and management, BI & analytics, and intelligent apps. The product seeks to help IT and business experts deliver value to the business by complementing their existing systems and infrastructure. Domo's Federated Data was designed to connect and unify fragmented data silos and systems to help customers unlock value from data. One of Domo's primary goals is to get data into the hands of all employees by simplifying data acquisition, delivery and consumption.

Domo enables customers to connect to data by loading it to the internal data warehouse powered by its Adrenaline engine as well as in-place queries through a federated approach to publishing live data into applications. Cloud Amplifier allows organizations to leverage their data cloud platform investments through native integrations to popular cloud data warehouses such as Snowflake and Databricks. To accelerate time-to-market for new analytics applications, Domo offers over 1,200 prebuilt connectors. Business users can also integrate data via file uploads or connect to cloud and on-premises databases, applications and services.

Domo is designed for cloud deployment and mobile consumption from the ground up. All functionality can be accessed through a browser, besides transforming and loading on-premises data into the Domo cloud, which is achieved though Workbench, a Windows desktop tool. Mobile users can access Domo through its dedicated iOS and Android apps. Microsoft Office Add-ins allow users to connect directly to Domo within Word, Excel, PowerPoint and Outlook.

The vendor also offers a low-code and no-code app development environment (App Studio) for customers wanting to build custom apps and make them available on the web and mobile devices. The no-code approach is intended to help developers with faster and easier app creation to connect real-time data insights to business process workflows.

In the area of advanced analytics, the vendor offers multiple ways to leverage its R and Python integration. Developers can integrate Magic ETL Scripting Tiles into their dataflow pipeline to transform and preprocess data. Moreover, Jupyter Workspaces is an integrated notebook environment which provides business analysts with further possibilities to analyze data. It allows data scientists to access governed data in Domo and helps developers deploy created data models into apps and other content.

Domo has recently invested in – and continues to improve – its GenAI capabilities, which are aimed at helping business users uncover hidden insights in data and making developers' work easier. The vendor currently offers text summarization and text generation AI services that can be accessed from Domo apps, views, workflows, beast mode and tested using an AI Services Playground. Domo plans to integrate them more tightly into the platform in future releases. Domo has also developed AI Chat (currently in beta), which enables users to have conversational interactions with data (e.g., generating reports and insights, converting text to SQL and recommending next best actions). The NLQ capabilities include the ability to create and manage proprietary LLMs or import open source LLMs to meet the needs of the business. Domo's AI services can use models hosted in Open AI, Databricks, Hugging Face and Amazon Bedrock.

Strengths

- More than 1,200 standard connectors built and managed by Domo to various data sources speed up implementation
- Scalable internal data store and federated data access in a modern, cloud-based architecture power various analytics use cases
- Central data governance features are the foundation for successful, governed and enterprise-wide self-service
- Ability to create interactive apps that leverage the governance and security features of the platform, along with write-back capabilities and AI/ML to guide decision-making
- Sophisticated mobile and Microsoft Office delivery of content helps to spread analytics to all employees, not just executives

Challenges

- Limited capabilities for large-volume, print-oriented and bursted reports compared to leading vendors due to focus on dashboards and analytical apps
- As the platform is more focused on the creation of interactive applications and dashboards, it offers less on support for business analysts with visual exploration and ad hoc analysis functionality. However, this situation may improve as planned GenAI features emerge.
- Data modeling is geared at specialists and not as easy to use as competing products. It lacks proper guidance for business users to build their own models efficiently. However, data preparation has recently been improved and offers prebuilt content to facilitate access to new data sources for business users.

Google

Mountain View, CA, USA

https://cloud.google.com

Google is mostly known for its search engine and associated offerings. However, the company entered the BI & analytics market many years ago with the data management and analytics products in its Google Cloud Platform (GCP). To complement its self-developed solutions (released in 2016), the vendor acquired Looker in 2020, a software company founded in 2012 in Santa Cruz, CA.

Looker is Google's BI & analytics offering. Google's goal for Looker is to offer GCP customers a complete BI suite. In order to provide customers with the familiar usage and management capabilities of GCP and foster Looker's integration with other GCP services, Looker (Google Cloud Core) was released.

Looker is a web-based platform that provides a governed, standardized and trusted view of business data. It relies strongly on a central semantic layer created using LookML, its proprietary data description language (abstraction layer on top of SQL). Through its code-based nature, LookML models can easily leverage Git software development workflows and therefore can be easily deployed, maintained and version controlled. The semantic layer built with LookML does not store data but processes it on the fly, pushing down workload to the source where possible, for example, to modern (cloud) data warehouses. Looker supports over 60 unique SQL dialects and especially leverages Google BigQuery functionality such as BigQuery ML. With Looker Blocks, the vendor also provides prebuilt pieces of code which help to accelerate the development of LookML models. These are available in the Looker Marketplace for selected Google (e.g., Cloud AI and Google Workplace) and non-Google products. The vendor continues to integrate Looker with other GCP services such as Vertex AI, Google Workspace and Google Maps.

Business users connect to data using the LookML semantic layer, allowing them to do ad hoc analyses via a point-and-click web interface. Looker is particularly strong in embedded BI and connecting interactive visualizations into dashboards. Besides the Looker web front end, GCP also offers the Looker Studio client (formerly Google Data Studio), a cloud-based visualization product. Studio is available as a free and Pro version ($9/pupm) for customers requiring support and enterprise admin capabilities.

The vendor plans to take best features of both products and create an integrated Google Cloud BI offering. As one of the first integration steps, Looker Studio now accesses Looker's semantic layer, LookML. Besides that, business users can query over 900 data sources, perform self-service analyses and visualize insights using dashboards. This year, Google announced that dashboard creation in the Looker platform going forward will be based on the current Looker Studio capabilities in this area. Both clients will have a central content management system for all reports in the future.

The Google Cloud Platform offers diverse options and services for advanced analytics. Besides using incorporated functions and partner solutions in its BI & analytics products, users can leverage cloud services such as Vertex AI. In the area of GenAI, Google has announced it will be equipping Looker with Gemini capabilities to bring more intelligence into Looker and help business users to understand and access data more easily, as well as to create dashboards and reports. Gemini also aims to help developers build new semantic models by generating LookML, for example.

Strengths

- Access to a huge number of sources through a central and governed semantic model and Looker Studio to help customers query needed data
- LookML as a semantic layer, which not only emphasizes governance and increases trust in data but also supports modern development and deployment techniques through its Git integration
- Looker Studio is a self-service data visualization product with connectivity to many business applications, especially within the vendor's extensive portfolio of marketing-related applications targeted at business users
- Integration with the growing cloud-based data management and analytics portfolio of the Google Cloud Platform and partner network to implement a broad range of use cases
- Integration with many (mostly cloud-based) business applications to get insights faster and act on data using Looker Actions or embed the software in other applications

Challenges

- Limited breadth of the portfolio when it comes to certain BI & analytics use cases (e.g., limitations in formatted reporting and visual exploration)
- Data preparation and upload of data by business users is currently not supported in Looker's web-based environment and is limited in Looker Studio
- Integration between Looker web and Looker Studio is in progress and currently limited to shared data access

ibi (a business unit of the Cloud Software Group)

Fort Lauderdale, FL, USA

www.ibi.com

Information Builders (ibi) was founded back in 1975 and acquired by TIBCO in 2020. Today, the vendor is a business unit of the Cloud Software Group, Inc (CSG). CSG was established in 2022 to facilitate the merger of Citrix and TIBCO. As part of this process, ibi became an independent business unit and therefore continues its business without TIBCO, which also an independent unit.

ibi has always been dedicated to providing solid software for BI and data management. Its flagship BI & analytics offering, WebFOCUS, was introduced in 1997 as the first web-based BI suite on the market. With its product portfolio consisting of data integration, data quality and BI front-end products, ibi aims to help organizations thrive through the pervasive use of trusted, governed data and analytics at scale.

The WebFOCUS data and analytics platform is ibi's flagship web-based BI front end for formatted reporting, ad hoc reporting, dashboards and analysis, and a custom application development environment. With WebFOCUS, BI applications can be centrally administered and published to a large group of internal and external recipients.

Most ibi customers typically query and process data live using ibi's numerous connectors. However, the platform does not provide any self-developed data storage components to speed up processing in scenarios which demand it. To meet these requirements, ibi incorporates an in-memory technology as OEM.

This architecture was designed to support operational analytics, which has always been a key strength of WebFOCUS. The solution delivers insights from data coming directly out of production systems. These capabilities have been extended across enterprises to enable analysis across systems that are engaged, including today's cloud-based infrastructures.

