

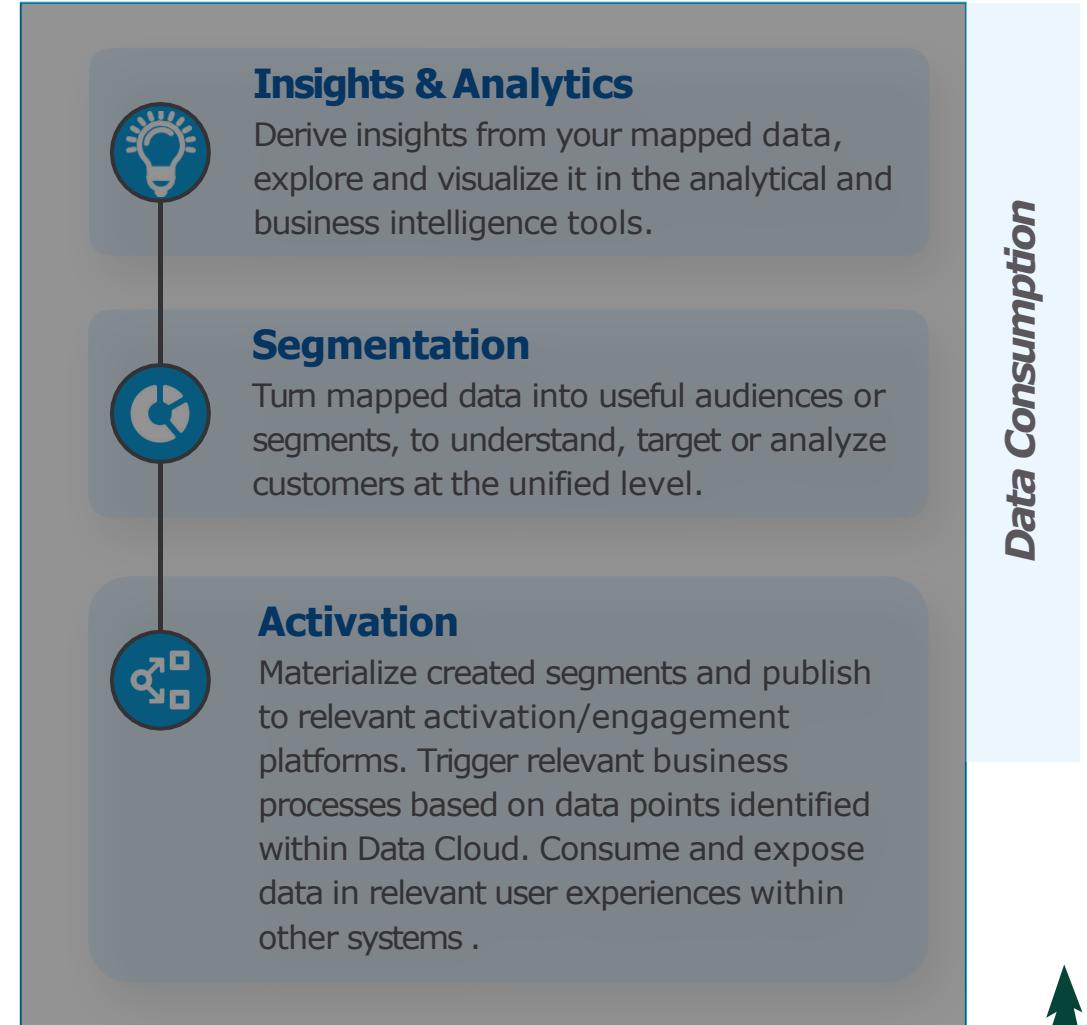
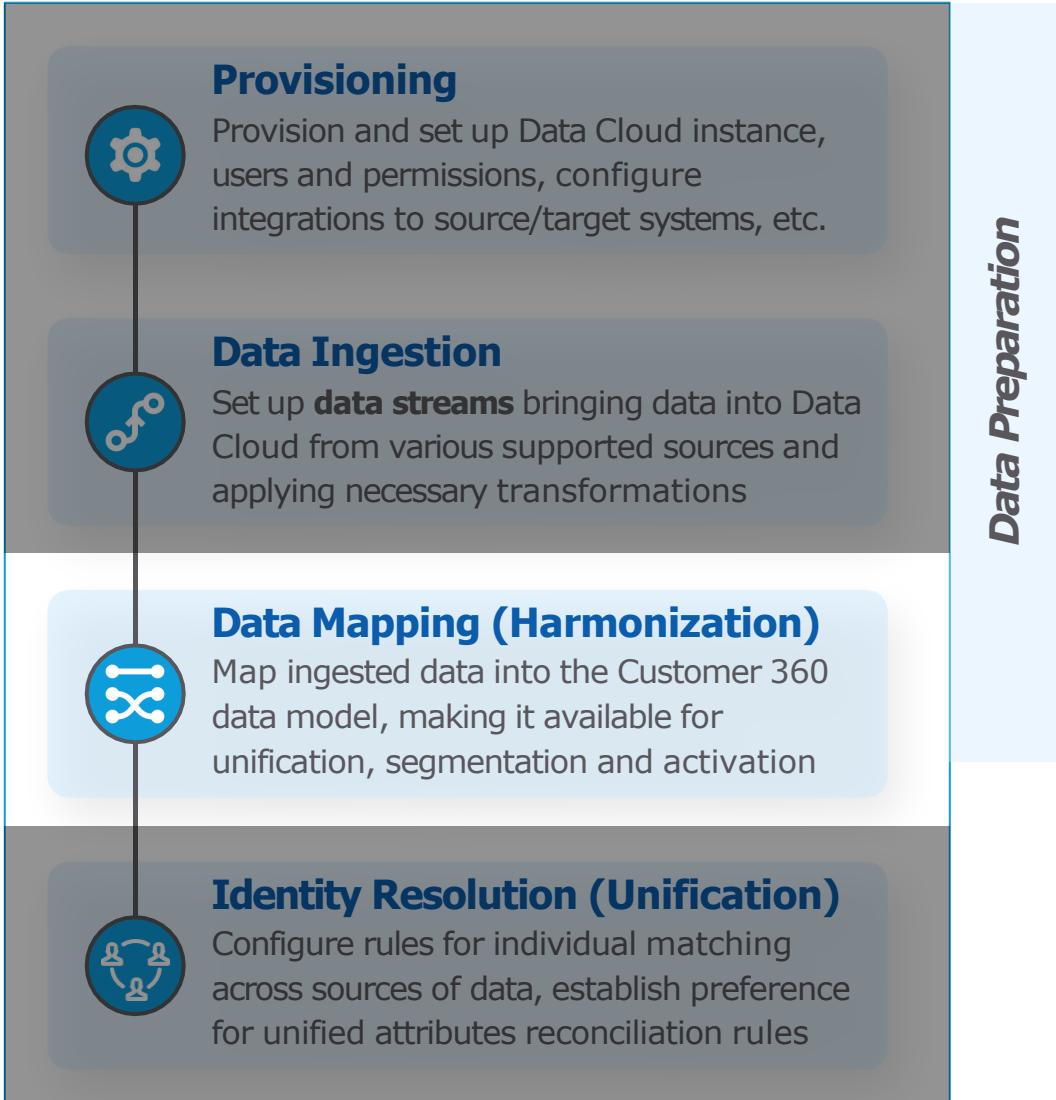


