Whitepaper

THINKDATA WORKS

Building a Better Customer 360

Best practices for designing, using, and maintaining comprehensive customer records

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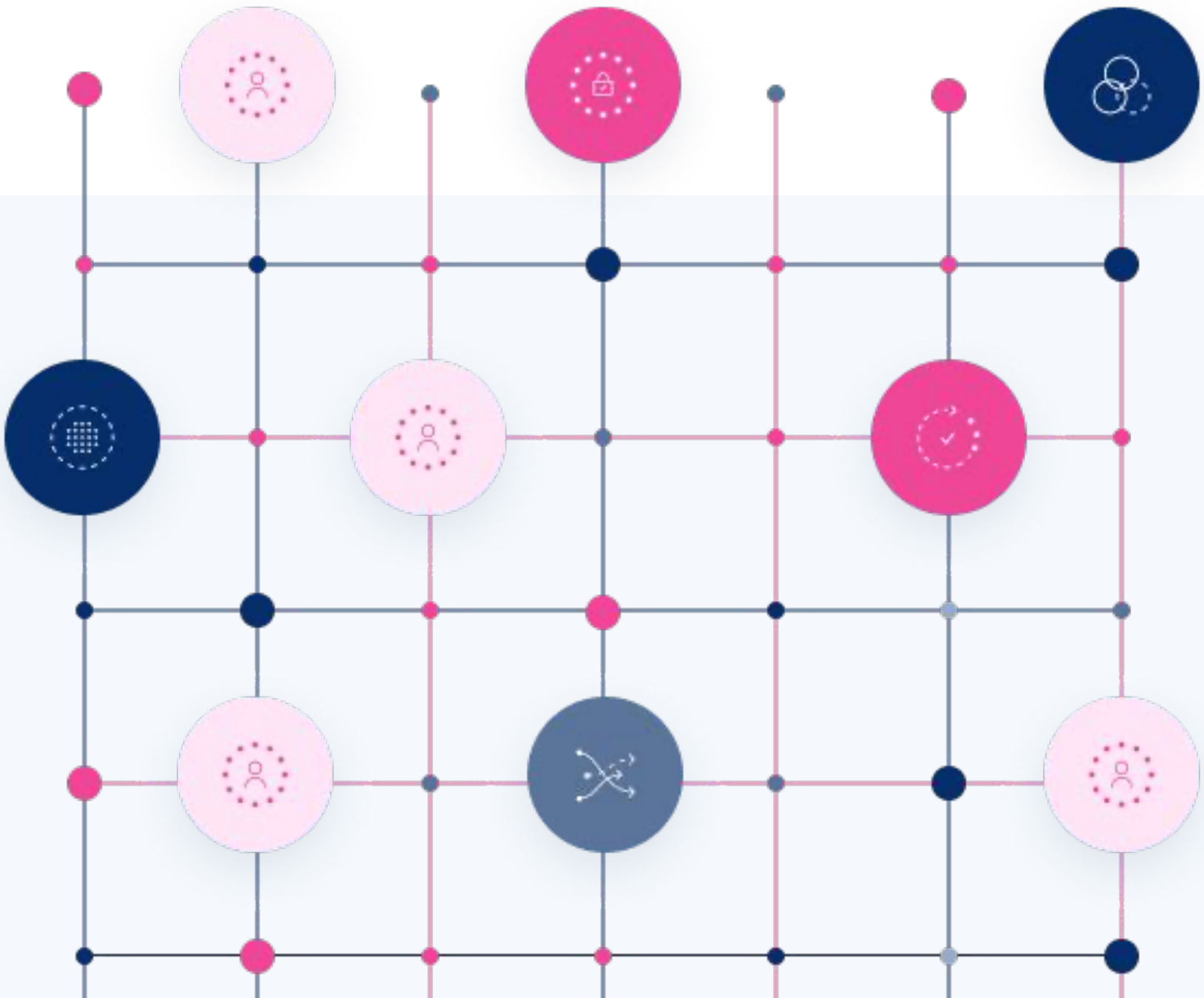
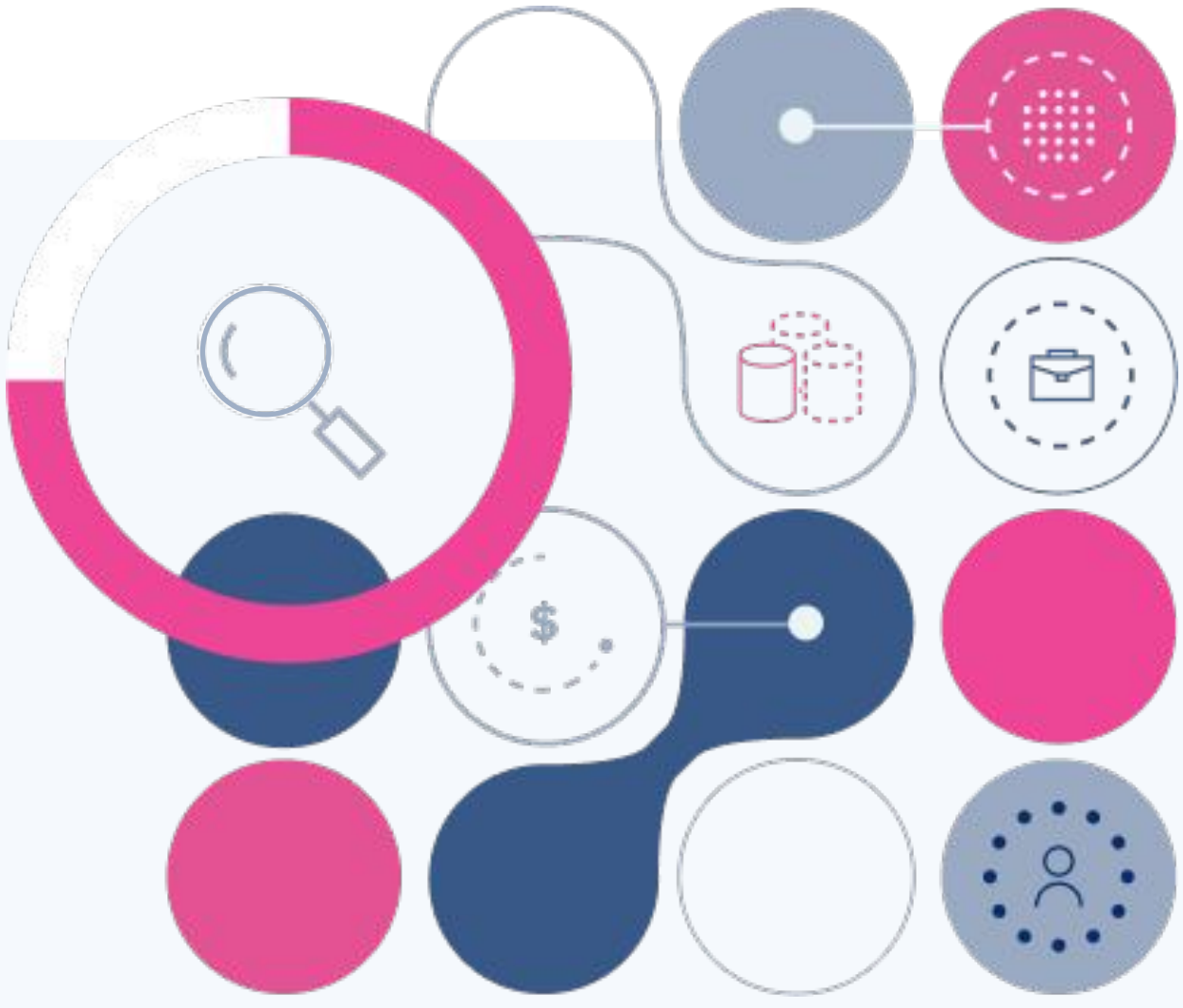


