



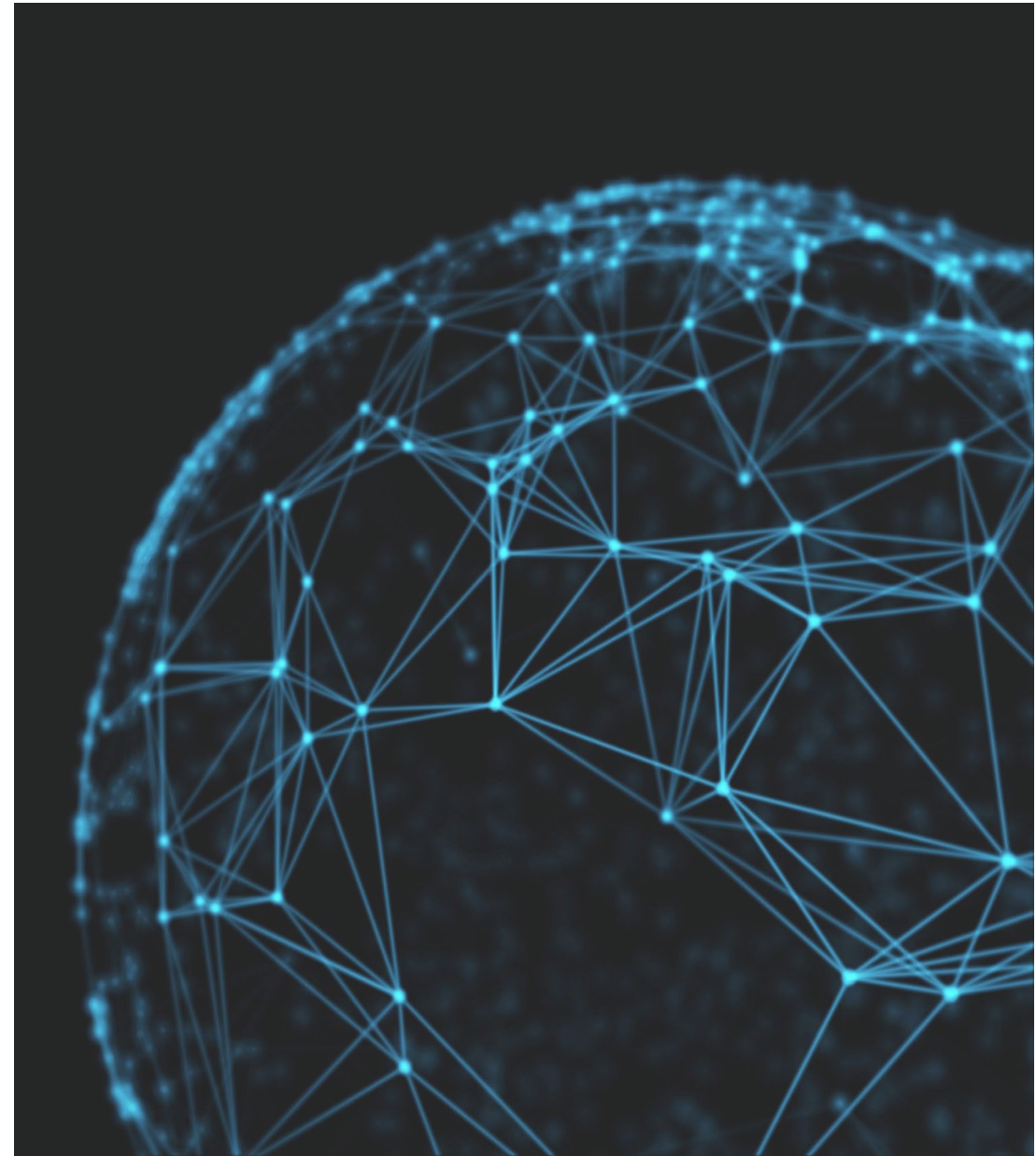
# Speed Data Vault Delivery and Ensure Sustainability

WITH ERWIN BY QUEST  
Paul Kinnier, Principal Engineer

erwin<sup>®</sup>  
by Quest

# Agenda

- Welcome
- Brief erwin overview
- erwin Data Vault Automation







erwin is the only software suite to **own every critical piece of the data management and governance lifecycle**, so enterprises can understand and trust their data for faster speed to insights.