Data Modeling Identity Resolution



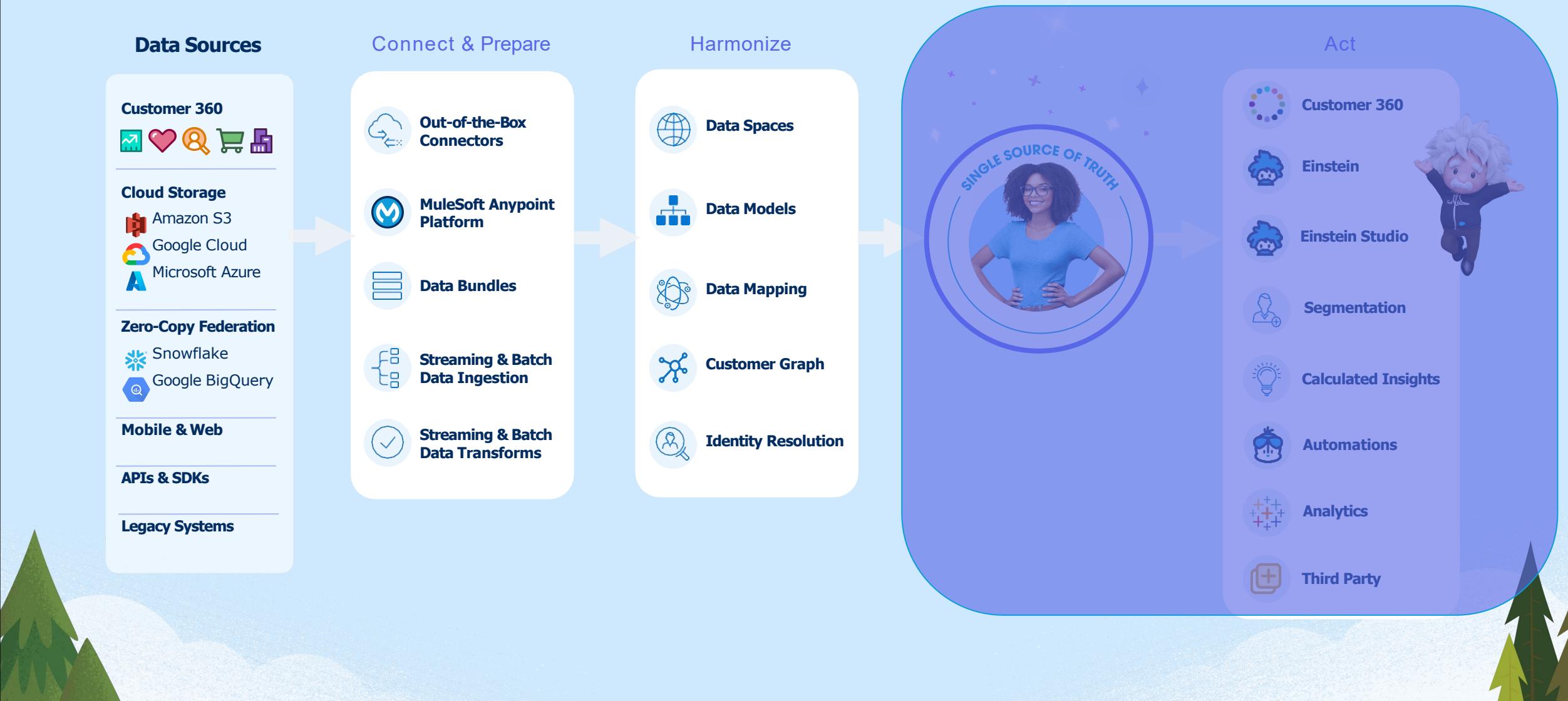
The Big Picture: Implementation Themes

Related to the components of Data Cloud



Let's walk through how this works

A “day in the life” of customer data



Data Mapping



Map disparate data source structures to a common model

Disparate Schemas

Contact
FirstName
LastName
MailingStreet
Phone



Subscriber
Email
Suburb



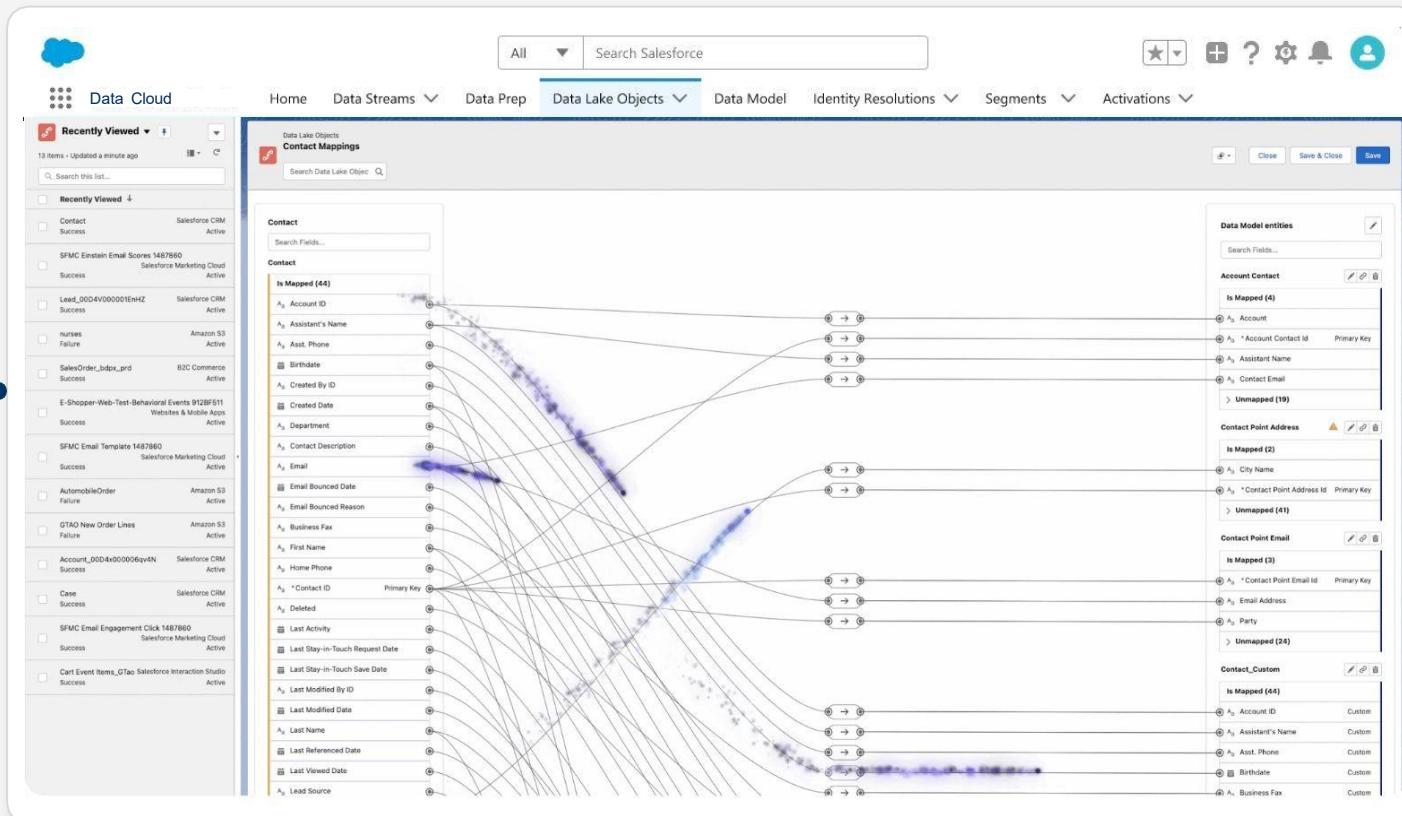
Guest
firstName
lastName
email
mobilePhone



Customer Invoices
First_Name
Surname
Address_1
Address_2



Data Map



Data Lake Object

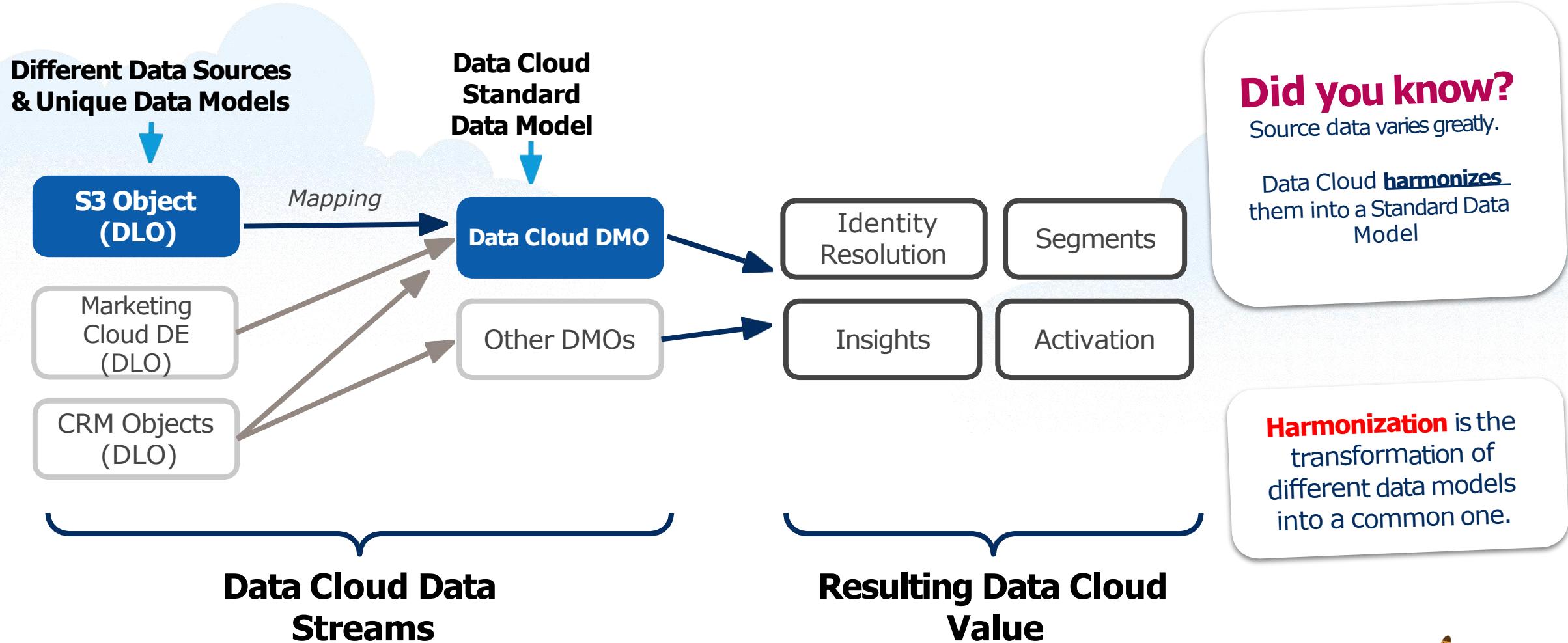
Data Model Objects

Canonical (Normalized) Data Model

Individual

firstName
lastName
middleName
preferredName
militaryServiceId
birthDateDay
birthDateMonth
birthDateYear
birthDate
contactPointEmailId
mailingAddressId
mobilePhoneId
leadSource
...

Data Ingestion & Data Mapping are Distinct Steps



Data Modeling

Design vs Implementation Activities



1. Inventory Data

Create a data dictionary/inventory for each source system that is ingested into Data Cloud.

2. Inspect Field-Level Data

For each data stream object inspect field-level data and determine its accuracy. Choose which standard/custom object(s) and field(s) it should be mapped to.

3. Configure Mapping

If needed extend data model with custom object(s)/attribute(s). Complete and save required mappings.

4. Configure Relationships

Review default relationships between mapped data model objects. Update and define additional relationships as needed.

Design Phase

Build Phase



Harmonizing Details

Developing a complete view of profile and engagement data across systems



Salesforce

Marketing Cloud

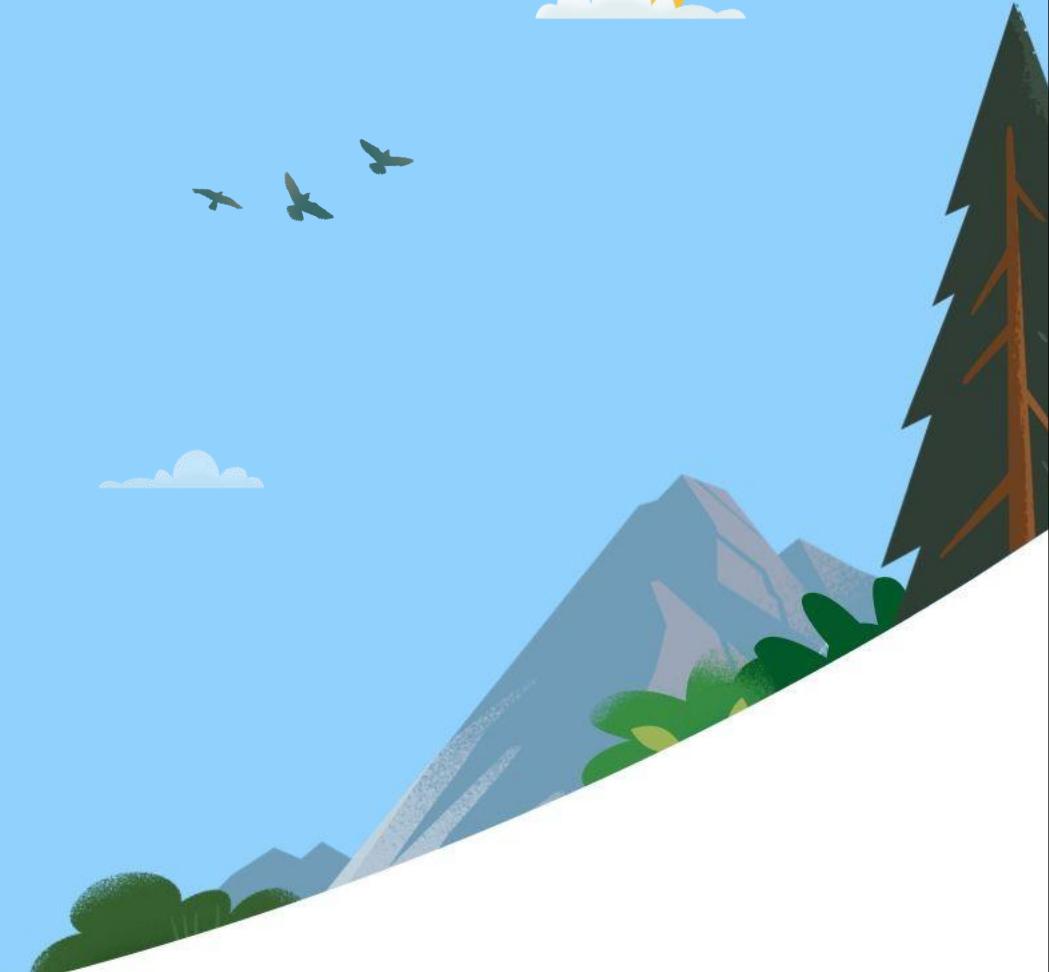
Basic Profile Attributes	Name, DOB, Title	Jen Smith	Jennifer Smith	Other Systems
Contact Points	Phone, email, address, app	jsmith@gmail.com , jen.smith@abc.com	jsmith@gmail.com , 801-555-1234	
Profile (Individual or Business)	Identifiers	DL Number, Loyalty number, SSN, DUNS, MDM ID	MDM Id = 123456	
Engagement Data	Cases, Email, SMS, shipments, orders, transactions	Cases, Program Enrollments	Email, SMS Sends	
Privacy Consent and Authorizations	Communication Subs. Consent, Channel Consent		Communication Subs. Consent, Channel Consent	