Summary

Properly configured, a Customer 360 can provide data-driven businesses with a competitive edge, streamlined operations, and a best-in-breed data platform capable of managing advanced analytics and AI projects at scale. Building this Customer 360 begins with data consolidation, and a hybrid approach to building a federated data ecosystem including data virtualization is the least disruptive and most efficient strategy. Data virtualization complements current migration efforts by creating a virtual data layer that integrates data from different sources without physically moving it, enabling seamless data access and real-time integration. This hybrid approach to centralization ensures that all customer-related data is aggregated, providing a unified view that serves as the foundation for the Customer 360.

Data preparation is crucial for creating an accurate and comprehensive Customer 360 view. This stage involves data cleansing, entity resolution, and master data management. Data cleansing is the process through which data is standardized and cleaned to ensure that the raw data layer is well-formatted and ready for processing. Entity resolution is the process where records referring to the same customer across various datasets are identified, matched, and merged. By resolving duplicates and inconsistencies, entity resolution ensures that each customer is represented by a single, consolidated profile. Master data management further enhances data quality by establishing a single source of truth for key customer attributes, standardizing and synchronizing data across the organization. These processes are essential for maintaining data integrity and accuracy, which are critical for deriving reliable insights and personalizing customer interactions.

Finally, deploying an integrated data platform is key to supporting data lifecycle management, governance, and data health monitoring. This platform should include tools for data ingestion, storage, processing, and analytics, ensuring that data is managed effectively from acquisition to disposal. Governance mechanisms are vital for securing sensitive customer information and ensuring compliance, while continuous data health monitoring, through automated checks and alerts, help maintain data quality and integrity over time. By integrating these elements, organizations can build a trustworthy and comprehensive Customer 360 solution that supports strategic decision-making, enhances customer experiences, and drives business growth.



Overview

WHAT IS A CUSTOMER 360?

For any company that collects customer data, there's a massive opportunity to use the data they have to create value and gain a holistic understanding of every customer. The approach of consolidating customer data into a production-ready product is often called a Customer 360, since it provides a complete, multi-dimensional, view of the customer across all data sources, including their profile, purchasing history, and their interactions with the company. The concept of a Customer 360 aims to provide businesses with a comprehensive understanding of each customer, including their preferences, behaviors, and needs. For modern organizations, using this data effectively can lead to personalized approaches, improved customer satisfaction and retention, and impactful business growth through well-designed customer experiences. A Customer 360 is, for many companies, the foundation on which they can build a modern data-driven enterprise.