In the past few years, the vendor has focused on developing interfaces that are easier to use and configure for business decision-makers, and has modernized the user interfaces of the overall platform. One of the solution's main clients for business users is WebFOCUS Designer. This tool can be used for data preparation and to build interactive web applications for non-technical consumers, for instance, to be used in operational BI scenarios.

ibi has also incorporated modern features such as natural language query (NLQ) and predefined advanced analytics models to support users in data exploration.

Strengths

- Very flexible front end for highly formatted reports, infographics, dashboards and (ad hoc) analyses
- Capabilities for developing predefined interactive BI & analytics applications for business users (e.g., to be used in operational, tactical and strategic scenarios)
- Scalable platform proven in demanding scenarios for large user groups
- Support for a wide range of data sources and creation of a governed metadata layer
- NLQ and NLG capabilities aim to support business users in data exploration and interpretation

Challenges

- ibi has to improve its overall brand perception as well as awareness for its modernized data and analytics platform. Many customers and prospects are not aware of recent developments, both on the business and product fronts.
- Support for data preparation and visual exploration for business analysts is limited compared to competitors, for instance, in the area of AI-based guidance (recommendations for transformation, analysis steps and so on)
- Compared to other vendors on the market, the expertise in WebFOCUS available from partners, job seekers and web sources (e.g., user communities) is rather limited

IBM

Armonk, NY, USA

www.ibm.com

IBM® is one of the world's largest vendors of IT hardware, software and services. The company has a global workforce of approximately 282,000 employees and is active across the globe. In 2007, IBM purchased the BI vendor Cognos and made their software the center of its BI & analytics product offerings.

IBM offers a broad portfolio of analytics, performance management and advanced analytics solutions to support its customers with their businesses and increase productivity. Major offerings considered in this BARC Score include IBM Cognos Analytics , IBM watsonx and IBM Cloud Pak for Data. IBM supports a wide range of deployment requirements by offering both cloud and on-premises options as well as the option of a client-preferred IaaS provider or IBM Cloud data centers (single or multi-tenant).

Cognos Analytics is IBM's BI & analytics platform which concentrates its functional strengths in enterprise reporting, self-service dashboards and AI-assisted analytics categories. It combines ease of use with elaborate governance features in an end-to-end platform. The product can be used in large-scale scenarios supporting the needs of many concurrent users as well as large data volumes.

An important go-to-market message for IBM is that Cognos Analytics provides AI-powered insights faster and for every user. The vendor has incorporated NLQ, automated insights and intent-driven modeling and has invested in automation and ML capabilities across data modeling, dashboards, data exploration ('Exploration') and an analytics chat assistant. The Cognos Analytics assistant allows users to explore data by asking natural language questions and by receiving insightful answers with a presentation-ready dashboard or report. Cognos' built-in ML capabilities can also identify trends and forecast results, helping companies to identify relevant influencers and correlations and calculate quick predictions.

IBM has also extended the advanced and predictive analytics capabilities of Cognos Analytics to bring business analyst and data scientist workloads together. For instance, Jupyter Notebooks has been incorporated in the user interface to provide greater flexibility in data preparation, statistical analysis and ML. The product also connects with IBM watsonx, the vendor's advanced analytics platform targeted at data scientists and developers. Besides its widely known visual modeling capabilities, watsonx includes coding modules based on Jupyter Notebooks for development in R and Python, AutoML and embedded decision management. Watsonx also offers IBM's proprietary Granite and third-party LLMs, along with Prompt Lab and Tuning Studio components. Cognos Analytics can also be deployed as part of IBM Cloud Pak for Data to enable many types of analytics use cases.

Customers seeking a solution to help business users access their analytics content in one place may find it in IBM Analytics Content Hub. This product is an OEM used by IBM to provide a central point of access not only to IBM's products, such as IBM Cognos Analytics and IBM Planning Analytics, but also for third-party providers.

Strengths

- Cognos Analytics is a well-integrated end-to-end platform for governed analytics for business users that spans data preparation and modeling to analysis, reports and dashboards
- Cognos Analytics supports report creation by business users on the web which can then be polished by professionals and distributed to a large audience
- Automated insights in 'Explorations' help to find relationships in large data sets, discover relevant drivers for a metric and create detailed forecasts
- Broad capabilities for advanced analytics and AI with product lines such as IBM watsonx and IBM Cloud Pak for Data
- Versatile use of the platform through more deployment options and improved openness (APIs)

Challenges

- 'Reports' requires better-trained users than 'Explorations' and 'Dashboards', limiting the possibilities for business analysts to create highly formatted print-oriented reports
- The 'Reports' and 'Dashboards' modules are not fully integrated, so there are several different visualization engines and objects such as 'Custom Controls'
- Natural language assistant does not use LLMs to offer more precise and broader support for business users as some competitive solutions do

insightsoftware

Raleigh, NC, USA

www.insightsoftware.com

insightsoftware is a US-based global provider of solutions for the office of the CFO backed by private equity investors Hg, TA Associates and Genstar Capital. The company employs more than 2,000 people in over 40 locations worldwide and serves 32,000 customers with more than 500,000 active users in 150 countries.

insightsoftware was formed in 2018 out of the merger of Hubble by insightsoftware.com and Global Software, Inc. The vendor's rapid growth in recent years has been driven by the acquisition of vendors such as Bizview, Calumo, Certent, Clausion, Cubeware, CXO Software, Dundas, IDL, Jet Global, Power ON, Legerity, Magnitude, Logi Analytics, Longview, Spreadsheet Server, Tidemark and Viareport. This strategy has resulted in a broad portfolio of more than 80 software solutions.

The product portfolio includes solutions for all the key processes of today's finance organizations: BI & analytics, financial reporting, operational reporting, ESG reporting, disclosure management, planning and budgeting, financial consolidation and close, tax, treasury and data management. These solutions can be used independently or in combination and are offered based on customer requirements and strategic direction (e.g., global or local orientation of an organization, company size, connectivity to source systems, etc.). The overall objective is to enable the office of the CFO to connect to and make sense of existing enterprise data to drive greater financial intelligence across the organization.

In the area of BI & analytics, the vendor offers various well established and niche products including Logi Analytics, Atlas, CXO, Power ON, Jet Reports and Angles. Logi Symphony unites the best features of Dundas and Logi Analytics into a single, cloud-ready platform.

The Logi Symphony platform is a modern and integrated full-stack BI & analytics platform with core strengths in data visualization, operational dashboards and embedded analytics. With its clean, modern and responsive graphical interface, Logi aims to improve time to value for users by offering self-service data discovery, highly customizable modern dashboards and pixel-perfect reporting.

Logi Symphony was conceived with an emphasis on ease of use. To shield business users from the complexity of the powerful low-code/no-code dashboard creation environment, customers can individually control the functions and features presented to them. Further presentation options include a dedicated scorecard editor and small multiples for producing a series of visualizations for comparison. These components all offer rich functionality for building individual applications with custom triggers and actions. Logi Symphony can be easily embedded and extensively customized as customers can leverage all functions via APIs and therefore support demanding embedding use cases. Logi Symphony also offers a client for creating pixel-perfect reports, which can be used for tailored embedding needs. It is therefore unsurprising that software vendors represent Logi Symphony's largest customer group, even ahead of regular customers that use Logi Symphony as their enterprise BI software. The vendor has recently invested in its generative AI capabilities, equipping the suite with a flexible AI engine that supports different Large Language Models (LLM) and Small Language Models (SLM), which enterprises can leverage to implement their modern BI requirements for internal and external use cases.

Logi's strengths lie in its query engine that uses patented micro-queries and data sharpening capabilities to enable business users to perform real-time analytics and visual discovery on modern data sources and data lakes. Logi Symphony can stream big data sources in real time with its optimized data sharpening engine or store data for performance optimization in the patented in-memory cube for in-app warehousing and data preparation.

Strengths

- Logi Symphony is a combined suite based on the former Dundas BI and Logi Analytics products with a rich set of APIs and support for the implementation of sophisticated embedding scenarios
- Self-service data discovery capabilities suitable for business users in both embedded and non-embedded context provide flexibility for content distribution and usage to end users
- Support for creation of embeddable pixel-perfect reports and their distribution to different users on regular schedules provides embedding customers with different content types to meet their users' needs
- Development environment allows the creation of custom analytical applications through a high level of control over the look, feel and interactivity of charts, offering a high degree of flexibility to consumers
- Through the combination of the Dundas and Logi suites, and harnessing their strengths in data connectivity with its query engine purpose-built for modern data sources, Logi Symphony now offers improved direct data connectivity and data ingestion to provide customers with greater flexibility to connect to needed data sources

Challenges

- A number of solutions in the portfolio currently have a rather regional market presence and customer base. Enterprise customers with global implementation requirements should evaluate similar references for the use of insightsoftware's individual products.
- Limited integration of AI and advanced analytics and ML-based guidance functions within developers' workflows, for instance, to speed up calculation or application creation
- Logi Symphony consists of two product lines, Logi Analytics and Dundas BI, which is evident in the different UIs for content creators. However, much effort has already been made to integrate the products.