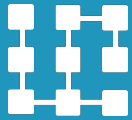


# erwin Enterprise Modeling & Data Intelligence Software

## Enterprise Modeling Suites



erwin Evolve



erwin Data Modeler

## Data Intelligence Suite



erwin Data Catalog



erwin Data Literacy

### Data Automation

Standard Data Connectors

Smart Data Connectors

# Recognized Industry Leadership

## erwin Is a Leader in Metadata Management (Gartner 2020)



## Industry Awards and Accolades



# erwin Strength Across Verticals

## Financial Services



## Healthcare



## Insurance



## Retail & Manufacturing



## Technology



## Telecommunication



## Aerospace and Defense



## Entertainment



**Quest** is the company customers count on to write the software that makes their enterprises go 'round.

**30+**  
years

**4,000**  
employees

**\$1B**  
revenue

**100**  
countries





# erwin Data Vault Automation Overview

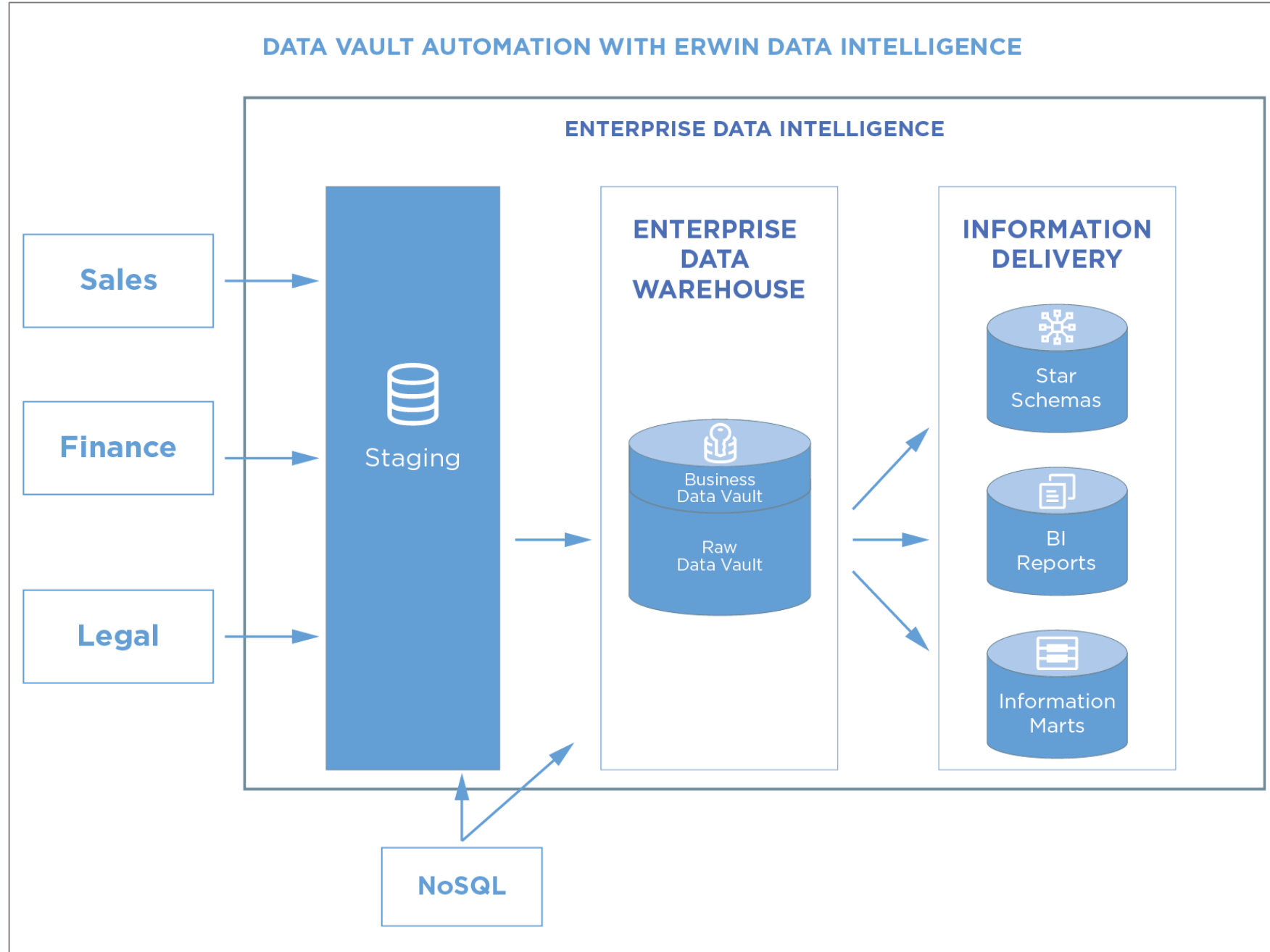
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by Quest



# Data Vault is Possible with erwin Data Intelligence by Quest

Leverage metadata-driven automation to efficiently:

- Deliver
- Document
- Operate
- Govern



The background is a dark blue to black gradient, filled with numerous vertical lines of varying lengths and thicknesses, creating a sense of depth and movement. These lines are composed of small, bright blue and white dots, giving the impression of a digital rain or a data stream. A prominent, brighter vertical column of light is visible on the left side, suggesting a focal point or a source of data. The overall effect is futuristic and high-tech.

