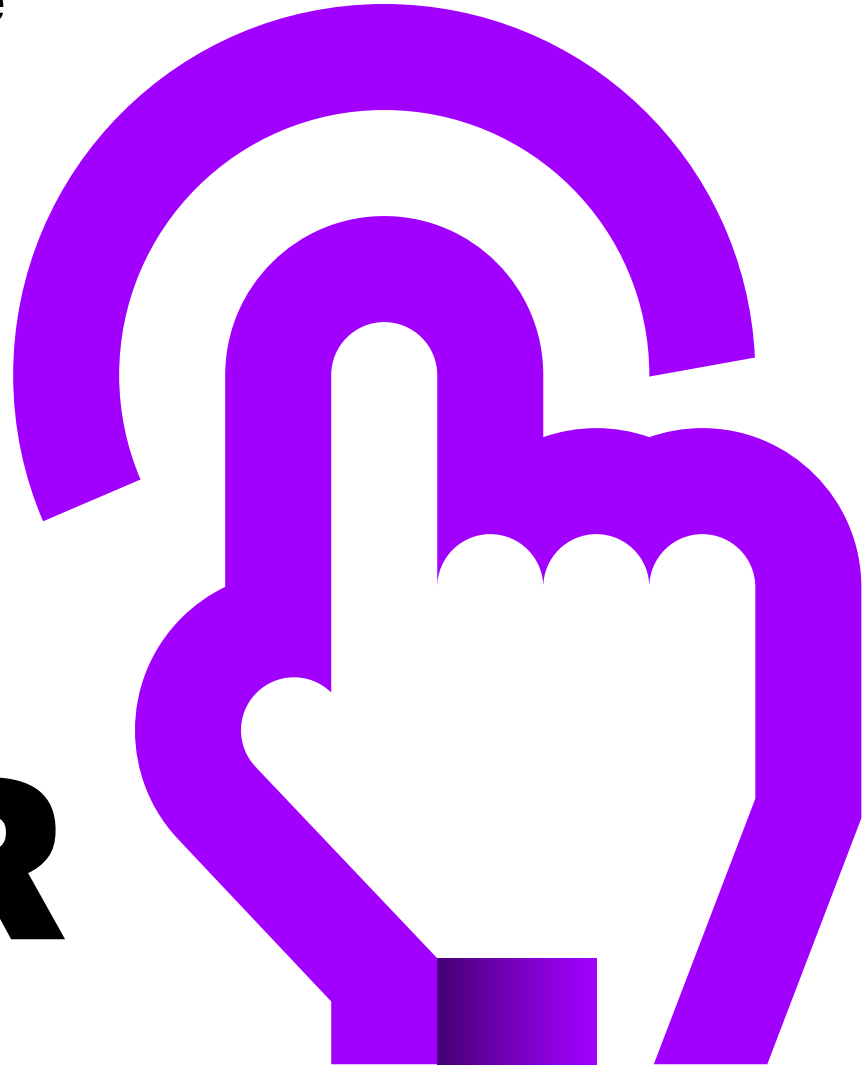
Accenture Applied Intelligence

MEET YOUR DIGITAL MASTER



A guide to transforming master data in the digital age.

As we journey through a digital era, traditional Master Data Management (MDM) is increasingly unable to serve emerging business and application requirements. There is a need to expand the realm of master data to create value as business applications get a digital makeover.

Traditionally, master data has focused on establishing a few attributes of a critical business entity extracted from transactional systems to create a high-quality version of the truth. A lot of time and money has been invested into this, primarily for driving consistency of business reporting.

This traditional approach has an increasingly limited impact in the digital age. The characteristics of data are evolving rapidly and today's business needs have become more granular and require near real-time responses. Data is not simply confined to structured, internally-generated transactional data but now spans heterogeneous, machine-generated, unstructured and also externally-sourced datasets.

The changing needs and evolving data, combined with the advent of analytics, machine learning and cognitive technologies have opened up new possibilities. Traditionally slow and selective master data can now be made more comprehensive, varied and insights-powered to provide a near real-time view of critical business entities. This expanded view not only supports quality business reporting but can actually start supporting transactional digital applications, making real-time decisions by leveraging the "new" master data attributes. Master data now, more than ever before, needs to be highly business outcome focused, adaptable and scalable across the enterprise.

In this article, we look at how to evolve beyond a traditional MDM to a "Digital Master", an enterprise that is near real-time, analytically-powered and directly influences business transactions in a digital world. The end result is business processes that consistently deliver tangible outcomes and impacts, powered by these master entities.

Contents

Then and Now

MDM has traditionally been the framework of processes and technologies aimed at creating and maintaining an authoritative, reliable, sustainable, accurate, timely and secure data environment.

Master Data

Master data is the consistent and uniform core dataset within an enterprise that describes entities around which business is conducted. Master data includes hierarchical or dimensional data that categorizes core objects of business for analytical or reporting purposes.

This definition, accurate as it is in the context of traditional MDM, is limiting in the digital age. The “consistent and uniform” designation implies that the data represents the single version of the truth, i.e. a golden record. However, it does not cover external data sources that provide context in a dynamic manner. Secondly, it also implies that the data is infrequently changed. Is that really a positive feature in the digital age?

Increasingly a business requires master entities to support analytical applications and not just serve as a reference. This dynamic view of master data requires probabilistic inference of data characteristics, which leads to profiles rather than records.

Thirdly, this definition does not refer to the interactions and relationships that exist within the data entities across an enterprise. The focus is on logical and integrated models of structured datasets. In the digital age, datasets now increasingly include unstructured data in batch, real-time and interactive modes requiring contextual analytical models.

Challenges

Organizations should reconcile investment in traditional MDM to help meet their business needs with digital transformation that makes use of evolving MDM capabilities. Many recent MDM projects have fallen short of delivering on their full potential.

There could be several factors behind this, such as:

- Implementations can take too long and cost too much.
- Project scope is often much too large.
- Business and IT teams are sometimes poorly coordinated for achieving the desired end state.
- Traditional approaches can lag in keeping up with new technologies.
- Solutions can delay inclusion of new data sources.
- Creating a data governance framework and measuring and resolving data quality issues can be difficult.
- Scaling MDM solutions to deal with the volume and complexity of data (especially with increased use of unstructured, digital data) can be a challenge.

New Digital Demands

From our point of view, the back office-driven approach runs contrary to the way the business and its employees need to function if they are to achieve their goals and objectives.

In Case Study 2 on the following page, the organization wanted to recognize consumers as individuals wherever they interacted with the company and connect this identification with intelligence which could enhance the customer experience and increase earnings.

The approach needed to be transformational and evolutionary. Transformational in the sense that we see more overtly business-defined approaches that enable the technologies underlying MDM. Evolutionary because we see the expansion of the meaning of MDM in the digital age.

These business-defined approaches usually reflect the complex, sophisticated needs of many organizations:

- Working from the desired end state and/or from the requirements of complex business problems.
- Choosing contextual and analytic solutions over traditional MDM tools that can handle new approaches for multi-dimensional and complex hierarchical data, including social and commercial graphs that underlie digital business use cases.
- Utilizing new technologies that simplify the development of industry-focused business applications that take advantage of master data to help solve business problems.
- Transforming model-driven approaches to be more flexible and agile so they can work with existing business processes (instead of creating new processes) and help deliver business value. IT and business teams can then transition to optimizing various processes for additional value.

Case Study 1:

A life sciences company was severely held back from promoting drugs to individual healthcare organizations.

The traditional solution made it difficult to pull together critical master data such as:

- Which insurance companies or payers accepted by the healthcare organization actually cover the drugs.
- And for those payers, which insurance plans provide coverage.
- What other sales teams in the same company were already promoting to the healthcare organization.
- Attributes that derive from complex hierarchies and networks of relationships.
- What contracts for the pharmaceuticals company were already in place.

Only after incorporating changes to enable the Digital Master could the sales team determine if any business opportunities existed before actually having to approach a healthcare target.

Case Study 2:

An organization in the travel industry found it very difficult to combine consumer data with visit and hotel information using their traditional solution. They could not recognize customers without authentication nor anonymous visitors to their websites. Call centers did not have visibility into consumer profiles or prior consumer touchpoints and had limited ability to update customer preferences. They were limited to a few offers and did not have the ability to customize based on recent activity.

The Changing Face of Data

In addition to the evolving requirements, the data has changed significantly and with it the resulting disruption from digital data on traditional MDM capabilities. If we take a few of these capabilities and drill down, it quickly becomes clear that traditional methods are not sufficient.

For example, match and merge for digital data is too complex, with a wide variety of digital datasets that run too slowly with today's data volumes. Hierarchical management is too complex, especially considering the nature of digital data with its interrelated complex data relationships and formats.

Furthermore, most enterprise data is either unstructured or semi-structured. New techniques are required to adequately capture, curate and store these types of data. These data types also require different strategies for metadata capture and management. Matching and merging these types of data usually require not only deterministic, but probabilistic and fuzzy matching algorithms. These probabilistic matching and merging methods enable the contextual and analytical models necessary for dynamic profiles.