Microsoft

Redmond, WA, USA

www.microsoft.com

Microsoft, the world's largest software company, was founded in 1975 and has become a household name primarily due to its Windows operating system and Office suite. With its offerings, Microsoft wants to contribute to a modern workspace for its customers, whether they are private individuals or large enterprises. The vendor has a broad enterprise offering, ranging from cloud (Azure) to database to its ERP products.

Microsoft was among the first vendors to focus on providing cloud-based solutions for analytics, a path later followed by several competitors. Azure is used by numerous companies as a cloud computing platform and for storing substantial amounts of data, putting Microsoft in a good position to offer integrated analytics front ends. Indeed, the vendor has not only integrated Power BI, its core BI & analytics platform, with many Azure Services and Microsoft products but has also included it in various product packages. One of the most recent is Microsoft Fabric, designed as an integrated end-to-end data and analytics platform delivered as Software as a Service (SaaS). The package contains several Azure services such as Power BI, Azure Synapse Analytics, Azure Data Factory and many more. The core value proposition and advantage for customers is that the already stitched together services facilitate the building up of a SaaS environment consisting of data and analytics services. One of the additional benefits is the obligatory Data Lake 'OneLake', which is automatically connected with all other Fabric services and can be used by customers without extra configuration.

Power BI itself is a cloud-based analytics product consisting of Power BI Desktop (a full client for data preparation, dashboards and analysis) and Power BI Service (a web application for content publishing and sharing). It is an interactive tool for data visualization geared at enabling business users to analyze data and share insights, predominantly via dashboards.

Data visualization in Power BI delivers rich visualizations but is limited in flexibility by its dashboard-oriented approach. NLQ makes it easy for users to retrieve relevant visualizations. Guided analytics is mostly covered by 'Quick Insights', a feature that automatically analyzes data sets for patterns and outliers and provides the user with suggestions about relevant findings. The 'Insight' feature can be used to receive information about interesting patterns in the data a specific visualization is based on. For advanced requirements, AutoML features are integrated into Power BI dataflows. Recently, Microsoft introduced its AI-based service Copilot for Power BI which is now in public preview. The product is designed to support dashboard and visual creation, and the writing of narratives and DAX queries.

Microsoft has also incorporated formatted reporting functionality from its on-premises product set Reporting Services as Paginated Reports into Power BI to provide a broader feature set and integrate analytics capabilities. Power BI Report Server delivers a subset of Power BI features to on-premises customers, mostly to facilitate their migration to the cloud.

Power BI content can also be integrated into Microsoft PowerPoint to provide better data storytelling capabilities as well as to increase the use of insights gained in Power BI for a larger number of users.

Strengths

- Power BI, the business-user-oriented dashboard and self-service analytics solution, is attractively priced, which makes it easy for organizations and individual users to get started with it
- Dashboards are easy to build for business users and can either display governed data or leverage additional data through powerful data preparation
- 'Quick Insights' and NLQ guide users when exploring new data sets with auto insights while data preparation offers ML-based productivity features too. The AI-based assistant Copilot (public preview) facilitates the creation of dashboards and DAX expressions to speed up the development of content.
- Governance, shared data access and assets for Enterprise BI needs through tight integration with Azure Services and offerings such as Microsoft Fabric

Challenges

- Formatted (paginated) reports enhance the reach of Power BI, but building these reports is still a developer's task rather than one for typical business users
- Different clients with varying functionality in place: Besides the two possible clients for creating paginated reports, Power BI consists of a desktop and a web client
- Power BI and additional services are available on the Azure infrastructure only

MicroStrategy

Tysons Corner, VA, USA

www.microstrategy.com

Founded in 1989, MicroStrategy is one of the best-known vendors in the BI & analytics market worldwide. In 2003, MicroStrategy first released its fully integrated platform providing formatted reports, dashboards and interactive data discovery capabilities in a unified product using the same infrastructure and a consistent interface.

MicroStrategy pursues the vision of providing "Intelligence Everywhere" by developing a platform that powers AI to fulfill all customer needs and is capable of serving all types of users. Its flagship platform MicroStrategy ONE is based on a tightly integrated architecture that was built from the ground up without acquisitions. It offers functionality for dashboards, reporting, AI and analysis and can be used to implement various use cases such as operational, embedded or mobile analytics. Together with its library of statistical and advanced analytics functions, the vendor offers comprehensive capabilities to fulfil additional analytics requirements.

The suite offers various clients, which connect to an enterprise Semantic Graph (semantic layer) to deliver common and governed business logic across multiple data sources with strong calculation and caching features. Business users can use the enterprise Semantic Graph, typically created by technically savvy users, or create their own data models (data sets). For additional governance, data sets can be combined with the enterprise Semantic Graph or certified. MicroStrategy has adopted an open approach by allowing third-party tools such as Tableau, Qlik, Power BI, Jupyter and RStudio to access its Semantic Graph.

MicroStrategy offers 200+ connectors to data sources, as well as native support for cloud databases and data lakes. Besides direct connectivity to source systems, the product offers an integrated in-memory engine to ensure fast query performance on large data sets. MicroStrategy supports hybrid and multi-cloud scenarios and can be deployed on premises or in the cloud (managed or customer-owned, for instance, on AWS, Azure or GCP).

MicroStrategy has always taken market trends seriously. The vendor provides a no-code development framework to build native mobile apps. Offline capabilities and write-back data entry for transactions and operational use cases are available too. The vendor offers a modernized dashboard interface to analyze, present and visualize data. Dashboards are interactive applications that organize visualizations or reports in a familiar book-oriented chapter-and-page format giving them a logical flow.

To extend the adoption of analytics by business users, MicroStrategy introduced 'HyperIntelligence' to surface contextual information to users directly in web applications, on mobile devices and in selected productivity applications with zero clicks. This allows businesses to inject real-time, contextual insights and recommendations into users' browser-based or mobile workflows – bringing analytics closer to their work. Embedding analytics in business applications, in cooperation with service providers and often targeting distinct industries, is becoming increasingly important to vendors and offers further opportunities to differentiate their offerings.

In the area of AI, MicroStrategy has also introduced some helpful features. The AI offering uses the umbrella 'Auto' and is composed of multiple tools. In 2023, MicroStrategy launched 'Auto SQL', 'Auto Dashboard' and 'Auto Answers', which are targeted at different user types to support them in their daily work. Most recently, 'Auto Bot' enables customers to create, customize and deploy their own chatbots. 'Auto' uses multiple interpretation layers and benefits from the strong Semantic Graph and LLMs. These bots can be deployed on their own, on mobile, embedded into any application, and from HyperCards. With the latter, it is therefore possible to provide HyperIntelligence users with AI-based features.

Strengths

- Single integrated platform for formatted reports, dashboards, analysis and analytics application building with good performance in large environments
- Connectivity and connectors for third-party analytics tools such as Tableau, Qlik and Power BI grant access to its Semantic Graph
- Vendor takes important and relevant trends seriously and mostly develops solid strategies and tools to address them. The new AI tool, Auto, leverages MicroStrategy's Semantic Graph to ensure data security and integrity. With capabilities that cater to different user types, Auto allows them to ask questions in natural language and receive instant answers.
- HyperIntelligence enables users to access contextual information with zero clicks across existing applications, productivity tools and devices with highly personalized information to all users
- Dashboards offer modern responsive and interactive applications that organize visualizations or reports in a familiar book-oriented chapter-and-page format

Challenges

- Augmented analytics capabilities (e.g., automated insights) to help business users analyze data (e.g., with suggestions on outliers in data or possible further analysis steps) are not as pervasive as the capabilities of leading vendors in this field
- Data models created by business users (data sets) cannot be automatically converted to the enterprise Semantic Graph (semantic layer) as the data modeling environments are not fully integrated
- Customers who want to modernize their existing 'Documents' content by migrating it to the newer Dashboard applications format will have to invest extra effort as fully automated migration is not available

Oracle

Austin, TX, USA

www.oracle.com

Oracle is a global provider of enterprise cloud computing, offering software, platform, infrastructure and even data as a service. With over 164,000 employees, Oracle is one of the giants in the market.