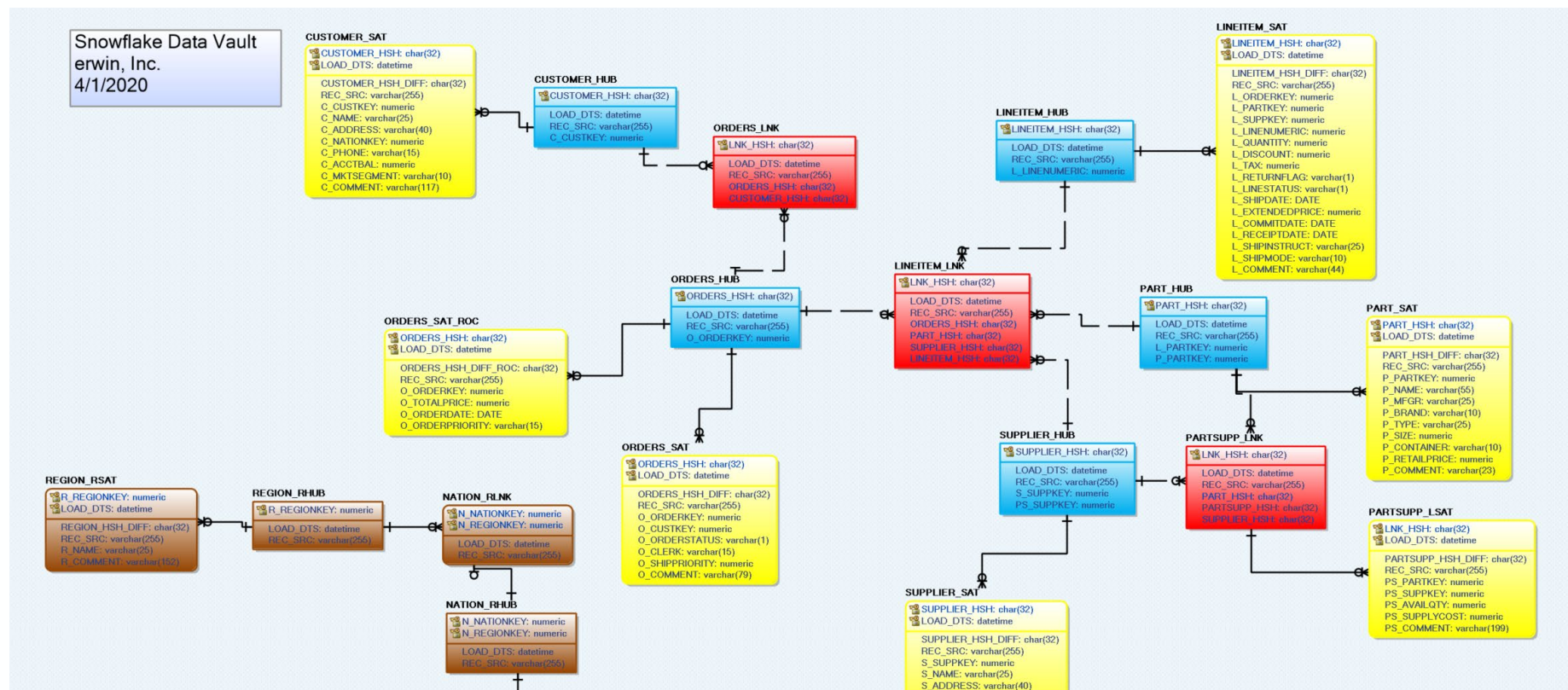
# Build a Data Vault through Automation

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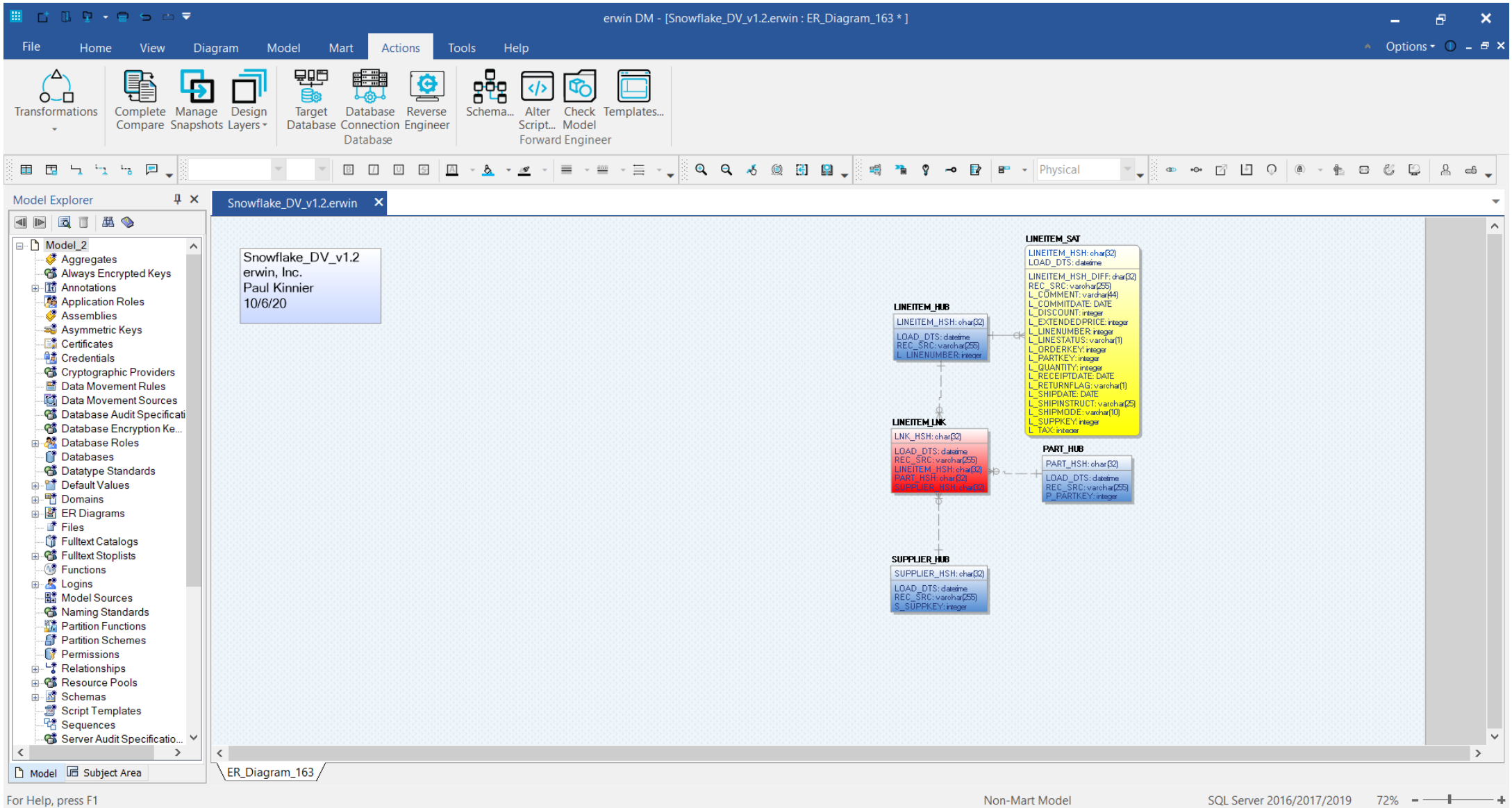
# Leverage erwin Automation to Build a 2.0-compliant Data Vault