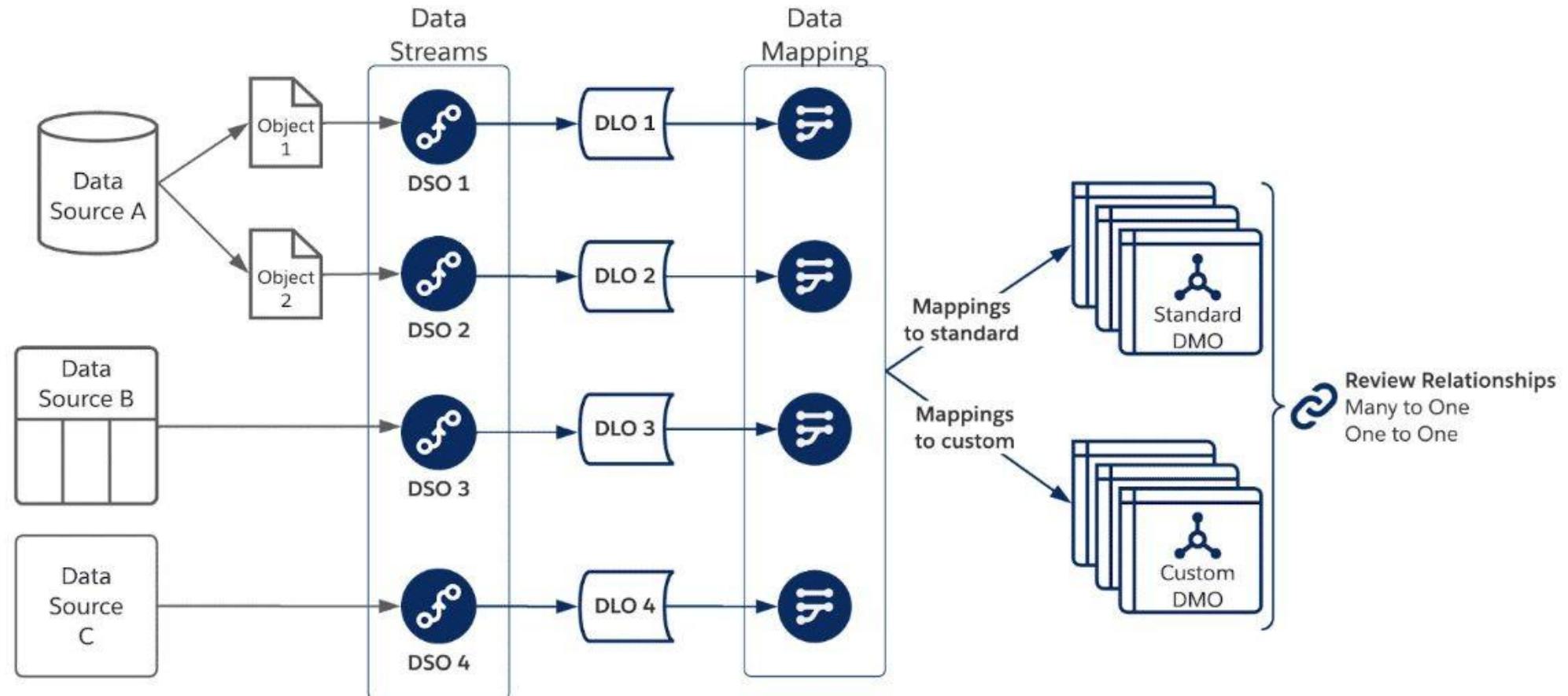
Modeling Walkthrough

Example



Data Modeling

End-to-End Sequence



Two Physical Objects, One Semantic Object



Your Source: **Web Orders**

Your Object: **Web_Sales_Order_Header**

OrderID	CustomerID	Purchase_Date	Purchase_Channel	Store_ID	Delivery_Method	Shipping_Date	Number_of_Items	Total_Amount
36058	101460170	2/21/2015 0:00	Online		Pickup	2/21/2015 0:00	1	117.7
36059	100520855	2/21/2015 0:00	Online		Shipping	2/23/2015 0:00	1	40.13
36060	101270958	2/21/2015 0:00	In-Store		Pickup	2/21/2015 0:00	1	324.21
36061	100100390	2/21/2015 0:00	Online		Shipping	2/23/2015 0:00	2	245.56
36062	100240389	2/21/2015 0:00	Online		Shipping	2/23/2015 0:00	2	110.42

Order Number	Customer	Date of Purchase	Items Count	Total
36071	100140252	2/21/2015 0:00	2	331.7
36072	100840779	2/21/2015 0:00	2	204.37
36073	100060584	2/21/2015 0:00	2	95.23
36074	100130910	2/21/2015 0:00	1	64.2
36075	100440394	2/21/2015 0:00	2	92.29

Your Source: **Offline Sales**

Your Object: **Offline_Sales_Order_Header**



Harmonize Data Source Objects into Data Model Object



The **web sales order** data set and the **offline sales order** data set both align well with the **sales order** data model object.

- In some cases both data sets have fields that map to the same data model attribute
- In other cases only a single data set maps to a data model attribute.

Data Source Object Fields	Data Model Object Fields
Web_Sales_Order_Header.OrderID Offline_Sales_Order_Header.Order_Number	SalesOrder.Id
Web_Sales_Order_Header.CustomerID Offline_Sales_Order.Customer	SalesOrder.SoldtoCustomer
Web_Sales_Order_Header.Purchase_Date Offline_Sales_OrderHeader.Date_of_Purchase	SalesOrder.PurchaseOrderDate
Web_Sales_Order.Store_ID	SalesOrder.SalesStore
Web_Sales_Order_Header.Total_Amount Offline_Sales_OrderHeader.Total	SalesOrder.GrandTotalAmount



Harmonize Data Source Objects into Data Model Object



The **web sales order details** data set aligns well with the **sales order product** data model object.

Data Source Object Fields	Data Model Object Fields
Web_Sales_Order_Details.OrderID_SKU	SalesOrderProduct.SalesOrderProduct
Web_Sales_Order_Details.OrderID	SalesOrderProduct.SalesOrder
Web_Sales_Order_Details.SKU	SalesOrderProduct.Product
Web_Sales_Order.Subtotal	SalesOrderProduct.TotalLineAmount
Web_Sales_Order_Header.Number_of_Items	SalesOrderProduct.OrderedQuantity



Explore Raw Data to Determine Object Relationships



- OrderID is the common thread, or foreign key, between the two data sets
 - Looking at Web_Sales_Order_Header, we see the list of OrderIDs is unique (no repeats)
- Looking at Web_Sales_Order_Details, we see the list of OrderIDs is not unique.
 - Multiple instances of 36061 and 36062
 - More than one SKU in the order
- We can conclude that *Web_Sales_Order_Details* is **Many:1** with *Web_Sales_Order_Header*

Web_Sales_Order_Header

OrderID	CustomerID	Purchase_Date	Purchase_Channel	Store_ID	Delivery_Method	Shipping_Date	Number_of_Items	Total_Amount
36058	101460170	2/21/2015 0:00	Online		Pickup	2/21/2015 0:00	1	117.7
36059	100520855	2/21/2015 0:00	Online		Shipping	2/23/2015 0:00	1	40.13
36060	101270958	2/21/2015 0:00	In-Store		Pickup	2/21/2015 0:00	1	324.21
36061	100100390	2/21/2015 0:00	Online		Shipping	2/23/2015 0:00	2	245.56
36062	100240389	2/21/2015 0:00	Online		Shipping	2/23/2015 0:00	2	110.42

Web_Sales_Order_Details

OrderID	CustomerID	SKU	Quantity	Unit_Price	Discount	Subtotal
36058	101460170	101115	1	110	0	110
36059	100520855	102155	1	75	50	37.5
36060	101270958	104177	1	303	0	303
36061	100100390	101129	1	70	15	59.5
36061	100100390	103210	1	170	0	170
36062	100240389	103205	1	24	0	24
36062	100240389	103213	1	99	20	79.2



Assign Object Relationships in the Data Model



Understand the relationships between objects in the raw data

- Set these **relationships** accordingly in the data model layer
- Relationships are defined in the UI based on Data Model fields
- Allows multiple data sources power the same data model object

Relationship definition at the Data Source Level

Object	Field	Cardinality	Related Object	Related Field
Web_Sales_Order_Details	OrderID	N:1	Web_Sales_Order_Header	OrderID

Relationship when applied to Data Model Object

Sales_Order_Product	SalesOrder	N:1	SalesOrder	Id
---------------------	------------	-----	------------	----





Customer 360 Data Model

Required Mappings and Standard Entities



Why use a Standard Data Model?



Did You Know

Harmonization is the transformation of different data models into a common one.



The Salesforce Customer 360 Data Model is used to **harmonize** disparate data sources and **draw insights** from the harmonized data.

- Default mappings included for data from Salesforce clouds
- Extend the standard data model for unification, segmentation, and activation

A custom data model can also be used to harmonize data.

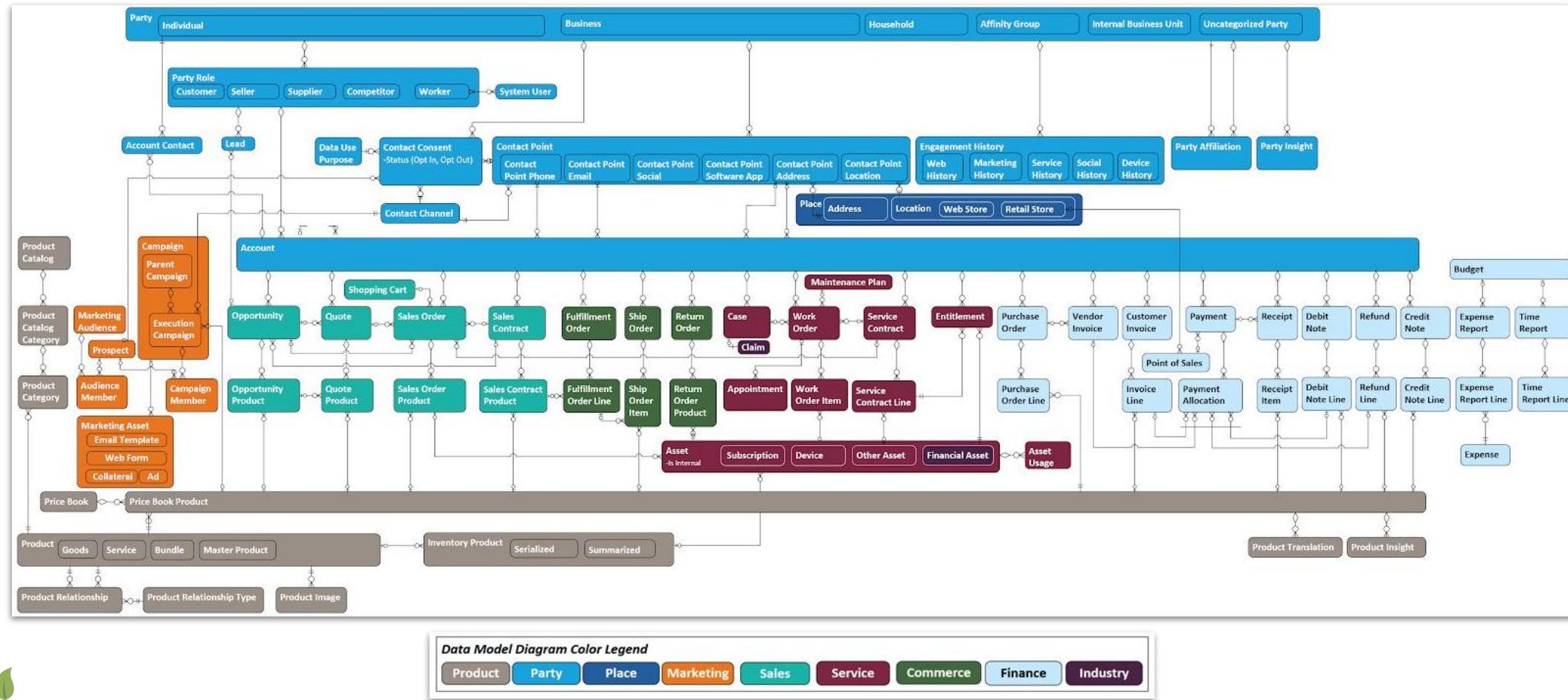
- Thoughtfully planned out data model objects are necessary to fuel harmonization.

REMEMBER:

You can extend the standard data model with custom objects, fields and relationships for a hybrid approach.

