# Magic Quadrant for Metadata Management Solutions

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Requirements and market demand have expanded for metadata management solutions to address a new population of users leveraging a variety of data and analytics initiatives. This research will help data and analytics leaders find the most suitable vendor and solution for their organizational needs.

**This Magic Quadrant is related to other research:**
Critical Capabilities for Metadata Management Solutions
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## Market Definition/Description

This document was revised on 18 November 2020. The document you are viewing is the corrected version. For more information, see the Corrections page on gartner.com.

Metadata management is a core aspect of an organization's ability to manage its data and information assets. The term "metadata" describes the various facets of an information asset that can improve its usability throughout its life cycle.

Metadata and its uses go far beyond technical matters. Metadata is used as a reference for business-oriented and technical projects, and lays the foundations for describing, inventorying and understanding data for multiple use cases. Use-case examples include data governance, security and risk, data analysis and data value.

The market for metadata management solutions is complex because these solutions are not all identical in scope or capability. Vendors include companies with one or more of the following functional capabilities in their stand-alone metadata management products (not all vendors offer all these capabilities, and not all vendor solutions offer these capabilities in one product):

- **Metadata repositories —** Used to document and manage metadata, and to perform analysis using metadata. Organizations can also use repositories to publish information about reusable assets, which enables users to browse metadata during life cycle activities such as design, testing and release management.
- **Business glossary —** A repository used to communicate and govern an enterprise's business terms, along with the associated definitions and the relationships between those terms.

- **Data lineage —** Specifies data's origins and where it moves over time. Data lineage also describes what happens to data as it goes through diverse systems and processes. Data lineage can help with analyzing how information is used and tracking the flow of information across the enterprise, serving various purposes.
- **Impact analysis —** Conveys extensive details about the dependencies of information or the impact of a change propagated from a data source.
- **Rule management —** Automates the enforcement of business rules that are tied to data elements and associated metadata. This capability supports dedicated interfaces for the creation of, and the order of execution and links with, information stewardship for effective governance.
- **Semantic frameworks —** Include support for taxonomies; entity relationship (ER) models; and ontology and modeling languages such as the Resource Description Framework (RDF), the Web Ontology Language (OWL) and the Unified Modeling Language (UML).
- **Metadata connectors for ingestion and translation —** Using techniques or bridges for various data sources, such as:
    - Extraction, transformation and loading (ETL), application integration, data integration, search
    - Business intelligence (BI) and reporting tools
    - Modeling tools
    - Database management system (DBMS) catalogs
    - ERP and other applications
    - XML formats
    - Hardware and network log files
    - Microsoft Excel spreadsheets and Word documents
    - PDF documents
    - Business metadata
    - Custom
    - System metadata administration and operations runtime metadata from networks, servers, communications nets, telemetry and other hardware specification and operations data

- Vendors must demonstrate the ability to identify, document and maintain relationships between ingested and translated metadata.

# Magic Quadrant

Figure 1. Magic Quadrant for Metadata Management Solutions

*drag_indicatorget_app*Source: Gartner (November 2020)


## Vendor Strengths and Cautions

### Adaptive

Adaptive is a Challenger in this Magic Quadrant. Based in Aliso Viejo, California, U.S., its metadata management solution is Adaptive Metadata Manager, which we estimate has 67 customers worldwide. Adaptive's operations are mostly in North America and EMEA, and its clients are primarily in the FinTech sector.

**Strengths**

- **Semantic knowledge graphs:** Adaptive's bright spot in the user experience is with graph technology and machine learning (ML), including weaving in domain expertise. Graph capabilities also include integrated use of ontologies, taxonomies and triple-store technology. Included are a variety of menu options to drill down into various elements in the graph.
- **Business processes and workflows:** Adaptive includes a rich set of business glossaries out of the box. Thirty-one predefined user types enable granular, role-based access and experience. Extensible architecture enables effective linking of data models to business functions. Adaptive's metadata management includes capabilities to manage regulations such as Dodd-Frank and GDPR. As part of contextualized support for data governance, Adaptive utilizes the FIBO standard for financial services.
- **Partner ecosystem:** Adaptive's approach to expanding its sales capabilities focuses on attracting alliance partners for vertical and specific use cases. It benefits from partnerships with industry partners, major service providers and from OEM relationships, which improve its ability to upgrade, and speed up deployment of, its product.

#### Cautions

- **Market share and visibility:** Adaptive continues to have only a limited market share for metadata management solutions, with visibility primarily limited to its existing customer base. It appears infrequently in the competitive evaluations seen by Gartner.
- **Deployment and training:** Customers have expressed concerns about the deployment of Adaptive Metadata Manager, in terms of integration, training and the limited availability of a peer user community. They were also not wholly satisfied with the APIs and tools to get the platform up and running and connected.
- **User experience:** The features for the business processes and workflows are robust and, once trained, customers rate these highly. However, the user experience and interface that wraps around these features feel dated and can take time to adapt to. The integration between features and add-ons is not as seamless as some customers would like. Adaptive claims that many of these usability issues have been addressed in Metadata Manager v.10. Prospective customers, and customers looking to upgrade, should carefully evaluate product implementation and usability concerns during the POC process to make sure needs are met.

### Alation

Alation is a Leader in this Magic Quadrant. Based in Redwood City, California, U.S., its metadata management solution is the Alation Data Catalog. Alation has more than 200 customers worldwide. Its operations are mostly in North America, and its clients span multiple sectors, two of the largest being financial services and technology.

#### Strengths

- **Market visibility and traction:** Alation has been a leading vendor in this market since its entry into it with data catalogs, and is well known for its data-cataloging capabilities. Increased market interest in data cataloging over the past four years has benefited Alation, thereby expanding its customer base.
- **Innovation with machine learning:** Alation continues to extend its innovation with ML application. Examples include ML applied to behavioral analysis for search and

governance, consumption-oriented and role-based interfaces, and extension of its catalog to an open, programmable platform. In reviewing inputs from all available sources, it should be noted that Alation dominates scoring for active metadata management.

- **A focus on active metadata and collaboration:** Alation has continued to expand its vision and is investing in product capabilities and ways to deliver value from increased analyst productivity and from analytics stewardship use cases. It now embraces the value proposition of being an active metadata platform. It also supports collaborative use cases across a variety of personas, such as data analyst, data scientist and information steward.

#### Cautions

- **Data lineage and impact analysis:** Some of Alation's customers scored its core metadata management functionalities relatively low (including data lineage, impact analysis and rules management). However, Alation continues to invest in these functionalities by adding new capabilities and partnerships that allow for fully automated capabilities throughout the entire data life cycle.
- **Proficiency in data governance:** Although Alation has been highly successful at getting customers started with data cataloging, some customers identified challenges in using Alation for data governance. Alation has already responded with new capabilities for active governance on stewardship and policy enforcement, and is also working to change the market perception on the matter.
- **Pricing and licensing:** Customers for Alation expressed concerns about its flexibility during pricing negotiations. They also suggested that the vendor improve its licensing model to grant access to a whole group, not just individuals.

### Alex Solutions

Alex Solutions is a Leader in this Magic Quadrant. Based in Melbourne, Australia, its metadata management solution — composed of Alex Data Marketplace and Alex Scanner Marketplace — has more than 70 customers worldwide. The vendor's operations are mostly in Asia/Pacific, and its clients are primarily in the utilities, telco and financial services sectors.

#### Strengths

- **Revenue growth and partner ecosystem:** Alex Solutions has demonstrated significant growth in its overall revenue compared with last year, approximately in the range of 50%. It has also added some large customers to its user base. Alex Solutions' go-to-market strategy focuses heavily on channel partners, the list for which has grown by approximately 150% since the last iteration of this Magic Quadrant. This includes technology companies, third-party service providers and consulting organizations.
- **Ease of deployment and use:** Customers continue to express a high degree of satisfaction with the overall user experience of the solution. They especially appreciate the ease of deployment and integration, the business-friendly UI, and the functional coverage for data lineage and impact analysis. Alex Solutions continues to invest in its usability team to further improve user experience, based on feedback collected through sessions with its customers.
- **Product functionality and breadth of services:** Alex's customers continue to cite its support for a range of usage scenarios, such as data and analytics governance, risk and compliance management, data analysis and data value management. Customers choose

Alex over other vendors in the market primarily because of its extensive product capabilities. Although a requirement for data value management is only just emerging, the other three use cases are already central to many organizations.

**Cautions**

- **Market share and mind share:** Alex Solutions' presence in Asia/Pacific is significant, but its presence in Europe and North America is comparatively small, which limits its share of the overall market for metadata management solutions. However, the company continues to invest in a partner ecosystem to improve its visibility on a global scale.
- **Workflow management and collaboration for governance processes:** Although Alex has improved its solution's workflow management capabilities, customers still consider the functionality requires further improvement. They also suggested possible improvements to establishing the governance processes, especially those that needed higher levels of collaboration and were difficult to attain.
- **Roadmap visibility:** Several customers requested better visibility into the vendor's product roadmap. They also suggested easy-to-comprehend release notes and timely updates on future releases. Alex Solutions will need to focus more on these matters to further to meet the expectations of large enterprises.