- Flexible data modeling with drag-and-drop ease of use
- Extensive properties to document at the table, column, system or environment level
- Color-coding of entities to differentiate different objects



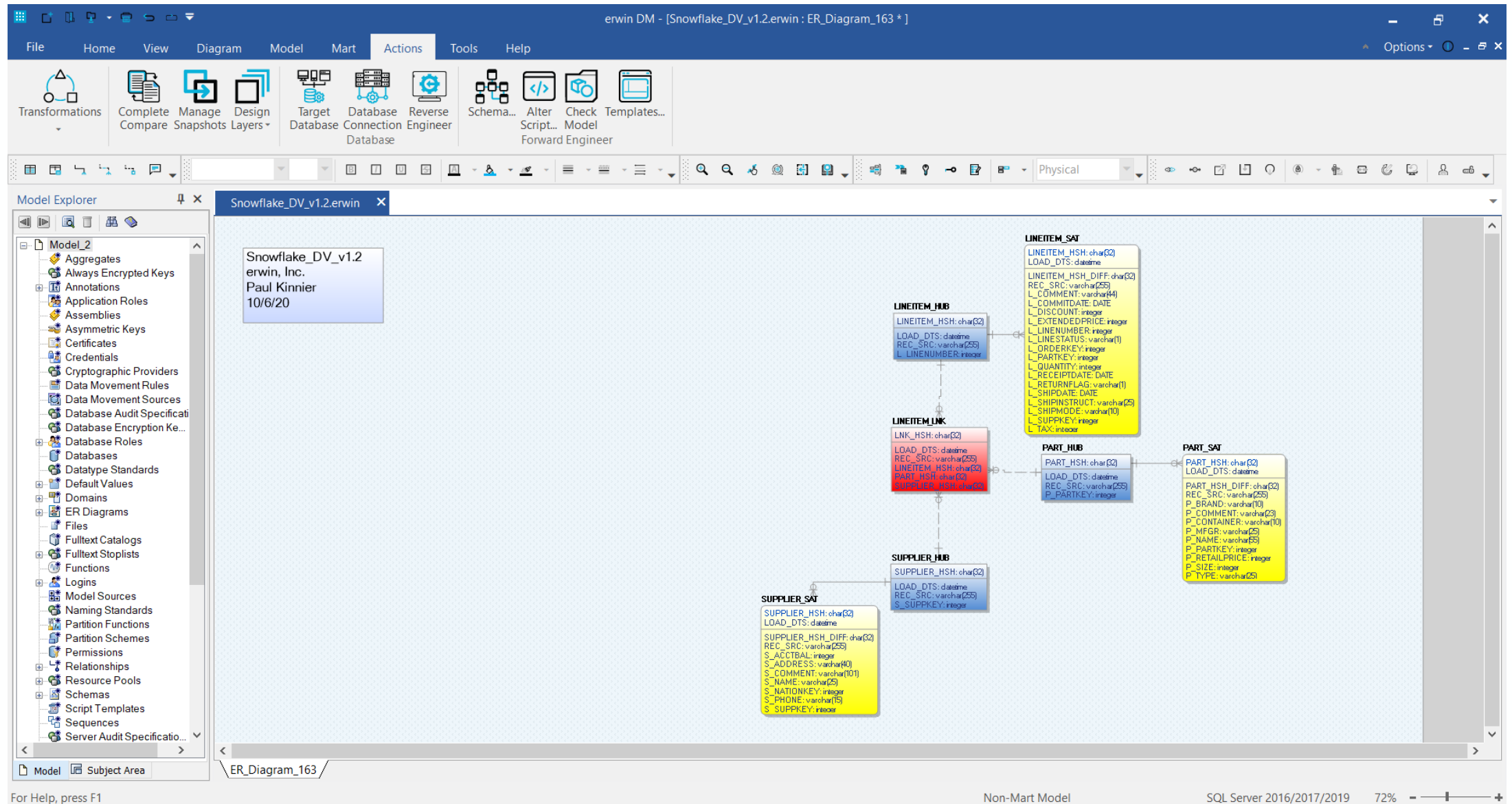
erwin Data Modeler 2020 R1 SP1 Build: 12392