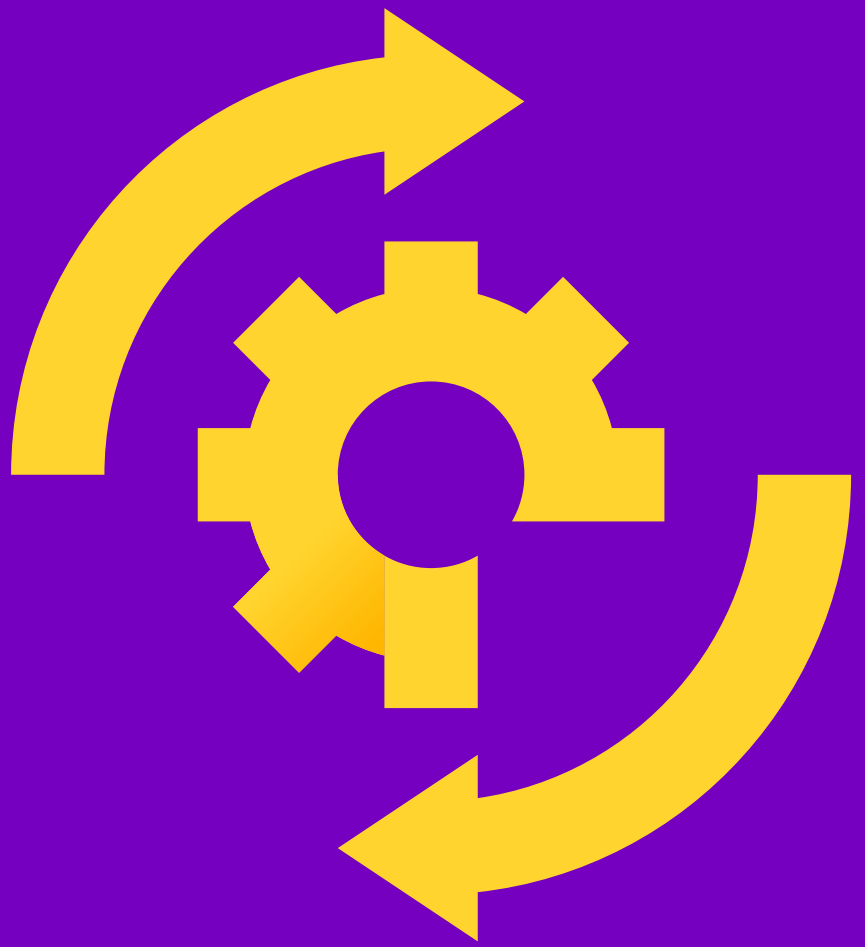
Case Study 3:

In a recent project, a hospitality company embarked on a digital data platform project with Accenture to ensure that digital master data consumption use cases were met. The digital data platform provided the foundation to capture, curate, process and store emerging data types. The objective was to drastically improve customer experience, retain loyal customers, prevent churn and increase market share through personalization and truly understanding customers.

Only after incorporating these digital changes was the organization able to recognize individuals at any touchpoint across channels and enrich their view with intelligent insights. By using a Digital Master that provides a 360-degree view, they have begun the journey to a smarter experience for their customers, generating increased earnings and significant business uplift.

Shift from Golden Record to Golden Profile

Examining the MDM landscape reveals a shift from golden records to golden profiles powered by online, transactional and dynamic data characteristics. We could say that there are two fundamental drivers. The first is the new onus placed on master data, and the second is the changing nature of digital data.



Reset

Traditional MDM focused on establishing a sanitized single version of the truth. The process usually involved identifying missing or erroneous entries in highly structured datasets, eliminating duplicate records while integrating multiple data sources. While this is still vital, its value alone has diminished in the digital era. The new Digital Master needs to accommodate the evolving requirements and emerging digital data.

Rethink

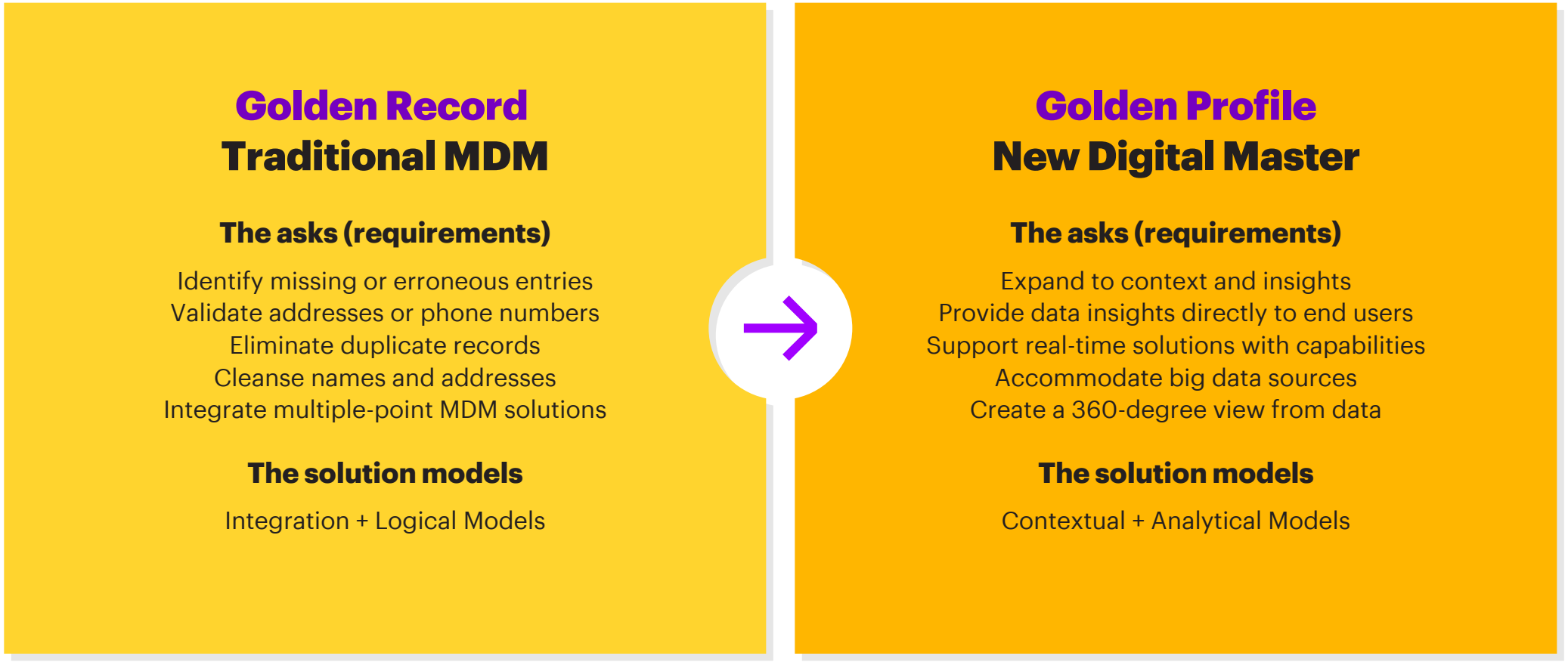
The general consensus is that these evolving requirements are becoming more granular and real-time in nature, in addition to being much more context and insight driven. There is a shift from traditional golden records to dynamic golden profiles. This also stems from the need to empower business users to be able to consume more data and enable patterns that allow for self-service.

This evolution from back office IT-centric golden records to business user-centric golden profiles has resulted in the need for complementary models. Integration and logical models (associated with traditional MDM) produce golden records by validating and eliminating duplicates and integrating multiple MDM solutions. Changes in data become rather obvious.

We are now producing an unprecedented amount of data, including digital data sources, machine-generated, unstructured, semi-structured and streaming data.

These two drivers have given rise to aspirations to modify or augment traditional MDM to achieve a more complete and dynamic view of data entities. The requirements of MDM have evolved in the era of digital data and data lakes.

Figure 1: Contrast Between Golden Record and Golden Profile

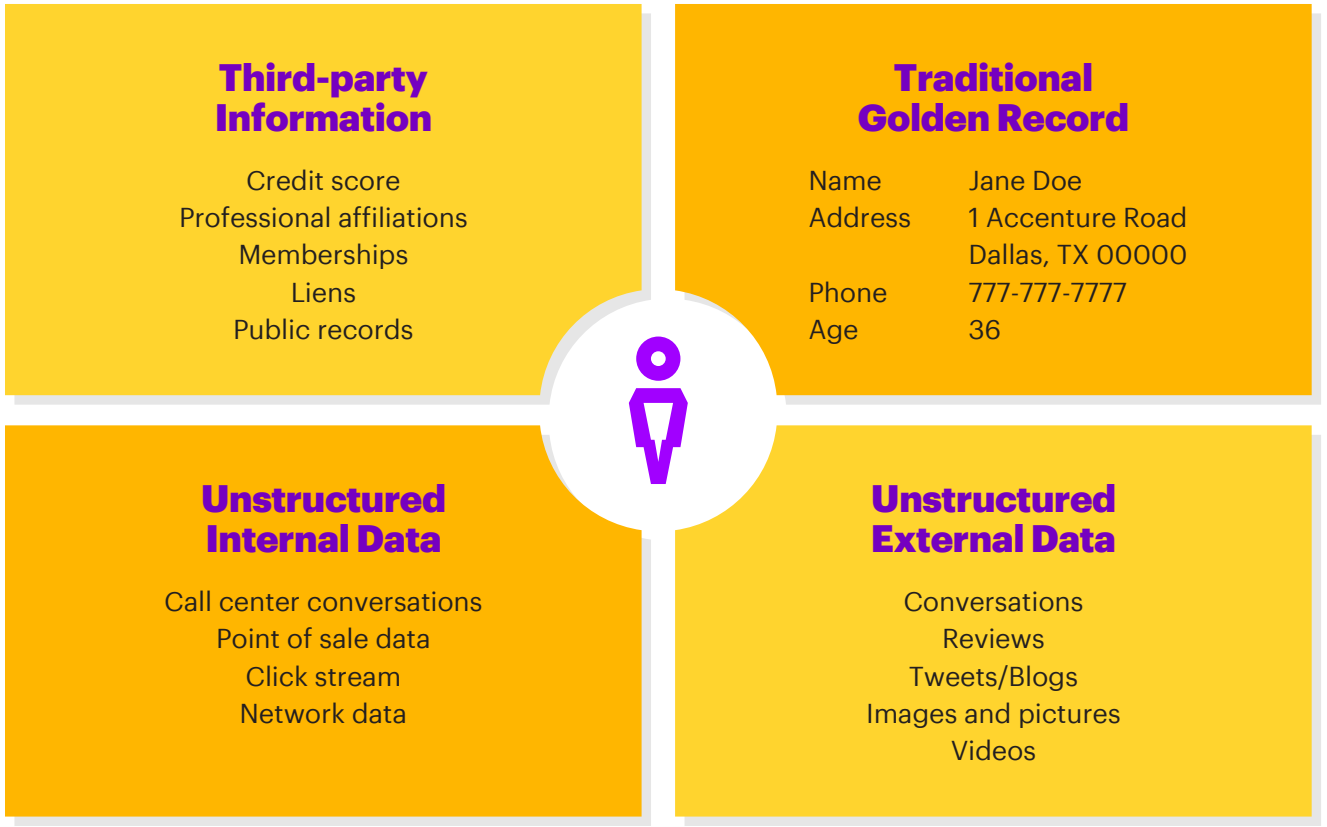


Re-Imagine

Contextual and Analytical Models are now employed to help accommodate these new drivers and to help evolve and transform the Digital Master. These models associated with the new Digital Master produce a golden profile by providing data insights directly to end users, supporting real-time decision making and leveraging digital data sources to create a 360-degree view. So, the question then is, what is this golden profile, and how is it different from a golden record?