## ASG

ASG is a Leader in this Magic Quadrant. Based in Naples, Florida, U.S., ASG's metadata management solution is Enterprise Data Intelligence, which we estimate has 104 customers worldwide. ASG's operations are mostly in North America and EMEA, and its clients are primarily in the financial services and insurance sectors.

**Strengths**

- **Metadata management repository and architecture:** ASG Enterprise Data Intelligence is a single solution with an intuitive interface. Customers noted that the solution scales well in complex environments. It offers a broad range of functionality, including autodiscovery, cataloging capabilities, reference data management and governance. Furthermore, customers for ASG noted that the solution is straightforward to install and offers reasonable time to value.
- **Business use-case support:** ASG Enterprise Data Intelligence is based on business use cases including analytics, privacy, compliance, migration and application modernization. ASG has deep financial domain knowledge. It recently introduced a trust model to evaluate and measure data sources. ASG's impact assessment capabilities assess data management changes relative to business outcomes. Social capabilities include ratings, comments, issue management and workflow collaboration.
- **Support for data types and lineage:** Customers rate ASG data lineage capabilities as a key advantage of the offering. ASG provides supports for more than 260 data sources, in addition to the ability to import from and export to other metadata tools. Data lineage capabilities include the ability to version various metadata elements and link them in the configuration path.

**Cautions**

- **Slow to deliver on current market requirements:** ASG seems to be methodical in delivering updates to products, including Enterprise Data Intelligence. Though releases have occurred biannually for the past three years, the changes are primarily incremental. Prospective customers should assess Enterprise Data Intelligence to ensure released functionality meets current needs.
- **Active metadata framework:** ASG Enterprise Data Intelligence is used primarily for data compliance, privacy, governance and reporting. Much of its active metadata capabilities are basic — including lineage subscriptions, virtual data stewards, lineage gap notifications and workflow notification triggering — while data source recommendations are new and unproven. Customers with highly automated metadata management needs should evaluate Enterprise Data Intelligence for suitability.
- **Artificial intelligence (AI) technology and governance:** ASG has taken strides to embrace artificial intelligence, including a relationship with AI experts 4th-IR. However, the technology is still somewhat limited and new. ASG has introduced machine learning into the Virtual Data Steward module to match business and technical assets, but human training on this module is required.

## Collibra

Collibra is a Leader in this Magic Quadrant. Based in New York City, New York, U.S., its metadata management solutions are the Collibra Platform, Collibra Data Governance, Collibra Data Catalog, Collibra Lineage and Collibra Data Privacy. We estimate that Collibra has more than 450 customers worldwide. Its operations are mostly in North America and EMEA, and its clients are primarily in the financial services, insurance and healthcare sectors.

### Strengths

- **Product development matches market demand:** Collibra's offerings were originally focused on business semantics, with the capability to ingest external technical metadata while supporting business-user glossary development. This combination was the original sweet spot for metadata management. In the past four years, the vendor has kept pace with market demand, gradually improving metadata analytics and ontology/taxonomy development.
- **Strong services and user community:** When indicating why they engaged with Collibra, many organizations point to the company's strong professional services organization and its peer user community. Metadata is a complex topic and Collibra combines internal resources with third-party solution providers to help organizations complete implementation, for those that need it.
- **Wide market delivery:** Organizations report significant use of Collibra on-premises, in the cloud, across multiple geographic regions and across a wide distribution of vertical industries. User company size varies from $25 million in annual revenue to those with over $30 billion in annual revenue.

### Cautions

- **Resuming innovation:** Collibra is ensuring the ongoing success of current implementations, while aggressively moving existing customers to the cloud. This requires the careful balancing of legacy customer needs with product innovations. Collibra has been pragmatic in this regard by innovating at the pace of market

expectations. Recent indications suggest the product team has begun pursuing aggressive feature development, especially for integrating new types of metadata — once again focusing on innovation.

- **Customer awareness gaps:** Many customers reported manual issues that are, in fact, supported by product features. Customers were either unaware of, or indicated difficulties using, features for creating/managing the reference repository, workflow development, data lineage, data discovery, and missing history/life cycle functions. Native connectors support metadata ingest, and an underlying knowledge graph analysis helps to populate the metadata repository. The data lineage solution released in early 2020 also resolved some of the manual metadata management.
- **Clarity of value proposition:** Customers indicated support issues in a general sense, with some customers saying support quality was dependent on individual personnel. Customers questioned the total cost and how it relates to the value expectations. Collibra has already made progress to address both issues, with the hire of a chief customer officer, new initiatives on customer success, and an enhanced pricing model based on user and solution pricing.

### Data Advantage Group

Data Advantage Group is a Challenger in this Magic Quadrant. Based in San Francisco, California, U.S., its metadata management solution is called MetaCenter, for which we estimate there are over 80 customers worldwide. Its operations are mostly in North America, and its clients are primarily in the financial services and insurance sectors.

#### Strengths

- **Adaptation to demand:** Data Advantage Group has invested in meeting new demands for metadata management. It has significantly raised its marketing investment and is evolving its product to meet a wider user audience and more use cases.
- **Competitive pricing:** Over 40% of customers for Data Advantage Group indicated that cost management was a key reason for selecting it. MetaCenter's functionality and performance are widely considered to provide high value for money.
- **Overall service and maturity:** Data Advantage Group's customers scored it above the average for overall service and technical support. They also praised the solution's maturity.

#### Cautions

- **Technical audience focus:** Data Advantage Group has been delivering metadata management solutions for 20 years, but mostly for an IT audience. Its business glossary, semantics framework and rule management capabilities fell short of the expectations expressed by its customers. It is, however, committed to adapting its UI and messaging to the needs of a broader business community, and to continuous improvement.

- **Geographic coverage:** Despite being an established vendor, Data Advantage Group competes in relatively few countries, compared with new and emerging vendors. But having increased its marketing investment by 55% over the past year and secured new partnerships, it now appears to be addressing opportunities outside the U.S. — in EMEA and Australia — more aggressively.

- **Availability of third-party resources:** Most customers for Data Advantage Group indicated that they work only with the vendor, and without third-party involvement. This tendency may limit the company's growth as it seeks to attract a wider audience, although it has begun to attract technology partners.

## data.world

Data.world is a Challenger in this Magic Quadrant. Based in Austin, Texas, U.S., it provides a cloud-based metadata management solution that we estimate has over 59 customers worldwide. Its operations are mostly in North America, with media, insurance and services as top penetrated sectors.

### Strengths

- **Ease of use and collaboration:** Customers highlight ease of use as a major advantage of the platform. In addition to the existing collaborative capabilities in the product, data.world also introduced crowdsourcing data governance features that enable the entire organization to contribute to and support governance processes. As a cloud-native catalog, data.world makes it simple to import and export from and to other platforms and has recently entered a partnership for better management of unstructured data.
- **Knowledge graphs and business semantics:** Data.world offers scalable metadata management capabilities that use graph-based representation, as the solution is evolving into an enhanced semantics platform. Intuitive lineage and impact analysis capabilities, in conjunction with business semantics, create efficient workflow capabilities displayed through graph. Data.world's knowledge graph approach provides context through capturing relationships between data, along with metadata analysis.
- **Cloud-native platform:** Data.world has introduced a new transparent, simple pricing and licensing approach for its AWS-hosted, fully cloud-native SaaS solution. The solution scales automatically, based on resource demand, and enables thousands of users to run on the platform and utilize its core functionalities. Time to value was cited positively by customers. Data virtualization capabilities enable ease of use across data on-premises and in cloud and hybrid environments.

### Cautions

- **Geographically skewed market share:** While data.world offers comprehensive support for metadata management use cases and increased its customer count by nearly 50% this year, 90% of those customers are in North America and globally it is not well-recognized. While implementing some broad advertising, the company heavily focuses on converting paid pilots, freemium and free-trial options into paying customers.
- **Limited visibility across all use cases:** Data.world is primarily used for analytics use cases, with governance following somewhat behind. It supports the additional use cases of security and risk and data value, but customers are often unaware of these capabilities.
- **Ecosystem and third-party alliances:** Data.world has few implementation partners that are involved with customer implementations. This is partially due to the platform being 100% SaaS, but customers have indicated they would like to do more of their own customization, including with their current services partners. Knowing that this has been a customer concern, in 2020, data.world has focused on developing a stronger partner network with some early success.

**erwin**

Erwin is a Leader in this Magic Quadrant. Based in Melville, New York, U.S., it offers the erwin Data Intelligence Suite for enterprise metadata management. Combining data catalog and data literacy capabilities, we estimate that this solution has 127 customers worldwide. Its operations are mostly in North America and EMEA, and its clients are primarily in the financial services, healthcare, pharma and technology sectors.