Data Cloud is not BYO Data Model

Transform Business Domain Models into the Customer 360 Data Model



Before Mapping Your Data

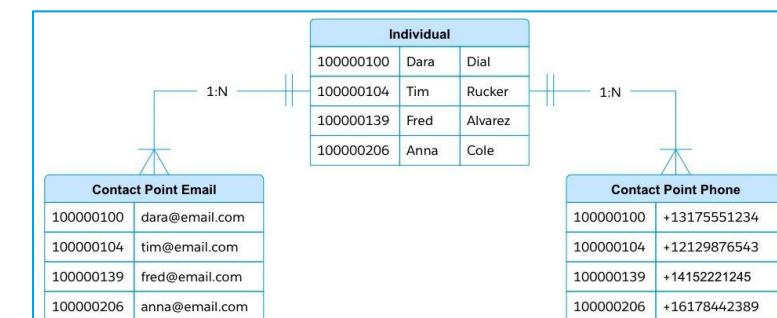
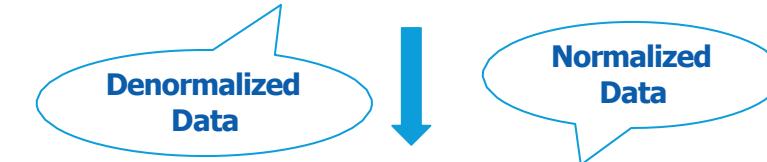
Align Your Data with the Customer 360 Data Model



- Data Cloud Data Model is **normalized**
 - Data needs to be normalized before it can be mapped
- Assess & establish
 - How to transform & map source data to the standard data model
 - Leverage **Data Model Subject Areas** (Party, Case, Engagement etc)
- Determine **Type of Data** per **Source System Object**
 - Profile vs Engagement vs Other
 - **"Map"** Source and Destination Objects and Fields **in a spreadsheet**
 - **Propose Extensions or Substitutions** to Standard Data Model as needed (fields or objects)

Take Your Time with this part
Do not rush into pushing buttons in
Data Cloud

Customer ID	First Name	Last Name	Email Address	Mobile No
100000100	Dara	Dial	dara@email.com	+13175551234
100000104	Tim	Rucker	tim@email.com	+12129876543
100000139	Fred	Alvarez	fred@email.com	+14152221245
100000206	Anna	Cole	anna@email.com	+16178442389

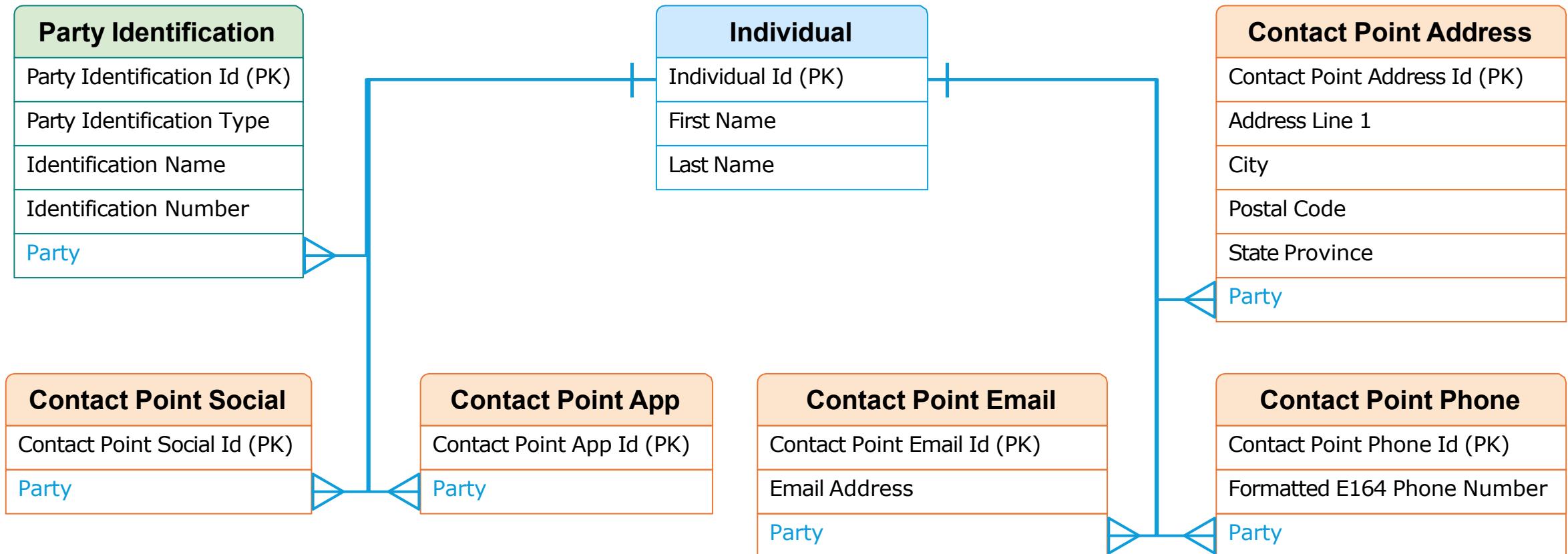


What standard DMOs must you be familiar with for any implementation?



Required Mappings

These Objects Enable Unification and Activation Processes



Common Entities To Know

Not a comprehensive list, rather some of the commonly used entities



Engagement Subject Area

- Device Application Engagement
- Email Engagement
- Engagement Topic
- Product Browse Engagement
- Product Order Engagement
- Shopping Cart Engagement
- SMS Engagement
- Website Engagement



Sales Order Subject Area

- Sales Order
- Sales Order Product
- Sales Store
- Order Delivery Method



Product Subject Area

- Brand
- Goods Product
- Product Catalog
- Product Category



Privacy Subject Area

- Party Consent
- Contact Point Consent
- Communication Subscription Consent
- Engagement Channel Type Consent



Loyalty Subject Area

- Loyalty Program
- Loyalty Program Member
- Loyalty Tier
- Promotion
- Voucher

Look for **Customer 360 Data Model** references on
<https://architect.salesforce.com/diagrams#template-gallery>



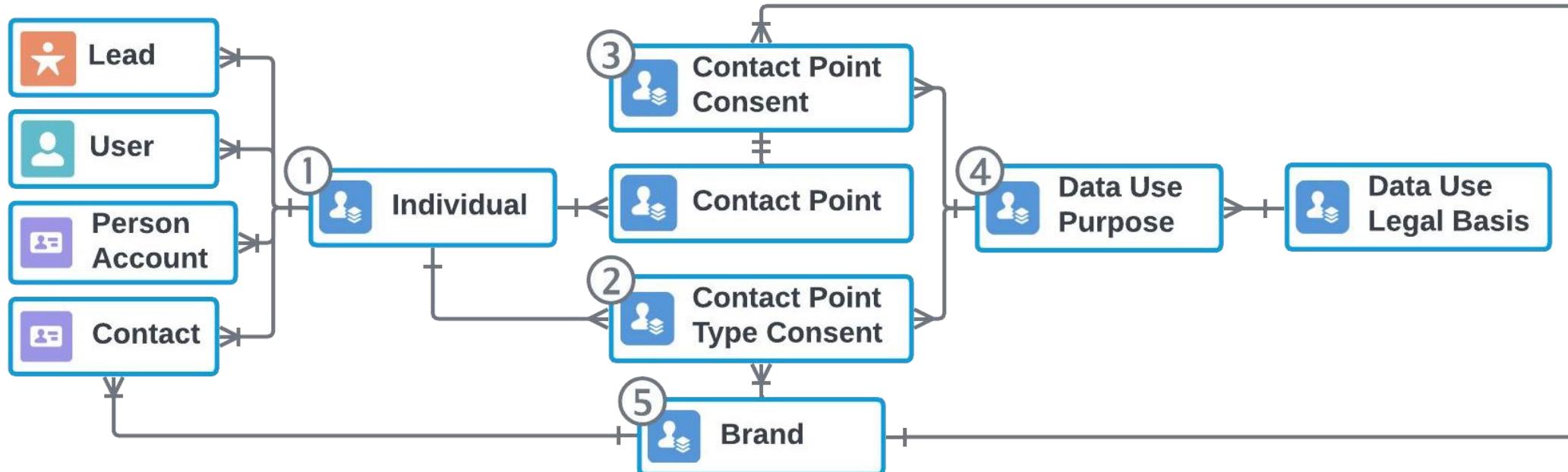
Data Model (Consent)



There are four different levels where consent is managed in the data model:

Global Consent (1), Engagement Channel Consent (2), Contact Point Consent (3), and Data Use Purpose (4).

In addition to these core consent objects, **Brand (5)** is also a critical component to enable distinction of consent preferences by different Brands.

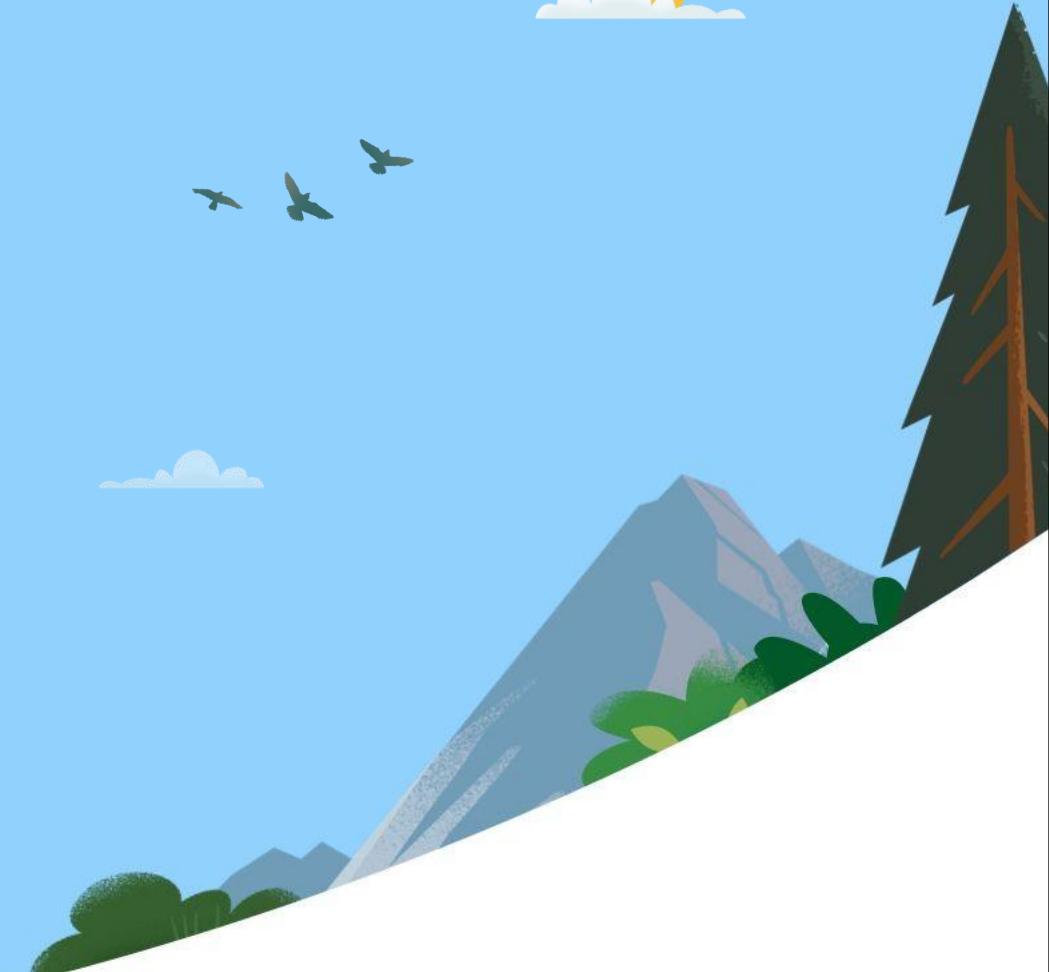


GLOBAL CONSENT (Object: Individual, Party Consent)	ENGAGEMENT CHANNEL CONSENT (Object: Contact Point Type Consent)	CONTACT POINT CONSENT (Object: Contact Point Consent)	DATA USE PURPOSE (Object: Data Use Purpose)
You can contact me <i>(all or nothing)</i>	You can email me, but you can't call me	You can email me on my work email address , but not my personal email address	You can email me on my work email but only for new product updates