Figure 2 represents a customer data entry used in a recent digital master data implementation that Accenture conducted for an insurance firm. The key objective was fraud prevention. The company already had the traditional golden record.

Figure 2: Customer Data Entity



This customer data entity goes further than traditional data attributes to provide a meaningful context and a panoramic view of critical data entities beyond just attributes (or what you get from the golden records). It provides dynamic actionable insights in real-time from other sources like unstructured internal and external data and third-party sources.

These additional data sources are typically not leveraged in traditional MDM implementations. In this implementation, being able to leverage online real-time transactional data, combined with contextual and analytical models, enables the insurance company to reduce the percentage of false positives by almost 50 percent and gain significant savings from fraudulent claims payouts.

Golden profiles are the foundation for modernizing revenue management systems in travel-related industries.

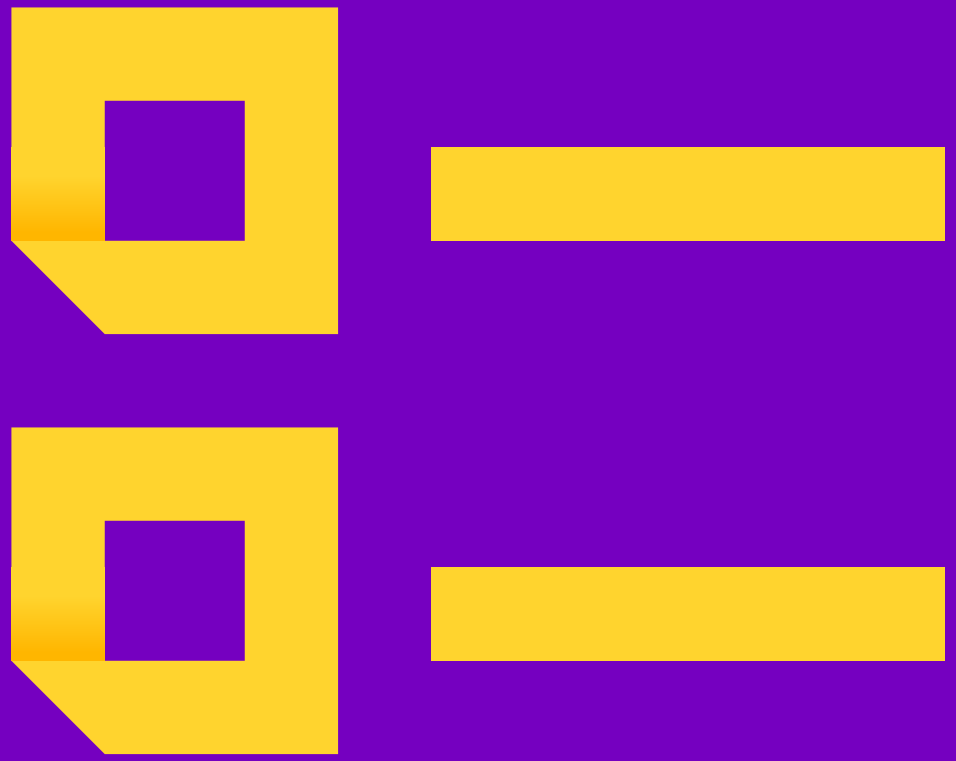
Case Study 4:

We recently helped a large regional airline increase its topline sales by expanding the traditional MDM capabilities, introducing relevant technologies and models to create a master graph. The dynamic profiles produced for the graph were successfully used to enable real-time inventory tracking and an alerting mechanism for the company to make targeted decisions.

Our experienced perspective introduced a data engineering pipeline that was fundamental to combining traditional models with contextual and analytical ones. This empowered and enabled business users to consume master data in a granular, contextual, analytical and real-time manner.

The Contextual and Analytical Elements of a Digital Master

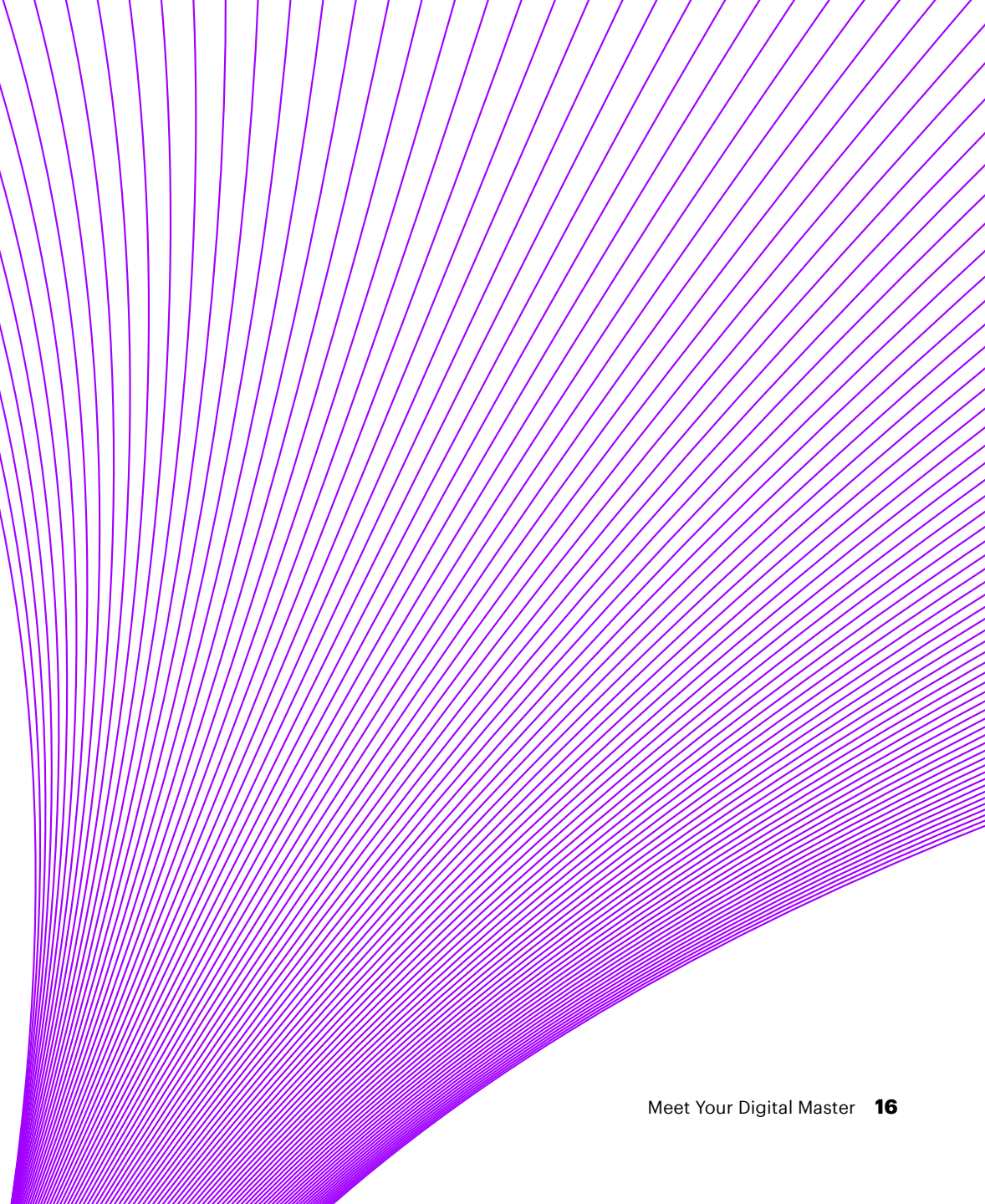
Requirements and data types have evolved beyond traditional methods, and this new Digital Master essentially combines traditional MDM capabilities with contextual and analytical models to accommodate new requirements in the era of digital data and data lakes.



Contextual

Contextual master data models use semantic representation and storage databases to collect and link master data with additional attributes, metadata, transactions and digital data.

In contextual master data models, information is blended and personalized to address different functional needs—only the data that is relevant is provided. For example, the relationships between customers and other entities can be extremely hard to decipher in traditional methods, which stand in the way of personalizing customer experiences. These can now be readily and dynamically represented using contextual models and graph databases. Combining these contextual representations with artificial intelligence (AI) and machine learning can enable deep learning capabilities and greater insights.



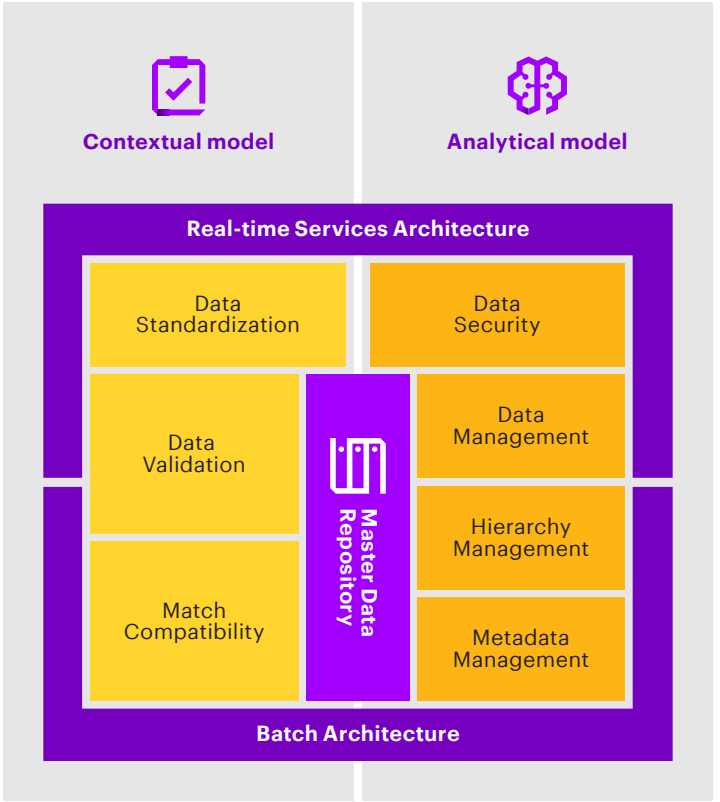
Analytical

Analytical master data models combine master data capabilities with analytics. These models translate master data directly into insight. For example, a customer can be scored daily to calculate a "trust" score—which is then used as an input in fraud-detection models. In addition, analytical models incorporate AI and machine learning algorithms in probabilistic matching and merging.