**Strengths**

- **Completeness of offering:** Customers cite the complete experience of erwin's data governance as a primary buying point and as a point of satisfaction. This starts with the simulation environment, with impact analysis capabilities and the ability to easily survey errors and deficiencies before going into production. Business semantic capabilities have been noted as very effective, including business glossaries, and the ability to automatch data elements. Finally, the data modeling capabilities are robust across business and technical needs.
- **Data governance:** Customers were very complimentary of erwin's data governance capabilities, including its data literacy awareness. Erwin data governance makes it easy to bridge across organization and technical silos, including business-friendly workflows. The security capabilities within the governance workflow were considered adequate to the user requirements. Data governance is the primary use case for erwin metadata management solutions.
- **Growth, partners and market breadth:** Erwin has come a long way since it was spun out of CA Technologies in 2016. Enterprise metadata management revenue and the number of customers continue to grow at a rapid pace. With 425 global resellers and 48 consulting partners, erwin has a well-established knowledge partner network. In addition, erwin services customers of many sizes and in many verticals, and across many platforms such as ERP systems, data warehouses, data lakes, cloud databases and graph solutions.

**Cautions**

- **Implementation and initial configuration:** Customers mentioned that setting up erwin Data Intelligence Suite can be cumbersome. Implementation can take some time to complete. Also, configuring the tool can be complex, and the complexity increases as it scales (though customers like the robustness once implemented). The supplied tutorials for the offering have also been noted as an area that could use improvement. Erwin claims that these issues have been addressed in version 10.1 of the Data Intelligence Suite. Prospective customers should carefully evaluate implementation and complexity concerns during the POC process to ensure their needs are met.
- **Product acquisition costs:** Customers indicated that the solution tends to be expensive, especially when compared with the competition. However, there aren't any complaints from customers about the value supplied by the solution. Prospective customers should keep in mind the cost/benefits when comparing erwin with other solutions, and ensure the added value for their organization is worth a possible higher price tag.
- **User experience:** While the graph interface is quite powerful, larger diagrams can be difficult to manage within the application, as the image does not stay within a single frame and users can only see part of the image on the screen at one time. Erwin claims that these issues have been addressed in version 10.1 of the Data Intelligence Suite with

an “eye in the sky” view to enable users to see where they are in the diagram. Prospective customers with large data maps should ensure this new feature meets their usability needs.

## IBM

IBM is a Leader in this Magic Quadrant. Based in Armonk, New York, U.S., its metadata management solution is delivered through the latest version of Watson Knowledge Catalog (WKC) on Cloud Pak for Data and through its earlier product, IBM InfoSphere Information Governance Catalog. We estimate that IBM’s solution has more than 1,000 customers worldwide. Its operations are geographically diversified, and it has clients in various sectors.

### Strengths

- **Mind share and market presence:** IBM has been a leading vendor in this market for several years. Its offerings are widely adopted as enterprisewide standards that can be applied to a variety of use cases. IBM often appears as one of the top vendors in competitive evaluations seen by Gartner.
- **Breadth of product functionality and innovation:** The latest IBM metadata management solution — WKC — leverages IBM Cloud Pak for Data for data integration and data quality capabilities from the same platform. This reflects the vendor’s investments and interest in providing a single solution for end-to-end data management needs of its users.
- **Move toward openness:** IBM continues to focus on making information infrastructure more open, as it strives to align data integration with the diverse demands for information capabilities across hybrid integrations. IBM is working within the Open Data Platform initiative (ODPi) to enable metadata exchange via open metadata standards (like Egeria).

### Cautions

- **Lacks enhanced user experience capabilities:** IBM’s customers indicated that they could benefit extensively from an enhanced UX. Requirements include enhancing the UI for a business audience, providing better representations of objects when using automated metadata capture, navigation through groupings, and introducing better workflow management for collaboration across an enterprise.
- **Product upgrade and migration:** IBM’s most recent product strategy is to migrate its existing Infosphere Information Server customers to the latest version of WKC. The Information Governance Catalog will likely move into “maintenance mode” in the future. Customers currently on older versions will have to consider a migration path to WKC to take advantage of IBM’s innovative technologies.
- **Pricing and licensing:** IBM customers expressed concerns about the cost of WKC and suggested this is a primary factor working against the broader adoption of it. They also requested that IBM adopt a more standard pricing model, which IBM is working on by adopting virtual processor core (VPC) licensing based on the number of virtual cores. This model also aligns with Cloud Pak for Data’s overall pricing model.

## Infogix

Infogix is a Challenger in this Magic Quadrant. Based in Naperville, Illinois, U.S., its metadata management solution is called Data360, for which we estimate there are around 60 customers

worldwide. Its operations are mostly in North America, and its clients are primarily in the financial services and insurance sectors.

**Strengths**

- **Data-governance-focused product vision:** Infogix demonstrates a holistic vision that emphasizes the importance of data governance for business users. Its solution offers active metadata capabilities that enable the management not only of metadata, but also of data itself. Data360 offers data quality functionalities using the same platform, which further help improve the accuracy and accountability of data.
- **Support for all use cases:** Infogix offers comprehensive support for all the enterprise metadata management use cases. Worth noting here is the product's extensive support for the data value use case, applying a value-based framework to manage data assets toward a set business goal or outcome. The framework gains from internal and external valuation methodologies and can present the results within the context of business strategic objectives.
- **Ease of use and flexibility of implementation:** Infogix customers continue to cite ease of use and product flexibility as key vendor strengths. They also praised its offer of a social collaboration method for metadata enrichment.

**Cautions**

- **Clarity into product enhancements:** Customers mentioned that Infogix lacks clarity in terms of its roadmap and commitment to upgrading the Data360 solution. Improved visibility into future upgrades to requested features — such as lineage, visualization of relationships and models, intuitive workflows and comprehensive documentation — would greatly benefit the existing user base.
- **Solution documentation:** Customers praised Data360's flexibility and ease of use, in the way that it can be configured to achieve desired results. However, some noted a need for better documentation for APIs and integration to help them achieve the most effective implementation. At the same time, aggressiveness to expand the metadata connector portfolio and API frameworks over the past year has led to increased support levels for APIs as customers are migrated onto Data360's updated API framework.
- **Service offering:** While Infogix has several partnerships among service providers, the majority of its current customers worked only with the vendor for their implementations. Working with the vendor alone requires a certain organizational maturity and readiness for running metadata initiatives, which is a different approach to the rest of the market. Infogix also has an advisory services function, but this helps only a relatively small number of customers to run metadata initiatives.

## Informatica

Informatica is a Leader in this Magic Quadrant. Based in Redwood City, California, U.S., its metadata management solutions are Enterprise Data Catalog, Axon Data Governance, Data Privacy Management, Metadata Manager and Business Glossary, for which we estimate the vendor has more than 2,000 customers worldwide. Its operations are geographically diversified, and it has clients in various sectors.

**Strengths**

- **Market presence and dedication to data management:** Informatica's mind share is high — it appears more often than any other vendor in competitive situations seen by Gartner. Its focus on enabling data governance, data privacy and analytics capabilities aligns with its application- and platform-agnostic offerings, which have a broad range of established and emerging information infrastructures.
- **Innovative end-to-end offering:** Informatica's approach to providing an end-to-end, modular offering — including an enterprise data catalog, data preparation, data security and privacy, stewardship, data governance and analytics — helps its solutions stand out for business use cases. All aspects of its end-to-end approach are tied together by glossaries and rules management, and enabled by its enterprise unified metadata intelligence engine, CLAIRE. With the acquisition of Compact Solutions, Informatica has further strengthened its breadth and depth of metadata connectivity and lineage for all data inside and outside the enterprise, on-premises and in the cloud.
- **Alignment with business-oriented outcomes:** Extensive interactions with Informatica's customer base indicate that strong sales execution has increased the vendor's presence across all markets and industries. This points to a deep understanding of the growing business requirements for robust, enterprise-class metadata management.

#### Cautions

- **Implementation in some complex customer scenarios:** Knowledgeable personnel are required to implement and manage Informatica's extensive product portfolio. Customers indicated that Informatica support is required to improve implementation in relation to some complex customer scenarios. To address this need for complex deployment scenarios, Informatica has a dedicated professional services team with data advisory and technology strategists to help customers optimize their complex deployments.
- **Limited awareness and user adoption of open interfaces:** Customers indicated the need for understanding and adopting Informatica's open interfaces to fully exploit the advanced metadata capabilities provided by its metadata management solutions. However, many customers have already deployed Informatica's open APIs to integrate with third-party applications.
- **Regional support from third parties:** Informatica has an extensive set of solutions and tools to support various aspects of metadata management, but some customers raised concerns about the limited availability of high-quality expertise from its service partners outside the U.S. Informatica has accelerated partner enablement across the globe to make high-quality expertise available through partners in all geographies.

### Oracle

Oracle is a Leader in this Magic Quadrant. Based in Redwood Shores, California, U.S., its metadata management solutions are Oracle Enterprise Metadata Management (OEMM), Oracle Data Relationship Management, Oracle Enterprise Data Management Cloud, and Oracle Cloud Infrastructure Data Catalog. For these products collectively, we estimate Oracle has more than 1,000 customers worldwide. Oracle's operations are geographically diversified, and it has clients in various sectors.