The Oracle Analytics offering rests on three major pillars: Oracle Analytics Cloud (OAC), Oracle Analytics Server (OAS) as well as predefined content and embedded analytics created using OAC, now combined into the Fusion Data Intelligence offering. OAC is Oracle's flagship product for BI & analytics. The suite runs on Oracle Cloud Infrastructure (OCI) and can leverage OCI services such as Autonomous Data Warehouse. Oracle Analytics Server, the on-premises version of OAC, brings the capabilities of the cloud platform annually to organizations requiring on-premises deployments or wanting to run it in other clouds. For Oracle's business application customers, Fusion Data Intelligence (FDI) combines predefined content developed with Oracle technologies such as Oracle Analytics Cloud or OCI Data Lakehouse and equips customers with preconfigured connectivity to Oracle Cloud Applications (Oracle Fusion Applications, Oracle NetSuite, Oracle Health etc.) as well as options to connect to third-party data. Besides that, the product serves customers with prebuilt AI models configured to support a specific operational task such as predicting sales order delivery. In addition, FDI will be the basis for a range of intelligent applications that Oracle says will go beyond dashboards and reports with prebuilt insights and AI/ML-driven recommendations to facilitate decisions and actions by role, task and industry.

Oracle Analytics Cloud is a platform for dashboards, formatted reports, ad hoc reports, analysis, data preparation and machine learning. It offers different clients for different user types. Business users typically work with the modern web-based environment, which offers augmented data preparation and custom data transformations via Data Flows as well as visual analysis features. More mature clients, such as Answers (ad hoc reporting) and Publisher (for developer-oriented pixel-perfect reporting), still exist and have been equipped with the same visualization engine. Mobile clients are also available.

All the clients can connect to Oracle's enterprise semantic layer, which offers strong calculation and caching features and a common and governed business logic. The suite typically connects directly to underlying data using native connectors, OEM software, REST APIs or standards such as OData and JDBC/ODBC without replicating data. To modernize this layer, the vendor introduced a new semantic modeler, a web-based environment for creating SMML-based models. SMML is a JSON-based Semantic Modeler Markup Language that describes the semantic model's objects. The model has also been integrated with Git to support software development and facilitate deployment, maintenance and version control. Moreover, Oracle has opened its semantic layer to be consumed by third-party applications such as Power BI. In the area of openness, Oracle now offers REST APIs for Oracle Analytics to provide developers with access to functionality in OAC. And most recently, the vendor has developed a story exchange format, which allows customers to integrate with third-party video GenAI services to provide interactive and spoken stories using AI.

Business users can use the semantic layer, which is typically created by technically savvy users, or create their own data models (data sets). Oracle offers a self-optimized in-memory engine, which is used to ingest and cache data instead of connecting live to sources, making it a compelling option to boost performance and productivity without leaving the governance delivered by the platform.

With Automated Insights and 'Explain', users can leverage automated insights generation powered by ML and NLG. Relevant drivers, patterns and clusters are identified and visualized. Beyond that, forecasts leveraging weighting algorithms can be created based on the drivers identified. Natural language queries ('Ask') can be used to analyze data without deep technical expertise or having to search across

all data sets cataloged in many supported languages. Moreover, a GenAI assistant has been introduced and is now in limited availability in certain geographic regions.

Complementing the portfolio, machine learning algorithms are embedded out of the box with Oracle Analytics Cloud. R and Python scripts can be embedded to leverage the results of advanced analytics models. Additionally, ML algorithms embedded in Oracle databases can be leveraged without shifting data, providing enhanced speed and flexibility for analytics.

Strengths

- Cloud and web-based platform for reports, analyses, visualization, data preparation and dashboards
- SMML-based semantic layer which provides a governed and trusted view of data (for third-party tools such as Power BI as well) and facilitates modern software development workflows through its integration with Git
- Oracle offers the possibility to build independent self-service data sets for high flexibility as well as weaving semantic models together for a consistent enterprise-wide view
- Automated Insights based on ML and 'Ask' NLQ drive acceptance and lower the barrier for business users to use analytics by helping them to find relevant signals for decision-making
- Powerful and easy-to-use data preparation with good data profiling and user guidance through recommendations for transforming and enhancing data

Challenges

- OAC is only available on Oracle Cloud. Customers seeking to deploy it on other cloud services must use OAS, which receives functional updates only once per year and must be managed by the customer.
- Data models created by business users cannot be easily deployed to the central semantic layer as the data modeling environments are only partially integrated
- Integration between Publisher and Visualize is at data level only, reducing efficiency when creating content and making it harder for business users to leverage complete functionality

Pyramid Analytics

Amsterdam, Netherlands

www.pyramidanalytics.com

Founded in 2009, Pyramid Analytics is a privately held software company with more than 150 employees. The company is headquartered in the Netherlands and has offices in the United States, Israel and the United Kingdom. It continues to grow and now supports more than 1,000 customers.

Pyramid Analytics launched its first BI product, BI Office, back in 2012. In 2017, the company introduced Pyramid Decision Intelligence Platform (Pyramid), a newly architected and revamped product to help customers make faster and more intelligent business decisions by automating the decision-making process.

Pyramid combines components for data preparation, reporting, dashboards, machine learning and advanced analytics into a unified enterprise BI & analytics platform. It was designed from inception to bridge the gap between self-service and IT-driven BI & analytics, providing agility for decentralized business users while retaining centralized monitoring and control. This fosters enterprise-wide collaboration through the sharing of business logic and content.

The vendor puts an emphasis on Pyramid as an open and agnostic web-based platform. Its open architecture means the software can be deployed in different environments: cloud, hybrid or on premises. Moreover, Pyramid is device and operating system agnostic with full gesture support on touchscreen and mobile devices. Through this versatility, customers can use the product to transform their existing and traditional on-premises businesses to modern cloud-based deployments.

Pyramid also supports REST API to cater for scenarios such as embedding and automation. Its analytics engine, 'PYRANA', drives both querying and analytic calculations across different data sources using ANSI SQL or MDX – which enables fast in-place analytics on large data sets. This extends direct analysis to numerous relational, in-memory, cloud data warehouses and unstructured data sources natively – including Pyramid's own proprietary in-memory engine. Pyramid also offers certified support to various SAP data sources, making it a viable alternative to leverage data from, for example, BW/4HANA without duplicating it. Data preparation and modeling features to support data integration and processing are incorporated into the product. Besides connecting and querying data, the vendor also supports write-back to selected relational data sources.

For ML and AI, the vendor relies on R, Python, MLib, Weka and TensorFlow integrations. Pyramid is also investing in GenAI and has incorporated AI into its data preparation and analytics front ends. Its NLQ chatbot now leverages LLMs to provide users with search-based analytics on all data sources without indexing all the data upfront. Moreover, automated insights ('Smart Insights') leverage NLG to explain basic facts, relationships, forecasts and other findings when applied to visuals or query results. Power users also benefit from incorporated AI features such as assistance for formulas or dashboard creation.

Recent improvements include the Tabulate and Solve modules. Tabulate is a browser-based spreadsheet environment which resembles Microsoft Excel. It offers business analysts well-known Excel formulas and granular formatting options. The module stores its objects, like other Pyramid objects, centrally and does not produce single file structures as its prominent competitor does. Solve is an optimization engine, incorporated into the Tabulate environment, which can be used for decision modeling and to solve optimization problems. The insights users gain in Tabulate can be published to other users using the Publish module.

Strengths

- Well-integrated platform for reporting, dashboards, data preparation and analysis – all in a single, enterprise-grade environment
- Good connectivity with in-database analytics to various data sources including business applications such as SAP, leading to high performance perception by users
- Open architecture and provision of APIs suitable for various analytics use cases beyond classic BI, such as embedding and analytics applications
- Provision of enterprise platform features such as governance, security, lineage, impact analysis, versioning and content distribution for large-scale deployments
- Well thought-out capabilities for dynamic text for storytelling, spreadsheet-like calculations and formatting as well as topics in the area of GenAI, and advanced and prescriptive analytics

Challenges

- Visual data exploration for business users is not as intuitive as some competitors' products (for instance, it follows a 'visualization first' principle and lacks visualization recommendations)
- Feature-rich environment potentially overwhelms creators from business departments, curbing use and value of analytics despite the introduction of streamlined 'Smart' and 'Light' interfaces
- Active guidance features offer basic help but lack functionality to assist business users, especially with data preparation (for instance, through join or transformation step recommendations)

Qlik

King of Prussia, PA, USA

www.qlik.com

Qlik, originally founded in 1993 in Lund, Sweden, moved its headquarters to the United States in 2005 after raising funds from several venture capital firms. Qlik is currently owned by the private equity company Thoma Bravo after its acquisition in 2016. Since then, the vendor has made a number of acquisitions to create a robust cloud platform that delivers the data integration and analytics organizations need to transform raw data into informed action.

