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Magic Quadrant for Metadata Management Solutions

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Demand arising from a variety of data and analytics initiatives drives strategic requirements for metadata management solutions. This Magic Quadrant will help data and analytics leaders find the most appropriate vendor and solution for their organizational needs.

Market Definition/Description

Metadata management is an aspect of an organization's management of 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 management differs from enterprise metadata management (EMM). Metadata management operates only at the level of a single program, project or initiative. EMM, by contrast, encompasses all of an organization's metadata management initiatives. It encompasses the roles, responsibilities, processes, organization and technology necessary to ensure that appropriate usage of metadata across an enterprise adds value and protects an enterprise's data.

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, risk and compliance, data analysis and data value (see "4 Use Cases That Drive Critical Capabilities in Metadata Management").

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. It also describes what happens to data as it goes through diverse processes. Data lineage can help with analyzing how information is used and tracking key bits of information that serve a particular purpose.
- **Impact analysis** — Conveys extensive details about the dependencies of information or the impact of a change within a data source.

- **Rules 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 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 metadata

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

Magic Quadrant

Figure 1. Magic Quadrant for Metadata Management Solutions

Source: Gartner (October 2019)

Vendor Strengths and Cautions

Adaptive

Adaptive (http://www.adaptive.com/) is based in Aliso Viejo, California, U.S. Its metadata management solution is the Adaptive Metadata Manager, which, we estimate, has 60 customers worldwide.

Strengths

- **Knowledge graphs:** Adaptive takes advantage of knowledge graphs and machine learning. It is working to integrate metadata management with knowledge graphs in order to develop an enhanced semantics platform that eases the collection of metadata and the discovery of semantics. It also includes integrated use of ontologies, taxonomies and triple-store technology.

- **Contextualized business processes:** Adaptive enables customers to position data governance in the context of heterogeneous enterprise architecture, which is increasingly important for compliance with regulations for complex organizations. In particular, Adaptive addresses requirements such as those of standard 239 of the Basel Committee on Banking Supervision (BCBS) and the EU's General Data Protection Regulation (GDPR), for which data must be managed in the context of governed business processes.
- **Partner ecosystem:** Adaptive's approach to expanding its sales capabilities focuses on attracting alliance partners for specific use cases. It benefits from partnerships with 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 has only a limited share of the market for EMM tools, and suffers from a lack of visibility beyond its customer base. It appears infrequently in the competitive evaluations seen by Gartner.
- **Customer satisfaction:** Surveyed reference customers for Adaptive expressed a level of overall customer satisfaction that was lower than the average, even though their scores for perceived value for money rose to nearer the average. These scores are likely to improve with the release of new versions that include significant improvements to existing capabilities.
- **Platform user experience:** Surveyed reference customers for Adaptive expressed a low level of satisfaction with the platform user experience, which they scored well below the average. They suggested that Adaptive modernize its UI and how it displays the business glossary.

Alation

Alation (https://alation.com/) is based in Redwood City, California, U.S. Its metadata management solution is the Alation Data Catalog, which, we estimate, has more than 130 customers worldwide.

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 three years has benefited Alation by expanding its customer base.
- **Partners:** Alation continues to extend its partnership ecosystem by attracting leading providers from multiple markets that support analytical use cases — Cloudera, MicroStrategy, Salesforce, Tableau, Teradata and Trifacta, for example. It has also invested in, and benefits from, its program for system integrators and resale partnerships.
- **Vision:** Alation has continued to expand its vision and is investing in product capabilities and ways to deliver value from increased analyst productivity and from information stewardship use cases. It now embraces data valuation and active metadata by suggesting, for example, what data to trust. It also supports collaborative use cases across a variety of personas, such as data analyst, data scientist and information steward. Additionally, Alation has focused on increasing data literacy when metadata is distributed across business and IT teams.

Cautions

- **Data lineage and impact analysis:** Some of Alation's reference customers scored its core metadata management functionalities relatively low. However, Alation continues to invest in these functionalities by adding new capabilities.
- **Cross-organization scaling of metadata management:** Although Alation has been highly successful at getting customers started with data cataloging, some reference customers identified challenges with managing implementations and practices for enterprise expansion. Alation is working on improving its professional services and implementing the lessons learned from successful deployments, consolidating these deployments and sharing information through an online customer community.
- **Pricing and licensing:** Reference customers for Alation expressed concerns about its flexibility during pricing negotiations. They also suggested that Alation improve its licensing model to grant access to a whole group, not just individuals.

Alex Solutions

Alex Solutions (http://alexsolutions.com.au/) is based in Melbourne, Australia. Its metadata management solution, which comprises Alex Data Marketplace and Alex Scanner Marketplace, has more than 60 customers worldwide.