> For most companies, achieving Customer 360 is easier said than done. Legacy systems, fragmented data sources, and institutional barriers often impede efforts to build a comprehensive customer view and thwart efforts that represent immediate and long-term value to the organization.

For companies aiming to leverage advanced analytics tools, legacy data systems pose significant challenges to achieve Customer 360. These systems are typically siloed, fragmented, and lack the agility to integrate with new technologies seamlessly. In order to function properly, a Customer 360 needs to integrate data from these disparate data sources, enabling companies to consolidate customer information regardless of its origin or format. Before any organization can begin to utilize a Customer 360, they must first grapple with the state of their data ecosystem. By breaking down data silos and weaving together disparate data, organizations will be able to unlock valuable insights and unearth hidden patterns that were previously obscured by these legacy data structures. For most organizations, this does not require an extensive data migration or modernization effort. More often, building a Customer 360 requires a new approach to data consolidation, not an entirely redesigned data architecture.

When properly implemented, a Customer 360 not only achieves impactful business outcomes, it also facilitates compliance with data regulations and enhances data governance practices by generating a fulsome and consistent gold layer of customer data that can be queried, analyzed, and reported on. By centralizing customer data, either in the cloud or through data virtualization, companies can enforce stricter access controls, monitor data usage more effectively, and mitigate the risks associated with data breaches. The centralized record not only safeguards customer trust but also ensures regulatory compliance, reducing the potential for costly fines. Deploying the foundation of a Customer 360 is an investment in data-driven decision-making, cost savings, and greater profits.

Customer 360 is an opportunity and a challenge that serves as a catalyst for transformation in data-focused organizations. For companies with legacy data systems, Customer 360 can be both the motivator for and the positive net impact of breaking down data silos, leading to improved outcomes through the downstream integration with cloud-based analytic tools, future-proofing and modernizing a data environment, and enhancing data governance and reporting. Customer 360 is a way for modern organizations to unlock the full potential of their customer data, gain a competitive edge, drive innovation, and cultivate lasting, positive relationships with their customers.

Overview

WHY A CUSTOMER 360 IS USEFUL

There are two key reasons why an organization would pursue building a Customer 360, and many more peripheral benefits from developing a complete, well-rounded customer data product. The primary reasons why an organization would undertake the often challenging process of building a Customer 360 are twofold: increase growth and reduce churn.

Personalized Experiences: A unified view of customer data gives businesses highly personalized experiences across all touchpoints and channels. By analyzing customer preferences and behavior patterns, companies can customize product recommendations and service interactions to better resonate with each customer, leading to better relationships, increased retention rates, higher lifetime value, and enhanced marketing effectiveness.

Streamlined Billing: One of the most common reasons for building a Customer 360 is the desire to effectively bill clients and streamline operations. In many organizations the billing process is opaque and challenging, leading to difficulties for both the Finance and Operations side of the business. Establishing a Customer 360 not only helps organizations set the foundation for new, customer-focused experiences, it also simplifies and improves existing critical processes.

Data-Driven Decision Making: A well-designed Customer 360 removes the onus of responsibility from “gut” choices to evidence-based and data-supported decisions. By leveraging data analytics and predictive modeling on top of the Customer 360, companies will be able to make forward-thinking recommendations about product development, pricing strategies, and market opportunities, enabling businesses to stay agile, competitive, and responsive to evolving customer needs and market dynamics.

Better Governance of a Source of Truth: When all aspects of a customer profile flow well into a centralized data product, organizations will be able to better analyze and report on the overall health of their data, monitoring not only the quality of the data itself, but also report on the data use throughout their organization. Being able to monitor and report on the health of the data in the 360 ecosystem as well as report on how it’s being used will provide organizations with stronger data governance as the regulatory landscape continues to evolve.

Overall, building a Customer 360 offers businesses a strategic advantage by giving them the tools they need to gain deeper insights into their customers, deliver personalized experiences, and drive growth and profitability alongside better governance and increased analytics. By prioritizing customer-centricity and leveraging the power of data effectively, businesses will take an important step towards data-driven decision making and create lasting, impactful relationships with their customers.

Overview

WHERE MOST COMPANIES GO WRONG

For any company that tracks user or customer data, building a Customer 360 should seem like a matter of course. However, there are many challenges associated with achieving this view. As with any outcome that relies on well structured or streamlined data, organizations often struggle with implementing the core technology that can be used to consolidate, cleanse, and otherwise modify and manage the data.

Primarily, there are frequently institutional and technological barriers associated with generating a Customer 360. This may not be a comforting realization, but these barriers are the same as those that face organizations trying to achieve any meaningful evolution of a data and analytics environment: legacy data sources, data silos, and a chasm between the technical and business-oriented side of the business will be the same problems that face any organization trying to modernize in any way, be that building a Customer 360, achieving regulatory compliance, or implementing AI. The truth of the matter is that any meaningful progress on data initiatives will be impeded by the same problems. The good news is that solving these problems will make organizations ready to succeed on several fronts concurrently.

TECHNICAL CHALLENGES

Data Silos: Legacy systems often store data in disparate silos, including homespun ERPs, FTPs, and databases such as Oracle and SQL Servers, as well as more modern data storage like the cloud and the application layer. This can make it difficult to integrate and reconcile data sources into a common record. This fragmentation hampers efforts to create a unified view of the customer across all data sources and systems.