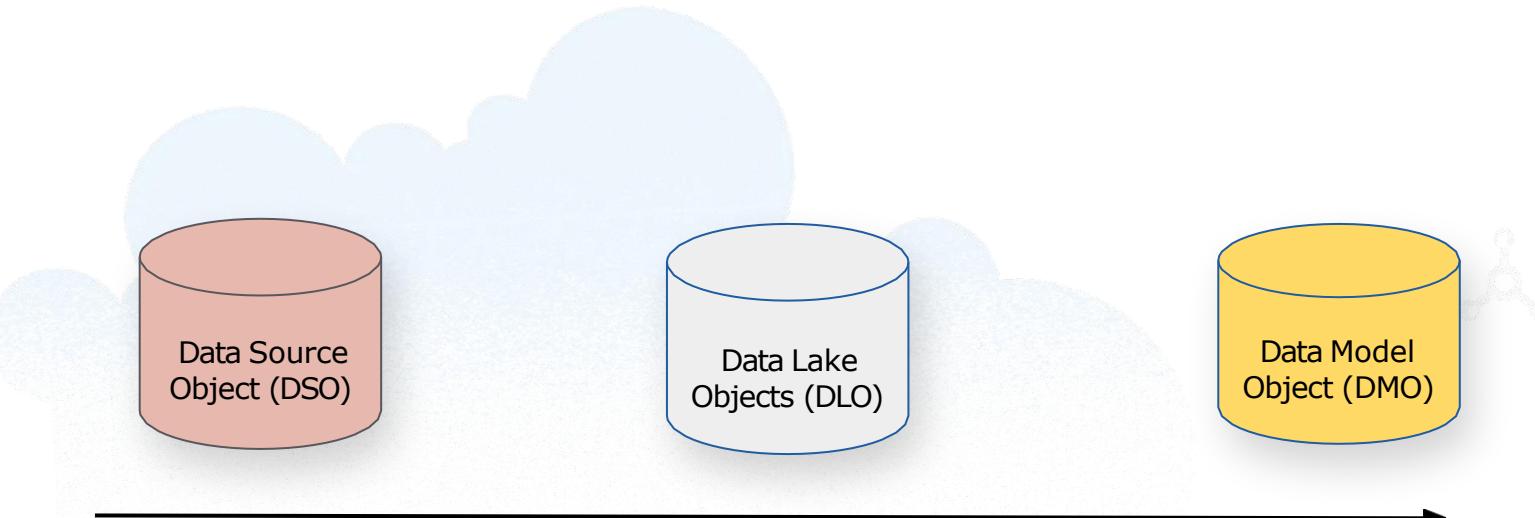
Behind the Scenes

Object Types and Data Categories



Data Transformations

Lakehouse Data progresses from bronze -> silver -> gold



- Multi Format (Json, csv, parquet, orc)
- Multi Sourced - Cloud Storage, Mulesoft, Kafka
- Schema Preserving
- Virtual BYOL Tables
- Schema enforced
- Parquet formatted Iceberg Tables
- Hydrated by transformations
- Typed (Profile Vs Engagement)
- Materialized Tables
- Salesforce Data come direct into Lake Objects
- Semantic Mapping establishes DLO to DMO
- Can be optionally materialized
- Insights, Unified Profiles are DMOs
- Simplified Curated Data to Powers Business Applications

Data Transformations

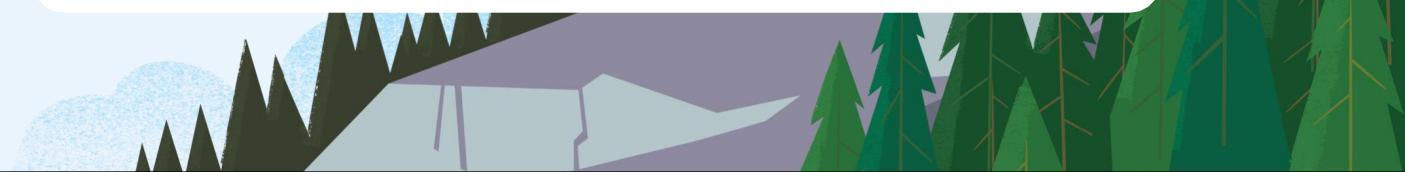
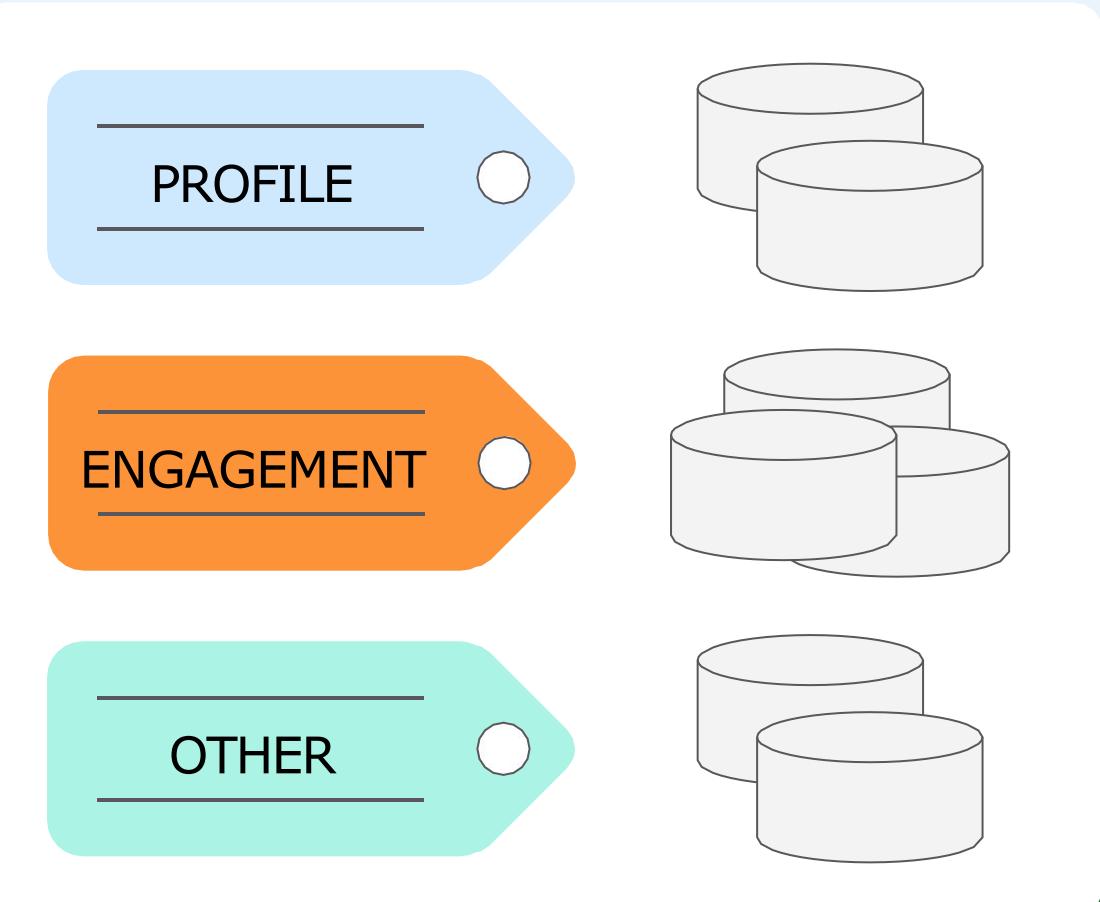
- Data is logically organized as 4 parts
- Data Source Objects** - the original data sources. This is the customer's original file format (e.g. CSV) or transient data storage in case of built-in connectors. (e.g. Marketing cloud)
- Data Lake Objects** - the data that is transformed and actually stored in the lake. This is generally stored as Parquet files.
- Data Spaces** - Once your data has been ingested, it is assigned to a Data Space that acts as a partition, allowing you greater control over how your data is organized
- Data Model Objects** - These are either materialized or views on top of the Data Lake Objects. These can be Customer 360 DMO or materialized ones such as Unified Individual, Computed Insights, transformations etc.

DMO Does Not Have Category Preassigned



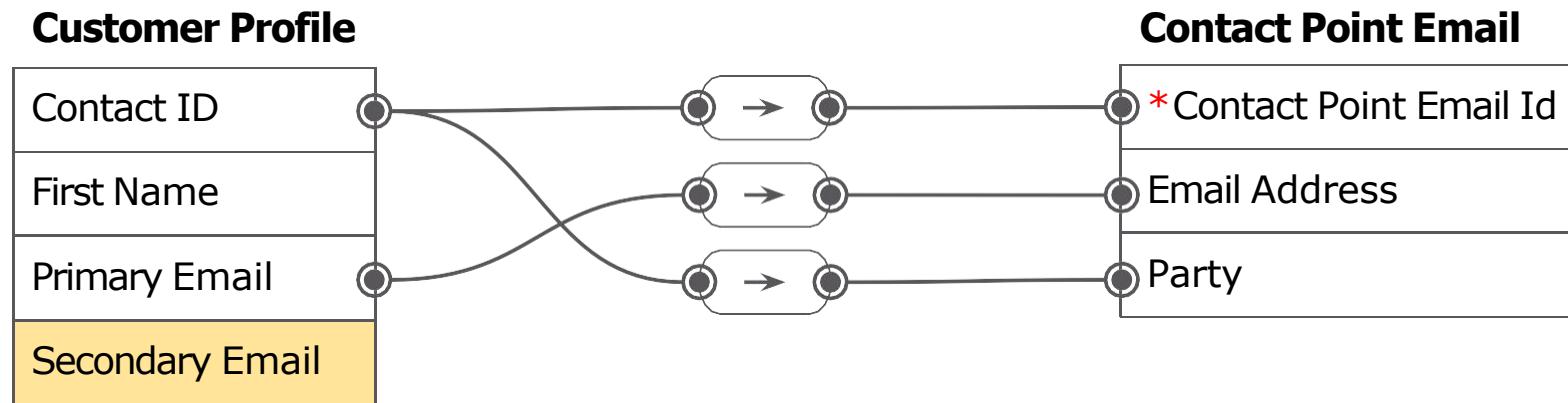
DMO inherits category from the **first** mapping and once mapped will only allow for mapping of the same category DLOs.

Individual object is an exception and is typed to the **Profile** category by default.



One DLO to One DMO Mapping

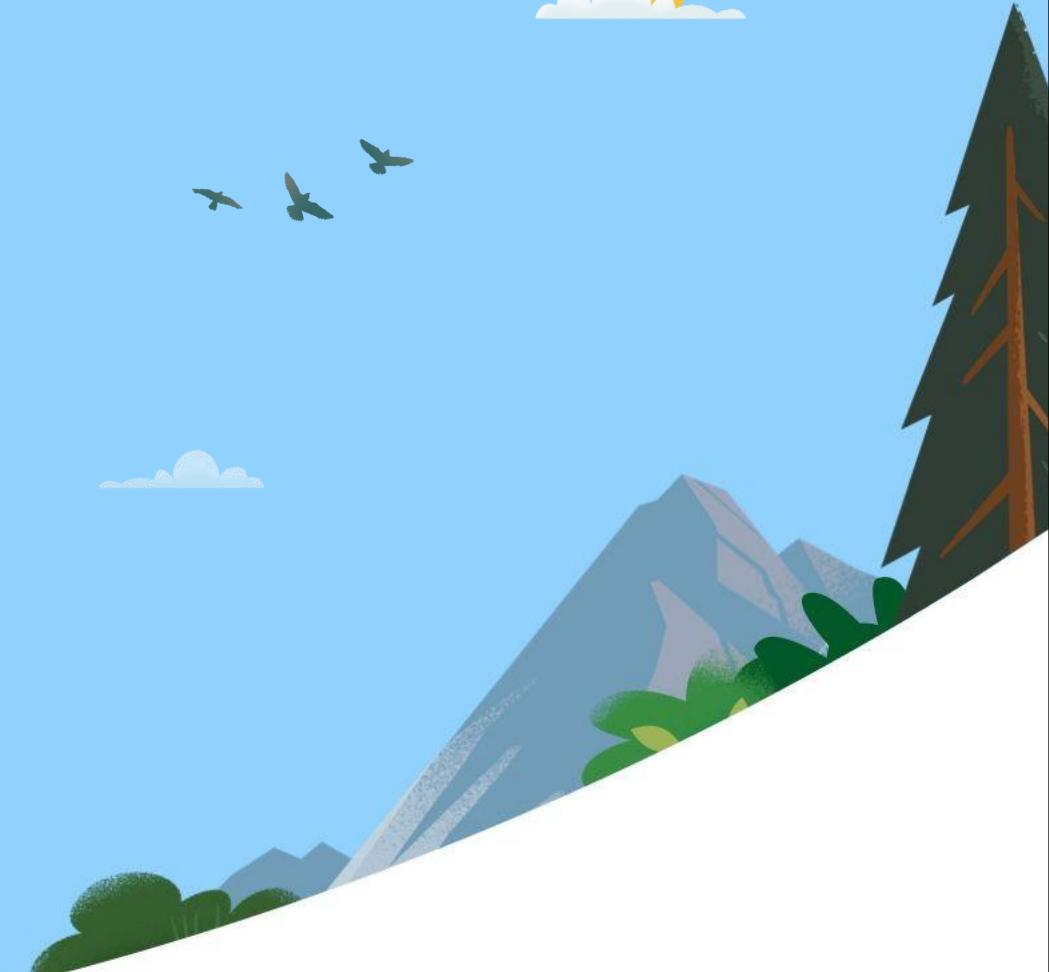
How can you map same source data multiple times?