Strengths

- **Management of data as an asset:** Alex Solutions has a strong vision for managing an end-to-end marketplace for enterprise data and helping organizations value their information assets. It offers a fast-evolving solution that is aimed at a variety of use cases in order to support emerging requirements across different industries.
- **Ease of implementation and use:** Surveyed reference customers for Alex Solutions expressed a high degree of satisfaction with the overall experience. They were especially appreciative of the ease of deployment and integration, the business-friendly UI, and the functional coverage for data lineage and impact analysis.
- **Support for key use cases:** Reference customers said that an important reason why they chose Alex Solutions was that it supports a range of usage scenarios, such as data and analytics governance, risk and compliance management, data analysis and data value management. 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 limited, which limits its share of the overall market for EMM tools. This explains the company's relatively infrequent appearances in the competitive evaluations reviewed by Gartner. To help address these limitations, the company continues to invest in enabling its channel partners to attract and support more customers across the world.
- **Business rules and semantics:** Alex Solutions' business glossary, semantics framework and rule management capabilities, in particular, fall short of some expectations, judging by its reference customers' scores, which were lower than the survey averages. However, the company is working to

address issues relating to semantic use by learning from insights gathered from assets under its management.

- **Metadata exchange and workflow management:** Reference customers for Alex Solutions indicated there was scope for it to improve its metadata exchange capabilities in order to provide fast and efficient metadata interoperability. They also identified a need for the company to provide more than basic workflow management. Alex Solutions is working on improving this within the latest version of Alex Data Marketplace.

ASG

ASG (https://www.asg.com/en/) is based in Naples, Florida, U.S. Its metadata management solution, called Enterprise Data Intelligence (EDI), has, we estimate, 190 customers worldwide.

Strengths

- **Metadata management repository and architecture:** ASG EDI is a single solution with an intuitive interface. It offers a broad range of functionality, including autodiscovery, cataloging, reference data management and governance. Furthermore, reference customers for ASG noted that it is fairly straightforward to install and offers a reasonable time to value.

- **Business use-case support:** ASG EDI is based on business use cases and therefore has functionality that helps capture use cases and support technical requirements. ASG's unique impact assessment capabilities — tied to detailed business glossaries — demonstrate the impact that changes in the data management flow will have on business outcomes.

- **Support for data types and lineage:** Most reference customers for ASG identified EDI's comprehensive data lineage capabilities as a primary reason for purchasing it. Its support for data lineage, tied to more than 220 data sources, builds trust in data-driven business outcomes. The most recent product release added new cloud sources and NoSQL metadata analyzers; the release was also consistent with ASG's continuous-delivery targets.

Cautions

- **Responsiveness to market change:** ASG has historically been slow to respond to the changing dynamics of this market. It is, however, improving. Two releases were delivered in 2018 and another as recently as April 2019. ASG has increased its investment in partners to extend its ecosystem. Prospective customers should assess EDI's current strengths and have less concern about the possibility of extended waits for enhancements.

- **Active metadata framework:** ASG EDI is used primarily for data compliance, governance and reporting. It has an active metadata framework that includes workflow triggering, subscription alerts and data source recommendations, but some reference customers for ASG expressed concerns about EDI's suitability for highly automated transactional business purposes.

- **Artificial intelligence (AI) technology and governance:** ASG has yet to fully embrace AI as a means of identifying opportunities within datasets for various business use cases. Also, EDI has limited capabilities for utilizing machine learning (ML) to automatically adapt data assets and data flow for intelligent data management and governance. ASG is expanding its ecosystem in this area, by integrating with tools such as those of Project Jupyter, Tableau and Google (Google Cloud Data Fusion)

to draw on their embedded ML capabilities. It also uses ML algorithms to autotag, based on previous manual tagging, and to recommend data sources, based on crowdsourced input.

Collibra

Collibra (https://www.collibra.com/) is based in New York, New York, U.S. Its metadata management solutions are the Collibra Platform, Collibra Catalog and Collibra Privacy & Risk. We estimate that it has more than 350 customers worldwide.

Strengths

- **Focus on business users:** Collibra solutions were built with the business user in mind. Its business UI enables users to contribute to metadata and to use metadata to generate insights. This approach is a differentiator for Collibra in competitive situations.
- **Market traction with data governance:** Collibra has created a strong brand for data governance. Its solution was considered for purchase by more than 40% of the reference customers surveyed for this Magic Quadrant. Collibra is expanding its support for data governance with additional capabilities to help customers operationalize privacy policies in a centralized location and comply with current and future regulations.
- **Market education:** Metadata management is often challenging for organizations new to the discipline, but Collibra University and Collibra Coaching Services offer important support to clients establishing their first practice.

Cautions

- **Data valuation:** Although Collibra's overall product capabilities are strong, its reference customers scored it relatively poorly for applied data valuation. This area is, however, a strategic focus for Collibra in the context of an upcoming release of its solutions.
- **Quality of technical support:** Although Collibra has regularly offered new capabilities to meet the fast-evolving demands of this market, one-third of its reference customers said they faced challenges getting the technical support they requested.
- **Licensing model.** The survey of reference customers, together with Gartner's interactions with other customers regarding Collibra, indicate that its pricing model can be perceived as complex. This perception could limit customers' use of Collibra's current offerings and their acceptance of its ambitious roadmap.