# Generate Hubs, Links and Satellites with Stub Hubs

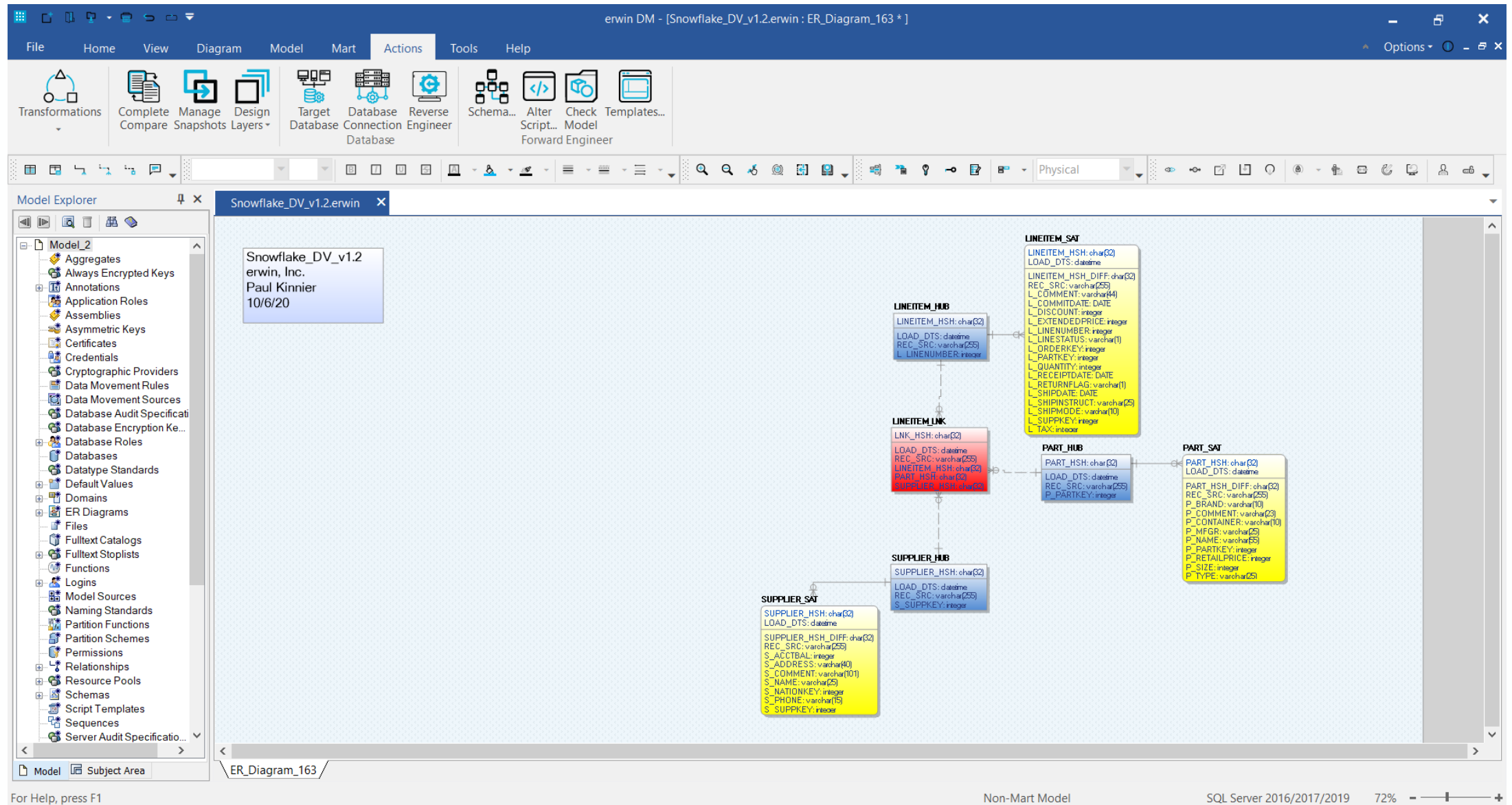




# Add Hub Satellites