Data Quality: Older data sources (and new ones, for that matter) may suffer from inconsistencies, inaccuracies, and incompleteness, resulting from outdated data collection processes or manual errors. Cleansing and standardizing data in order to resolve it to a common entity is a requirement of building a Customer 360, and this process can be time-consuming and resource-intensive.

Data Structure: Siloed data may not be retrievable by modern analytics tools. Without a standard API and query language for every data source relevant to the Customer 360, it will be difficult to consolidate the data into a common product.

INSTITUTIONAL CHALLENGES

Organizational silos: Institutional barriers between the technical and business sides of an organization can hinder collaboration and data sharing across different business units. Building a Customer 360 solution requires breaking down these silos and fostering a culture of cross-functional collaboration.

Resistance to Change: In many organizations the appetite for a useful product like a Customer 360 is diminished when stakeholders confront the significant changes they will have to make to process design, skill development and technology adoption. Institutional inertia resists change, regardless of how positively impactful that change will be on the organization.

Lack of Executive Buy-In: While most executives support the need for AI adoption and advanced analytics, their willingness to sign off on long projects with uncertain outcomes may not be as wholehearted. Many executives prefer to achieve minor successes at lower risk than take a larger risk for a potentially larger reward. Without executive buy-in, any Customer 360 project will struggle to get off the ground.

Overcoming the obstacles associated with building a Customer 360 is essential for businesses to unlock the full potential of their customer data and deliver exceptional experiences in today's competitive marketplace.

It is not enough to merely build a Customer 360, however. It is critical for forward-thinking businesses to also modify their approach to data so that the 360 stays accurate over time and is used effectively across many different departments. **Deploying a Customer 360 is a commitment to reorienting core business processes to ensure that the health of every data asset is ensured and the maximum value is extracted from your data environment.**

Data Centralization

One of the most paralyzing aspects of developing a Customer 360 is the process of centralizing, reconciling, and managing data, otherwise knows as master data management (MDM). For many organizations, the idea of moving all relevant data assets into a central repository is one of the largest barriers to overcome in the desire to build a modern data platform, and is in itself the most complicated aspect of developing a Customer 360.

The reason we tend to think of data centralization as a complicated and lengthy process is because most organizations are under the impression that data centralization implies the actual physical movement of data assets from their current systems into a different system. This process of data migration is incredibly complex, and may take years to get right.

> The reality is that for most Customer 360 projects, extensive data migration **probably isn't necessary**. The centralization of data assets does not require the physical movement of data, but rather the ability for a centralized platform to query and analyze data, wherever it lives. Technologies like Data Virtualization make this a possibility.

Where migration is required, it is often due to an institutional desire to move data from a legacy system to a more modern cloud storage because of the additional benefits this will unlock. Certainly, there are circumstances where migrating data from an old ERP system into a modern cloud warehouse for analytics provides enough long term benefit that it's worth the headache. A data platform will assist this migration, and should give you the ability to catalog and query the legacy data and the new warehouse concurrently, monitoring the migration consistently in order to validate the data structure, quality, and completeness over time.

Likely, developing a Customer 360 will include both physical and virtual centralization of data assets. The process of virtualizing data into this central environment enables consolidation of data without movement of data, and created a federated access layer that supports good governance alongside improved access. In this section, we will break down the process of how virtualizing data into federated access layer sets the foundation for a Customer 360.

Data Centralization

DATA VIRTUALIZATION

Most organizations will prefer to virtualize data assets into the Customer 360 as much as possible. As mentioned previously, the migration of data is both a logistical and governance headache that should be performed with data sources that are already marked for deprecation or in urgent need of migration to a modern environment. Application-level data should also be a candidate for migration into a warehouse to optimize integration. For everything else, data virtualization provides a fast, efficient, logical framework for consolidating data in order to build a Customer 360.

Data Virtualization is a data management strategy that lets applications retrieve and manipulate data without moving that data into a specific warehouse or database. The process provides a unified, abstracted view of data from disparate sources, which allows for easier access and integration of a distributed, fragmented data ecosystem.

1. **Unified data access:** Data virtualization federates data from multiple sources (databases, cloud, application layer) into a single virtual data layer.

2. **Real-time data integration:** Unlike other access frameworks, data virtualization provides real-time access to the virtualized warehouse/data storage, ensuring the central application is integrating with the most up-to-date representation of the data.

3. **Data abstraction:** Data is remotely connected, not ingested, which allows applications to access underlying data without additional ETL complexity.

4. **Query Optimization:** Data virtualization optimizes queries, ensuring they run as efficiently as possible, regardless of the data structure or where it resides. By ambiguating the query through an abstracted layer, data virtualization minimizes the resources required to execute the query and standardizes to a common query language in order to improve the way the query accesses and retrieves data.

5. **Security and Governance:** Virtualizing data, rather than moving it, makes it possible to centralize governance operations without redesigning access and security policies to accommodate the transfer of data into a central repository.

By virtualizing data into a central data platform, organizations will unlock the value of cloud-based analytics tools immediately. Since the platform connects natively to data sources on one side and analytics tools on the other, it acts as an intermediary between storage systems and the modern toolset, letting users connect to legacy systems as though they are brand new cloud warehouses.