Behind the Scenes

Understanding primary keys



Follow Along

Simplified use case to visualize the concept

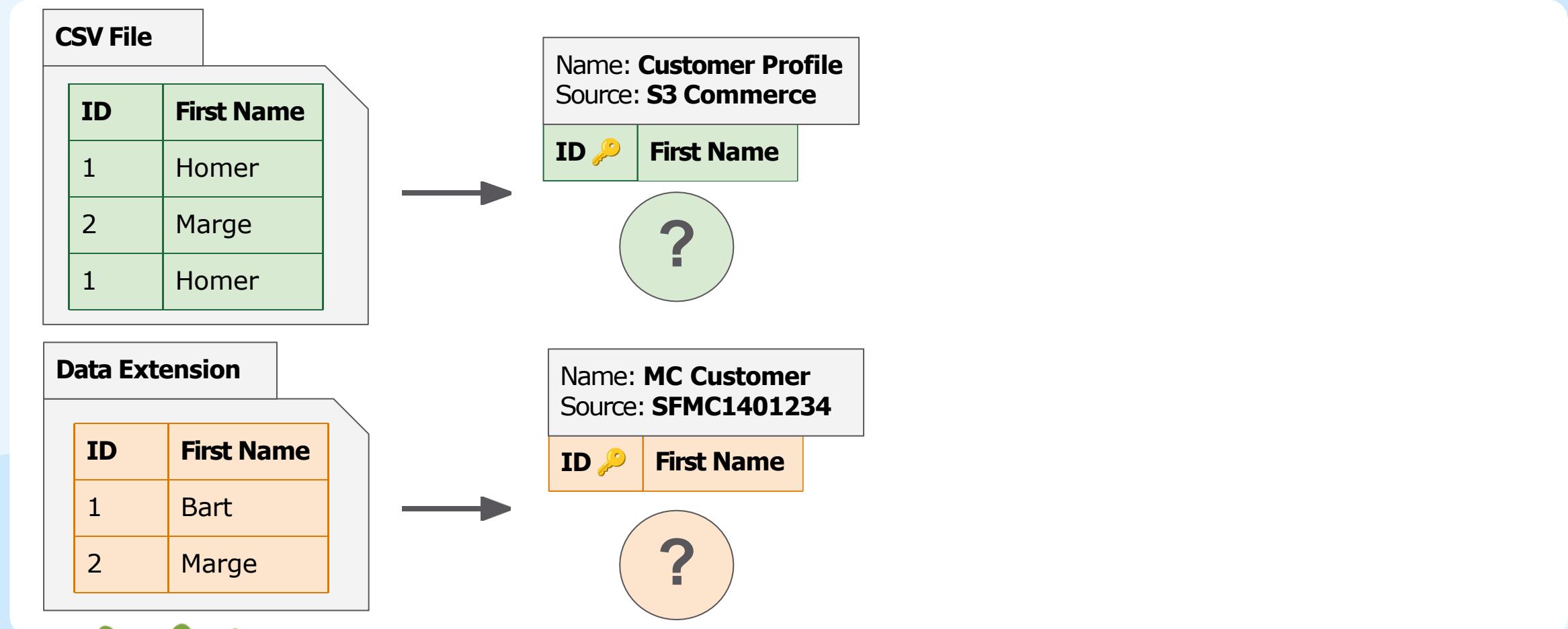


How many records will be created in the DMO (Data Model Object) as a result of the provided data stream configuration?

On the following slides we will present you an example of the source data and certain configuration for the data stream.

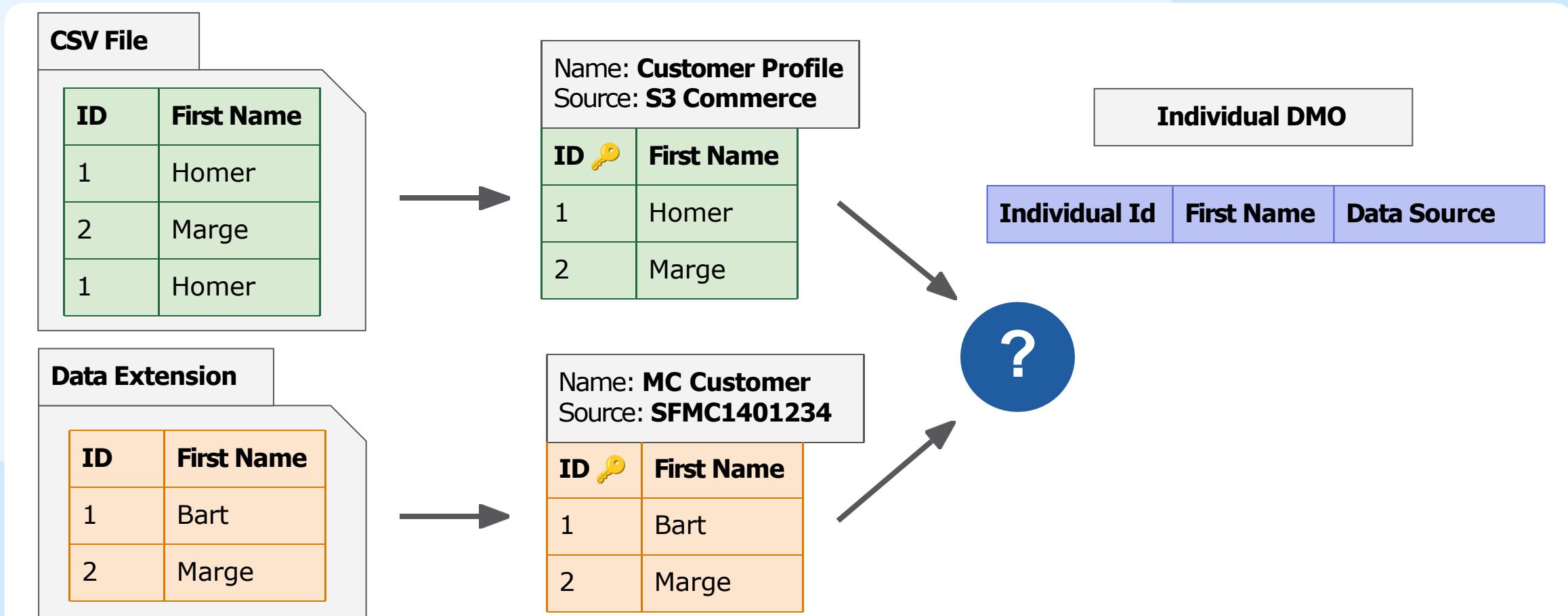
Take a note of how the records will be processed in the system post ingestion and how the resulting data will be presented in the Data Model Object.