Data Advantage Group

Data Advantage Group (http://www.dag.com/) is based in San Francisco, California, U.S. Its metadata management solution is called MetaCenter, for which, we estimate, there are over 75 customers worldwide.

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.

- **Cost management:** Over 30% of the reference 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 value for money.
- **Overall service and support:** Data Advantage Group's reference customers scored it above the average for overall service and technical support. They also praised its 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, in particular, fell short of the expectations expressed by its reference 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. However, 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 of the surveyed reference customers for Data Advantage Group indicated that they work only with it, 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 (https://data.world/) is based in Austin, Texas, U.S. It provides a cloud-based metadata management solution which, we estimate, has over 40 customers worldwide.

Strengths

- **Ease of use and collaboration:** Reference customers for data.world especially praised its platform's ease of use, the ability to collaborate with other users on the creation and inventorying of data and metadata, and the ability to import and export from and to other platforms.
- **Knowledge graphs and business semantics:** Data.world offers scalable, flexible and rich metadata management capabilities that use graph-based representation, as the solution is evolving into an enhanced semantics platform. The acquisition of Capsenta in June 2019 shows that data.world continues to work on making knowledge graphs a key aspect of its offering.
- **Cloud-native platform:** Data.world's is a fully cloud-native SaaS solution that scales automatically, based on resource demand, to enable thousands of users to run on the platform and utilize its core functionalities. It also offers the ability to work with data in situ across on-premises, cloud and hybrid environments by means of data virtualization.

Cautions

- **Market share and mind share:** Although its solution offers comprehensive support for EMM use cases, data.world needs to do more to sell outside North America and to be considered an alternative solution

in competitive situations. It has made some progress in this regard by using its open data community to raise its profile.

- **Limited application across use cases:** Judging from the responses of reference customers, data.world's solution is used for data governance and data analysis in the vast majority of cases. Although the solution can be tailored for other use cases, data.world needs to increase the market's awareness of this fact.

- **Ecosystem and third-party alliances:** Most reference customers for data.world indicated that they work with only this vendor (or use purely their own resources), with no third-party service provider involvement. This tendency may limit the company's growth as it seeks to address a wider audience. However, data.world's ecosystem does include a healthy range of technical partners that can meet many of its clients' needs.

erwin

Based in Melville, New York, U.S., erwin (http://www.erwin.com/) offers a combined solution comprising erwin Data Governance, erwin Data Intelligence, erwin Data Literacy and erwin Data Catalog. We estimate that this combined solution has approximately 100 customers worldwide.

Strengths

- **Partner network:** Aided by a reseller base of over 400 global resellers and 25 consulting partners, erwin has approximately 100 metadata-specific customers, mostly in North America and Europe (although metadata management specifically accounts for only a small portion of its annual revenue). Its solution builds on its long-standing data modeling software, which itself generates large volumes of technical metadata. The solution also embeds capabilities to integrate with third-party data access rights management and security solutions.

- **Range of metadata utilization:** By importing metadata from data integration platforms and tools (via connectors for Informatica and Talend data integration platforms, for example), as well as cloud-based offerings (from ServiceNow, for example), erwin can evaluate complex lineages across many systems and use cases. Once metadata is available, erwin's combined solution can generate data management and integration scripts to support data governance solutions for master data management (MDM), data quality and data profiling. Data flow and utilization metadata is augmented by business process metadata to create a combined metadata picture of data flows within an organization. Autonomous agents that continuously collect metadata enable system analysis and improvement capabilities.

- **Market diversity:** This vendor has customers of many sizes in a broad range of industries: pharmaceuticals, banking, government, utilities and services. Reference customers reported using erwin's combined solution to support ERP systems, data warehouses, data lakes, big data projects, cloud databases and even graph solutions.

Cautions

- **Focus on architects and analysts:** Reference customers reported that erwin's combined solution is almost always used by either the architecture team or the analytics delivery team. At the same time, they expressed strong satisfaction with the deployment and use of erwin's combined solution (they highlighted the semantic, metadata ingestion, business glossary and data lineage capabilities). This

finding underlines the solution's use by the more advanced metadata personnel. Reference customers also expressed a desire for better design documents for code/script generation.

- **Overreliance on support:** Reference customers reported high levels of satisfaction with support issues, but also a need for better documentation, more standardized API functionality and additional features in the business glossary. They also said that erwin's relatively small size limits its professional services capability.
- **Interface and training:** Some reference customers for erwin reported that better support is needed in the interface for accessing management configurations, and that the web user experience also needs improvement. They also reported that scheduled training and education services are sometimes delayed.