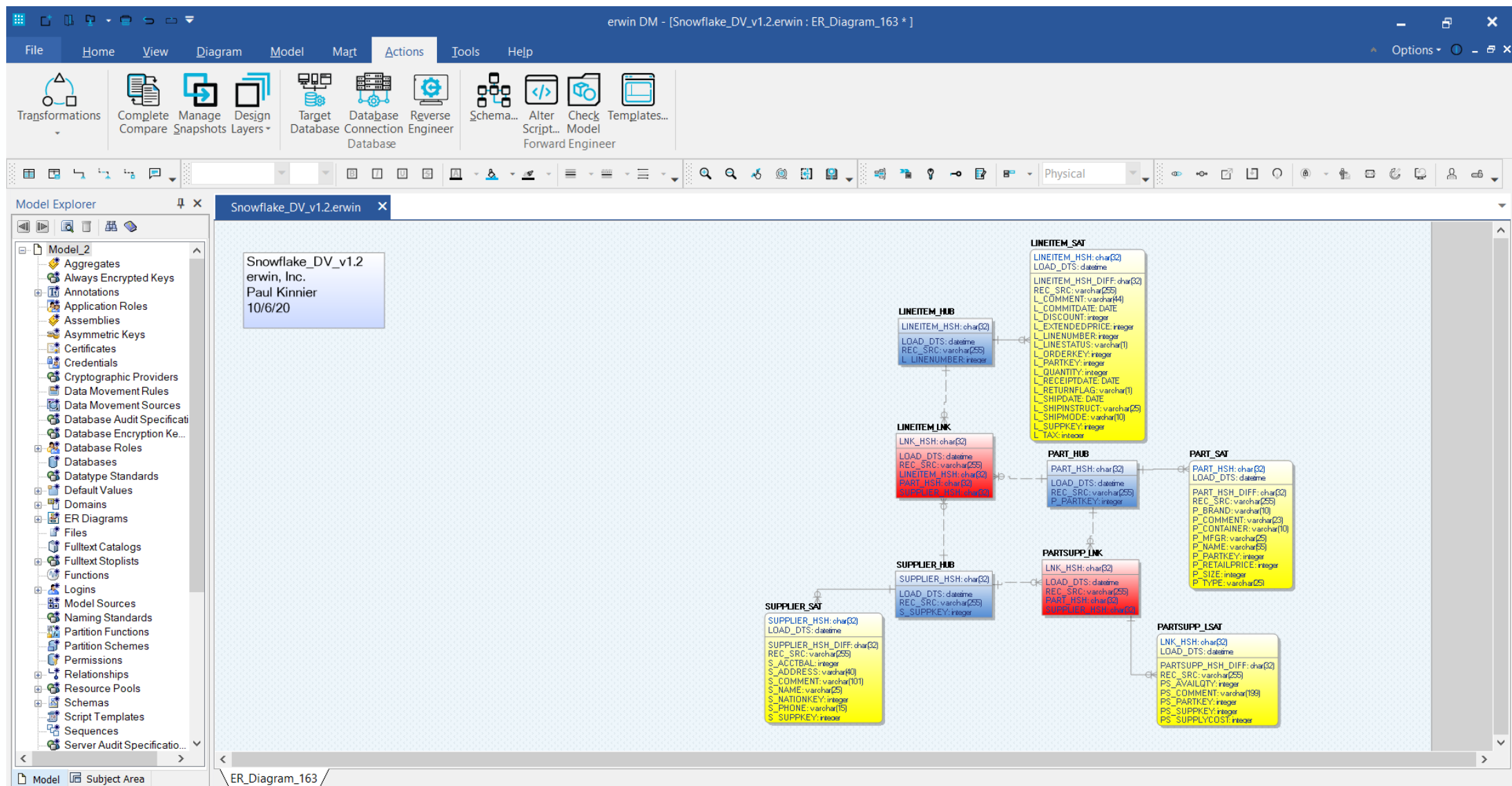


# Add Hub Satellites





# Add Link Satellites



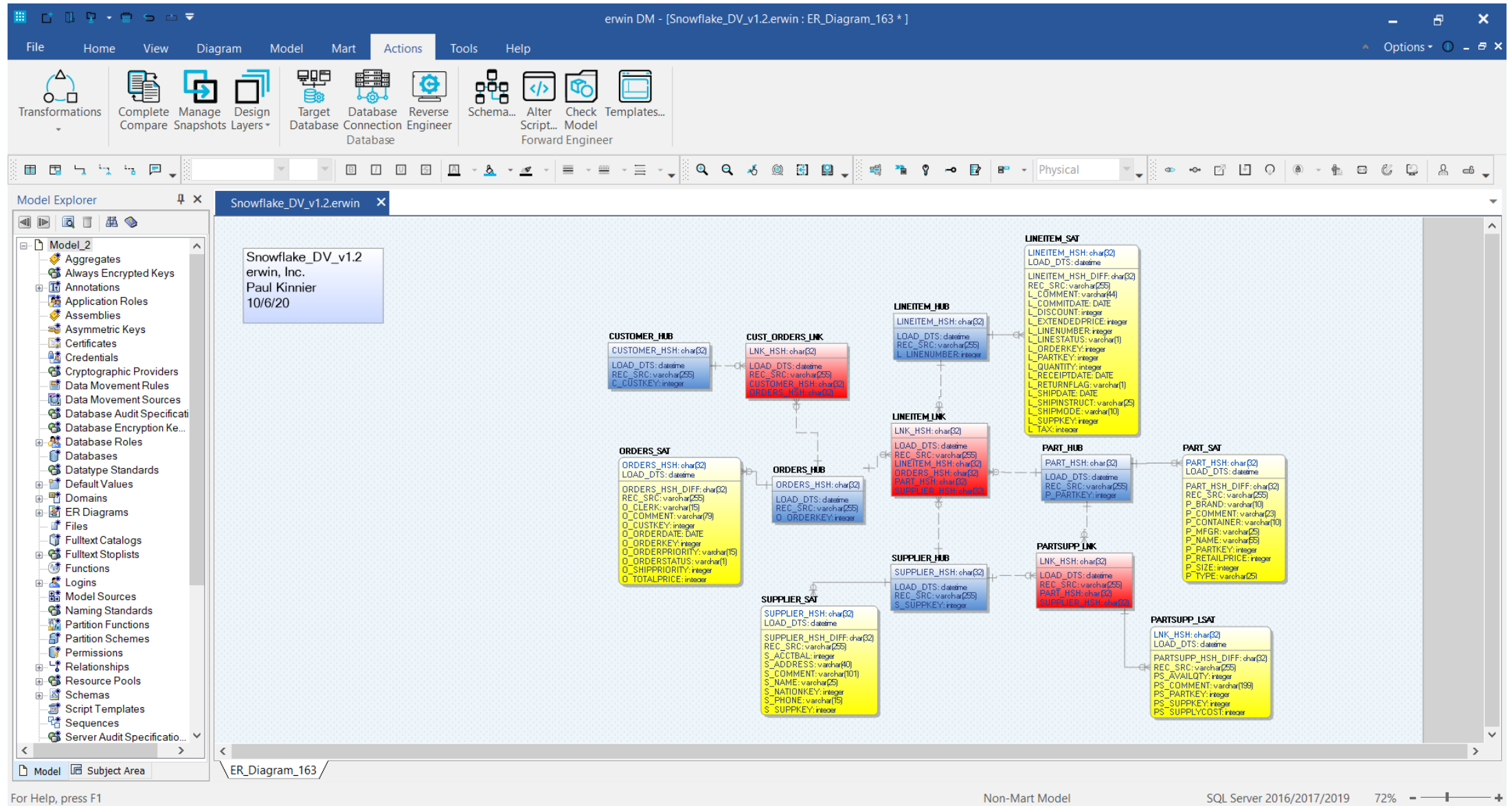