Primary Key



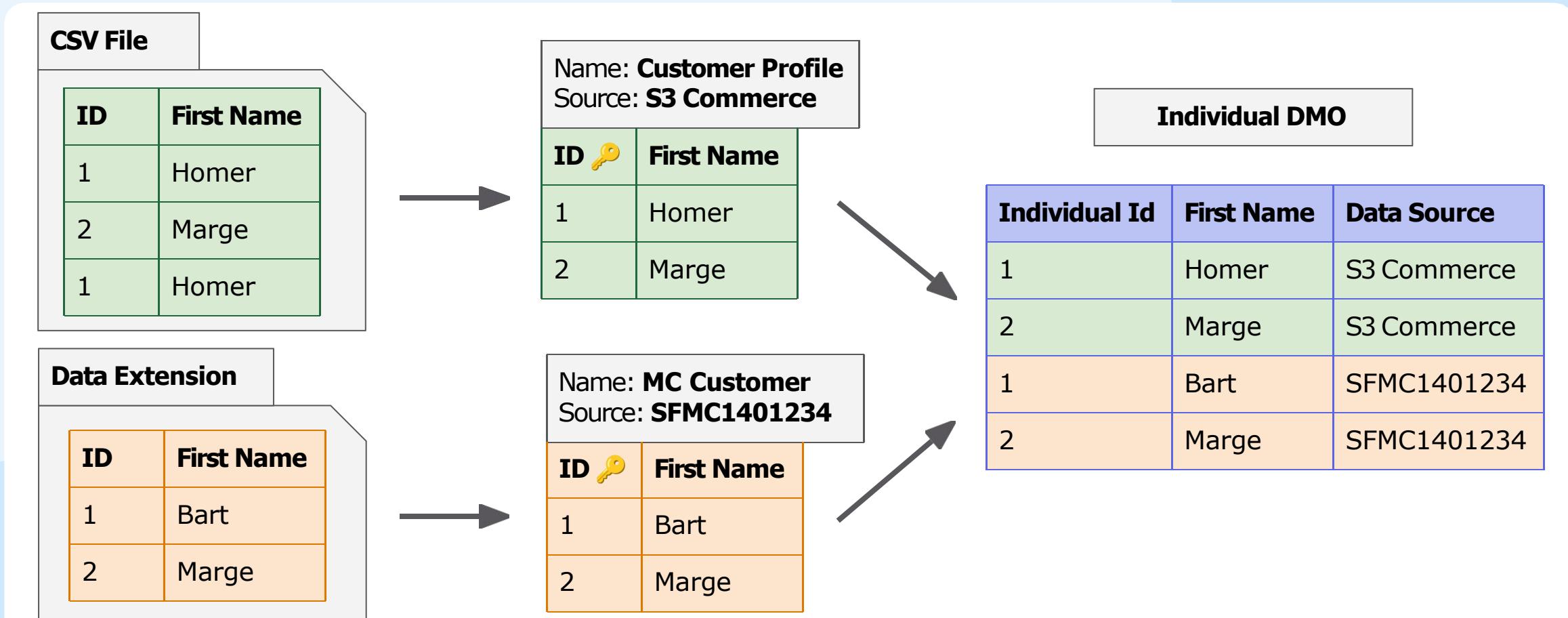
Primary Key

PK DMO != PK DLO/DSO



Primary Key

PK DMO != PK DLO/DSO



Let's See Data Modelling in Action



**DEMO
TIME|**

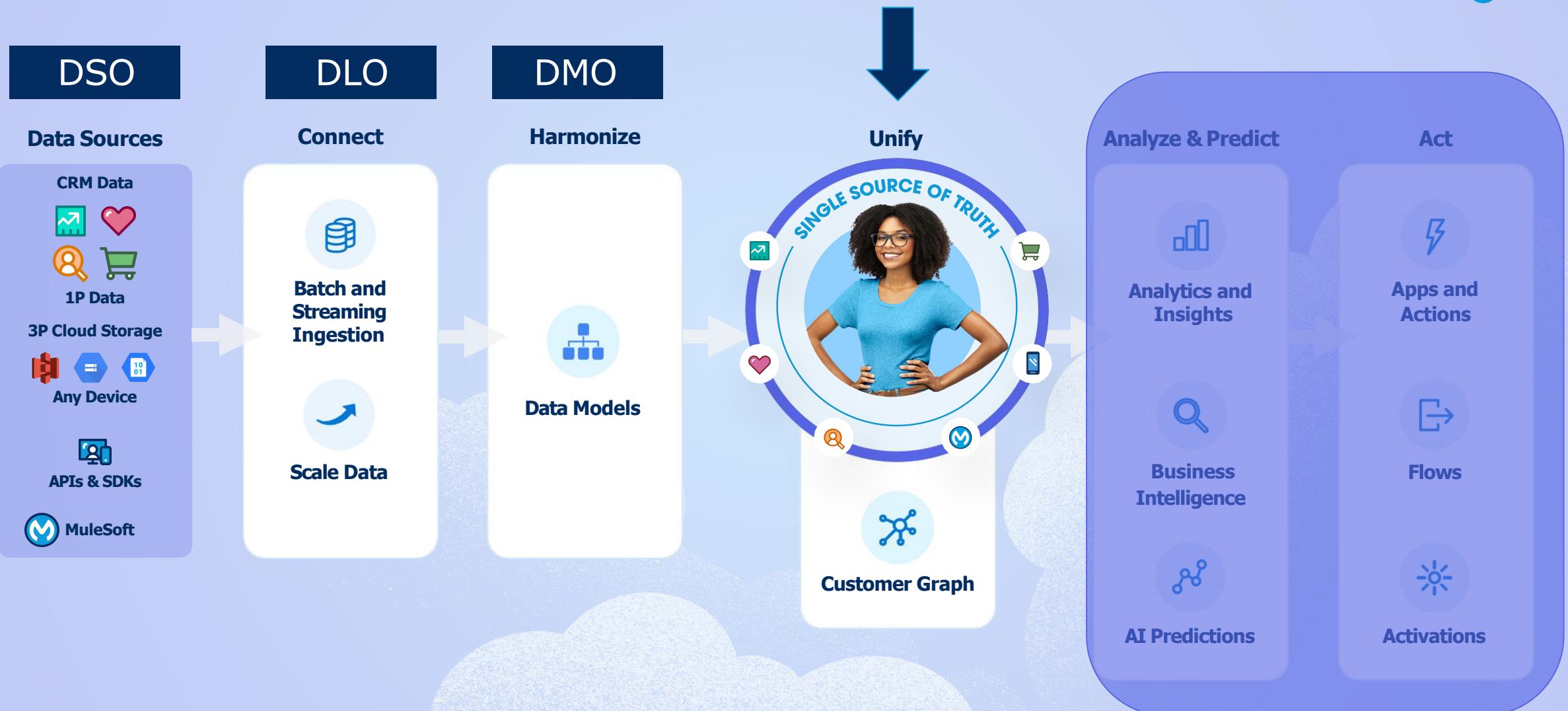




Identity Resolution



How Data Cloud Works



Identity

Connect, match, and resolve customer data



A screenshot of the Salesforce Identity Resolution interface. On the left, there's a sidebar with 'SSOT' and 'Home' options. The main area shows 'Identity Resolution Unified Individual' details: Profile Object (Individual), Status (Active), Last Run Status (Success), Last Run (3/20/2021, 1:58 PM), and Last Modified (3/18/2021, 4:25 PM). Below this are sections for 'Rules Configuration' (Match Rules: Fuzzy Name and Fuzzy Email OR Fuzzy Name and Exact Phone) and 'Reconciliation Rules' (a table with columns: Name, Reconciliation Rule, Default, and rows for Name, Individual Attributes, Gender, Date of Birth, Yearly Income, Address, Email, Phone, Party ID, and Social ID). To the right is a 'Resolution Summary' card with metrics: 378.6K Total Individual Profiles, 498.2K Total Matched Profiles, and a 24% Consolidation Rate. A 'View Summary Dashboard' button is also present. At the bottom, there's a 'Help' section with 'What is a Unified Individual?' and 'Match Rules' links, and a 'Related Trails' section with 'Getting Started with Identity'.

Unlock the single source of truth inside your data



Advanced Identity Resolution

Resolve customer identity using flexible rules with exact and AI-powered advanced (fuzzy) matching

Unify Customer Profiles

Reconcile matched customer data into a unified profile with a single global party ID

Streamline Enterprise Identity Management

Standardize identity data models and locate profile data across silos with a click-based UI

Cross Device Identity Management

Enrich profiles with first party pseudonymous data, including first party cookies, device IDs, MAIDS, and HEMs

Data Mapping



Map disparate data source structures to a common model

Disparate Schemas

Contact
FirstName
LastName
MailingStreet
Phone



Subscriber
Email
Suburb



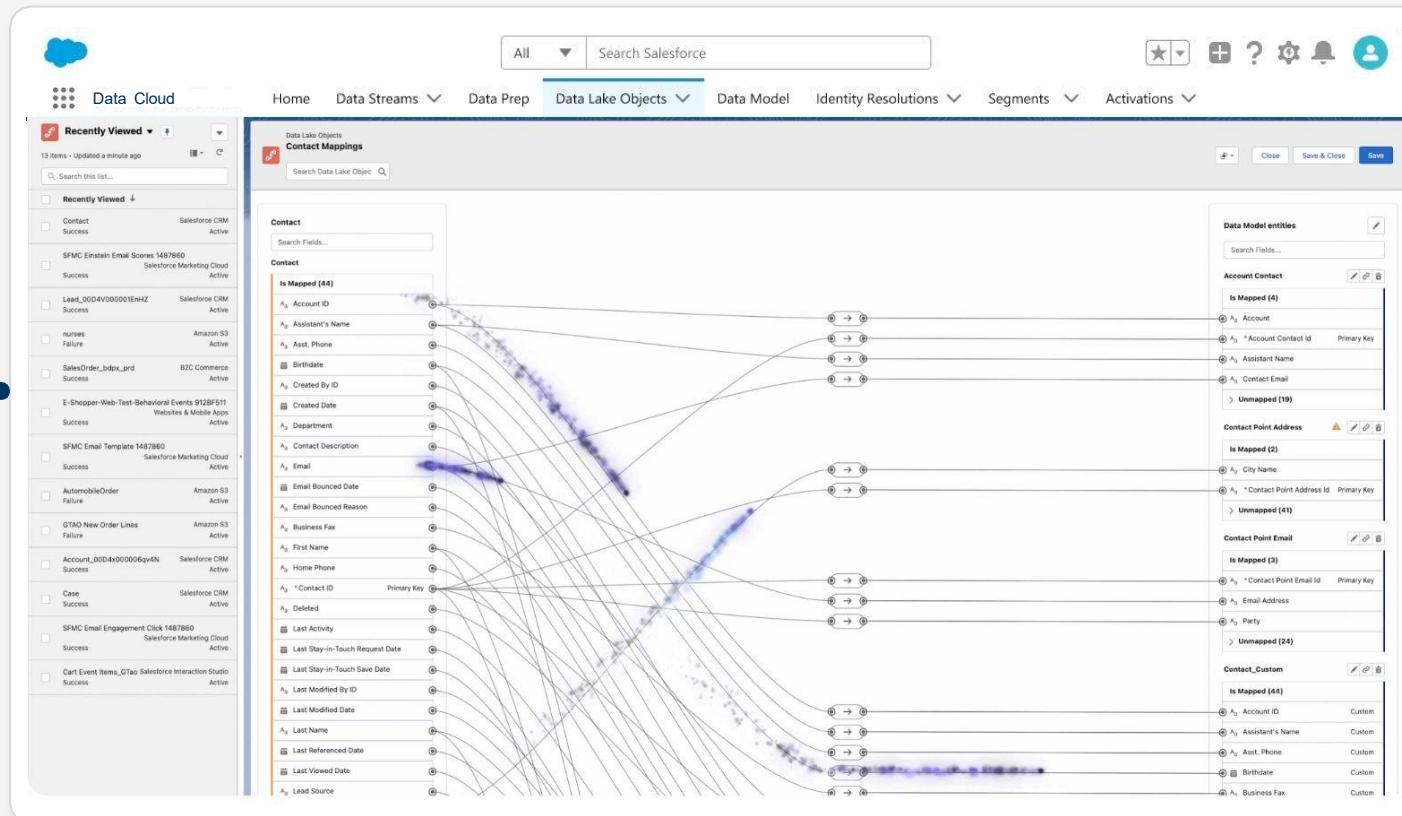
Guest
firstName
lastName
email
mobilePhone



Customer Invoices
First_Name
Surname
Address_1
Address_2



Data Map



Data Lake Object

Data Model Objects

Canonical (Normalized) Data Model

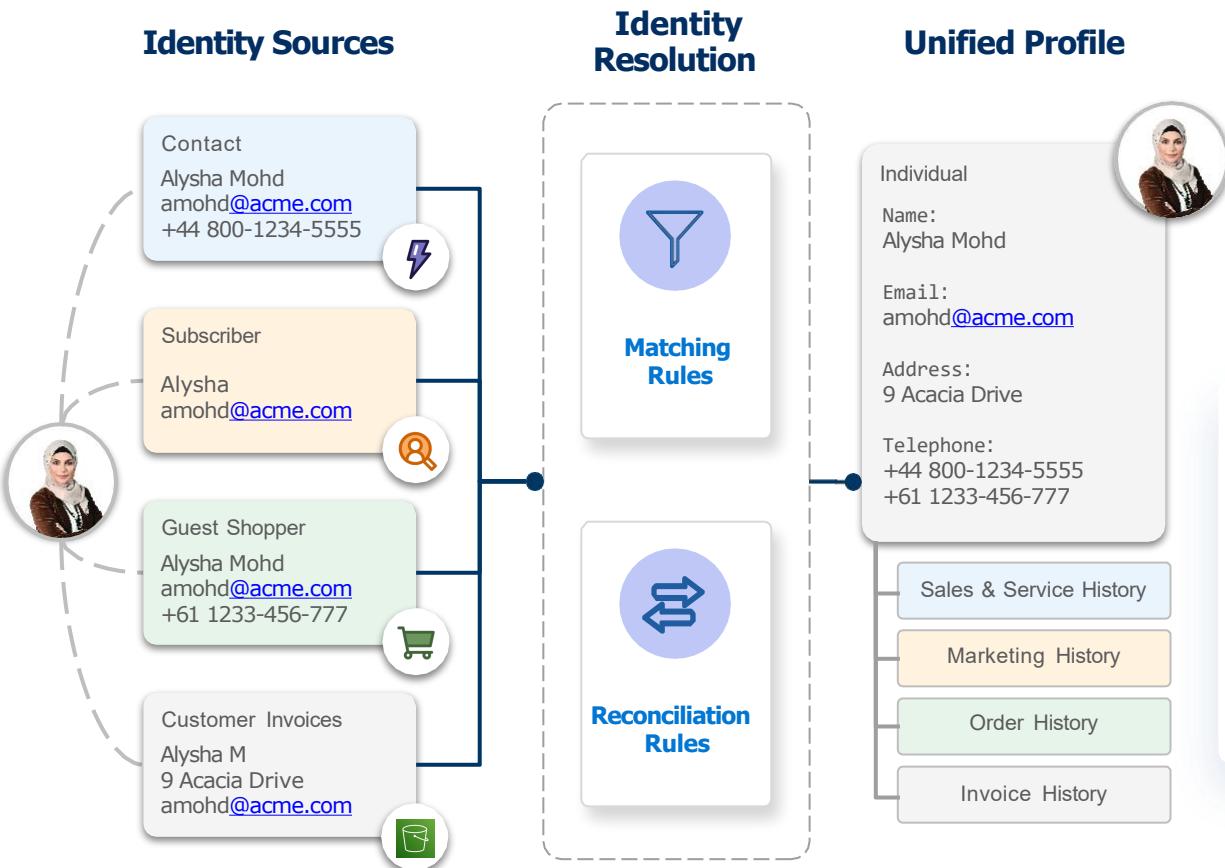
Individual

firstName
lastName
middleName
preferredName
militaryServiceId
birthDateDay
birthDateMonth
birthDateYear
birthDate
contactPointEmailId
mailingAddressId
mobilePhoneId
leadSource
...

Identity Resolution



Create a unified customer profile



The screenshot shows the Data Cloud Identity Resolution interface:

Identity Resolution Customer Name and Email

Primary Data Model Object: Individual, Ruleset ID: ind, Ruleset Status: Published, Last Job Status: In Progress, Last Job Completed.

Ruleset Properties: Details, Processing History.

Match Rules: Fuzzy Name and Normalized Email.