The common assumption that all data must be migrated to modern cloud warehouses in order to be operational is a fiction, and **it is possible to gain the advantages of cloud-based tools without performing an expensive and difficult lift-and-shift to the cloud**.

Data Preparation

ENTITY RESOLUTION

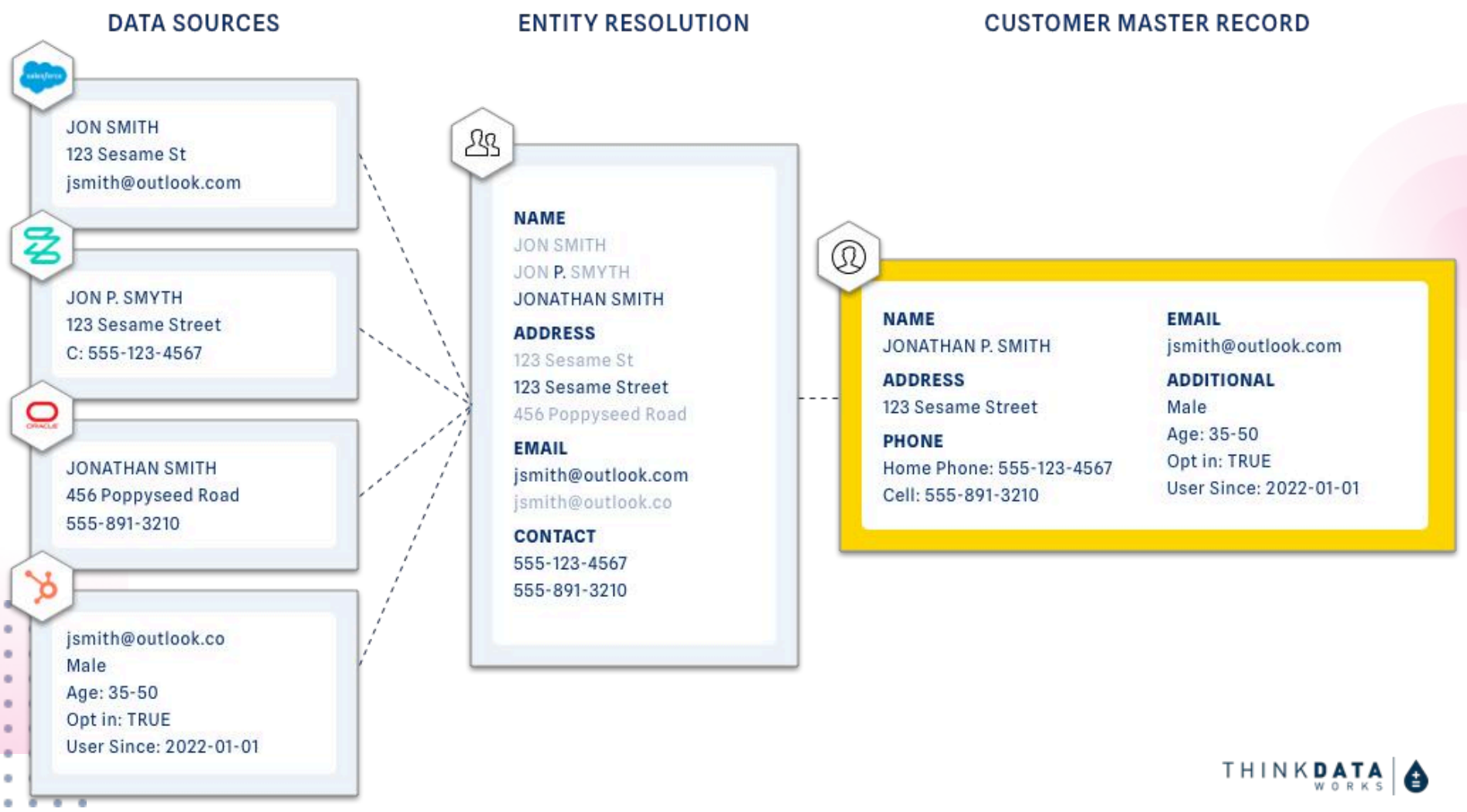
Entity Resolution is a data processing technique that identifies and consolidates different records that refer to the same real-world entity across various data sources. In the context of a Customer 360, the process of entity resolution refers to the process of reconciling the customer records from many distributed data sources into a single customer entity. This process is crucial for merging duplicate records where they exist, resolving discrepancies between systems, and ensuring each customer is represented accurately in the master record.

Prior to entity resolution, data will undergo a process of reconciliation, where all records are consolidated into the data platform. During this process, customer records may be given a unique identifier that can be used to resolve and merge records together across separate systems. This process of matching, linking, and deduplicating records uses algorithms and techniques to compare attributes (such as name, address, contact information and other identifying information) to reconcile customer records to a common, or business-preferred, entity.

This process enhances data quality and lays the foundation for a comprehensive Customer 360 by creating a reliable and unified view of entities across an organization.