#### Strengths

- **Technologies for complex deployments:** OEMM is seldom sold stand alone, as Oracle's diverse data management portfolio is seen as an all-in-one solution for addressing data-, analytics- and application-oriented requirements. This increases its appeal, especially in complex environments. Customers cited OEMM as high speed and reliable. In addition, reporting and interactive searches are noted as positives within the solution.
- **Metadata management as basis for core capabilities:** Oracle's vision sees metadata management as a basis for integrating core capabilities, such as business continuity, data movement, data transformation and data governance, as well as analytics and streaming data solutions. Oracle's strategic direction for metadata management in the cloud draws on its catalog and Enterprise Data Management Cloud offerings.
- **Connectors for metadata ingestion:** Oracle's broad support for bridges works for both organizations with Oracle environments and those with non-Oracle environments. It partners with Meta Integration Technology Inc. (MITI) for a diverse set of data connectors. To capitalize further on big data and streaming integration scenarios, Oracle is expanding its product development competencies to focus on the use of ML for modeling and design processes for metadata discovery.

**Cautions**

- **Execution to win new customers for enterprise metadata management:** Oracle continues to market its overall data management value proposition with metadata management noted as being included. This focus has begun to attract interest from potential clients. But Oracle needs to execute in alignment with its overall market presence if it is to exploit the metadata management value proposition more effectively.
- **Active metadata management:** Customers find the active metadata management capability of OEMM lacking in innovation in an area where the market uses ML to enable automation, highlight data insights and deliver business value. Oracle needs to focus on this area in the context of the augmented cataloging capabilities within Oracle Cloud Infrastructure (OCI) services. Oracle has indicated that AI/ML capabilities are on the metadata management solutions roadmap, including for OCI.
- **Complicated to install and use:** As noted above, OEMM is apt for complex environments, but at the same time customers remarked that it is a very complex offering with a difficult installation for some. OEMM can be hard to learn and nonintuitive. Some customers perceive the interface as clunky and outdated. A more automated workflow approach, such as automatically triggered email notifications, is lacking in the product.

## SAP

SAP is a Leader in this Magic Quadrant. Based in Walldorf, Germany, its metadata management solutions are SAP PowerDesigner, SAP Information Steward, and SAP Data Intelligence (formerly Data Hub), for these products combined, we estimate SAP has several thousand customers worldwide. SAP's operations are geographically diversified, and it has clients in various sectors.

**Strengths**

- **Innovation progress:** In recent years, SAP has initiated a new focus on metadata-driven solutions throughout its ecosystem. SAP Data Intelligence has brought together metadata discovery data modeling (for emergent and schema-based analysis), scenario analysis,

and the capability to forward engineer from metadata analytics into data preparation tasks. At the same time, it offers an enhanced business glossary and updated/enhanced capabilities to support metadata and data analytics for pipeline modeling. It also has improved support for Amazon Redshift, Azure Data Lake Storage Gen2, and the Pub/Sub operators for Google sources.

- **Breadth of metadata types:** SAP leverages metadata integration for multiple DBMS platforms, across the SAP ecosystem, with available integrators for business intelligence platforms, data modeling tools, competing data integration tools, and more. This also includes integrating data quality, data profiling, governance policy level and the resulting outputs for data lineage, impact analyses and business glossary resolution. The interoperability of metadata from the various platforms and tools within the SAP stack also provides for a consistent design, maintenance and monitoring capability for the data environment.
- **Monitor, report, audit and forward engineer:** Most customers report "ease of use" or "intuitive interface" in a repeated pattern. The combined metadata ingested from other tools creates a reporting and monitoring system that adds value to migration efforts, as well as data valuation assessments.

**Cautions**

- **Product functionality:** Customers reported minor feature and functional issues that can be attributed to the frequent release pattern. For SAP Information Steward, they cited what appears to be a user-interface-driven issue that can make it difficult to adjust rules, once they are bound to a column. Binding and unbinding rules is supported, but it's not entirely intuitive. They also reported difficulty identifying/resolving operational issues (sometimes bugs, sometimes poor tracing capability). For SAP PowerDesigner, customers are not utilizing performance features that improve the experience as the data store under management grows more complex or larger (big data and relational data assets are both reported).
- **Customer experience:** A small number of customers reported below-average timeliness of response regarding user questions or support issues. Some customers reported confusion over the "user-based pricing" aspect of SAP's solutions, since this tends to lower the expected cost, rather than increase it. SAP made the case that, generally, customers have a perception that the costs of SAP technology are higher than expected, but this is not due to user-based pricing. Organizations frequently report two primary reasons for SAP purchases: their preexisting relationship with the vendor and breadth of its offerings.
- **Implementation partner dependencies:** SAP has extensive implementation partners worldwide, but they are not as involved in most metadata solutions as they are with other products from SAP. The vendor's metadata solutions demonstrate about 50% cloud deployment, 25% hybrid cloud and on-premises, and 25% on-premises. As the demand for metadata has grown significantly faster in cloud deployments, this is a good sign that the solution practices and functionality are transferable.

**Semantic Web Company**

Semantic Web Company (SWC) is a Visionary in this Magic Quadrant. Based in Vienna, Austria, SWC's metadata management solution is the PoolParty Semantic Suite, for which we

estimate it has 141 customers worldwide. The PoolParty brand is better known in this market than the name of the company behind it. SWC's operations are mostly in EMEA and North America, with clients across multiple industry verticals (notably pharmaceutical and IT consulting).

**Strengths**

- **Advanced semantic evaluation:** SWC's PoolParty analyzes the context in which data is used (regardless of structure and including derived data from analytics). It can then recommend new or additional use cases for that data in analytics, reporting or transactional requirements. The ML is designed to assist in separating data terminology from usage assertions for ontology/taxonomy, entire documents, paragraphs, for name entity recognition (NER), for entity linking, and more. Managing instances of new assertions from users and use cases that "certain data goes together" is crucial to ensure that only reliable semantic relationships are promoted back to the data terminology as opposed to falsely supporting user "echo chambers."
- **Combines first- and second-generation machine learning:** SWC's solution ingests metadata using a combination of graph analytics engine, natural language processing (NLP) and traditional gap analysis based on existing schema and models to help infer missing metadata points. The ML continuously enhances metadata analytics to support continuous improvement by combining ML with knowledge graphs, NLP, text mining, and building a semantic meta model.
- **Flexible and adaptable:** Users report strong support for existing metadata and semantic standards. Customers reported as strengths the extensibility of the metadata model, excellent integration of open-source solutions (e.g., Spark processing), evaluation and development of very large and dynamic data taxonomies, metadata extraction, autotagging and vocabulary management. The solution performs continuous conceptual, ontological and taxonomic analysis. Text mining (including entity extraction) combines with linked data analysis and semantic classification to develop a rich set of tags that defines attributes across multiple scenarios. The tags are edited through workflows using various components of the platform employed at different points in the interface.

**Cautions**

- **User access to semantic framework:** Customers reported limited visibility into the semantic framework (PoolParty develops an internal semantic model). Similarly, customers find it difficult to review imported lineage (PoolParty can import metadata from other tools and platforms, but this is then difficult to locate for review and analysis).
- **Complex market, complex solution:** The tool embeds capabilities used to support automated metadata discovery via inference (for example, PoolParty UnifiedViews allow the execution of SPARQL/SHACL/OWL rules for transformation from any2RDF). Users report that organizations should persistently complement tool implementation with skills training leveraging the tool. Subtleties such as some bulk actions are not supported via the GUI. Specific to PoolParty, customers indicated that early involvement with SWC's e-learning or classroom tutorials and training are essential. PoolParty Academy is also a viable resource.
- **Uneven user experiences:** Users reported that the ontology editor needs to be improved. They also reported that, as the metadata tasks grow, it is necessary to monitor the

resource demands aggressively (there's a lot of processing and memory involved with graphs).

**Smartlogic**

Smartlogic is a Leader in this Magic Quadrant. Based in San Jose, California, U.S., its metadata management product is Semaphore, which Gartner estimates has 210 customers worldwide. Smartlogic's operations are mostly in North America, and its clients range across multiple industry verticals.

**Strengths**

- **Diverse utilization:** Customers specifically mentioned their use of the platform across multiple business use cases, including revenue leakage prevention; data quality and governance; as part of the compliance fabric; customer self-service; and investigative analytics. This diverse use is also cited as appropriate justification of the cost, which is aligned with the complex problems Semaphore solves. Additionally, the customer base includes a broad spectrum of verticals (such as manufacturing, media, energy/utilities, finance, service and transportation).
- **Optimized functionality:** Customers appreciate the highly scalable architecture, easy-to-use metadata management and the always-on, real-time availability of metadata. Positive comments were also shared regarding the use of ML and AI in combination as a learning and decision engine for unstructured and discoverable structured data assets. This has resulted in dynamic ontologic/taxonomic discovery, and is increasingly accurate through broader use.
- **Customer experience:** Building on the metadata hub vision, Semaphore's capabilities to ingest or access diverse types of metadata provide a wide usage base. The technical capabilities of the platform provide the basis of a strong experience, but this is further enhanced with frequent, efficient updates and highly rated professional services and support. Smartlogic received more above-average scores (all within deviation of the mean) from users than any other solution provider in this Magic Quadrant.