For Help, press F1

Non-Mart Model

SQL Server 2016/2017/2019

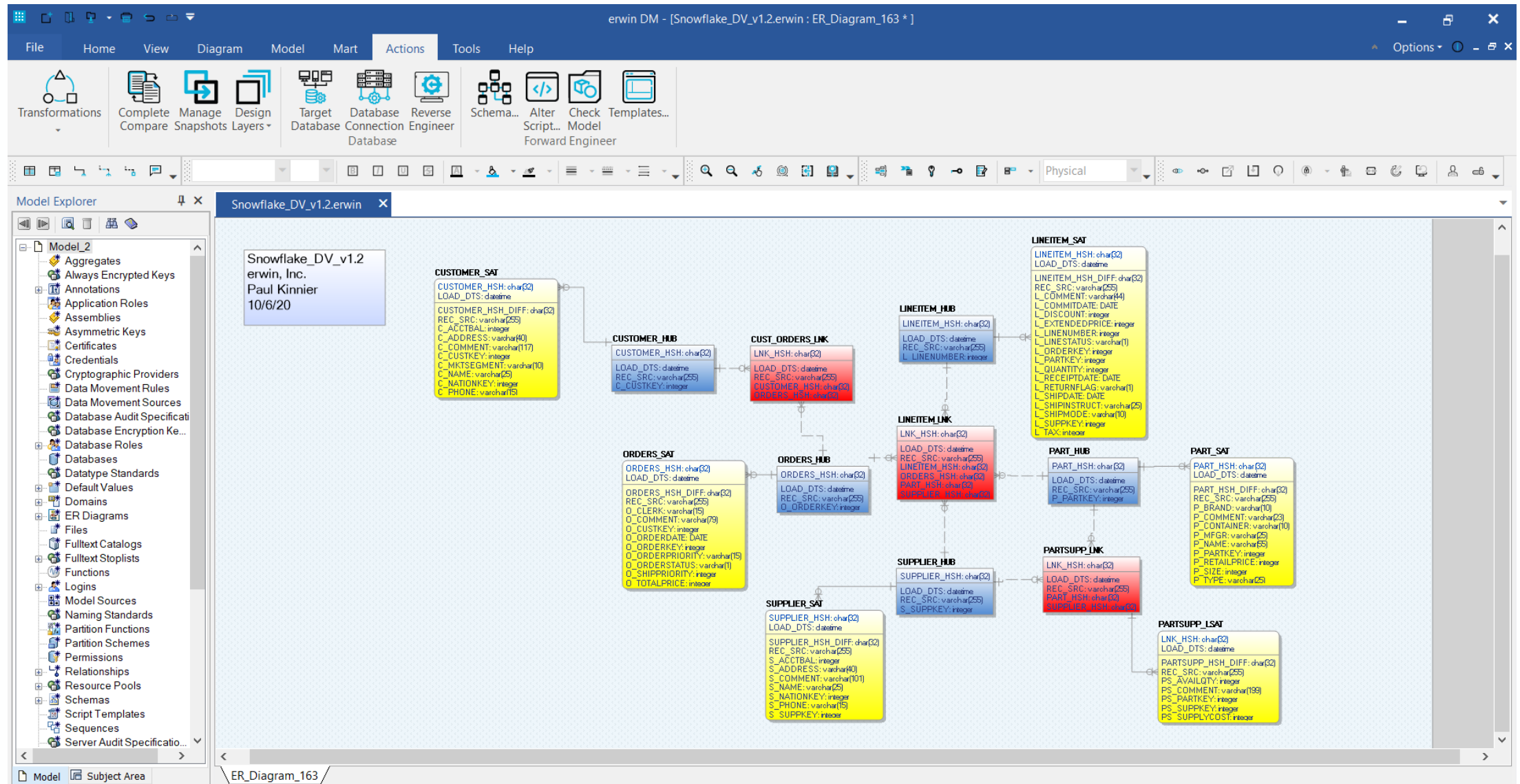
72%

# Add Orders Data