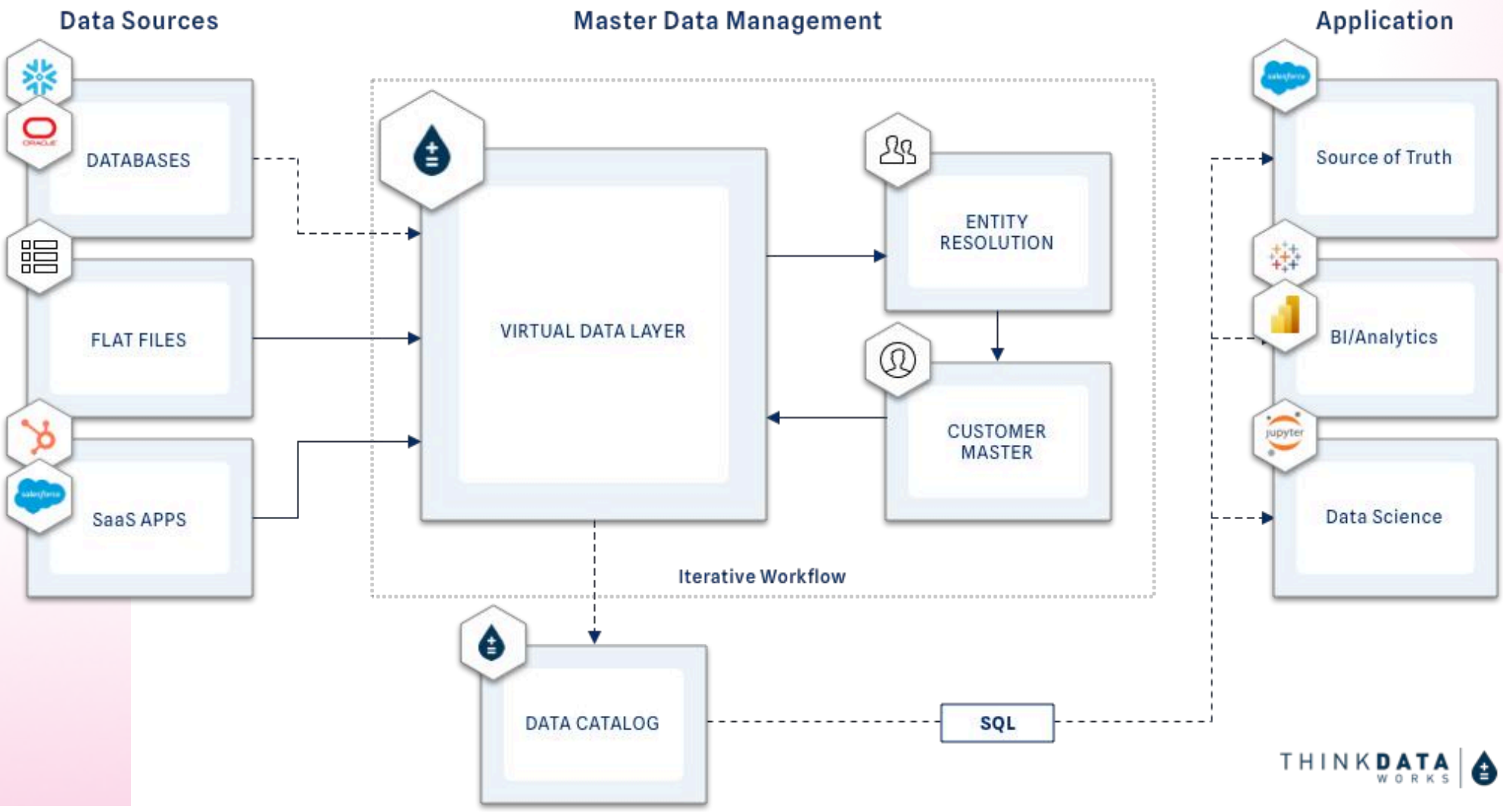
In the context of a Customer 360, entity resolution plays a pivotal role. Given that a Customer 360 aims to provide a comprehensive, holistic view of a customer by integrating data from multiple touchpoints and systems, such as CRM, marketing, customer service platforms, and other data sources, effective entity resolution is a critical step in ensuring a consistent, accurate, and complete customer profile that aggregates data across all data systems, enabling organizations to gain deeper insights into customer behaviors, preferences, and interactions.

ENTITY RESOLUTION EXAMPLE



Data Preparation

ENTITY RESOLUTION DATA ARCHITECTURE



ENTITY RESOLUTION KEY COMPONENTS

The complexity of performing entity resolution hinges upon the preparedness of the data architecture to accomplish the master data management and entity resolution work efficiently and in a way that scales across the enterprise. The following are critical components of a well-designed entity resolution architecture.

1. DATA PREPROCESSING

Data Centralization: Migrating or virtualizing data into a central data staging environment

Data Cleansing: Processes for correcting innacurate records from a dataset and converting data into a consistent format for easier consumption

2. THE MATCHING ALGORITHM

Machine Learning and AI: Using NLP, supervised and unsupervised learning to find potential matches

Deterministic Rules: User and predefined rules for matching results and defining a unique identifier

3. DEDUPLICATION AND MERGING

Deduplication Algorithms: Idenfitfy and remove duplicate records in the source records

Merging Techniques: Generating a “customer master” record by combining information from multiple records into a single, unified record that can be fed back into the virtual data layer as a derived dataset

4. DATA INTEGRATION

APIs and SDKs: An API layer facilitates integration with data sources and systems

Data Governance: Lineage and quality checks enable reporting on the data product in order to identify anomalies in the raw data and the customer master

The Data Platform

OVERVIEW

Although every company's data architecture is different, there are points of similarity between these data ecosystems, especially among those that want to build a Customer 360. Commonly, there will be several distributed data sources across many business lines. Each of these must be integrated into the Customer 360 model in order for it to provide a holistic view. Below is an example of an organization with data stored across several types of data sources chose to centralize data into a common platform for use in a Customer 360 model.