In a recent master data implementation for identity resolution, we employed algorithmic matching on heterogeneous data types from real-time streaming logs to create an identity graph for cross-channel devices. The traditional methods produced deterministic matching with limited opportunities to expand the advertising segments.

Rather than enforcing format and meaning to facilitate advertising data exchanges, AI and machine learning enabled us to discover patterns in data, as well as propose associations, correlations and adaptations. To accommodate the added complexity and sophistication of the client's needs, data entity references were better served by the contextual and analytical master data solution over traditional MDM tools that are built with a relational database at its core. Digital master data solutions expand this with analytics, graph databases, machine learning and near real-time analytical visualization.

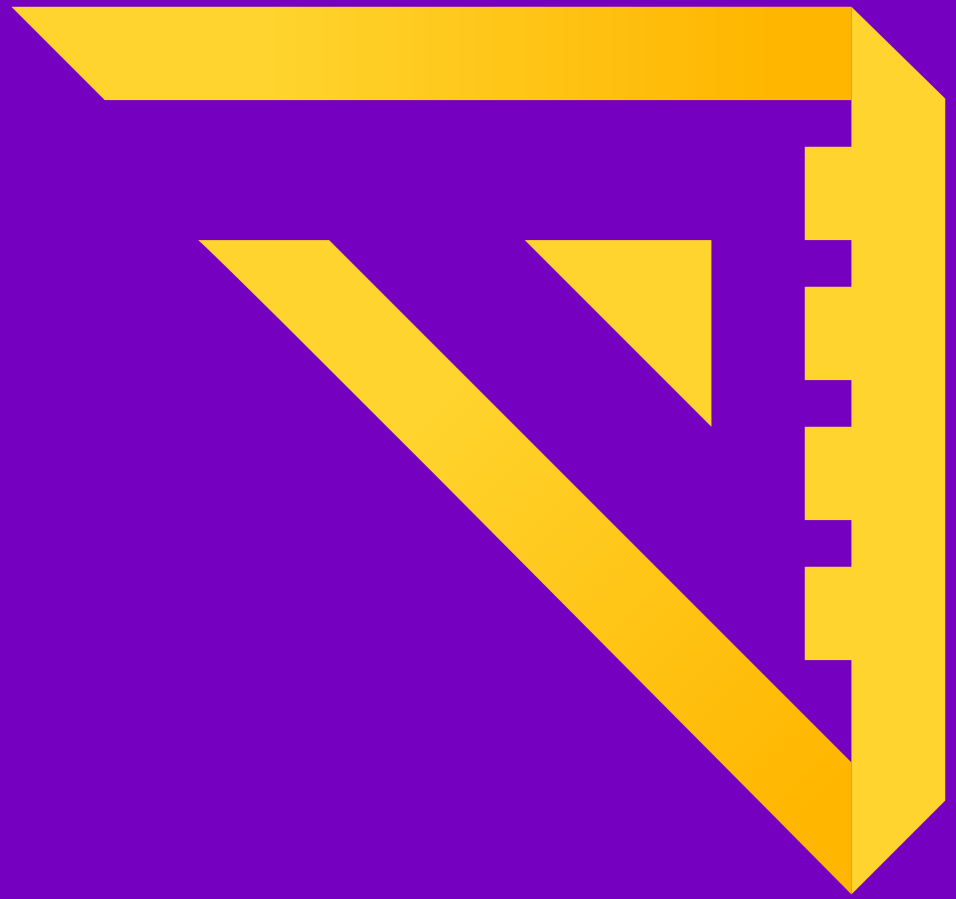
Figure 3: The "New" Digital Master



Laying the Foundation for a Digital Master

Organizations can choose from many different data technology components to build an architecture that supports new digital master data management through an Intelligent Data Foundation (IDF).

Accenture believes introducing a data engineering pipeline is fundamental to being able to combine traditional and contextual and analytical methods to create this new digital master data.



Intelligent Data Foundation (IDF)

The fundamental step towards building a Digital Master is to modernize your data supply chains to bring in contextual and analytical information built on a solid IDF.

Key IDF capabilities should provide the foundation for:

- **Data Capture** staging, ingestion and metadata management.
- **Data Curation** data protection, standardization and promotion.
- **Data Provisioning** business rule and data warehouse.
- **Data Exploration** unification and aggregation.
- **Data Consumption** BI reporting, advanced analytics, machine intelligence and data services.

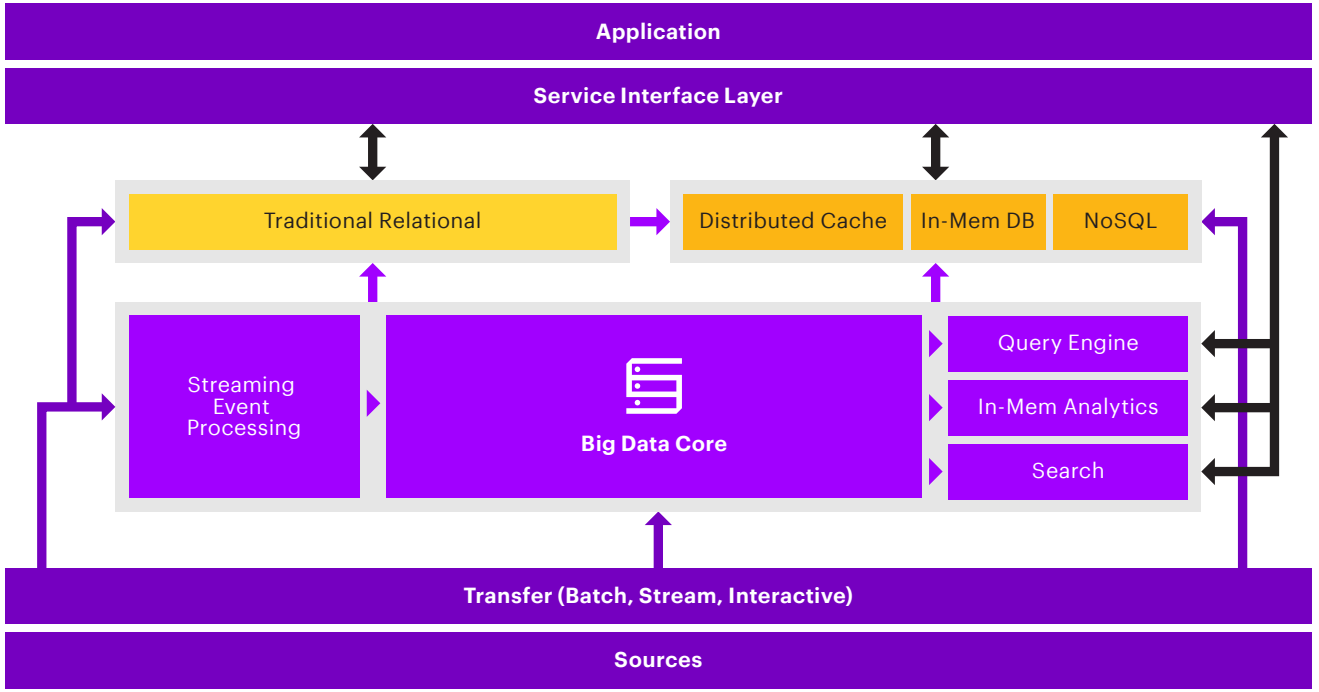
In addition, IDF captures security, governance, data management, monitoring and operations.

The layers are typically built from components that include a big data platform, streaming and complex event processing, ingestion framework, in-memory databases, cache clusters, data warehouse, NoSQL, analytics, AI, machine learning and search engines.

IDF can help businesses bridge the gap between traditional MDM and emerging data realities. The focus is to enable sustainable, trusted intelligence by empowering businesses to consume enterprise data widely delivered at speed and scale. This enables the transformation and evolution of traditional MDM to the new digital master data.

So, how do we design the digital master data solution?