**Cautions**

- **Semantic approach:** Taking a semantic approach reduces data silos, but these skills are less common in the employment market. The user base is split in a distinct manner between clients reporting no issues who have accomplished the "curve" and those reporting varied experience. This emerges in part from an expectation that knowledge of ontologic/taxonomic principles is required. Smartlogic offers a "customer success" guarantee to mitigate the requirement for new semantic skills inside its client base, and continues to improve its end-user training and technical documentation.
- **Market skills and partners:** While Smartlogic demonstrates several implementation partners, most clients indicate that they utilize internal resources exclusively or only vendor implementation teams. This difficulty of finding third-party implementers is not specifically a caution — more an indication of lack of broadly available skills in the market.
- **Market presence:** Although a Leader in this Magic Quadrant, Smartlogic has found it difficult to gain market recognition. That said, it exhibits consistent revenue growth year over year. Gartner review data places customer satisfaction with any type of deviation

analysis, which could indicate that customers do not see the solution as a positive or negative relative to their experiences with Smartlogic. More a caution to Smartlogic, the growth of metadata demand in the market currently appears higher than the vendor's own growth rate. This can be an opportunity if Smartlogic establishes itself as an active metadata vendor.

**Solidatus**

Solidatus is a Niche Player in this Magic Quadrant. Based in London, U.K., its metadata management capabilities are delivered through the Solidatus platform. We estimate more than 62 customers worldwide use the platform. The vendor's operations are mostly in EMEA, and its clients are primarily in the financial services sector.

**Strengths**

- **Regulatory and compliance experience:** Solidatus draws from its immense experience working with financial services organizations, which form more than 90% of its customer base in one of the most regulated industries. The solution provides complete traceability and audit trails for all the governance workflows and changes available to users based on their access rights.
- **Lineage first focus:** Solidatus has differentiated itself from other vendors with its "lineage first" focus, which has worked well for its user base. Customers especially praised its strong data lineage capabilities that helped the vendor provide an "investigate and fix"-type approach, and exposed dependencies in an easy-to-search and visualize manner. Solidatus has also been used as a terminal product to capture all the other content/lineage from other applications, and to provide end-to-end lineage.
- **Customer experience and professional support:** Solidatus customers cite ease of use and product flexibility as strengths of the platform. They also praised the quality of professional support provided in an agile manner, ranging from initial implementation to utilizing the solution for specific use cases.

**Cautions**

- **Market share and visibility:** Although Solidatus has developed its offering by expanding the variety of use cases and personas it supports, its market visibility remains limited. It appears infrequently in the competitive evaluations seen by Gartner. Almost all its user base is in financial services, so it needs to expand to other industry verticals and to other regions in Asia/Pacific and Latin America.
- **Experience with other use cases:** Solidatus does a good job in the greater regulation and compliance-oriented market, where major focus is around governance, privacy and risk reduction. Its mix of customers using Solidatus for other use cases focused around data valuation and data analysis remains low.
- **Third-party resources, skills and partners:** Most Solidatus customers reported to Gartner that they only worked with the vendor, without any third-party involvement. This approach may limit the company's growth and availability of skills for its platform as it seeks to attract a global audience. Although the vendor has begun to attract technology partners, there is scope for improvement as it plans to increase its footprint outside of its preferred industry and geography.

### Syniti

Syniti is a Visionary in this Magic Quadrant. Based in Boston, Massachusetts, U.S., its metadata management solution is now offered from its common platform, called Syniti Knowledge Platform. We estimate that Syniti has over 400 customers worldwide for this solution.

#### Strengths

- **Incremental data-experience-based delivery:** Syniti offers a combination of software and services focused on incremental, data-experience-based delivery. The approach uses metadata to identify gaps in an organization's overall information management, which Syniti then strives to fill.
- **Convergence of metadata with key data management actions:** By capturing process flows, schema and technical architecture, Syniti delivers a broad view of infrastructure and how data overlays it. It adds to this business process metadata by showing how data flows between applications, even between many applications in different business units. A joint metadata and data analytics model identifies pressing data management requirements to feed a recommendation engine with information about how to improve and optimize those data flows.
- **Dedicated professional support:** Most customers indicated that Syniti is intently focused on making product improvements based on customer input. The company's dedicated professional support draws on many years of strong consulting.

#### Cautions

- **Market growth and visibility:** Although Syniti has developed its offering by expanding the variety of use cases and personas it supports, its market visibility remains limited. Syniti has managed to increase its customer base, but this has resulted in a very limited revenue increase. More than 80% of its revenue is still attributed to consulting and professional services and not licenses.
- **Ease of use and business-centric focus:** Syniti provides a high-level conceptual overview of data flows and metadata sources, but this includes underlying details that are primarily useful to designers and architects. Although a business-user-centric UI is available for the business glossary, strategy and rules management, many Syniti customers rely on designers and architects to interpret and forward-engineer experience-based metadata analytics in order to enable more effective use by business-oriented roles.
- **Reliance on third-party governance tools:** Ingesting metadata from third-party connected data governance tools, and then developing an overall data governance strategy, is a highly functional model, but it should be considered a metadata ingestion and analysis model. That said, customers that aim to take a metadata-driven governance approach using a Syniti-based solution will find the active use of metadata thorough.

## Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may reflect a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

#### Added

- Solidatus

**Dropped**

- Global IDs

# Inclusion and Exclusion Criteria

For Gartner clients, Magic Quadrant research identifies and then analyzes the most relevant providers and their products in a market. Gartner uses, by default, an upper limit of 20 vendors to support the identification of the most relevant providers in a market. On certain occasions, the upper limit may be extended by Methodologies where the intended research value to our clients might otherwise be diminished.

The inclusion criteria represent the specific attributes that analysts believe are necessary for inclusion in this research. To be included in this Magic Quadrant, vendors had to meet the following criteria:

- Vendors must offer stand-alone packaged software tools or cloud-based software (that is, not only embedded in, or dependent on, other products and services) positioned, marketed and sold specifically for general-purpose metadata management. Each solution must support **two or more** of the following use cases:
    - **Data governance —** Metadata for data governance includes interfacing, import/export or manual capture of identities and their associated restrictions or permissions to modify data asset schemas or content. Support for this use case means having the capability to interface or import/export data definitions, schema, structure, validation rules and profiles of data values from various data assets in an organization across multiple platforms for both structured and unstructured data assets. Effectively governed metadata and content provide a glimpse into the workflow of data, the ability to perform an impact analysis and a common data model. Solutions supporting this use case also provide a business glossary, including accountability for its terms and definitions, and an audit trail for compliance. Governance use cases must support situational application of policies and rules.
    - **Security and risk —** Metadata that includes data lineage, data sharing, data asset publication and subscriptions to those assets, data query tracking, user identification for access or attempted access to data assets. Support for this use case means being able to report on all these metadata assets in any or all forms. This includes direct access to the metadata, list capability for each category, analysis of intersections of any of these metadata assets, graphical representation of lists (counts, summaries), data flow/architecture diagrams for impact analysis showing data connections, links, dependencies, and reports in list form of these same impacts. Solutions should also demonstrate the capability to provide all this metadata to third-party security and identity management solutions via direct access, API or metadata export (scheduled or event driven).
    - **Data analysis —** This use case provides insight into an organization for assessment of past performance and reporting. Requirements for this use case include leveraging known uses of data, learning through a community of users,

provision of necessary reports on past business performance, and contributions from users through the sharing of data. Metadata management leverages data — as data teaches us, so metadata helps us. This use case requires role-based access that separates application developers from data engineers from public access for data inventory and other role-based management.

- **Data value —** Data value involves the inventorying, assessment and analysis of data assets through the lens of metadata. This use case focuses on the future. Metadata and data are analyzed for potential value-add, including the identification of additional metadata that needs capturing and datasets that need enrichment. It includes support for data valuation methodology. Solutions should have the capability to activate the metadata collected under governance and risk to demonstrate which data usage instances exhibit high frequency. Additionally, capturing data from business process completion rates, financial results and performance ratings in business functional areas will be added as metadata to evaluate value to the organization — to cross-reference popularity with effectiveness.