Qlik Cloud® offers a compelling portfolio of data integration and analytics services. It is a full SaaS platform, and customers can also deploy a hybrid cloud by combining Qlik Cloud® with a client-managed Windows-based deployment. In the area of enterprise-level BI & analytics capabilities, Qlik Cloud® includes Qlik Sense®, supporting a broad spectrum of analytics use cases across organizations.

Qlik Sense® is powered by Qlik's associative engine and offers flexible and fast access to analyzed data. In addition to its mature in-memory analytics engine, the vendor now provides direct query capabilities to query live data from cloud databases, including Snowflake, Google BigQuery and Databricks. Qlik Sense® includes product features that support business users from data preparation to the creation of interactive applications. Data preparation, traditionally script-based in Qlik, can be conducted in a visual interface for most data transformations but still generates code that can be changed directly or optimized by developers if required.

Augmenting the user experience with helpful and guiding functions is at the core of Qlik's vision to reach more users with well thought-out BI & analytics capabilities. During data preparation, joins and default aggregations are suggested for measures. Qlik Sense® offers further guidance and automation for data visualizations to benefit data consumers by actively recommending suitable visualizations to users based on fields selected and their metadata.

ML powers the suggestion of insights for consumers in 'Insight Advisor' and NLQ. Insight Advisor is an assistant that auto-generates insights with advanced analytics, assists with analytics creation and supports natural language interaction including search-based discovery and conversational analytics. Qlik AutoML® supports the automated creation of machine learning models, predictive analytics and scenario analysis, specifically designed for analytics users and teams that want to apply ML to a broad set of use cases. In addition, third-party data science and ML platforms can be integrated to allow decision-makers to explore calculations in real time through visual dashboards.

A further component of Qlik Cloud® is Qlik Application Automation®, a visual, no-code facility to automate tasks and workflows within Qlik Cloud® and in conjunction with third-party applications. For example, Qlik Application Automation® can be used to create custom publishing routines for reports or to send notifications and insights to chat applications.

Recently, the vendor acquired Kyndi to grow its GenAI capabilities.

Strengths

- Comprehensive portfolio of data management and analytics products offered in Qlik Cloud® to help customers gain insights from data and act upon them
- Qlik Sense® is a business-user-oriented platform for BI & analytics covering interactive dashboards, highly customizable and embeddable analytical applications, visual analyses and reports
- Strong features and APIs to customize and embed not only the analytics applications but parts of (or the whole) product if needed in any target application
- Data preparation is very powerful. Features such as join detection based on field content are not common among competitors and speed up data preparation decisively.
- Qlik sets itself high expectations in terms of query performance and hardly ever falls short of them thanks to its mature in-memory engine

Challenges

- Although the portfolio is broad and feature-rich, we regularly see customers becoming overwhelmed with the increasing number of functions and modules offered (UX improvement is on the roadmap)
- Limited built-in functionality for data governance to align KPI definitions and ensure consistent use of master data across multiple applications (copying tasks with Qlik Application Automation® is possible; business glossary functionality for central KPI definition and links to metrics in apps is available)
- Advanced layout options for page-oriented reports in the cloud are still limited compared to leading vendors despite the enhanced capabilities of the web UI (roadmap item)

SAP

Walldorf, Germany

www.sap.com

SAP was founded in Germany in 1972 as a business applications company. The vendor now employs more than 105,000 people worldwide and has a turnover of €31.2 billion, making it one of the largest business software vendors in the world.

The vendor's data and analytics portfolio is based on SAP Business Technology Platform (BTP), which provides cloud-based data, analytics, application integration and extension services across all SAP products. The platform is built on SAP HANA Cloud, a modernized cloud-based version of SAP HANA, the vendor's in-memory database.

SAP's strategic direction for analytics centers around SAP Analytics Cloud (SAC). The product brings BI, augmented and predictive analytics, and planning into one integrated platform. SAC is continuously becoming richer in features such as application and dashboard design, planning and predictive functionality as well as prebuilt business content (e.g., solutions for finance, sales and marketing, HR and various industries).

The product is fully web-based with a modern web client and a Microsoft Office 365 Excel add-in. SAP Analytics Cloud has a modern and user-friendly front end that offers users guided insights in data through NLQ and NLG as well as automated insights via Smart Predict, Smart Insights and Smart Discovery. While SAC is aimed at business users creating analytics content, it also incorporates JavaScript capabilities to enhance the level of interactivity and customization of analytical applications.

SAP Analytics Cloud connects to various SAP and non-SAP data sources, and can be used with its own data sets or to query selected SAP data sources directly (e.g., SAP HANA, SAP BW/4HANA, SAP Datasphere, SAP BusinessObjects Universes). Customers can take advantage of this live connection to implement hybrid cloud scenarios without moving, caching or persisting the data into the cloud. Moreover, the vendor will soon release its SQL live data query capabilities for non-SAP data sources (Google Big Query at first). Moreover, SAP Datasphere can be used for other data-management-oriented tasks to augment SAC's capabilities in this area.

Predictive analytics functionality for business users is covered in SAP Analytics Cloud while more extensive functions for data science are made available in SAP BTP.

Strengths

- SAP Analytics Cloud is an integrated business-user-oriented solution for planning and analytics with embedded functionality for augmented analytics and application design
- 'Smart Predict', 'Smart Insights' and 'Smart Discovery' together with NLG functions help users to dig deep into data sets quickly by surfacing trends and outliers automatically
- Exclusive connectivity, live access, embedded analytics and prebuilt content available for SAP sources and applications speed up implementation and help to gain insights from these systems
- Integration of SAP Analytics Cloud with SAP data platforms such as BW/4HANA and SAP Datasphere offers capabilities to govern master data and align KPIs across an organization
- Flexible options for product usage: SAP Analytics Cloud is deployed in the public cloud with multi-tenant or private tenant options (availability on AWS, Azure, Alibaba and GCP). Moreover, data access to cloud and on-premises sources and across multiple cloud providers is possible.

Challenges

- Data source connectors and especially live data query capabilities are focused on SAP data sources with a lower number of connectors available than leading competitors, especially to competing business applications. SAP Datasphere is intended to augment SAP Analytics Cloud capabilities for live data query to non-SAP data sources. In addition, SAP hopes its upcoming SQL live data query capability to non-SAP data will overcome this issue.
- Data preparation capabilities are weaker than average compared to other vendors in this report, resulting in challenges for business users to leverage all the data sources required. SAP Datasphere offers additional functionality targeted at tech savvy users.
- GenAI capabilities such as NLQ and 'smart' features do not utilize third-party LLMs to provide more precise and content-sensitive information to business users and ease their daily development tasks for instance. However, the 'just ask' feature uses a proprietary LLM hosted on the SAP Analytics Cloud back end so the data does not leave it.

SAS

Cary, NC, USA

www.sas.com

Founded in 1976, SAS is a privately held company and a well-known brand in the analytics and business intelligence market. The vendor's aim is to make analytics available everywhere and for everyone.

SAS Viya is an end-to-end platform for analytics intended to serve all types of customers' analytical needs. Viya was designed as an API first massively parallel, distributed environment which connects to various data sources and can be run on premises or in the cloud. SAS has made a point of creating an open architecture which not only supports SAS code but also popular data science languages such as R, Python, Java and Lua directly or through APIs to enhance their scalability and serve the appetite of data scientists for these tools. SAS models can be called from Jupyter Notebooks, a very popular way to access the platform among data scientists.

Viya consists of a set of micro services and an in-memory engine called SAS Cloud Analytics Services (CAS) for execution in a single-machine or distributed mode. The vendor recently introduced the option to offload data to SingleStore to offer customers greater flexibility with in-memory data loading decisions. Viya is completely containerized and thus cloud agnostic. Nevertheless, a strong partnership with Microsoft adds additional integration with Azure.

Viya powers several different products and solutions. Business users typically access SAS Visual Analytics (VA) for self-service analytics. This product line focuses on visual analysis, dashboards and analytics apps. To support business analysts, the product offers various automations such as explanations, predictions, anomaly scans and visualization suggestions. Moreover, a chatbot which can be integrated with LLMs using SAS Viya offers additional assistance in data exploration. Natural language generation is also provided to support content creators. Content, such as interactive visualizations, can be embedded in custom web applications or other third-party apps. In addition, a Microsoft 365 integration is included with VA, allowing VA insights to be embedded, for example, in Excel spreadsheets, PowerPoint presentations and Microsoft Teams. Visual Analytics can also be used to build and deploy sophisticated conversational interfaces and chatbots.