DATA VIRTUALIZATION

A modern data layer that enables users to access, query, cleanse, and deliver datasets without moving them from their source system, centralizing data access without centralizing data assets

SQL and NoSQL Databases: Oracle, SQL Server, DB2, etc

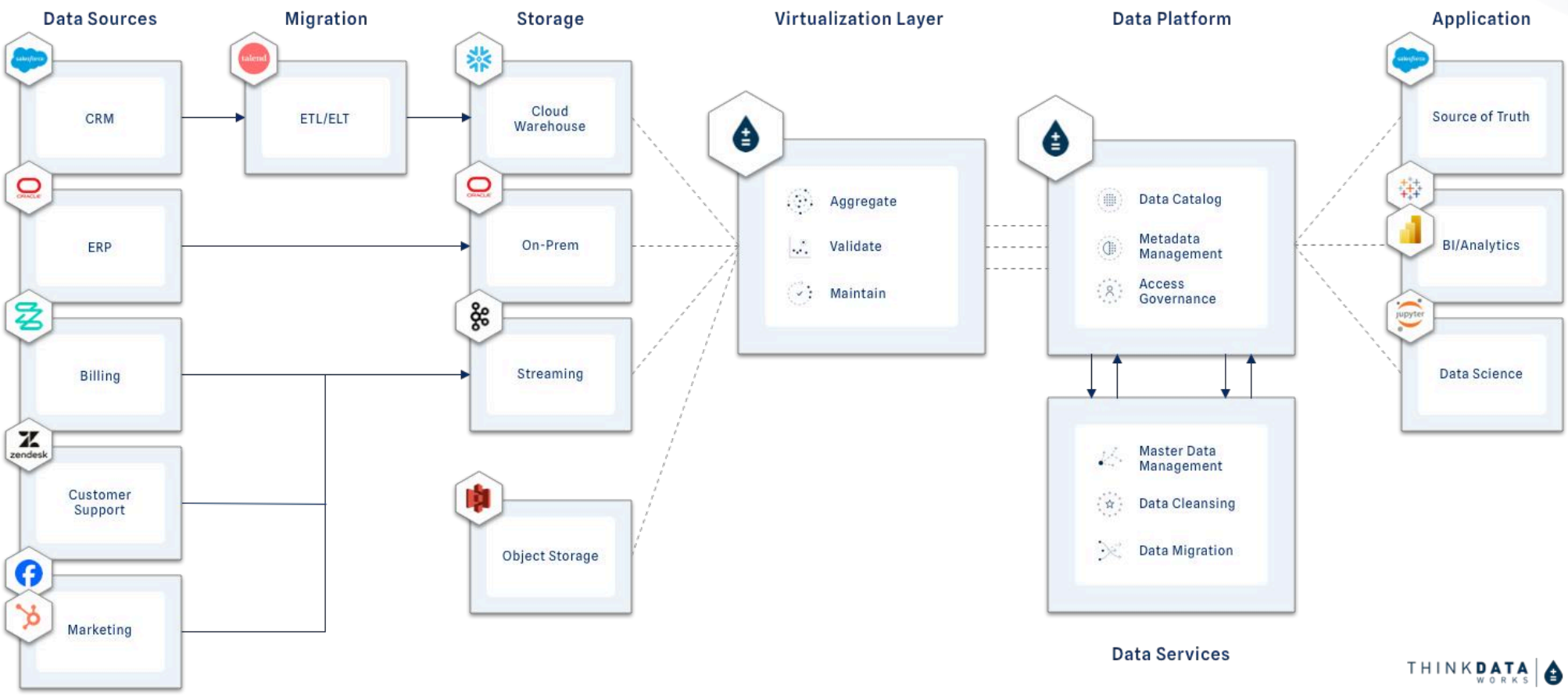
Data Warehouses: BigQuery, Snowflake, Redshift, Azure DataLake Storage Gen 2

DATA MIGRATION

Moving (or replicating) the physical data to another location to enable better performance, query optimization, or the ability to use modern, cloud-based tools.

SaaS and Legacy Applications: Salesforce, SAP. Zendesk, Zuora,
Shopify, Social Media Feeds,

CUSTOMER 360 DATA ARCHITECTURE



The Data Platform

KEY COMPONENTS

The modern data platform is one that enables rapid data use, analysis, and integration for an entire organization, and includes access governance, quality monitoring, and data management to facilitate consistent reporting and compliance. Any data platform tasked with building a Customer 360 will also need to include entity resolution and master data management capabilities, in addition to a virtual data layer to support discoverability, triage, and the deployment of a gold layer.

The data platform consists of four key components, outlined below.