Global IDs

Global IDs (http://www.globalids.com/) is based in Princeton, New Jersey, U.S. Its metadata management product is the Global IDs Data Ecosystem Suite, and we estimate it has 40 customers worldwide.

Strengths

- **Machine learning:** Global IDs' approach to metadata management is based on machine-centric automated learning that enables automatic curation of metadata assets. This is the right approach for dealing with the ever-growing variety and complexity of enterprise data assets.
- **Graph representation:** Global IDs' metadata repository is graph-oriented and can be composed of any number of subgraphs representing things such as data elements, applications and business concepts. This approach is essential for delivering scalable, flexible and rich metadata management capabilities.
- **Support for complex data ecosystems:** Responses from surveyed reference customers for Global IDs indicated that its solutions do a better-than-average job of supporting large data ecosystems that are complex and evolving.

Cautions

- **Core capabilities:** Global IDs' reference customers gave it a relatively low average scores in the areas of business glossary and metadata translation, compared with most vendors in this Magic Quadrant. Global IDs is, however, working effectively to improve on all its core capabilities. In particular, its work on core lineage capabilities is addressing emerging requirements from its customers in this market.
- **Market execution:** Despite several initiatives to win new customers (including the launch of "Demo-it-now"), Global IDs is growing more slowly than other vendors in this market. Continuing to help customers understand and articulate the business benefits of its approach will be crucial to Global IDs' growth.
- **Growth outside U.S.:** Global IDs focuses on the U.S. market. It is looking to address this challenge by using cloud-based technology, by expanding its direct sales channel, and by drawing on established relationships with global system integrators such as Accenture, Capgemini, Deloitte, EY and PwC.

IBM

IBM (http://www.ibm.com/) is based in Armonk, New York, U.S. Its metadata management solution is delivered through the InfoSphere Information Server platform, which includes the Watson Knowledge Catalog (WKC) and InfoSphere Information Governance Catalog (IGC) components. We estimate that it has several hundred customers worldwide.

Strengths

- **Mind share:** IBM's Information Governance Catalog, along with the Watson Knowledge Catalog, is widely adopted as an enterprisewide standard that is applied to a wide variety of use cases. Furthermore, IBM often appears as one of the top-three vendors in competitive evaluations seen by Gartner.
- **Integration with InfoSphere Information Server suite:** Reference customers highlighted benefits arising from the integration of Information Governance Catalog and Watson Knowledge Catalog with other applications in the InfoSphere Information Server suite, especially the integrated capabilities for metadata management and data quality.
- **Move toward openness:** IBM continues to focus on making information infrastructure more open as it strives to align data integration with diverse demands for information capabilities across hybrid integrations. It is working with Hortonworks (and the Hortonworks Data Platform) to enable metadata repository connectivity via open metadata.

Cautions

- **Pricing and contract flexibility:** Reference customers for IBM expressed concerns about its flexibility when negotiating pricing. They scored it below the survey average for value for money. They also requested that IBM adopt a more standard pricing model, not processor value units (PVUs).
- **User experience and ease of use:** Reference customers indicated that there is plenty of scope for IBM to improve its user experience. It could, for example, enhance the UI for a business audience, provide better representations of objects when using automated metadata capture, and introduce better workflow management for collaboration across an enterprise.
- **Service and support:** Reference customers for IBM identified a need for it to improve its service and support. In particular, they want it to provide more timely and complete responses to their product-related questions. Also, the availability of quality third-party integrators did not meet their expectations.

Infogix

Infogix (http://www.infogix.com/) is based in Naperville, Illinois, U.S. Its metadata management solution is called Data3Sixty Govern, for which, we estimate, there are around 220 customers worldwide. Infogix acquired DATUM in October 2018.

Strengths

- **Product vision:** Infogix demonstrates a holistic vision that emphasizes the importance of data governance for business users. Its solution also offers active metadata capabilities that enables the management not only of metadata but also of data itself.
- **Adoption for a variety of use cases:** Reference customers for Infogix reported using Data3Sixty Govern for data governance and for risk, compliance and data value management. The product also supports

data analysis, though relatively few of its reference customers used this capability.

- **Ease of use:** Reference customers identified ease of use and product flexibility as strengths of Infogix. They also praised its offer of a social collaboration method for metadata enrichment.

Cautions

- **Market visibility:** Infogix has expanded the variety of use cases and personas supported by its product, but market traction remains limited. Few of the surveyed reference customers for vendors in this Magic Quadrant had considered using Infogix.
- **Industry focus:** Traditionally, most of Infogix's reference customers have come from the banking sector. Infogix has started to address a wider variety of industries, but needs to prove it can fulfill governance use cases at scale in relation to more than compliance and regulatory drivers.
- **Service offering:** While Infogix has a number of partnerships among service providers, the majority if its reference customers worked only with the vendor for their implementations. Working with the vendor alone requires a certain maturity and readiness for running metadata initiatives, which is not where most of the market is. Infogix also has an advisory services function, but this helps only a relatively small number of its customers to run metadata initiatives.