SAS Data Preparation is also aimed at business users and is designed to load data into the internal Viya in-memory engine. Improvements in the data flow representation have enhanced usability and speed up implementation. Moreover, the product has been enhanced with more data quality features to support customers, thus assuring data quality and increasing trust in data.

Viya also offers multiple add-on products for advanced business users and data scientists such as SAS Visual Statistics and SAS Visual Data Mining and Machine Learning. The integration with VA offers the opportunity to further extend analytics applications with advanced analytics models. The vendor offers a variety of analytics applications to specifically address the needs of particular industries, especially banking and insurance. SAS provides prebuilt content for these industries based on its Viya platform to help buying companies implement and operationalize challenging analytics use cases.

Strengths

- Business-user-oriented end-to-end analytics platform offering data preparation, visual analysis, analytical apps and dashboards that can be enhanced with advanced analytics models
- Strong guidance in analytics (auto insights) for detecting correlations, clusters and patterns or calculating decision trees and automated predictions supported by NLG
- Users get recommendations during data preparation to enhance and shape data for analytics requirements, speeding up the process
- Solid and well thought out GenAI strategy woven into the entire Viya platform and its individual modules eases the lives of developers and business analysts
- The Viya platform offers numerous services and modules for analytics and data science with data management capabilities. It is designed as a scalable and flexible architecture for substantial amounts of data and large numbers of concurrent users.

Challenges

- Page and print-oriented formatted reports lack some functions required by demanding users and designing them requires additional effort as VA favors on-screen information display
- Live access to external data sources is limited so required data has to be ingested to the CAS in-memory engine, possibly in tandem with a recently introduced option to use SingleStore for data push down
- Partner network, expertise and market awareness of the more recent SAS products is not as broad as for some competitors in the analytics area

Spotfire (a business unit of the Cloud Software Group)

Gothenburg, Sweden

www.spotfire.com

Spotfire's history began in the early 1990s with its first visualization products followed by the foundation of the company Spotfire in 1996. In 2007, the vendor was acquired by TIBCO, which was combined by investors with Citrix Systems to form the Cloud Software Group (CSG) back in 2022. Following this development, Spotfire was split out from TIBCO into a standalone business unit of CSG in 2023. As a result, Spotfire is now marketed and sold as a comprehensive standalone visual data science platform.

Spotfire is strongly focused on visually aided data preparation, exploration and advanced analytics as well as the design of interactive applications. Its applications are optimized to deliver excellent performance through the product's integrated in-memory data storage or by using in-database analytics in combination with third-party storage technologies. Offered in two clients (installed and web), Spotfire targets a range of user types from power users in business departments and even data scientists to end users who consume interactive content. Spotfire offers multiple deployment options and a managed cloud offering Spotfire Cloud.

Although the product can be used in any industry and by a range of user types, Spotfire's strength lies in the combination of its analytical capabilities with industry-specific content. Predefined solutions are available for the energy, manufacturing, life sciences, financial services and logistics industries. The content on offer includes not only typical artifacts such as connectors, algorithms and applications, but also industry-specific visualizations. The combination of industry-specific advanced analytics models and visualizations is designed to solve customers' complex business problems more precisely. To achieve this, the vendor has acquired several companies to strengthen its advanced analytics, geo analytics and streaming analytics capabilities in recent years. To address complex business problems and serve various user types, the product is optimized to support large data volumes and user numbers.

Spotfire has incorporated natural language query search and AI-driven recommendations in its product for few years now. As part of its GenAI investment, the vendor has enhanced its existing features and introduced a natural language extension called Spotfire Copilot. Copilot is designed to invoke the best LLM to answer users' questions and help them not only with data analysis but also chart and code creation.

Strengths

- Spotfire is a scalable visual data science platform, offering end-to-end analytics for data at rest and in motion from dashboards to exploratory to advanced analytics applications, with the ability to scale to large enterprise deployments
- Spotfire is designed to support business users with different types of analysis and decision-making: visual, geo, streaming and data science
- Support for embedding BI & analytics through multiple programming frameworks and a lightweight, native JavaScript framework for developing low-code extensions
- Connectivity to many data sources with optimized caching as well as direct access supporting many analytics use cases
- Pre-built industry-specific accelerators containing visualizations, algorithms and data connectors to help customers solve complex business questions

Challenges

- Traditional BI use cases such as formatted mass reporting are not primarily targeted by the vendor but there are some functions available to create PDF and PPT outputs and distribute them to different audiences
- As a recently spun-off subsidiary of Cloud Software Group, having being part of TIBCO for many years, Spotfire must now strengthen its market position and build up a broader partner network to be recognized by customers as an independent software company
- Easy-to-understand pricing model, but not a low-cost product. Additional negotiation and enterprise agreements are needed for larger deployments or use cases such as embedded analytics to be attractively priced for customers. However, volume discounts are offered to make larger deployments attractive.

Tableau from Salesforce

Seattle, WA, USA

www.tableau.com

Founded in 2003, Tableau emerged from scientific research at Stanford University. The company has achieved strong growth and is now among the best-known BI & analytics brands worldwide. Tableau was acquired by Salesforce in 2019. However, it largely acts as an independent business unit focusing on its target audience.

Tableau is a BI & analytics platform that aims to provide better insights in data and empower better decision-making in all industries.

Tableau is committed to developing software that requires little training and allows business users to interpret data, mostly by means of interactive visualization. The intuitive user interface, built-in intelligence and option for in-memory data processing to optimize performance all contribute to the popularity of this solution for visual analysis, dashboards and data discovery. The product offers solid support for analysts through various features such as one-click analyses, data explanations and highlighting anomalies in data.

Tableau's openness to a variety of data sources is one of its strengths, as it is not necessary to rehost data to use Tableau. The solution allows users to query data live from different data sources, to combine data from across these sources, or to move the data into its own 'Hyper' in-memory database for analysis. In order to ensure performance, Tableau optimizes live queries to generate the most efficient SQL and converts it to source-native dialect. Moreover, to reduce data movement, the product utilizes pushdown optimizations and its federated query cost-based optimizer. The vendor aims to do processing as close to the data as possible, even across different sources.

Data preparation in Tableau can be quick as many manipulations can be made directly while analyzing data, enabling a truly iterative approach to data discovery. With Tableau Prep, data preparation has been enhanced with deeper functionality and a more visual approach with recommendations for data shaping, profiling and enhanced traceability. Tableau Prep transformation flows can be created either on the desktop or via Tableau Cloud and may be scheduled and orchestrated on the server to operationalize data preparation tasks. Data science scripts such as R and Python can be dynamically integrated into Tableau's data prep and analysis features.

With the rise of GenAI, the vendor has invested in a next generation product called Einstein Copilot for Tableau, which has a broader scope and acts as a successor to its natural language offering 'Ask Data' which was recently retired. With Einstein Copilot for Tableau, currently in beta, the Einstein Trust Layer of Salesforce is used, which leverages an LLM to support customers with more sophisticated natural language capabilities and visualization suggestions. A second, already available, GenAI offering is Tableau Pulse, aimed at helping customers focus on metrics and therefore make data-driven decisions. Pulse is equipped with AI functionality to guide users to needed insights and assist in interpreting them.

Additionally, the auto-ML capabilities of Salesforce's Einstein Discovery have been integrated with Tableau to provide advanced predictions and recommended next best actions.

The vendor is also actively pursuing the expansion of its community. Tableau Exchange is a platform for partners to provide a growing catalog of offerings including Viz Extensions (recently announced), connectors and accelerators (prebuilt dashboards).

Strengths

- Easy-to-use user interface combined with good user guidance leading to high acceptance by data literate business users and casual users alike
- Visual analysis with built-in user guidance and good interactivity enables business users to find answers to urgent business questions, even in cluttered data sets
- Data profiling and recommendations are part of data preparation that supports access to a broad number of data sources (live and cached) including cross-database joins
- Interactive, mobile-ready and appealing dashboards and data stories are built with little effort by compiling, combining and refining data visualizations
- Einstein Discovery extends Tableau's analytical capabilities with machine learning

Challenges

- Not all data preparation functions can be leveraged when running live queries from Desktop
- Although more and more functionality (and Prep Builder) is available on the web, Desktop is still needed for certain data sources
- Formatted reporting lacks the formatting and distribution functions that set apart the leaders in this area

TARGIT

Aalborg, Denmark

www.targit.com

TARGIT is a privately-owned software provider founded in 1986 with its headquarters in Aalborg, Denmark. The company has close to 8,000 customers (including OEM) primarily located in Europe and North America.