Figure 4: Digital Data Supply Chain Architecture



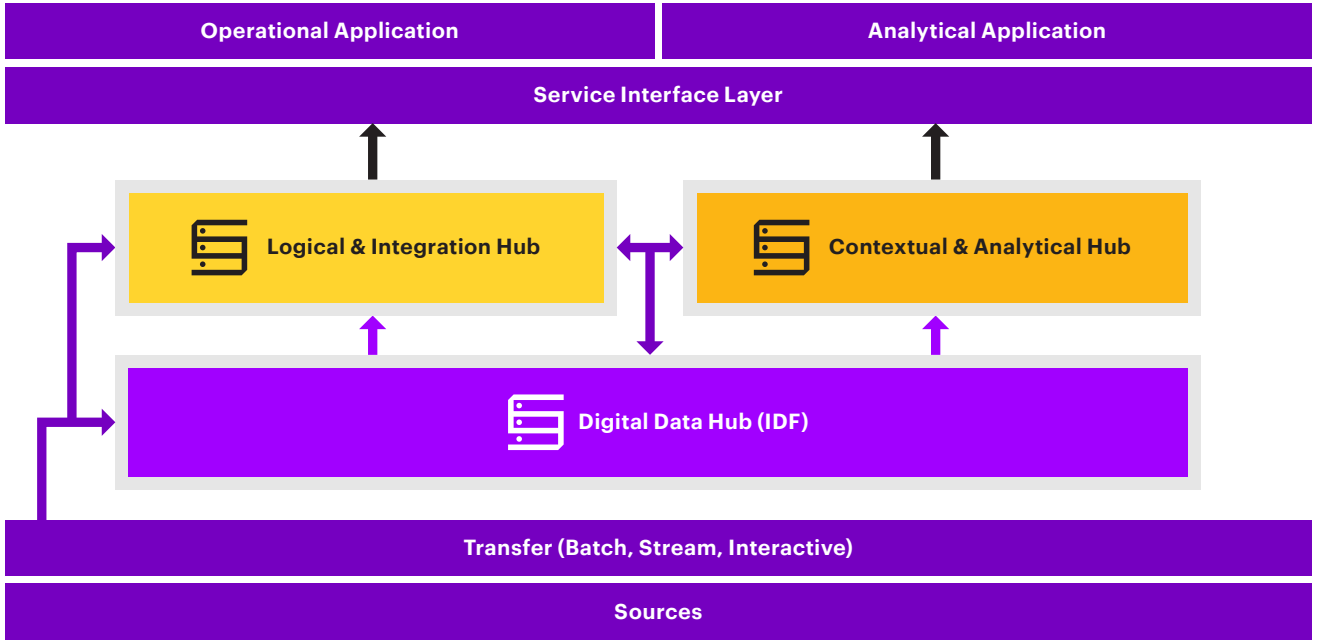
Architecting the Digital Master

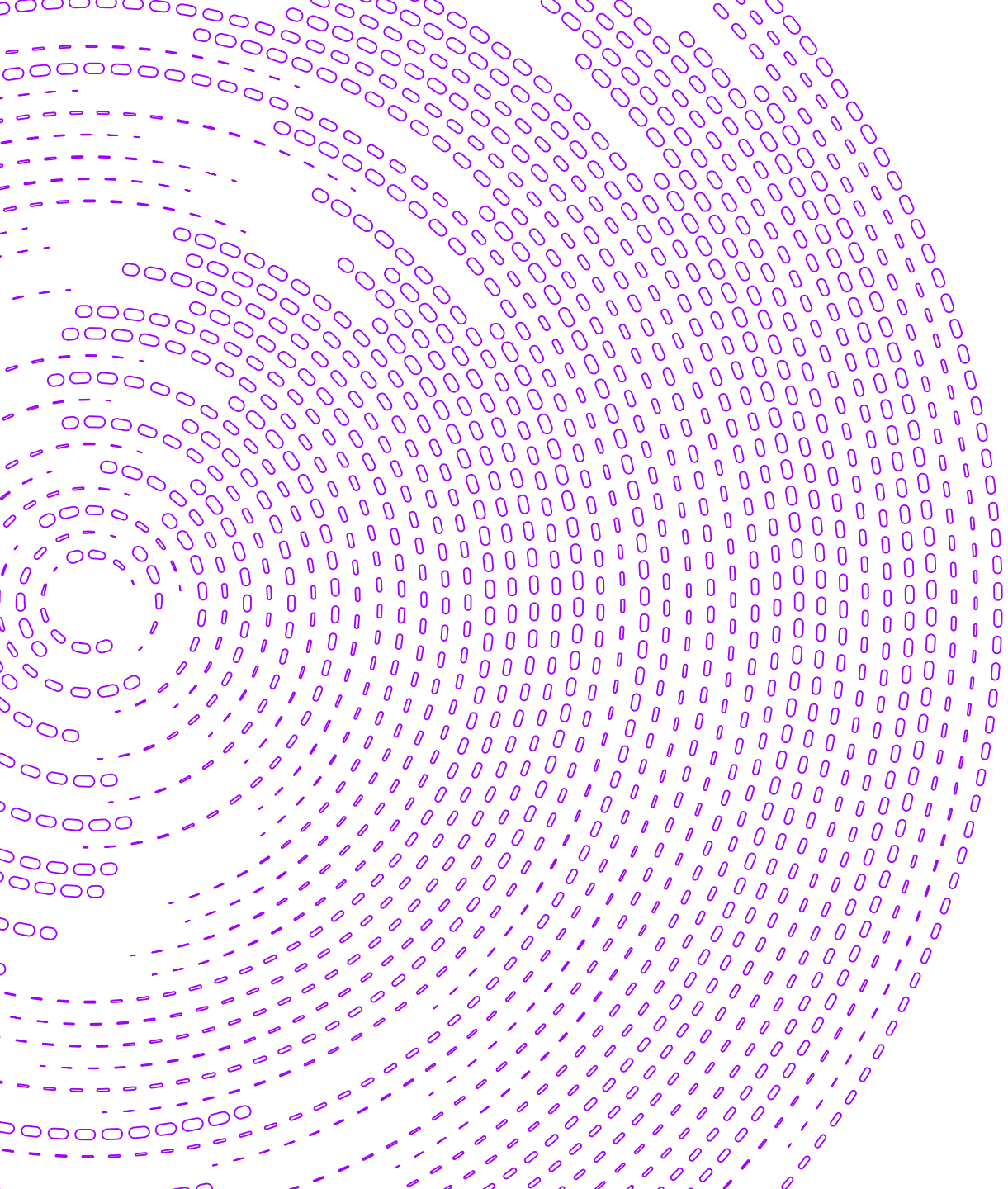
Architecting the new Digital Master implies introducing contextual and analytical models and leveraging (or integrating with) the IDF to provide the expanded master data entity view.

This new digital master data conceptual architecture consists of common services, the IDF, an integration hub and an information hub as shown in Figure 5.

These hubs represent the three logical data hubs that store master data in various stages of the pipeline process. In subsequent sections, these logical hubs will also reflect on the deployment options and architecture design options.

Figure 5: High-Level Conceptual Digital MDM Architecture





Recall that the integration hub represents the highly deterministic golden record. In the new digital master data, it remains crucial as the sanitized and trusted "reference" data. It is a foundational set of data elements for the entity that increases confidence as digital data sources are introduced, matching and merging to form an expanded view of the data entity. Also recall that the requirements are evolving to be more real-time and granular.

The IDF framework and the information hub can enable the polyglot storage and real-time processing and enrichment of data. It also helps ensure that the relevant analytical enrichment, AI and machine learning algorithms can be applied. Finally, contextual representation can provide the dynamic 360-degree view of the data entities. It is then important to drill down to understand what exactly these blocks or layers do.

Exploring the Architectural Components

The architectural components for the Digital Master provide the collective capabilities to progressively enrich master records as it flows through the data supply chain pipeline, increasing the data value for greater context and insight.

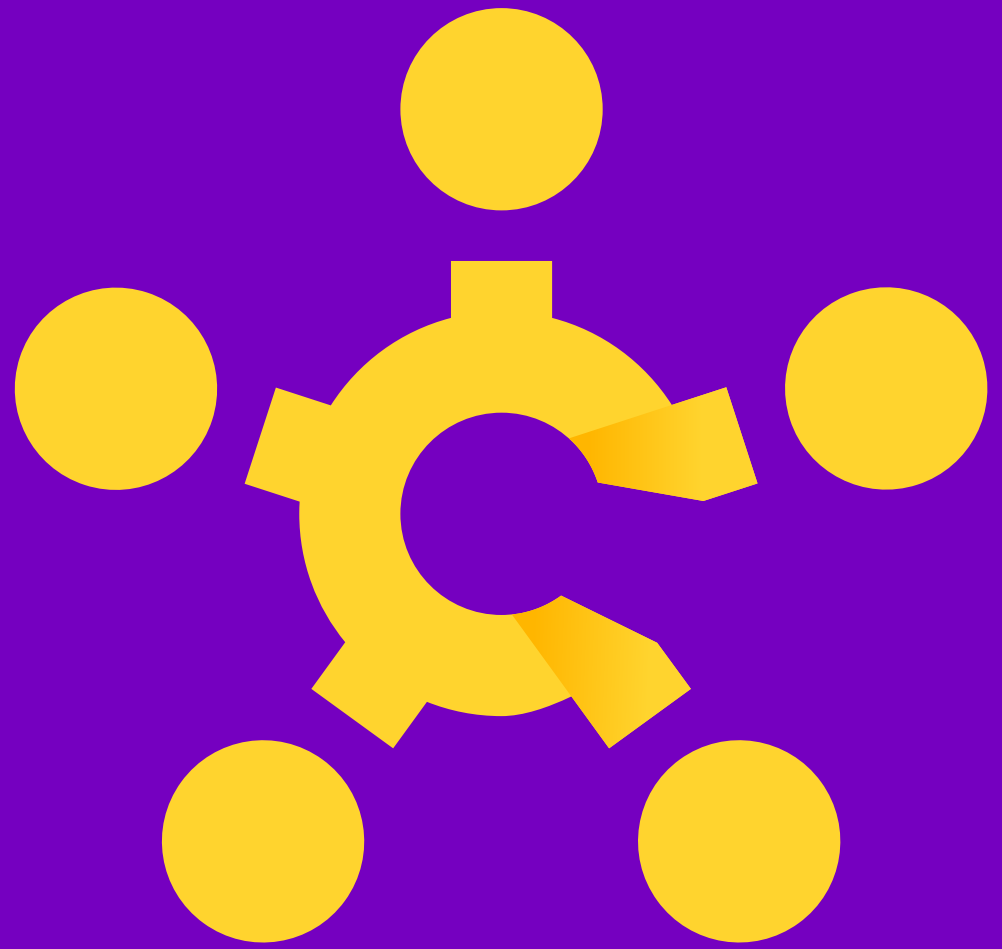
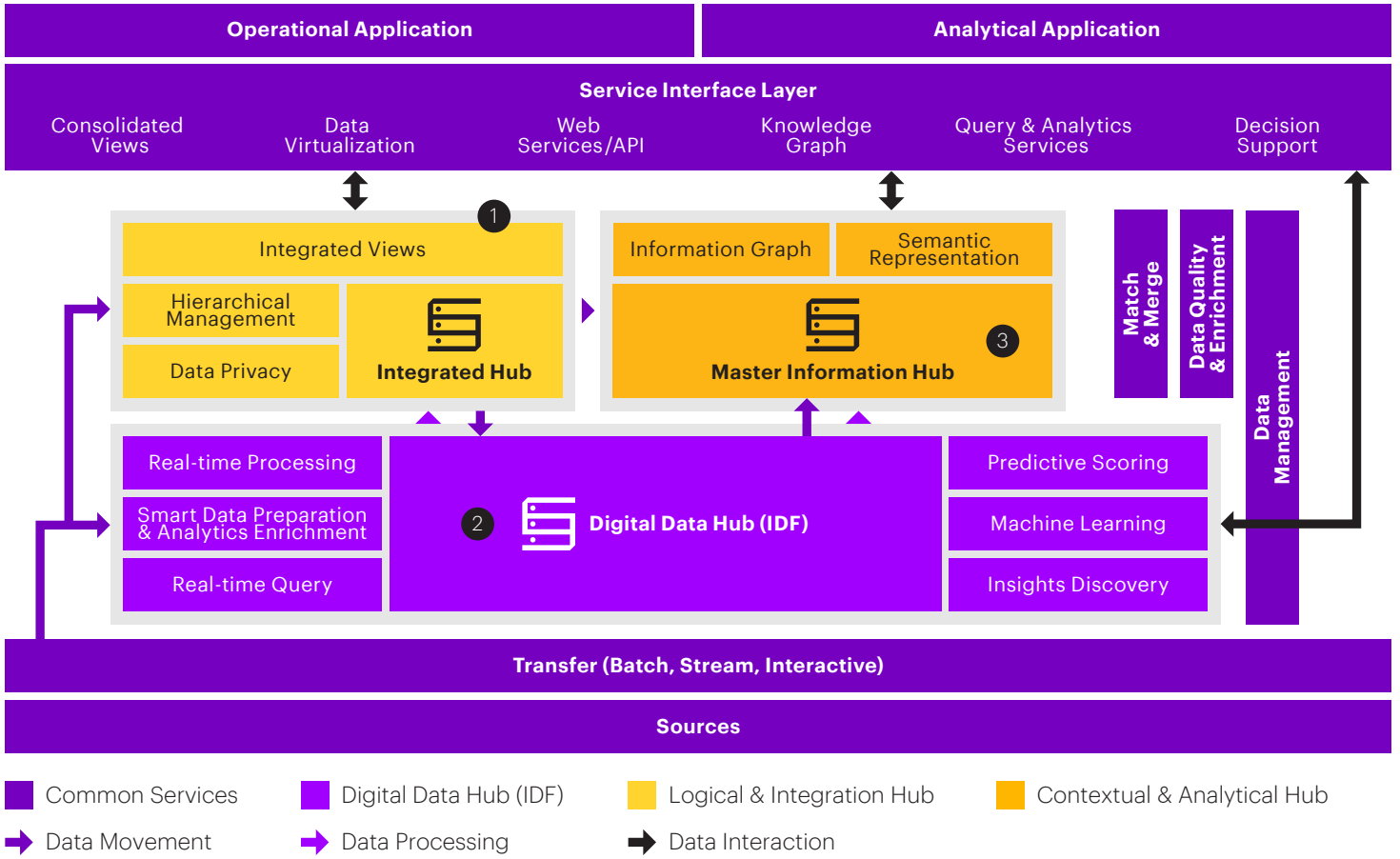