Informatica

Informatica (http://www.informatica.com/) is based in Redwood City, California, U.S. Its metadata management solutions are Enterprise Data Catalog, Axon, Metadata Manager, Business Glossary and Secure@Source, for which, we estimate, it has more than 2,000 customers worldwide.

Strengths

- **Market presence and dedication to data:** 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 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 offering — including an enterprise data catalog, data preparation, data security and privacy, stewardship, data governance and analytics — helps its solutions standout 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.
- **Alignment with business-oriented outcomes:** Extensive interactions with Informatica's customer base indicate that strong sales execution has increased Informatica'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

- **Integration between new and established products:** Knowledgeable personnel are required to implement and manage Informatica's extensive product portfolio. Reference customers indicated that Informatica needs to improve its integration in relation to complex customer scenarios and when

combining new products (such as Enterprise Data Catalog) with established products (such as Metadata Manager).

- **User adoption beyond IT:** Although Informatica is working to improve training for, and enablement of, its new leading products (Enterprise Data Catalog and Axon), some reference customers raised concerns about how difficult it was to enable effective adoption of these products outside the IT organization.
- **Regional support from third parties:** Informatica has an extensive set of solutions and tools to support various aspects of metadata management, but some reference customers raised concerns about the limited availability of high-quality expertise from its service partners outside the U.S.

Oracle

Oracle (http://www.oracle.com/) is based in Redwood Shores, California, U.S. Its metadata management solutions are Oracle Enterprise Metadata Management, Oracle Data Relationship Management and Oracle Enterprise Data Management Cloud, for which, we estimate, it has more than 1,000 customers worldwide.

Strengths

- **Technologies for complex deployments:** Recognition of Oracle's diverse portfolio for addressing data integration and other data- and application-oriented requirements increases its appeal in deployment scenarios. These requirements span data quality tools, MDM solutions, metadata management solutions, enterprise service buses, analytic appliances, enterprise applications and platforms. Oracle is displaying especially visible growth with Oracle Enterprise Data Management Cloud, which appeals to organizations at which metadata management initiatives are driving innovation.
- **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 catalogs, analytics and streaming data solutions. Oracle's strategic direction for metadata management in the cloud draws on its catalog offering.
- **Bridges for metadata ingestion:** Oracle's broad support for bridges works for organizations with both Oracle and non-Oracle environments. To capitalize further on big data and streaming integration scenarios, Oracle is expanding its product development competencies to focus on the use of machine learning for modeling and design processes for metadata discovery.

Cautions

- **Execution to win new customers:** Oracle continues to market its metadata management solutions strategically as part of its overall data management value proposition. 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:** Surveyed reference customers were not impressed by the active metadata management capability of Oracle Enterprise Metadata Management. This is an area in which innovation in the market will drive the use of machine learning to enable automation and deliver business value. Oracle needs to focus on this area in the context of the cataloguing capabilities it is developing within Oracle Cloud Infrastructure services.

- **Functional coverage:** Reference customers for Oracle indicated that it needs to improve some aspects of its metadata management, such as metadata repositories, data lineage, impact analysis and semantic frameworks.

SAP

SAP (https://go.sap.com/index.html) is based in Walldorf, Germany. Its metadata management solutions are SAP PowerDesigner, SAP Enterprise Architecture Designer and SAP Information Steward, and SAP Data Hub, for which, we estimate, it has several thousand customers worldwide.

Strengths

- **Focus on innovation:** SAP developed SAP Data Hub — a metadata management solution for active and passive metadata that allows for agile orchestration of data — generally available in 2017. This innovative product is helping SAP focus strategically, with a new emphasis on intelligent data management and scalable machine learning.
- **Breadth of capabilities:** Alongside SAP Data Hub and SAP Enterprise Architecture Designer (SAP's strategic cloud-based enterprise architecture solution), the company continues to enhance SAP PowerDesigner and SAP Information Steward. The combination of these products addresses a variety of use cases and personas.
- **Integration across SAP portfolio:** SAP has a long history of developing industry-specific practices, which includes practices for metadata management. Moreover, integration of SAP's metadata management solutions with SAP's business applications and business processes delivers added value to SAP customers.

Cautions

- **Product functionality:** Those reference customers evaluating SAP Information Steward scored the product's functionality for data lineage and impact analysis below the average in this Magic Quadrant.
- **Product awareness:** SAP Data Hub is a promising product that goes well beyond metadata management, given the breadth of its support for data-sharing pipelining and orchestration across a variety of use cases. But although the market's demand favors such solutions, reference customers for SAP were not fully aware of SAP Data Hub's capabilities.
- **UI:** Reference customers for SAP reported that SAP Information Steward's UI is not yet optimized for modern user requirements — a shortcoming they expect SAP to remedy in upcoming product releases. SAP has expressed commitment to improving the basic functionalities of its established products, and, judging by scores from its reference customers, it is succeeding in areas such as business semantics.