Reconciliation Rules.

Match Rule Criteria: Add criteria for your match rule. [Tell Me More](#)

Object: Individual, Field: First Name, Match Method: Fuzzy.

Object: Individual, Field: Last Name, Match Method: Exact.

Object: Contact Point Email, Field: Email Address, Match Method: Exact Normalized.

Matching Rule Criteria

Total Unified Profiles: 378.6M / 489.2M Source Profiles (Consolidation Rate: 24%)

Matched Source Profiles: 249.5M

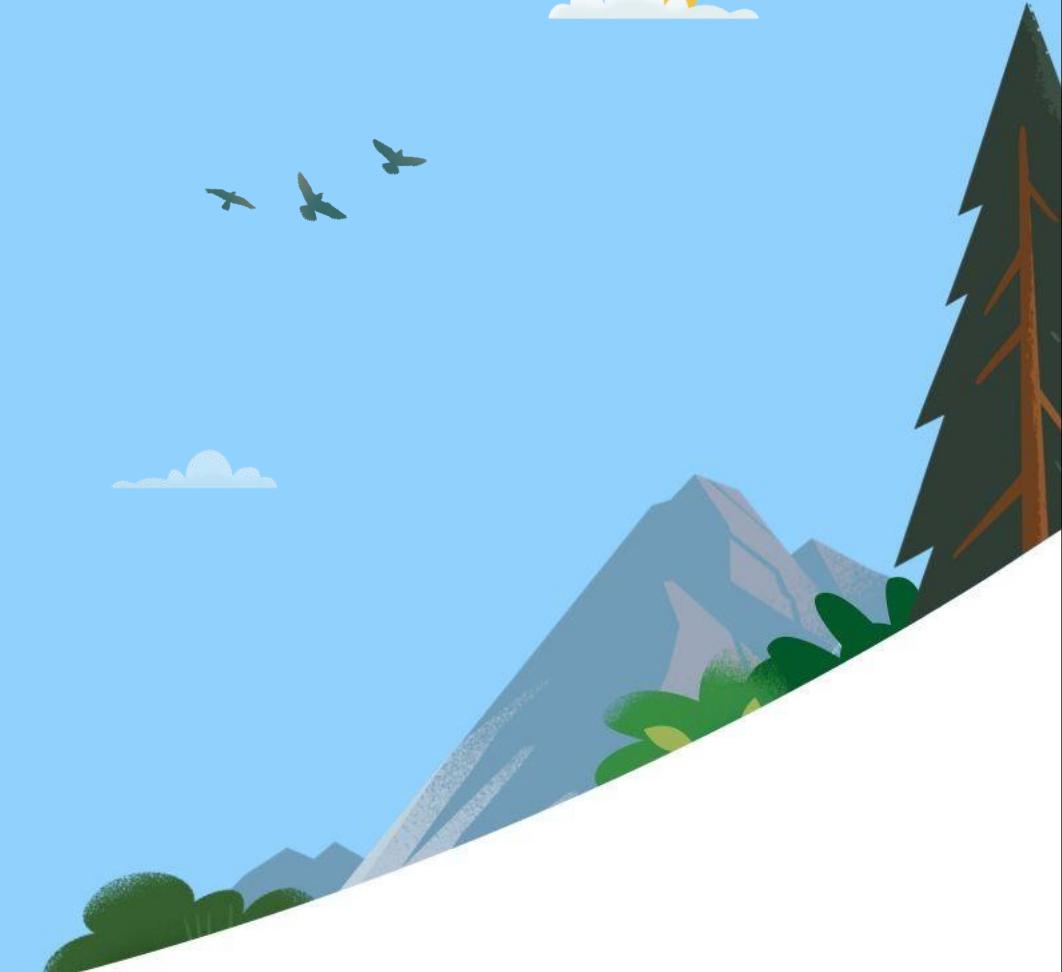
Known Unified Profiles: 149.5M

Anonymous Unified Profiles: 249.1M



Identity Resolution Walkthrough

Example



Challenge: Data is Distributed, Quality is Varied

Customers have multiple profiles, records, and contact points across systems



Duplicates Unintentional

(030) 29337611
Catrin Schmidt
Joachimsthaler Str. 1-4, Berlin

Cathrin Schmidt
katrin.schmidt@web.de
 TheKatrin

~50%
No Name

Cathrin Schmidt
katrin@mystyle.com



Customer Profile

Katrin Schmidt,
katrin.schmidt@web.de,
030 98127123
Joachimsthaler Str. 1-4, Berlin

Guest Checkout

Katrin Schmidt,
katrin@mystyle.com,
+49 030-9812-7123
Grunerstraße 20, Berlin



~70%
Guest Orders

More Profile Data

Cathrin Schmidt
katrin@mystyle.com
TheKatrin



"Duplicates"
Intentional



What's Needed? A Unified Individual Profile...

as a trusted reference to all profile and engagement data



Unified ID	5e1ef23f-4eae-3659-a434-ca310911a12c
Name	Katrin Schmidt
Twitter	TheKatrIn
Telephone	+49 030-9812-7123 (International) (030) 29337611 (Local)
Email	katrin.schmidt@web.de katrin@mystyle.com (Marketing Opt In)
Digital Keychain	Hashed email, Pixels, Ad-Tech IDs



Let's take a deeper look at the presented information



How many Systems of Source do you see? Source Records? Contact Points?

(030) 29337611
Catrin Schmidt
Joachimsthaler Str. 1-4, Berlin

Cathrin Schmidt
katrin.schmidt@web.de
 TheKatrIn

Customer Profile
Katrin Schmidt,
katrin.schmidt@web.de,
030 98127123
Joachimsthaler Str. 1-4, Berlin

Guest Checkout
Katrin Schmidt,
katrin@mystyle.com,
+49 030-9812-7123
Grunerstraße 20, Berlin

Cathrin Schmidt
katrin@mystyle.com


More Profile Data
Cathrin Schmidt
katrin@mystyle.com
 TheKatrIn

In this example there are 4 Source Systems

Service Cloud, Marketing Cloud, Commerce and Loyalty Cloud



there are a total of six records

Two Orders, a Contact, a Lead, Subscriber, Loyalty Member



Let's solve the connection one by one

Link the guest and registered user Orders by Name and normalized Phone



Let's solve the connection one by one

Using the guest's order secondary Email and Fuzzy Name



Let's solve the connection one by one

Connect the information from external systems via Party Identifier



Let's solve the connection one by one



Use Fuzzy Name and Address match to link the Service record with 2nd phone



Let's solve the connection one by one

Use Fuzzy Name and Email to link Marketing's record



All Records are now linked together

Let's do that another 100M times for each Customer!

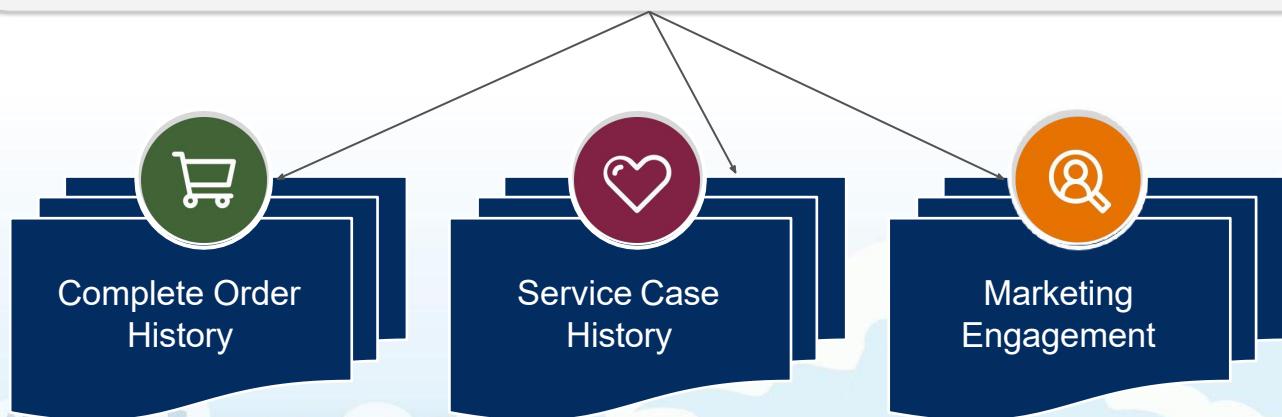


Unified Individual is now ready!

Leverage "Identity Link Individual" dmo to connect to all Engagement data



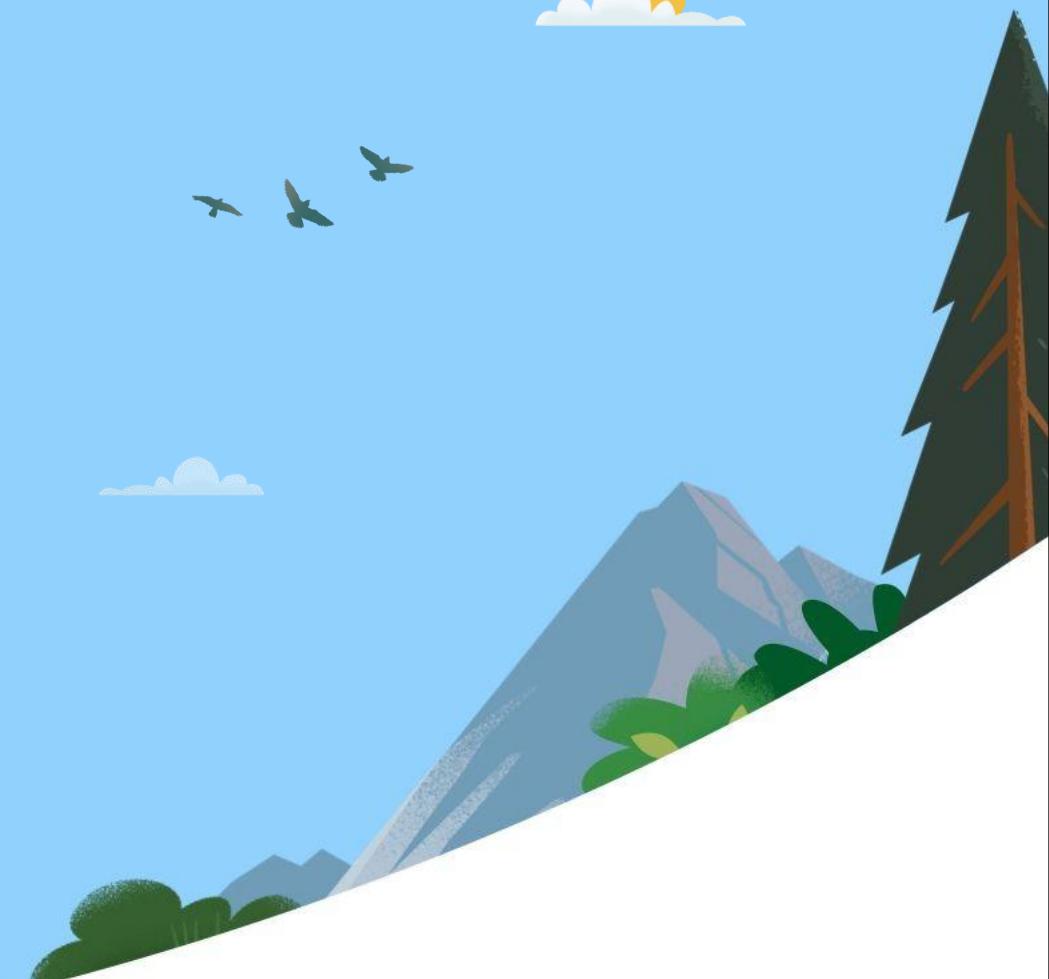
Unified ID	5e1ef23f-4eae-3659-a434-ca310911a12c
Name	Katrin Schmidt
Nickname	Katrin
Twitter	TheKatrin
Telephone	+49 030-9812-7123 (International) (030) 29337611 (Local)
Email	katrin.schmidt@web.de katrin@mystyle.com (Marketing Opt In)
Digital Keychain	Hashed email, Pixels, Ad-Tech IDs





Identity Resolution

To Be Continued



Q & A





Thank you