Figure 6: Logical Reference Architecture



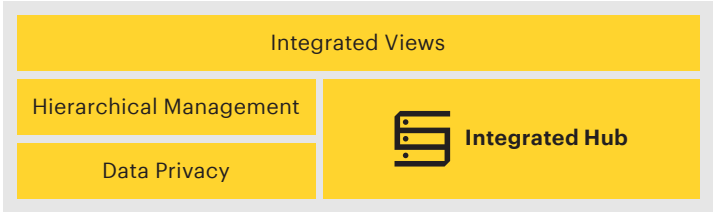
1. The integration hub provides an integrated consistent version of the truth, leveraging the investments made in traditional MDM.
2. The digital data hub allows for master data, data analytics enrichment and decision support, along with key components for the IDF.
3. The information hub provides the capability to uncover complex relationships that exist within the enriched master data with an expanded entity view.

Logical and Integration Hub

This provides traditional data integration and standards to uniformly maintain and govern hierarchies and data maps. Most organizations may already have this in some form of MDM solution.

It supports multi-domain master data in a single data model. Organizations usually rely on it for the golden records of the relevant data entities. The database storage is typically relational and supports deterministic matching and merging.

Figure 7: Logical and Integration Hub

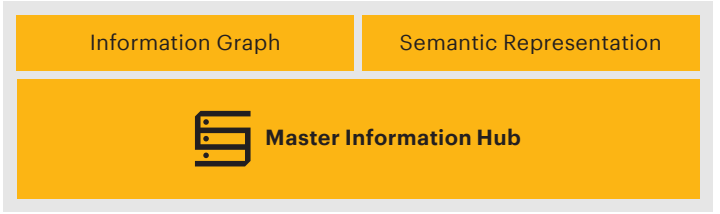


Contextual and Analytical Hub

The master information hub maintains the semantic representations of master interconnected data and provides a data store for contextual data. The information graph is the semantic representation that produces the knowledge graph and contextual model.

The knowledge graph can be seen as a snapshot of the entire information graph and can be based on a particular business use case or query pattern.

Figure 8: Contextual and Analytical Hub

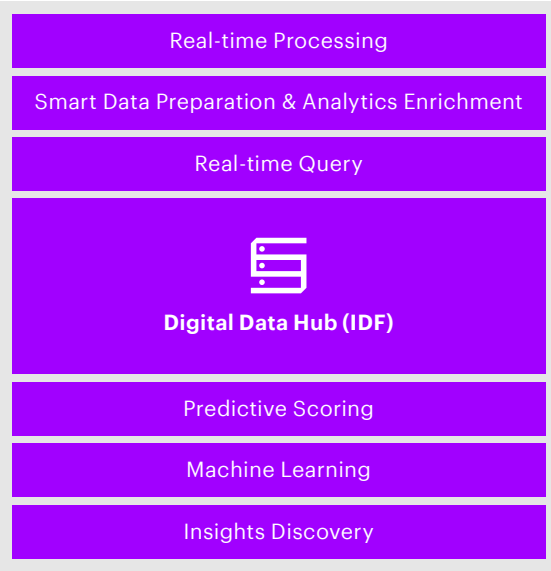


Digital Data Hub

The Digital Data Hub is a central data repository for raw and derived enterprise data. It may typically be an enterprise data lake. It includes real-time and batch-processing capabilities. IDF, as earlier stated, consists of the end-to-end data supply chain pipeline that enables this new digital master data.

- **Real-time processing** Real-time detection of patterns in the data and event triggering are enabled, which in turn promotes prompt decision -making, enhancing the data lake's processing capability, insight generation and analytics.
- **Smart data preparation & analytics enrichment** Data preparation is an iterative process for exploring and transforming raw data into forms suitable for analytics enrichment, data science experiments, data discovery and analytics. Analytics enrichment infuses digital data transactional information with attributes that enable a 360-degree view of data.
- **Real-time query** Real-time query capabilities facilitate insights discovery, data visualization and real-time decision support.
- **Predictive scoring** Predictive models are used to score data, delivering precise insights that facilitate informed decision-making based on quantitative logic and insights.
- **Machine learning** Machine learning leverages IDF processing capabilities to rapidly explore different permutations and generate the best model for entity resolution and fuzzy data matching. Machine learning is also leveraged for intelligent data capture and curation, profiling and data tagging to enhance metadata management and data quality.
- **Insights discovery** Statistical and mathematical methods are leveraged in order to provide both descriptive and predictive analysis of data to facilitate query, analytics and decision support.

Figure 9: Digital Data Hub



Digital Master Powered Business

To illustrate how this all fits together to enable both user and business applications to leverage digital master data to make timely decisions, consider the industry example on data flow on the following page. This new digital master data shifts the focus from merely powering downstream systems to allowing the business user to actively consume master data in a dynamic, granular, contextual and real-time manner.

A rethinking of what master data means has given rise to opportunities for a more business and outcome-oriented focus. The new Digital Master has challenged our insistence on strict, deterministic single versions of the truth. By expanding what digital data means, we are also seeing an acceptance of probabilistic approaches that aim to increase the number of potential outcomes. These outcomes provide a rich input to AI and machine learning applications, data services and analytical applications

Challenge

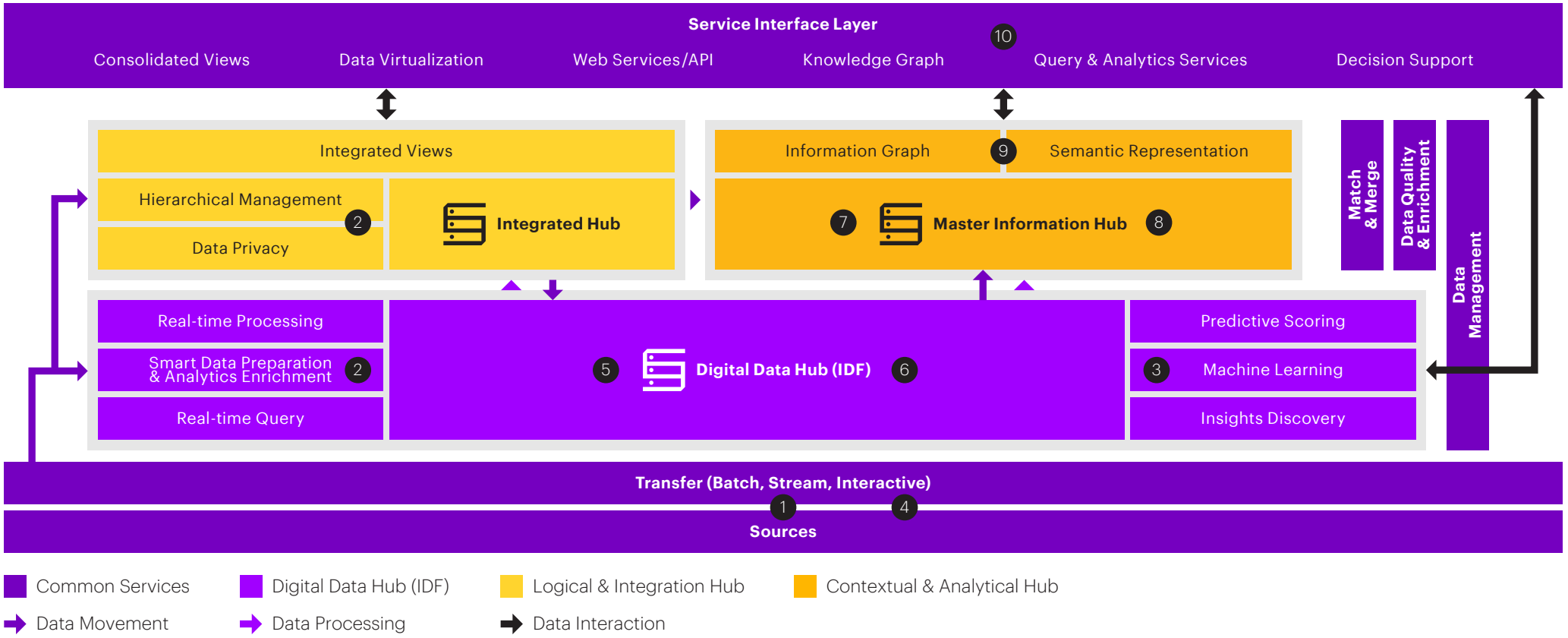
We recently helped an organization with the objective of building a cross-device identity graph for advertising purposes, which consisted of data on households, devices and individuals, enriched with online digital data sources. Services such as bring-your-own-data and broad activation channels were key requirements.