Semantic Web Company

Semantic Web Company (https://semantic-web.com/) (SWC) is headquartered in Austria. Its metadata management solution is the PoolParty Semantic Suite, for which, we estimate, it has 180 customers worldwide. The PoolParty brand is better known in this market than the name of the company behind it.

Strengths

- **Modern approach:** SWC's solution ingests metadata for analysis and utilization. It uses a combination of a graph analytics engine, natural language processing and traditional gap analysis based on existing schema and models to help infer missing metadata points; it also analyzes data utilization and content. After analyzing data usage, it analyzes the context in which data is used in order to recommend new or additional data for use for specific analytic, reporting or transactional requirements. SWC's product is currently misaligned with the more traditional metadata management requirements, but more suitable for emerging, dynamic requirements.

- **Machine learning-enabled knowledge graphs:** As data assets are analyzed and metadata is discovered or ingested, SWC's 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. A graph editor enables users to modify the tags' use and enhance the machine learning output.

- **Software and services:** Reference customers for SWC reported that its support demonstrates thorough skills with significant depth and experience in semantic and metadata concepts. They added that its documentation and technical support is well directed toward specific issues raised, that it resolves them quickly, and that it includes an educational component to encourage use of the solution's advanced features.

Cautions

- **Complexity of value proposition:** A large majority of SWC's reference customers reported that their primary users are highly aware of data architecture, taxonomy, and ontology or metadata usage relative to governance. The solution's specific purpose is to enhance advanced data semantic experiences and, if there is low appreciation of this value proposition, it is difficult to learn quickly. Reference customers added that early use of SWC's e-learning or classroom tutorials and training is essential, unless one already has a general understanding of semantics. Nevertheless, some reported growing use among business analysts.

- **Requirement to apply the right processes:** Some reference customers reported that SWC's solution has limited ability to create business rules when metadata insufficiently supports graph analytics and needs a manually supplied inference rule. 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) but right processes must be applied for leveraging the tool. Additionally, some bulk actions are not supported via the GUI, instead sometimes requiring scripting outside the tool.

- **Reliance on long-term relationships:** SWC's solution is initially used mainly at the project or business unit level. Midsize and large organizations then expand their use organically, first as specific additional needs emerge and then more broadly. Coupled with a complex value proposition, this means that usage and alignment requires the right skills to understand and exploit demand at a granular level within an organization. This results in deployments within large, globally recognized enterprises, but often only for customers that have a long-term relationship with SWC.

Smartlogic

Smartlogic (https://www.smartlogic.com/) is based in San Jose, California, U.S. Its metadata management product, Semaphore, has, we estimate, 190 customers worldwide.

Strengths

- **Market success:** Smartlogic has made good progress in this market and has clients in a number of industries: healthcare, life sciences, media, financial services, high-tech and manufacturing. It has used its ecosystem of partners to increase sales.
- **Functionality:** Smartlogic's reference customers scored Semaphore well above the average in this Magic Quadrant across all functionalities, which include, for example, modeling (including business glossaries) and metadata transformation and creation (classification and fact extraction). It received particularly high scores for its semantic framework capabilities.
- **Metadata hub vision:** Data cataloging is the subject of hype and associated with the introduction of many isolated products, which create metadata silos. Smartlogic responds to this problem with a vision for a metadata hub. The company's semantic capabilities will help it fulfill that vision.

Cautions

- **Metadata management focus:** Most of Smartlogic's reference customers said they use Semaphore for managing unstructured information assets. This is consistent with the vendor's semantic approach to active metadata enrichment and harmonization, but the benefits of this approach are not widely understood. Smartlogic needs to help organizations understand how active metadata management improves business outcomes.
- **Data valuation:** Although Smartlogic clearly articulates the business value of its solution, and how it enables users to define and enrich the definition of their data assets, it lacks a vision for data valuation. However, the metadata exposed by Smartlogic can be used by data valuation methodologies.
- **Solution documentation:** Smartlogic's reference customers praised Semaphore's flexibility, in the sense that it can be configured and customized in many ways to achieve desired results. However, some noted that they have traditionally had to rely on Smartlogic's professional services or a Smartlogic partner to help them achieve the most effective implementation. They suggested that Smartlogic's documentation should offer more guidance on how to exploit the solution's flexibility. Smartlogic is working to incorporate this feedback into end-user training and technical documentation.

Syniti

Syniti (http://www.syniti.com/) is based in Boston, Massachusetts, U.S. It was formerly known as BackOffice Associates, a company founded in 1996. On 8 May 2019, the company became Syniti as part of rebranding efforts. Syniti is a portfolio company that was acquired by private equity firm Bridge Growth Partners in late 2017. Its metadata management solution is Syniti Information Management, which is powered by the Syniti Knowledge Platform. We estimate that Syniti has 160 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.