- Vendors must deliver metadata management functional capabilities that include, **at a minimum**, metadata repositories, a business glossary, data lineage, impact analysis, rule management, and metadata ingestion and translation from various sources. Vendors that offer only some of these capabilities (for example, those that support only business glossaries) are excluded, because they do not provide the minimum metadata management capabilities required for a complete solution. Vendors **must therefore offer *all* of the following**:
  - **Metadata repositories —** Used by information managers to document and manage metadata, and to perform analysis using metadata. Information managers can also use repositories to publish information about reusable assets that enable users to browse metadata during life cycle activities (such as design, testing and release management).
  - **Business glossary —** A repository used to communicate and govern an enterprise's business terms, along with the associated definitions and the relationships between those terms. An advanced feature is the capability to derive synonym, homonym and antonym analysis by capturing multiple sources of business glossary entries. All of these functions can be captured via metadata management interfaces, import/export from other tools or integration with content/text analysis tools.
  - **Data lineage —** Specifies the data's origins and where it moves over time. It also describes what happens to data as it passes through diverse processes. Data lineage can help to analyze how information is used and to track key bits of information that serve a particular purpose.
  - **Impact analysis —** Conveys extensive details regarding the dependencies of information or the impact of a change propagated from a data source.
  - **Rule management —** Automates the enforcement of business rules that are tied to data elements and associated metadata. This capability supports dedicated interfaces for creation, order of execution and links with information stewardship for effective governance.

    - **Metadata connectors for ingestion and translation —** Using techniques or bridges for various sources, such as:
        - Extraction, transformation and loading (ETL); extraction, loading and transformation (ELT); application integration; data integration; insight engines
        - Business intelligence (BI) and reporting tools
        - Modeling tools
        - Database management system (DBMS) catalogs
        - ERP and other applications
        - XML formats
        - Hardware and network log files
        - Microsoft Excel spreadsheets and Word documents
        - PDF documents
        - Business metadata
        - Content management systems
        - Custom metadata
    - Vendors must be able to demonstrate the ability to identify, document and maintain relationships between ingested and translated metadata.
- Vendors must be able to show, with quantitative data, **the top five deployed customer scenarios** supported by their solutions. For each scenario, they must specify: the volume of data and metadata managed, the number of users using the solutions, and the benefit realized by the customer (**the scenarios must be presented in an anonymous way**).
- Vendors must demonstrate **current application of machine learning with a minimum of five examples** of how this is leveraging active metadata in their proposed solutions.
- Vendors must support packaged capabilities related to sales and support for **more than one global region** (North America, Latin America, EMEA and Asia/Pacific).
- Vendors must include a complete solution addressing administration and management, as well as end-user-facing functionality, for **four or more of the following types of users:** data steward, information/data architect, data engineer, developer, business analyst and casual user.
- Vendors must maintain an **installed base of at least 50 production customers** (different companies) for the metadata management solution(s) meeting the above criteria. The production customer base must include customers in more than one region (out of North America, Latin America, EMEA and Asia/Pacific).
- Vendors' products must have had referenceable production presence in accounts in a **minimum of three** of the following industry sectors*:*
    - Accommodation and food services
    - Administrative and support and waste management and remediation services
    - Agriculture, forestry, fishing and hunting
    - Arts, entertainment and recreation
    - Construction
    - Educational services
    - Finance and insurance
    - Healthcare and social assistance
    - Information services
    - Management of companies and enterprises

    - Manufacturing
    - Mining
    - Professional, scientific and technical services
    - Public administration
    - Real-estate rental and leasing
    - Retail trade
    - Transportation and warehousing
    - Utilities
    - Wholesale trade
- Vendors must be able to demonstrate an increase of revenue of at least $1 million from end of April 2019.

For this Magic Quadrant, we evaluate products in production (that is, **generally available**) as of **1 June 2020.** Products undergoing beta testing or other testing were not considered.
Vendors whose core capabilities (metadata repository, business glossary, and data lineage and impact analysis or rule management) are provided by a third party — through an OEM relationship, for example — were excluded. This exclusion did not apply to metadata ingestion and translation capabilities. Gartner did evaluate core intellectual property (IP) delivered by vendors, as opposed to third-party-provided IP.
Vendors meeting the above criteria — but limited to deployments in a single or specific application environment, industry or data domain — were excluded from this Magic Quadrant. There are many vendors in the market for metadata management solutions, but most do not meet the above criteria and are therefore not included in this Magic Quadrant.
Many vendors provide products for one very specific metadata management scenario; for example, solutions for the ingestion, population or governance of data in data lakes. Others provide a range of functions but operate only in a single country or support only narrow, departmental implementations. Others may meet all our functional, deployment and geographic requirements, but be at a very early stage in their life and therefore have few, if any, production customers.

# Evaluation Criteria

## Ability to Execute

**Product/Service.** Core goods and services that compete in and/or serve the defined market. How well the vendor supports the range of metadata management capabilities required by the market, the manner (architecture) in which these capabilities are delivered, and the overall usability of the solutions. This criterion receives a **high** weighting.
**Overall Viability.** This criterion includes an assessment of the organization's overall financial health, as well as the financial and practical success of the business unit. Also assessed are the vendor's financial strength (as assessed by revenue growth, profitability and cash flow), and the strength and stability of its people and the organizational structure. The **medium** weighting for this criterion reflects buyers' increased openness to considering newer, less established and smaller providers with differentiated offerings.
**Sales Execution/Pricing.** The organization's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support and the overall effectiveness of the sales channel. The effectiveness of the vendor's pricing model in the light of current customer demand trends and spending patterns, and the effectiveness of its direct and indirect sales channels. Given buyers' strong focus on cost models

and return on investment, and the criticality of consistent sales execution for a vendor's growth and customer retention, this criterion receives a **high** weighting.

**Market Responsiveness and Track Record.** The ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve, and market dynamics change. As an important consideration for buyers in this market, but not an overriding one, this criterion receives a **medium** weighting.

**Marketing Execution.** The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message in order to influence the market, promote the brand, increase awareness of products and establish a positive identification in the minds of customers. This "mind share" can be driven by a combination of publicity, promotional material, thought leadership, social media, referrals and sales activities. In this criterion, we look at the overall effectiveness of the vendor's marketing efforts, the degree to which it has generated mind share, and the magnitude of the market share achieved as a result. Given the evolution of the market with the improved knowledge about metadata management capabilities, we gave a **medium** weighting to this criterion.

**Customer Experience.** Products and services and/or programs that enable customers to achieve anticipated results with the products evaluated. This may include ancillary tools, customer support programs, availability of user groups, and service-level agreements.

In this criterion, we consider the level of satisfaction expressed by customers with the vendor's product support and professional services. Also, their overall relationship with the vendor, as well as their perceptions of the value of the vendor's metadata management solutions relative to costs and expectations. We provide a **medium** weighting for this criterion to reflect buyers' realization that executing on metadata management requires more maturity if they seek to derive optimal value from their investments.

**Operations.** The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure such as skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis. This criterion is **not rated** in this Magic Quadrant, because our interaction with the market indicates that it is a minor consideration during the selection of metadata management solutions.

## Table 1: Ability to Execute Evaluation Criteria

Enlarge Table

- 

| Evaluation Criteria | Weighting |
|---|---|
| Product or Service | High |
| Overall Viability | Medium |
| Sales Execution/Pricing | High |

| Evaluation Criteria | Weighting |
|---|---|
| Market Responsiveness/Record | Medium |
| Marketing Execution | Medium |
| Customer Experience | Medium |
| Operations | Not Rated |

Source: Gartner (November 2020)

## Completeness of Vision

**Market Understanding.** The ability to understand customer needs and translate them into products and services. Vendors that show a clear vision of their market will listen, understand customer demands, and can shape or enhance market changes with their added vision. In this criterion, we consider the degree to which vendors are aligned with the significant trend of convergence with other data management and analytics-related markets. Given the dynamic nature of this market, this criterion receives a **high** weighting.

**Marketing Strategy.** Clear, differentiated messaging that is consistently communicated internally and is externalized through social media, advertising, customer programs and positioning statements. In this criterion, we consider the degree to which the vendor's marketing approach aligns with and/or exploits emerging trends. This criterion receives a **medium** weighting.

**Sales Strategy.** A sound strategy for selling that uses the appropriate networks, including direct and indirect sales, marketing, service and communication. Plus, partners that extend the scope and depth of market reach, expertise, technologies, services and the vendor's customer base. This criterion receives a **medium** weighting.

**Offering (Product) Strategy.** An approach to product development and delivery that emphasizes market differentiation, functionality, methodology and features as they map to current and future requirements. We also consider the breadth of the vendor's strategy to cover a range of delivery models for products and services, from traditional on-premises deployment to SaaS and cloud-based models. Given the rapid evolution of technology in this market, we give this criterion a **high** weighting.

**Business Model.** The design, logic and execution of the organization's business proposition to achieve continued success. In this criterion, we evaluate the overall approach that the vendor takes to executing its strategy for the metadata management solutions market, including the diversity of delivery models, packaging and pricing options, and partnership types. The evolution of the market enables an improved comparison of options across the vendors, so this criterion receives a **medium** weighting.

**Vertical/Industry Strategy.** The strategy to direct resources (sales, product and development), skills and products to meet the specific needs of individual market segments, including verticals. Given the broad, cross-industry nature of the metadata management discipline, vertical-market

strategies are somewhat less important than in some other disciplines, so this criterion receives a **medium** weighting.