TARGIT aims to help businesses realize the full value of data by leveraging decades of analytics expertise and experience in key verticals. The vendor is strongly focused on customer and partner relationships and is well positioned for companies of all sizes requiring an all-integrated BI platform with vertical content.

With its TARGIT Decision Suite BI & analytics platform, the objective is to deliver detailed insights and make relevant data accessible to every employee by supporting the unique goals and processes that power its customers' daily operations.

Providing industry knowledge and industry value drivers with its BI & analytics platform remains a strong focus for TARGIT. The vendor especially focuses on certain verticals including heavy equipment, truck & trailer and automotive dealerships, retail and C-stores, the public sector (esp. in Nordics) and airport operators. Extensive prebuilt content with a particular focus on the automotive industry was added through the acquisition of TARGIT's partner CalmCo, now acting as TARGIT Automotive. Besides adding verticals and content to its portfolio, the vendor maintains a partner network with an emphasis on partners with a strong vertical focus or specialization, including OEM partners.

TARGIT Decision Suite offers integrated self-service analysis, ad hoc reporting and dashboards with features for batch reporting, mobility, slideshows and data mashups. An installed client is used for data preparation, document creation and analyses. The Document Model is intended to reduce the effort required to design content and make it available across all devices and output types. Dashboard applications and visuals can be embedded through a no-footprint web client into other applications and web portals. For mobile users, a dedicated client is available as well. The suite can be deployed on premises or used as a managed option from TARGIT (TARGIT Cloud) which is hosted on Microsoft Azure.

TARGIT uses Azure cloud infrastructure and services for its core platform and adopts a flexible and agnostic approach to data platforms and use of AI and ML services, opting to leverage vendors and solutions best suited for each specific purpose.

Strengths

- Accelerators, predefined content and industry knowledge for different verticals and topics
- Business-user-oriented BI platform for reporting, analysis and dashboards available on premises or in the cloud, and supporting additional technologies such as OLAP and Tabular
- One document type for different output formats to ease content development
- Well defined ad hoc query and reporting functionality compared to some competitors
- Enterprise functionality for data governance, reporting, distribution, deployment and logging

Challenges

- Currently, TARGIT only offers managed cloud deployment in Azure, making it less interesting for organizations that want to use other cloud infrastructures for BI & analytics
- Weaker support for visual data exploration and data preparation compared to many of its competitors, but strong OLAP analysis goes some way to compensating for this
- The use of ML and AI to guide users through data preparation and analysis (augmented analytics) is a focus area and part of the roadmap but still in its early stages

ThoughtSpot

Mountain View, CA, USA

www.thoughtspot.com

In 2012, ThoughtSpot embarked on a mission to make businesses more fact-driven by making data and insights easily accessible to business users. Bolstered by venture capital, it has been expanding rapidly ever since. In 2023, ThoughtSpot acquired Mode to provide its customers with a single platform to serve the full spectrum of BI users.

ThoughtSpot Analytics is a business-user-oriented, search-driven BI & analytics platform. Natural language queries enabled by a shared semantic model are at the heart of the solution. Users ask questions in natural language and results are presented in meaningful visualizations. To further facilitate its features in this area, the vendor recently announced the launch of ThoughtSpot Sage, a new search experience that combines LLMs (several versions of GPT, including opening up support to LLMs from other vendors such as Google Gemini) with ThoughtSpot's patented search technology. Sage is intended to empower users, regardless of their skill level, to use ML-powered analytics to ask and answer business questions, find accurate insights and act.

Moreover, the product produces automated insights based on ML. These insights along with NLG functionality, can explain patterns behind data visualizations or can be used to find clusters and outliers in data.

Interactive dashboards ('Liveboards') are created by optimizing and combining visualizations. Support for embedding and delivering search-based analytics and analytics applications is available through ThoughtSpot Embedded as it provides extensive APIs for embedding all content types and search in a low-code manner.

ThoughtSpot offers live connections (in-database query) to a growing number of popular cloud data warehouses such as Snowflake, Amazon Redshift, Google BigQuery and Databricks as well as selected relational databases such as Oracle, SAP HANA and Teradata. The vendor recently announced a partnership with dbt whereby ThoughtSpot not only connects to dbt models but also automatically generates worksheets to speed up analysis. Moreover, for other selected data sources such as Google Analytics, HubSpot, Salesforce and Facebook, the vendor offers predefined Liveboards. Write-back functionality enables customers to insert insights into popular applications such as Google Sheets, Zendesk, HubSpot and more.

ThoughtSpot has extended the reach of its analytics platform by increasing the number of deployment options in the cloud and on premises. To further facilitate usage, the vendor offers a free version of ThoughtSpot for Excel.

Mode Analytics adds ad hoc analysis capabilities to ThoughtSpot with a code-first approach.

Strengths

- Conversational UI for querying data with natural language sets ThoughtSpot apart as it provides greater flexibility and is more mature than competing offerings
- SpotIQ delivers insights and recommends steps for deeper analysis to business users, making analysis more efficient by uncovering hidden insights and automating repetitive tasks
- ThoughtSpot has a modern user interface that is easy to use and can be understood intuitively by users of all skill levels
- All functionality comes in a seamlessly integrated end-to-end analytics platform based on a self-contained architecture, guaranteeing productive use and quick set-up
- Write-back functionality and extended partnerships facilitate usage and integration into customers' heterogenous environments

Challenges

- ThoughtSpot clearly focuses on delivering quick results to ad hoc business questions while its functionality for creating and distributing standardized content such as formatted reports is weak
- Integrated data preparation lacks the versatile functionality found in solutions from competing vendors, limiting the flexibility of business users to ingest new data quickly
- Although enhanced recently, the options to customize interactive charts found in leading solutions are not available in ThoughtSpot's Liveboards

Zoho

Chennai, India

www.zoho.com

Zoho Corporation began life in 1996 as Adventnet, Inc., which focused on building network management products. The company was renamed in 2009 and now operates three distinct divisions including Zoho, which develops and sells a suite of business applications. Zoho Corporation remains privately held.

Headquartered in Chennai, India, Zoho currently has additional offices in India as well as sites in the United States, China, Mexico, Australia, Netherlands, United Arab Emirates, Japan and Singapore. The company employs around 15,000 people.

Its business application suite covers BI & analytics, CRM, project management, accounting, human resource management, marketing and support. Zoho currently serves more than 17,000 customers worldwide with its BI & analytics platform.

Zoho Analytics, first released in 2009, is the central BI & analytics platform in Zoho's portfolio. With Zoho Analytics, the vendor provides unified data management and business analytics to its customers. It supplies a large number of connectors to data sources which can be integrated in a central data model designed for use by business users. Business connectors for Zoho and non-Zoho apps can automatically identify and map table relationships, create domain and cross-domain models, train the NLQ engine and create sample reports and dashboards to speed up implementation of BI & analytics. Customers can access these models using APIs.

Zoho further serves business users with its natural language assistant Zia. Users can ask questions using 'Ask Zia' and analyze the underlying data without the need to create new content. Moreover, with Zia Insights, the software offers natural language generation (NLG) to provide in-depth information about displayed data and help business users to interpret it. Zoho Analytics is also integrated with Zoho Cliq to provide chat-like collaboration capabilities.

Zoho Analytics can be used as a self-service BI & analytics platform and can be embedded in Zoho's own or third-party applications. It can be deployed on-premises, on Zoho cloud and on third-party cloud infrastructures such as GCP, AWS or Azure. Its pluggable micro services architecture for public cloud deployments offers the flexibility to use third-party components such as AWS caching instead of those offered by Zoho

Zoho's Data Prep solution provides business analysts with an appealing and intuitive user interface for data ingestion and wrangling combined with guidance for possible preparation steps. Sophisticated data profiling features add value for customers when preparing data, decisively speeding up the identification and correction of issues in data.