- **Combination of data quality, master data and analytics metadata:** 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.
- **Ability to listen:** Reference customers indicated that Syniti is intently focused on making product improvements on the basis of customers' input.

Cautions

- **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.
- **Focus on designers and architects:** 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.
- **Market visibility:** Although Syniti has developed its offering by expanding the variety of use cases and personas it supports, its market visibility remains limited. Few of the reference customers for vendors in this Magic Quadrant had considered using Syniti.

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 be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

- data.world
- erwin
- Semantic Web Company
- Syniti

Dropped

- DATUM, which was acquired by Infogix in October 2018.

Inclusion and Exclusion Criteria

To be included in this Magic Quadrant, vendors had to meet the following criteria:

- They 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** — 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.
  - **Risk and compliance** — This demands the mapping and identification of data assets, an understanding of data processing and the associated risks, the provision of data lineage and impact analysis, and the management of data on an ongoing base. For this, security and risk professionals must develop policies and controls for access to data via classification, according to risk or security needs. The requirement for metadata management is reinforced by privacy requirements.
  - **Data analysis** — This 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.
  - **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 is 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.

- They must deliver metadata management functional capabilities that include, *at 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. They can also use repositories to publish information about reusable assets that 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 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 within 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 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
  - Custom metadata
- Vendors must be able to demonstrate the ability to identify, document and maintain relationships between ingested and translated metadata.

- They must support packaged capabilities related to sales and support for *more than one* region (out of North America, Latin America, EMEA and Asia/Pacific).
- They must include a complete solution addressing administration and management, as well as end-user-facing functionality, for *three or more* of the following types of users: data steward, information/data architect, business analyst and casual user.
- They must maintain an installed base of *at least 40* 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).

For this Magic Quadrant, we evaluated products in production (that is, generally available) as of 1 July 2019. 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 or Service. This criterion assesses core goods and services that compete in and/or serve the defined market. It evaluates how well a 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 a vendor's overall financial health, as well as the financial and practical success of the relevant business unit. It assesses a vendor's financial strength by revenue growth, profitability and cash flow. It also assesses the strength and stability of its people and its 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. This criterion assesses a 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. It also assesses the effectiveness of a 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 ROI, and the criticality of consistent sales execution for a vendor's growth and customer retention, this criterion receives a high weighting.

Market Responsiveness/Record. This criterion assesses a vendor's 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. This criterion assesses the clarity, quality, creativity and efficacy of programs designed to deliver a vendor's message in order to influence the market, promote a 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. With this criterion, we evaluate the overall effectiveness of a vendor's marketing efforts, the degree to which it has generated mind share, and the magnitude of the market

share achieved. Given the increasingly competitive nature of this market and the continued entry of new vendors (large and small), we gave a high weighting to this criterion.

Customer Experience. This criterion assesses a vendor's products, services and/or programs that enable customers to achieve anticipated results with the product(s) evaluated. It may assess ancillary tools, customer support programs, availability of user groups, SLAs and so on. For this criterion, we consider the level of satisfaction expressed by customers with the vendor's product support and professional services. We also evaluate 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 assign a high weighting to this criterion in order to reflect buyers' scrutiny of these considerations as they seek to derive optimal value from their investments.

Operations. This criterion, were it to be used, would assess the ability of a vendor to meet its goals and commitments. Factors would include the quality of its organizational structure, such as skills, experience, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis. This criterion is not used in this Magic Quadrant because our interactions with the market indicate that it is a minor consideration during the selection of metadata management solutions.

Table 1: Ability to Execute Evaluation Criteria

Evaluation Criteria ↓	Weighting ↓
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	High
Market Responsiveness/Record	Medium
Marketing Execution	High
Customer Experience	High
Operations	Not Rated

Source: Gartner (October 2019)

Completeness of Vision

Marketing Strategy. This criterion looks for clear, differentiated messaging that is consistently communicated internally and externalized through social media, advertising, customer programs and positioning statements. We consider the degree to which a vendor's marketing approach aligns with and/or exploits emerging trends. Examples of such trends include the abilities to address a variety of data types, to capture and enrich metadata at the time it is loaded, and to support complex multivendor environments in order to provide end-to-end data lineage. This criterion receives a medium weighting.

Sales Strategy. This criterion looks for a sound strategy for selling that uses appropriate networks, including direct and indirect sales resources, marketing, service and communication. It also looks for

partners that extend the scope and depth of a vendor's market reach, expertise, technologies, services and customer base. This criterion receives a medium weighting.

Offering (Product) Strategy. This criterion looks for 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 a vendor's strategy with regard to 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. This criterion assesses the design, logic and execution of a vendor's business proposition to achieving continued success. In this criterion, we evaluate the overall approach that a vendor takes to executing its strategy for the metadata management solution market, including the diversity of delivery models, packaging and pricing options, and partnership types. The dynamic and transforming nature of this market does not yet enable a significant comparison of successful business models, so this criterion receives a low weighting.