**Innovation.** This criterion covers direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, and defensive or preemptive purposes. It also includes driving toward information valuation and treating information as an asset. Given buyers' desire to take substantial leaps forward in their information management competency, and the strong interest in extending metadata management capabilities in support of broader information governance and analytics goals, this criterion receives a **high** weighting.

**Geographic Strategy.** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries, as appropriate for that geography and market. This criterion receives a **low** weighting as the market of metadata management solutions is expanding across the globe.

## Table 2: Completeness of Vision Evaluation Criteria

Enlarge Table

| Evaluation Criteria | Weighting |
|---|---|
| Market Understanding | High |
| Marketing Strategy | Medium |
| Sales Strategy | Medium |
| Offering (Product) Strategy | High |
| Business Model | Medium |
| Vertical/Industry Strategy | Medium |
| Innovation | High |
| Geographic Strategy | Low |

Source: Gartner (November 2020)

## Quadrant Descriptions

### Leaders

Leaders are frontrunners with offerings that support the full range of metadata management capabilities. They exhibit a clear understanding of, and vision for, where the market is headed, and are good at meeting customers' requirements for a variety of use cases. They support both business and technical metadata scenarios, with the help of strategic partnerships to optimize delivery of their solutions. They establish market trends by providing new functional capabilities and by identifying new types of business problem to which they can bring significant value. Leaders have an established and/or fast-growing market presence and a multinational presence.

**Challengers**

Challengers are well positioned in the light of key trends, but they may not provide the comprehensive breadth of functionality and support for use cases of the Leaders, or they may be limited to specific technical environments or application domains. In addition, their vision may be hampered by a lack of coordinated strategy across the various products in their metadata management solution portfolio. Challengers have an established customer base, as well as credibility and viability, though their implementations may focus on noninnovative projects.

**Visionaries**

Visionaries demonstrate a strong understanding of emerging technology and business trends, or have a position that is well aligned with current demand. However, they are not yet perceived as competitive players beyond their traditional customer base. They may be new entrants that lack the installed base and global presence of larger vendors. They might also be large, established players in related markets that have only recently placed emphasis on a focused offering for metadata management.

**Niche Players**

Niche Players have gaps in both their Completeness of Vision and Ability to Execute. They often exhibit a narrow focus in supporting particular use cases. They may be established vendors for some capabilities in the market for metadata management solutions, and may be going through a cycle of change in order to compete in a transforming market.

# Context

Metadata supports understanding of an organization's data assets, how those data assets are used and their business value. Metadata management initiatives deliver business benefits such as improved compliance and corporate governance, better risk management, better shareability and reuse, and better assessments of the impact of change within an enterprise, while creating opportunities and guarding against threats. Metadata management can be implemented at a single program or project level — for example, by governing data in a data warehouse to support analytics and BI.

Enterprise metadata management (EMM) seeks to exploit the value of governed metadata across programs and projects by, for example, sharing common business metadata across a data warehouse for use in application integration. Thus, EMM is much more complex and harder to implement than metadata management, but its business value is correspondingly greater.

The term "metadata" describes various facets of a data asset in order to improve its usability throughout its life cycle. Metadata management is about an organization's management of its data and information assets in order to address use cases such as data governance, risk and compliance, data analysis, and data value.

Business benefits that motivate the introduction of a metadata management solution to an enterprise include:

- Avoidance of fines, fees, penalties and even imprisonment by enabling better adherence to compliance and corporate governance frameworks. This is done by clearly identifying data that is covered by regulatory and legal obligations. Such obligations include the General Data Protection Regulation (GDPR), the Basel Committee on Banking Supervision (BCBS) 239 standard, and the Health Insurance Portability and Accountability Act (HIPAA).
- Reuse of data for ease of sharing, which will show which data is considered of highest value. Metadata management improves the productivity of analysts, data engineers and data scientists by providing them with curated and governed metadata for their projects.
- Improved productivity of sales teams and cost control managers, and improvements to business delivery channel development and the management of capital and expenditure.
- Improved risk management and better assessment by decision makers of the impact of change within an enterprise, thanks to communication of a clear lineage for data and its use.

Data and analytics leaders seeking metadata management capabilities often demand solutions that address a particular use case or project focus, or just need solutions that will work in alignment with their organization's other technology investments.
In this year's Magic Quadrant, we have reassessed the market in terms of vendors' Completeness of Vision, specifically for their ability to address effectively the exchange of foreign metadata (this is about openness and interoperability — critical for multicloud deployment). We have also reassessed the market in terms of vendors' Ability to Execute, looking at real examples of active metadata application through metadata analysis. In addition, the COVID-19 crisis has accelerated the value of implementing metadata management solutions, with new conversations at the business level not yet visible in the market.
The market for metadata management solutions continues to evolve. Disruption is likely to continue through 2021, which will create new competitive situations and might erode the installed bases of the less innovative vendors.
There are four key reasons why this continued disruption is likely:

- Existing vendors are expanding beyond the metadata management sector (for example, by switching to a data fabric value proposition).
- New vendors are entering this sector to expand their installed base, and application vendors (in the analytics and data science market, for example) are contributing to the creation of new drivers of metadata management.
- Cloud providers are targeting new or enhanced metadata management capabilities, driven by data catalog value propositions.
- New metadata management requirements and capabilities are arising in adjacent markets (see Modern Data and Analytics Requirements Demand a Convergence of Data Management Capabilities).

# Market Overview

The market demand for ever-increasing capabilities from metadata management solutions sees organizations pressing for more innovation and significantly improved support and skills. Organizations have indicated for three years in a row that integration and improved quality in analytics can and should be more automated — which require significantly enhanced metadata.

Improved metadata management and metadata analysis is the only way to address the needs of automation — via active metadata. When this already demanding mixture of capabilities is combined in cloud and on-premises hybrid deployments, the expectations are extremely high in 2020. Metadata management technology continues to expand in terms of capabilities and support for multiple use cases, but lags market demand significantly. A growing ecosystem of system integrators and independent software vendors is increasing their support for the most popular solutions.

In addition, the market is expanding to meet the requirement for organizations to address data governance and, in particular, regulatory requirements for privacy management imposed by, for example, the GDPR and the California Consumer Privacy Act (CCPA) (see The State of Privacy and Personal Data Protection, 2019-2020).

The market has shown significant growth during 2019. Interest in metadata management solutions during the COVID-19 crisis forced a significant inflection in the market, increasing expectations from tools and metadata management programs. Focus on cost optimization and augmented data management will support growth in this market in the upcoming months (see Cost Optimization Is Crucial for Modern Data Management Programs).

## Market Trends

From crisis to opportunity, the role of data and analytics is expanding and becoming more strategic and mission-critical. Business and society are becoming increasingly digital, complex, global and interwoven, yet local, with ever-growing competition and emancipated customers. Massive disruption, crisis and the ensuing economic downturn are forcing companies to respond to previously unimaginable demands to resource optimize, reinvent processes, and rethink products, business models and even their very purpose. Only resilient, nimble and creative organizations will survive and thrive.

The combinatory power of more sophisticated and complex analytics, on a greater variety of data, has become more strategic and central to the creative thinking required to innovate our way beyond the post-COVID-19 world of global uncertainty and change.

The need for more accurate contextual awareness — enabled by capabilities to scenario plan, optimize, prioritize and focus investments — are now priorities (see Top 10 Trends in Data and Analytics, 2020).

Metadata management solutions have improved over time, but still have gaps in workflow, data lineage, source data connectors and augmented catalog capabilities. Many organizations are just starting to explore enterprise metadata management solutions as a mechanism to optimize their data utilization and management, and improve productivity. Typical data management concerns include:

- Disparate and siloed data management tools, including multiple solutions that include metadata management capabilities.
- A lack of confidence in the underlying data that is being analyzed.
- Buyers outside IT — As non-IT functions are beginning to be the primary buyers and users of many data management tools, features and options of current solutions do not meet business user needs.
- Data lakes — Data lakes have exacerbated issues with user trust and utilization of data. This is because early data lake deployments, intended for data scientists or engineers, used poor data management and governance controls and did not include a usable data lineage.

- The inability to find the needed data, even though it resides somewhere within the organization.
- Difficulty in tracking the data as it flows through the organization, including appropriate handoffs for data management needs, such as data integration, data quality, data prep and general data availability.
- Delays in operationalizing models due to lack of lineage.
- Siloed use cases. These result in diminished value in data being collected or managed.
- Urgent need for metadata management to assist with multicloud/hybrid integration requirements.

In addition, there is a lack of focus on solutions that target:

- Better visualized workflows and lineage
- Extensible connectivity
- Active and augmented metadata management
- Ultimate business outcomes

To improve adoption, tech vendors must ensure these core capabilities are delivered in a business-usable fashion. Currently, many metadata management solutions focus on the delivery of incremental features or deeper development of individual modules, rather than aligning the overall offering to meet business use cases that meet business needs.