Strengths

- Completely web-based, business-user-oriented BI & analytics platform with functionality for ad hoc analysis, dashboards and data preparation
- Many prepackaged BI & analytics applications for different data sources (Zoho and third-party) with predefined data models and content to speed up implementation
- Competitively priced product with a compelling scope, attractive for companies that want to provide access to data to more users at an affordable price
- Conversational analytics with 'Ask Zia' supports natural language queries in multiple languages against data from the semantic layer to help business users search for insights
- Data storytelling through slideshows embedded in 'Zoho Show' to connect the 'last mile' of information presentation directly to the BI & analytics platform and get rid of error-prone copying

Challenges

- Visual data exploration capabilities are limited to interactive dashboard applications, increasing the effort required to generate insights from new data sets or new combinations
- Limited advanced analytics capabilities and ML-based guidance for business users during analysis
- Formatting and layout of print-oriented reports not as feature-rich as leading products

Further relevant BI & analytics vendors

There are many other established vendors in the business intelligence and analytics market that provide mature and very useful technology, which may be ideal for organizations looking for a BI solution. However, due to the inclusion criteria applied in this report, those vendors are not evaluated in detail. To provide a broader market overview, we have listed some of them here.

Alibaba Cloud

Hangzhou, China

www.alibabacloud.com

Alibaba Cloud provides several data visualization services for cloud users. DataV is an Alibaba Cloud data visualization service that enables the analysis and presentation of large and complex data sets as visual dashboards. Alibaba Cloud Quick BI is a next-generation intelligent business intelligence service platform.

Altair

Troy, MI, USA

www.altair.com

Panopticon is a business intelligence solution focused on data visualization and streaming analytics. With its acquisition of Datawatch, Altair also absorbed a data preparation product (Monarch) into its portfolio. Its analytics products are part of the Altair SmartWorks™ suite, which is an open-architecture solution enabling advanced edge-to-cloud IoT applications and augmented data analytics powered by machine learning to drive innovation.

Alteryx

Irvine, CA, USA

www.alteryx.com

Alteryx AI Platform for Enterprise Analytics automates data provision to analysts, data engineers, data scientists and business users with a workflow and spreadsheet-based approach to data integration, modeling and advanced analytics that leads to deeper insights into data. Its Auto Insights solution provides ML-generated data insights and data storytelling capabilities for business users.

Bilander

Gdynia, Poland

www.bilandergroup.com

Integrated BI tool for reporting, advanced analysis, planning, dashboarding and strategy management (management by objectives) with comprehensive chart functionality.

Bissantz

Nuremberg, Germany

www.bissantz.de

Bissantz's DeltaMaster software enables users to create custom solutions for analysis, planning and reporting, featuring patented visualization capabilities.

Board

Chiasso, Switzerland

www.board.com

Board aims to provide an all-in-one decision-making platform which unifies CPM with BI & analytics capabilities. The vendor focuses on providing end-to-end support to key decision-making processes in midsize to large enterprises. The goal is to deliver an easy-to-use and coding-free platform for business power users to build tailored CPM and analytics applications in a technically homogeneous environment.

Comma Soft

Bonn, Germany

www.comma-soft.com

The in-memory-based analytics solution INFONEA is targeted at business users. It includes advanced analytics and data science functionality as well as capabilities for dashboards, ad hoc analysis, reporting, set-oriented analysis and visual navigation in data.

Cyberscience

Centennial, CO, USA

www.cyberscience.com

An ad hoc query and production reporting system that allows users to create simple queries, business graphics and crosstab reports as well as production reports.

DigDash

Meyreuil, France

www.digdash.com

DigDash, a French vendor, offers a solution designed for business users to create interactive data applications. This dashboard functionality is complemented by a set of predefined statistical methods as well as R and Python integration; ad hoc query capabilities within dashboard applications; and functions to create PowerPoint, PDF and Excel documents based on dashboard content, text and video material.

Entrinsik

Raleigh, NC, USA

www.entrinsik.com

Entrinsik Informer includes a browser-based, drag-and-drop, point-and-click interface designed to encourage self-service BI. It is heavily used by mid-sized organizations in specific industries.

GoodData

San Francisco, CA, USA

www.gooddata.com

GoodData offers a cloud analytics platform that helps companies to organize and distribute their data and information. The product offers analytics functionality such as embedding and data preparation as well as data visualization.

Incorta

San Mateo, CA, USA

www.incorta.com

Incorta provides a unified end-to-end data and analytics platform with capabilities for data acquisition, storage, analysis, visualization and reporting.

InetSoft

Piscataway, NJ, USA

www.inetsoft.com

InetSoft offers a cloud-based visualization and reporting product focused on data visualization, pixel-perfect and embeddable reporting, and self-service.

Infor

New York, NY, USA

www.infor.com

Infor is a global US-based vendor of industry-focused business software solutions. It has two main solutions for analytics and performance management: Infor Birst and Infor Dynamic Enterprise Performance Management (d/EPM). Both are strongly focused on Infor's customer base and therefore did not meet the inclusion criteria this year.

Knowage

Rome, Italy

www.knowage-suite.com

An open-source business intelligence suite for ad hoc reporting, interactive cockpits, multidimensional (OLAP) analysis and data mining.

Lumenore

Madison Heights, MI, USA

www.lumenore.com

Lumenore offers a self-service, no-code BI platform which aims to provide insights to all users in the organization. The product contains data ingestion and management as well as data visualization components. AI-driven recommendations for data and search-based analytics complement the feature set.

MyReport

Paris, France

www.myreport.fr

The MyReport BI platform has two modules targeted at different user types: one is integrated in the familiar Microsoft Excel spreadsheet environment and the other comes with a web-portal-based dashboarding solution for distributing dynamic data to multiple users.

OpenText

Waterloo, ON, Canada

www.opentext.com

OpenText sees itself as an information company that helps customers on their digitalization journey with its OpenText Cloud product set. Best known as a global provider of enterprise information management (EIM), especially for its enterprise content management (ECM) and business process management (BPM) solutions, the company added analytics with the 2015 acquisition of Actuate, one of the earliest providers of business intelligence software.

Phocas

Sydney, New South Wales, Australia

www.phocassoftware.com

Phocas offers budgeting and forecasting as well as financial reporting products that enable users to perform their own analysis with IT support needed only for data provisioning. It has a good range of functionality to support ad hoc query, reporting and dashboards.

Sisense

New York, NY, USA

www.sisense.com

Sisense offers especially strong support for the creation of white-labeled analytics applications that can be embedded in various external solutions to infuse analytics everywhere and to break down what the vendor calls "the adoption barrier".

Suadeo

Ivry sur Seine, France

https://suadeo.fr

Suadeo calls its offering a Self Data Services Platform. It is effectively an end-to-end data and analytics product consisting of several modules for data management and data visualization.

Tellius

Reston, VA, USA

www.tellius.com

Tellius is an AI-driven BI & analytics product which focuses on bridging the gap between BI and data science teams. It offers data preparation, data visualization and ML-based analysis capabilities, which provide business users with needed insights.

Yellowfin

Austin, TX, USA

www.yellowfinbi.com

Yellowfin has evolved from a reporting and dashboard product to support an emerging style of analytics characterized by governed data discovery and collaboration. Besides engaging visualizations, the company focuses on making BI content consumption as easy as possible, often by providing it integrated into other applications and software (embedded analytics).

Workday

Pleasanton, CA, USA

www.adaptiveplanning.com

Formerly known as Adaptive Insights, Workday Adaptive Planning is a cloud-based, business-user-oriented CPM solution with integrated functionality for planning, reporting, dashboarding, analysis and financial consolidation.

Related research documents

The following BARC research complements this BARC Score report:

BARC+

https://barc.com/barc-plus-overview/

Access to BARC's complete research portfolio, including product reviews with detailed insights into major BI, analytics and data management solutions on the market.

BARC Scores

https://barc.com/research/barc-scores/

BARC Score Integrated Planning & Analytics: A clear overview of the market for integrated planning and analytics software based on a combination of detailed end-user feedback and thorough analysis of products and vendors.

BARC Software Surveys

https://barc.com/research/

The BI & Analytics Survey: BARC's major annual report on the global BI & analytics software market. It is based on the world's largest survey of BI users, with a sample of around 2,000 survey responses – that is why so many companies trust the results of The BI & Analytics Survey and base their software purchasing decisions upon it.

The Planning Survey: The Planning Survey offers an in-depth comparison of up-to-date planning solutions to decision-makers looking for new planning software. Based on feedback from more than 1,300 users, the latest edition evaluates nineteen leading planning products.

The Data Management Survey: The voice of the data management community: The Data Management Survey is BARC's annual report on the data management software market. This BARC survey examines data management products in terms of their functionality, application areas and usability.

Other BARC Research

Free to download at: https://barc.com/data-bi-and-analytics-trend-monitor-2024/

BARC Data, BI & Analytics Trend Monitor: BARC's Data, BI & Analytics Trend Monitor study gives practitioners a platform to have their say on the trends currently shaping the BI, analytics and data management market, supplemented by additional commentary and analysis from BARC analysts.

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