Vertical/Industry Strategy. This criterion assesses a vendor's 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 looks for direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or preemptive purposes. It also efforts to enable information valuation and treatment of 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. This criterion evaluates a vendor's strategy for directing resources, skills and offerings to meet the specific needs of geographies outside its "home" or native geography, either directly or through partners, channels and subsidiaries, as appropriate for the geography and market. This criterion receives a low weighting because the market for metadata management solutions is expanding across the world.

Table 2: Completeness of Vision Evaluation Criteria

Evaluation Criteria ↓	Weighting ↓
Market Understanding	High
Marketing Strategy	Medium
Sales Strategy	Medium
Offering (Product) Strategy	High
Business Model	Low

Evaluation Criteria ↓	Weighting ↓
Vertical/Industry Strategy	Medium
Innovation	High
Geographic Strategy	Low

Source: Gartner (October 2019)

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 could 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 GDPR, BCBS 239 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.

Figure 1 reflects the fact that the past year has seen all featured vendors working to improve their execution in order to meet requirements arising from data inventory opportunities and regulations, but also focusing on innovation and new deployment models. The increasing variety of emerging use cases has prompted investments in semantics, using active metadata (see Note 1) by means of the application of ML, and cloud support.

These types of requirements will probably change the fundamental criteria for evaluating success in this market. The market might diverge, driven by compelling value propositions around use cases, and its evolution may result in vital new capabilities that test the execution of new and existing vendors. The many vendors appearing in the Leaders quadrant suggests that key differentiators will be exploited through investment in specialization or by targeting new markets.

This market for metadata management solutions continues to evolve. Disruption is likely to continue through 2020, 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 for metadata management solutions continues to demand more innovation and better execution in order to address the needs of automation, and combined cloud and on-premises deployments. Metadata management technology continues to expand in terms of capabilities and support for multiple use cases. A growing ecosystem of system integrators and independent software vendors supports 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, and we expect further such growth in 2020.

Market Trends

Data-related demands are constantly increasing within organizations. They range from demand to access data more easily and flexibly, through demand for increased data governance, and on to demand based on the hope of being able to quantify the value of data and to sell data. These demands — which arise in a data landscape that grows ever more complex and distributed — are shifting the focus of organizations from managing data to managing metadata, in the hope that if data is unmanageable, metadata will be easier to tame.

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. It is interesting that a variety of new use cases are driving investment in metadata management. This is indicated by a significant shift in investment toward data analysis (up from 17% in 2018 to 29% in 2019, according to our survey of reference customers). It is also suggested by our interactions with vendors, which 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 also 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.

We have already seen, during the past 12 months, a focus on the pervasive use of metadata. This focus relates specifically to the pervasive use of metadata (business and technical, but also statistical and audit-related) in data management technologies ranging from database to data integration and even data quality technologies. The result is increasing automation of many activities, such as database optimization and tuning, data integration and data preparation, and detection and implementation of rules for data governance. All these activities will make extensive use of descriptive metadata, which has been the focus so far, and will turn it into active metadata (see Note 1), which, in turn, will lead to the automation of many data management implementation and maintenance activities. Metadata management vendors have a unique opportunity to play a key role in collecting, analyzing and sharing metadata from the overall data management landscape. They could then turn this metadata into actions — either by directly implementing these activities or, more realistically, by sharing the insights generated by active metadata with partners such as DBMS vendors, data integration vendors, data quality vendors and even MDM vendors.

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 fact that metadata management is still a nascent discipline in most organizations and accounts for only 12% of the time spent on data management (see “The State of Metadata Management”).
- The expensive but required effort to integrate metadata management solutions in multivendor environments. This inhibitor has started to be addressed, however, by new vendors’ initiatives relating to openness and interoperability (see, for example, ODPi (https://www.odpi.org/)).
- 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”).

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.
- A web-based survey of the reference customers identified by each vendor. This survey was part of a data-gathering effort to help us build on our knowledge of the vendors in this market. At the kickoff of the research process for this Magic Quadrant, all invited vendors were asked to identify reference customers that generally represented the inclusion criteria. The vendor-provided contact information was used to invite the reference customers to complete a 35-to-40-minute online survey. This survey captured data on usage patterns, levels of satisfaction with major product functionality categories, various non-technology-related vendor attributes (such as pricing, product support and overall service delivery), and more. A total of 238 reference customers from 20 vendors completed the survey.

  (Note that this gathering of reference customer data is different from primary research, and that this data is not a representative knowledge base for the market for metadata management solutions. The reference customers are not representative of customers in general in this market. They are simply the select customers that the vendors identified and that ultimately elected to participate in our research process.)

- Feedback about tools and vendors captured during hundreds of conversations with users of Gartner’s client inquiry service during the past year.

Note 1
Active Metadata

When data management capabilities make extensive use of metadata, and this leads to the automation of many data management implementation and maintenance activities, they turn it into “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 preemptive 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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