This technology-driven delivery approach of metadata management solutions leads to a wide usability and suitability gap for the ultimate users. Therefore, the sales and implementation cycles for metadata management solutions are elongated, and once acquired, the technology is not often used to its full potential.

Modern metadata management is still somewhat nascent when it comes to applying an end-to-end solution to solve specific business use cases. As such, most implementations are currently used departmentally for specific use cases. But when active metadata (see Note 1) is driving the requirements, metadata management must shift toward intelligent optimization and use-case metadata analysis. Metadata analytics makes it possible to build models (for example, data science models) that allow providers to use and execute automated data management strategies based on over two decades of database management system and data integration tools experiences with these functions.

The potential for augmentation and machine learning (ML) is not yet realized, even while these expectations in the market are accelerating. AI augmentation of all aspects of data and analytics is making everyone in the content creation pipeline more productive with less skill and changing how and where more types of users interact with analytic content.

Finding relationships in combinations of diverse data, using graph techniques at scale, will form the foundation of modern data and analytics. Metadata is the key for almost all forms of automation and augmentation in modern data utilization scenarios.

Metadata has historically been considered highly technical in nature, describing schema, schema rules and how data is represented in any given dataset relative to data expectations. Metadata is data used in a secondary role, to inform or control or elaborate on a related information concept. That means that any data from any system can be used as metadata in any adjacent part of the information architecture. For example, records count, or the rate of new data instances, can be

used to inform summaries, trends or detailed forms. Analyzing the metadata as it is used, and making decisions based on it, becomes the definition of active metadata.

The capacity and utilization of the processing workloads can be optimized using advanced ML and augmented data management, or for augmented analytics. ML tags — and even the metadata regarding how these tags are developed as both output from and input into AI-powered decision engines — are metadata. The physical location of data, when combined with access rights management and data governance demands, generates metadata that describes experiences and compares those experiences with expectations from data. Metadata can also be used to prove that compliance requirements have been met.

It is metadata analysis that will determine the best locations, access pathways, rights management and processing demand. It even controls how multicloud environments coordinate capacity and utilization, resulting in better processing parameters and resource allocation. Highly emergent workloads will be dynamically deployed across increasingly broader infrastructure that will eventually disregard all specific provisioning of assets in favor of policy- and demand-driven deployment models.

Some modern metadata management solutions can track the activities of data consumers in order to understand actual data usage, what data is most important, which datasets are related, and the nature of those relationships. These solutions also incorporate data and query usage analytics and certification metrics. Their capabilities help business users identify which integrated datasets have been certified, or not, for use by information stewards, as well as for use by experts in business processes and analytics.

Modern metadata management solutions also embed augmented data catalogs, and are often marketed with this as a standout feature (see Augmented Data Catalogs: Now an Enterprise Must-Have for Data and Analytics Leaders). Their increased intelligence capabilities make them more effective at helping data consumers create queries and at associating specific consumers, or groups of them, with particular datasets. As a result, data catalogs can now start meeting the needs of citizen data scientists, citizen integrators and business/data analysts — end users who are not IT coding experts or experienced data engineers. This opens up the organization's data assets, and their effective use, to a much larger constituency, effectively allowing organizations to take the first steps toward monetizing their information assets.

Although the market opportunity can appear extremely large — after all, metadata is everywhere — the success of metadata management as a distinct discipline for delivering value to organizations is not yet secure. According to the 2019 Gartner Data Management Drivers Survey (see Survey Analysis: Data Management Struggles to Balance Innovation and Control), participants estimate that data management teams spend only 8% of their time on the disciplines of metadata management/data cataloguing versus, for example, data preparation and data integration — both at 18%. Yet the same survey indicates that 43% of participants struggle to identify data that delivers value, while 32% consider the management of new data sources of different types as challenging. From several hundreds of inquiries on metadata management, Gartner recognizes that these challenges are due to a lack of a comprehensive metadata management focus.

It is interesting that a variety of new use cases are driving investment in metadata management. It is also suggested by our interactions with vendors which investments point to new use cases like data warehouse modernization, streaming analytics, "360 degree" solutions (for customer, reference, product and supplier data), MDM, explainable AI and DataOps.

Moreover, success with metadata management must be supported by technological evolution and, more importantly, by changes in metadata practice. It requires the participation of a wider set of roles, including business roles, in the metadata management process (see Create a Business Case for Metadata Management to Best Fulfill Your Data and Analytics Initiatives).
To fulfill the market's demand for easy management of data, despite an increasingly complex data landscape, metadata management solution vendors must do more than describe and provide transparency regarding the usage of data. They must also become active players in managing data.
Vendors are adjusting to and exploiting the following changes:

- The transfer of metadata ownership from the CIO to the chief data office (CDO) or a similar role.
- The increase in the variety and extent of metadata supported.
- The enhancement of the scope of metadata through automation (ML) and through automated enrichment by semantic search capabilities, standard processes and crowdsourcing.
- The rise of semantics formalism (also known as formal ontologies) for improved interoperability.
- The development of shared understanding across multiple domains.
- New ways to capture and visualize metadata (driven by data preparation for analytics).

Although these changes are still nascent, the ability of vendors to execute in associated areas will be key to their success. More specifically, success will involve using algorithms to inventory and discover the relationships between assets. It will also involve requirements such as the automatic discovery of taxonomies and ontologies to deal with semantic variations around business terms, as well as graph representations of metadata, combined with graph analytics, to discover and learn from usage patterns.
Overall, it is important to note that there are still some inhibitors of faster adoption of metadata management solutions. They include:

- The lack of maturity of strategic business conversations about metadata (see Create a Business Case for Metadata Management to Best Fulfill Your Data and Analytics Initiatives).
- The expensive but required effort to integrate metadata management solutions in multivendor environments. This inhibitor has started to be addressed by new vendors' initiatives relating to openness and interoperability (see, for example, ODPi).
- The lack of identification of accurate metadata management solutions whose capabilities meet the current and future requirements of specific use cases.

Most organizations will find that their current metadata management practices differ across applications, data and technologies, and that these practices are siloed by the needs of different disciplines — each with their own governance authority, practices and capabilities. Data and analytics leaders who have already invested in data management solutions should first evaluate the capabilities of their existing solutions — including federation/integration capabilities, support for ML and AI, and cloud options — before buying a new solution. However, if they are dealing with emerging use cases — including collaborative analytics and community-oriented data and

analytics governance — they must also assess new metadata management solutions, driven by active metadata, that are fueling the convergence of other data management disciplines (see Modern Data and Analytics Requirements Demand a Convergence of Data Management Capabilities) and the emergent data fabrics (see How to Activate Metadata to Enable a Composable Data Fabric).

# Evidence

The analysis in this Magic Quadrant is based on information from a number of sources, including:

- Extensive data on functional capabilities, customer base demographics, financial status, pricing and other quantitative attributes, gained via an RFI process that engaged vendors in this market.
- Interactive briefings in which vendors provided Gartner with updates on their strategy, market positioning, recent key developments and product roadmaps.
- Feedback about tools and vendors captured during hundreds of conversations with users of Gartner's client inquiry service during the past year.
- Gartner's Data Management Strategy Survey, which was conducted online from 19 August through 4 September 2019 with 129 Gartner Research Circle Members — a Gartner-managed panel. The survey was developed collaboratively by a team of Gartner analysts and was reviewed, tested and administered by Gartner's Research Data and Analytics team.

# Note 1Passive Versus Active Metadata and How to Activate Metadata

Passive metadata is metadata that is static in nature, usually emerges at design time and often requires human or manual updates. Passive metadata most often consists of simple documentation or design time technical metadata. It consists primarily of documentation, ranging from fixed schema of sources and/or targets all the way through to business definitions acquired in a glossary and maintained as a formal data dictionary.

Organizations now need continuous access, analysis and feedback on all metadata parameters (not just technical but also operational, usage and social). These include frequency of access, data lineage, performance optimization, context and data quality (based on feedback from supporting data quality/data governance/information stewardship solutions). It is expected that having graph analytics on every conceivable type of metadata will provide the necessary information for introducing ML capabilities into various data management tools (including data integration, data quality, data preparation and even DBMS). "Activating" passive metadata involves:

- Collecting all forms of metadata and illustrating them (along with their intricate relationships) in a graph
- Performing analytics on this metadata
- Using the results of this analysis as inputs for ML algorithms to assist with informing and automating data management activities

The resultant output is called active metadata.

# Evaluation Criteria Definitions

## Ability to Execute

**Product/Service:** Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

**Overall Viability:** Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

**Sales Execution/Pricing:** The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

**Market Responsiveness/Record:** Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

**Marketing Execution:** The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

**Customer Experience:** Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

**Operations:** The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

## Completeness of Vision

**Market Understanding:** Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

**Marketing Strategy:** A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

**Sales Strategy:** The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

**Offering (Product) Strategy:** The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

**Business Model:** The soundness and logic of the vendor's underlying business proposition.

**Vertical/Industry Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.
**Innovation:** Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.
**Geographic Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

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