Digital Master Flow

The emphasis in this example and indeed with the new digital master data approach, is the empowering of the business user and applications to consume master data in a granular, contextual, analytical and real-time manner.

Notice that in Figure 10 on the following page, the master data is progressively enriched as it flows through the information pipeline and increases the master data value. Meanwhile, master data along the pipeline enhances the data confidence while helping to convert information gleaned from digital data sources into actionable insights.

Figure 10: Next-Generation Work/Data Flow



1. Capture deterministic and probabilistic IDs using Personally Identifiable Information (PII), device IDs, location, cookies, Universally Unique Identifiers (UUIDs), derived behaviors/patterns. These can come from internal, third party and external online data sources. Intelligent tagging is key to breaking out behavioral patterns.

2. Develop a "device fingerprint"—this is about identifiers stored in identity graphs (including network information, device IDs, browsing behavior or third party cookies) to create a "fingerprint" that can predict someone's identity or household with a fair degree of accuracy.

3. Apply deterministic and probabilistic matching to create linkage from device to person. Machine learning is leveraged here to perform probabilistic matching.

4. Augment this linkage with third party and external linkage solutions. Here bring-your-own-data is enabled and combined with analytical enrichment to add enhanced profile data elements to an entity.

5. Create or update the ID graph by merging online and offline graphs together. The digital hub is the repository for all the graphs in a database format. This hub has the polyglot nature to maintain all the data elements that then form the basis for the profile graph.

6. Simulate real-time graph updates. The digital hub also has the real-time query and updated capabilities to ensure the ID graph is refreshed and up to date.

7. Merge multiple ID graphs together in ID translation refinery (steps include decryption, match/cluster, translate, create combined graph). The information hub enables the relationship linkage.

8. Create persistent IDs for each person based on the graph, i.e. global or ultimate ID. This ID will be tied to each device the person is associated with according to the graph.

9. Build the complete digital identity resolution data universe.

10. Build various activation services on the service interface layer for business user interaction and ID resolution data consumption.

Deploying the Digital Master

Having discussed the functional views and logical components, how do we translate these to actual solutions or implementations? How do we make informed decisions around the best deployment approach?

Implementation Patterns

Fundamentally, there are two implementation patterns—single container and multiple containers. The differentiation between these two patterns is based on the "container" each of the logical hubs is implemented in.

Single Container

In the single container approach, all three logical hubs are contained within the big data platform or data lake. It also ensures that the functionalities of each of these hubs are implemented within the data lake.

From an on-premise standpoint, typical tools could include Hadoop/Spark/HBase for the Digital Data Hub, Hive or Kudu for the integration hub and Neo4j for the information hub. S3, EMR, Snowflake, DynamoDB or Neptune could form the basis for a cloud single container approach.

Figure 11: Single Container

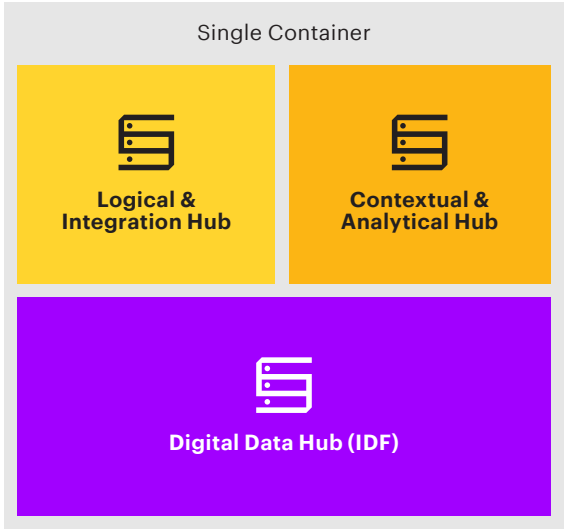


Table 1: Deployment Strategy

Green Field on Data Lake
Cloud or on-premise solution
Only a sub set of core MDM implemented
Graph-based master and integration data repository
Digital data technologies— Hadoop, Cloud, NoSQL (graph, columnar)
Flexible integration with existing enterprise MDM solutions

Multiple Containers

In the multiple container pattern, one or more of the logical hubs can be in different containers. The integration hub may be in a separate traditional master data container. Many clients have made significant investments in traditional MDM and would like to leverage this as much as possible. Tools associated with the traditional MDM container will include Profisee, Informatica, IBM InfoSphere, Teradata, Oracle, Talend, SAS and TIBCO.

Many clients aspiring to go for the single container approach may initially have started with the multi-container approach. It provides a soft landing and is a more cautious way of reaching the target state.

Figure 12.1: Multiple Container, Type 1

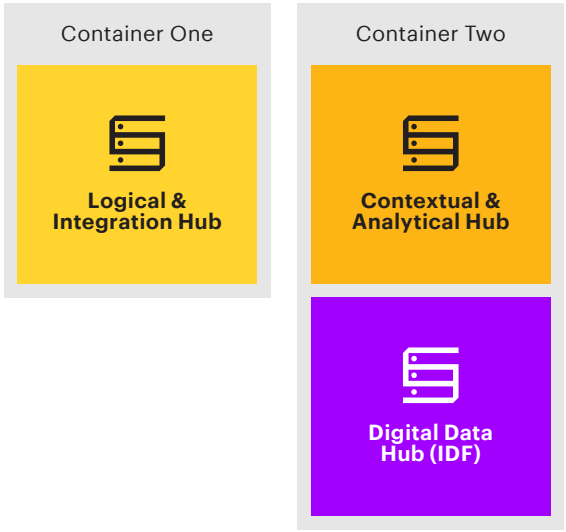
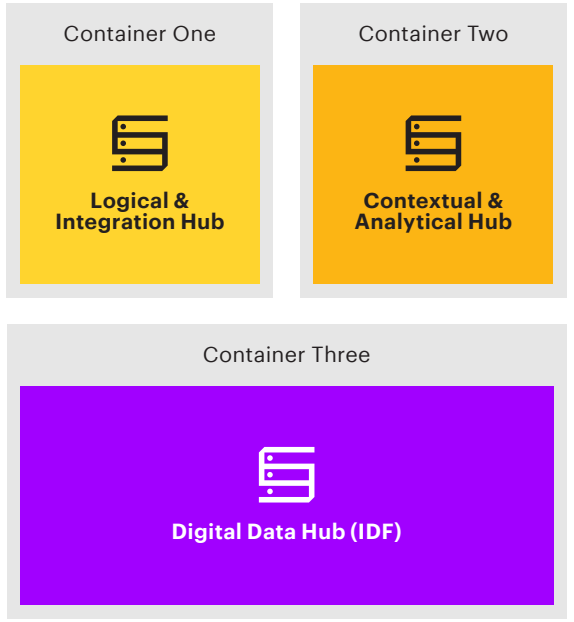


Figure 12.2: Multiple Container, Type 2



In addition to the options for the separate containers, there are two possible options where each of these hubs may be deployed:

- Managed Services
- On-Premise Appliance

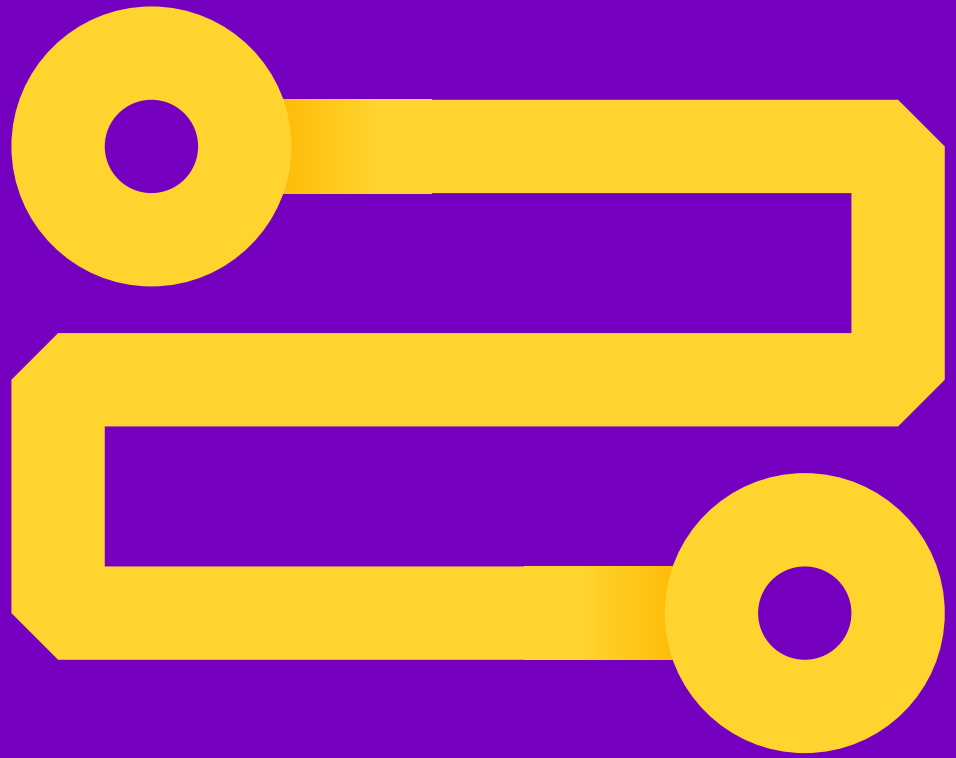
As data lakes become commonplace in the enterprise and technologies continue to mature, master data and digital data will coexist much more naturally and data will be entirely mastered in the data lake itself.