Data Virtualization

Data virtualization is the technology that provides the critical step of creating a unified access layer for all data in the data platform. The virtualization environment is an operations hub that neutralizes data residency and migration concerns by connecting to distributed data and consolidating it into a common observation point to enable self-service access. The virtualization environment is also the validation area to confirm the correctness of migration, where it is required, monitor data as it moves, and verify data corresponds to the standard required for downstream processes.

Data Ingestion and Storage

This software is responsible for collecting and importing data from various sources, including databases, APIs, and real-time streaming data sources, into a central system. Data storage system manages the safe and efficient storage of this data in data lakes, warehouses, databases, etc, ensuring accessibility, scalability, and reliability. Processing tools transform, cleanse, and otherwise prepare data for migration, consumption, and data productization, enabling businesses to derive insights and make data-driven decisions.

Data Governance and Quality

Data governance tools are required to enforce established governance policy, and ensure data quality, integrity, and security within an organization’s data platform, enabling effective data management and usage. Quality (or observability) tools monitor, track, and analyze the health and performance of data pipelines and systems, providing visibility into data flow, quality, and lineage to detect and resolve issures proactively.

Data Analytics and Business Intelligence

Data anlytics and business intelligence tools help to digest and derive actionable information out of the data products created by the data platform, uncovering patterns, trends, and insights that drive informed decision-making and strategic planning. In the context of a Customer 360, these tools will integrate with the customer master record to identify opportunities and risks at the customer level, empowering the business to harness their data for competitive advantace and operational efficiency.

How To Get Started

BUILDING A CUSTOMER 360

Building a Customer 360 involves integrating data from various sources to create a unified and comprehensive view of each customer. This process includes data centralization, storage, integration, identity resolution, and data productization. Deploying the Customer 360 solution requires the development of a data platform that ensures data governance, continuous monitoring, quality checks, and integration with downstream systems.

1 OPERATIONALIZE DATA

Deploy a unified data platform that consolidates data from all sources, ensuring it is accessible and usable for business operations, enabling rapid data aggregation and setting the foundation for a Customer 360

2 MIGRATE EFFICIENTLY

Use a hybrid approach to data access that employs both efficient data migration and data virtualization to support simplified data centralization into the 360 platform without an extensive architecture overhaul

3 VALIDATE AND MONITOR

Ensure good governance by employing data observation and validation tools to consistently provide real-time analysis of the raw data and the customer master to enhance confidence and ensure trust

STEPS TO GET STARTED

Define objectives and requirements

- Identify business goals and objectives for creating a customer 360
- Determine KPIs and data points required to achieve these goals

Identify and Collect Data Sources

- List all relevant data sources, such as CRM, ERP, marketing, customer support, and legacy systems

Identify Ideal Storage Systems

- Choose appropriate sorage solutions such as data lakes, warehouses, databases, etc, based on the requirements of the 360 view
- Ensure chosen systems are scalable, tailored to the stored data, and optimized for query performance

Integrate and Standardize Data Assets

- Implement data ingestion/virtualization pipelines to collect data from all identified data sources
- Clean, transform, and standardize data to ensure consistency

Consolidate Data

- Use the integration pipeline and virtualization technology to access data from a central repository

Deploy Master Data Management Solution

- Implement MDM processes to create an authoritzative view of key customer entities
- Perform Entity Resolution to consolidate data into a master record

Validate and Test

- Test the Customer 360 to ensure data accuracy and completeness
- Validate that the system meets business requirements

Deploy and Monitor

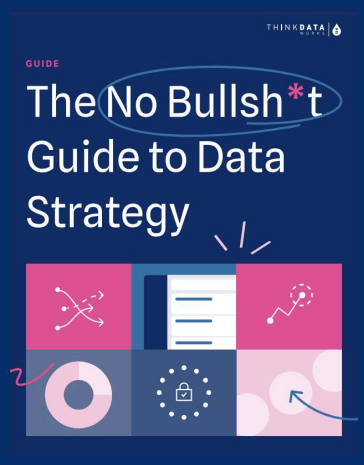
- Deploy the Customer 360 to a production environment
- Continuously monitor the system and data for performance, data quality, and data reconciliation

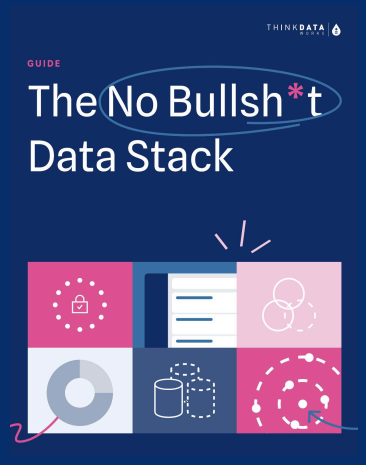
THINKDATA WORKS

Learn More

ThinkData provides in-depth research and data insight to help forward-thinking organizations cut through the noise and develop data strategies that support their immediate and long-term goals.

LEARN MORE





ThinkData Works

ThinkData Works specializes in helping organizations operationalize data to enhance data-driven decision-making.

Through an integrated suite of data management tools, ThinkData deploys fully operational data platforms to organizations looking to revolutionize the way they do business, unlocking insight, master data management, and setting a foundation for advanced analytics and AI

Learn more at: **www.thinkdataworks.com**

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