Table 2: Deployment Strategy

Managed Services	On-Premise Appliance
Usually cloud-based or externally hosted solution	Well-established traditional MDM solution providers
Graph-based master data repository	Typically relational database solutions
APIs provided for data ingestion and service delivery	Tight coupling to vendor technology stack and appliance recommendation
Big data technologies—NoSQL (graph, columnar)	Mature support from vendor
Example technologies—Reltio, Pitney Bowes	Example technologies—IBM, Informatica

Transitioning to the New

Most organizations have some form of traditional MDM implementation and are looking to enter the new realm of master data in the digital age. We are observing two transition patterns, which we call “Extend” and “Replace”.



These transition patterns typically involve a two-step process, i.e. starting with an existing MDM implementation, integrating with a data lake and eventually migrating all hubs and capabilities to the data lake. Some organizations bite the bullet and go for this end state directly. In the "Extend" strategy, clients opt to keep the traditional master in the existing traditional integration hub while extending or expanding the capabilities beyond the traditional ones by integrating with a data lake.

The information hub is typically decoupled from the integration hub, which helps in scaling and maintenance, but also in complexity and operations. The reduced time frames for the project build and deployment are an added incentive to achieving a minimum viable product as quickly as possible. Table 3 on the following page shows the pros and cons of these transition strategies.

However, reliance on legacy systems, cost of maintaining such systems and the data synchronization requirements needed to enable the successful transition to the new Digital Master are some issues to contend with.

With a "Replace" strategy, clients have an opportunity to build a robust new Digital Master entirely around a big data lake. This is a significant emerging trend, especially with data lakes becoming more mainstream in the digital era. Clients can leverage existing data lakes with the added flexibility and freedom of building adaptive intelligent master data models.

Other pros of this approach include a more seamless coupling of the various logical hubs and reuse of common services. The cost of building from scratch, time to deploy and data lake immaturity are all possible challenges.

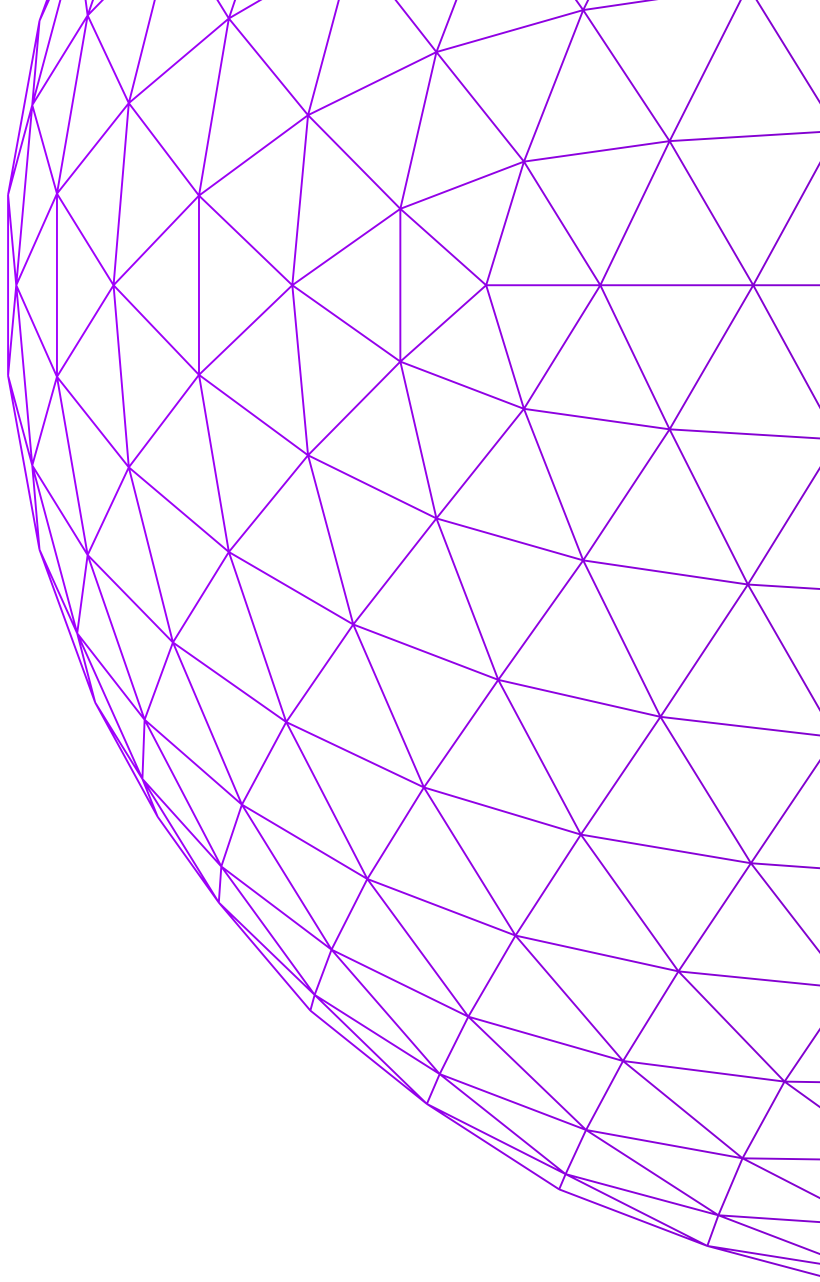
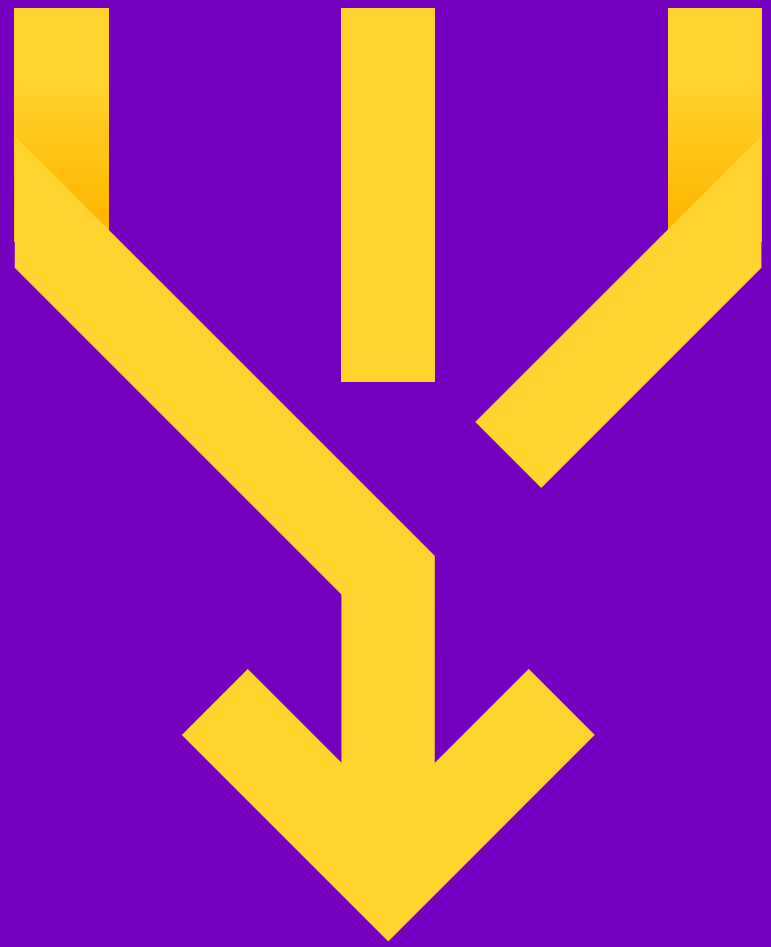


Table 3: Transition Patterns

Transition	Description	Pros	Cons
Extend	Integrate existing MDM with big data platform (data lake)—data lake consumes traditional MDM data	• Leverage existing MDM systems • Leverage existing data lake • Information hub is decoupled from integration hub • Reduced project build and deployment time frame	• Legacy MDM • Data synchronization needed to enable single source of truth
Replace	Implement digital MDM requirements entirely within data lake	• Leverage existing data lake • Flexibility and freedom in designing master data models • Tighter coupling between integration and information hubs • Green field implementation	• Built from scratch • Time to deploy and cost • Data lake immaturity for core traditional MDM functions

Conclusion

To gain a competitive advantage from its enterprise data, an organization should be able to generate business insights from it. The barrier to entry is at an all-time low, thanks to the advent of digital data.



As we enter this new era of digital data, traditional MDM methods are no longer sufficient. There are two main evolutionary drivers forcing a renewed look at what master data means to the enterprise—new demands that are placed upon the master data and an expanding universe of data sources that need to be integrated.

Traditional solutions and methods are characterized by difficult and expensive implementations that are complex to maintain. Most importantly, these solutions have very little impact in today's digital world. However, by augmenting existing master data with digital data, organizations are now able to greatly expand the view of whatever domain they have selected. Additionally, they can derive a more comprehensive understanding of the truth based on a host of relevant external factors.

By leveraging our Intelligent Data Foundation, transforming the role of master data and empowering the business user to consume "online master data" to drive decisions, this new digital master data can be ready for the digital age.

This point of view provides an overview for organizations to use as a starting point to understand this evolving landscape and familiarize themselves with the appropriate architectural options.

Next Steps

Here are the key actions to help build your organization's new Digital Master:

1. **Data inventory**
   Start with your most frequently accessed and time-relevant data. This can allow your initial sources to establish a version of the truth.
2. **Data hubs**
   Identify current data repositories to understand current needs across the business and the extent to which these data hubs meet the business requirements.
3. **Use cases**
   Examine the business use cases and align these use cases to existing solutions. Identify the potential opportunities.
4. **Prioritize individual Digital Master use cases**
   Prioritizing helps you develop a roadmap for implementing the new Digital Master at scale.
5. **Models, AI and machine learning**
   Identify the right contextual and analytical models to cover the business use cases.
6. **Consider external data sources**
   Look outside your organization for external data sources that can be incorporated to complement existing reference data and help generate more complete insights through contextual and analytical models.
7. **Choose the data technology stack**
   Research the optimal deployment methods for your organization.

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