# Add Customer Data



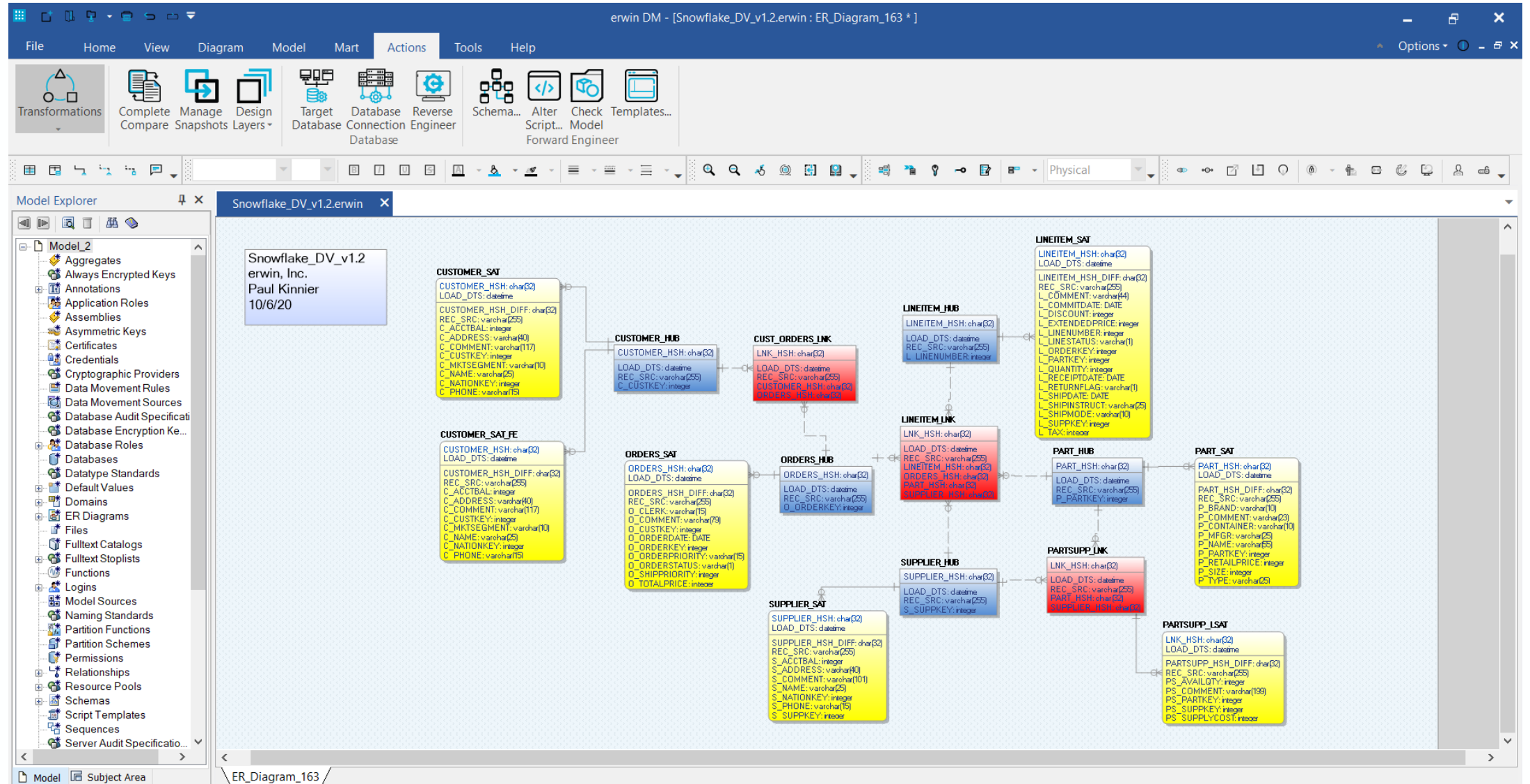
For Help, press F1

Non-Mart Model

SQL Server 2016/2017/2019

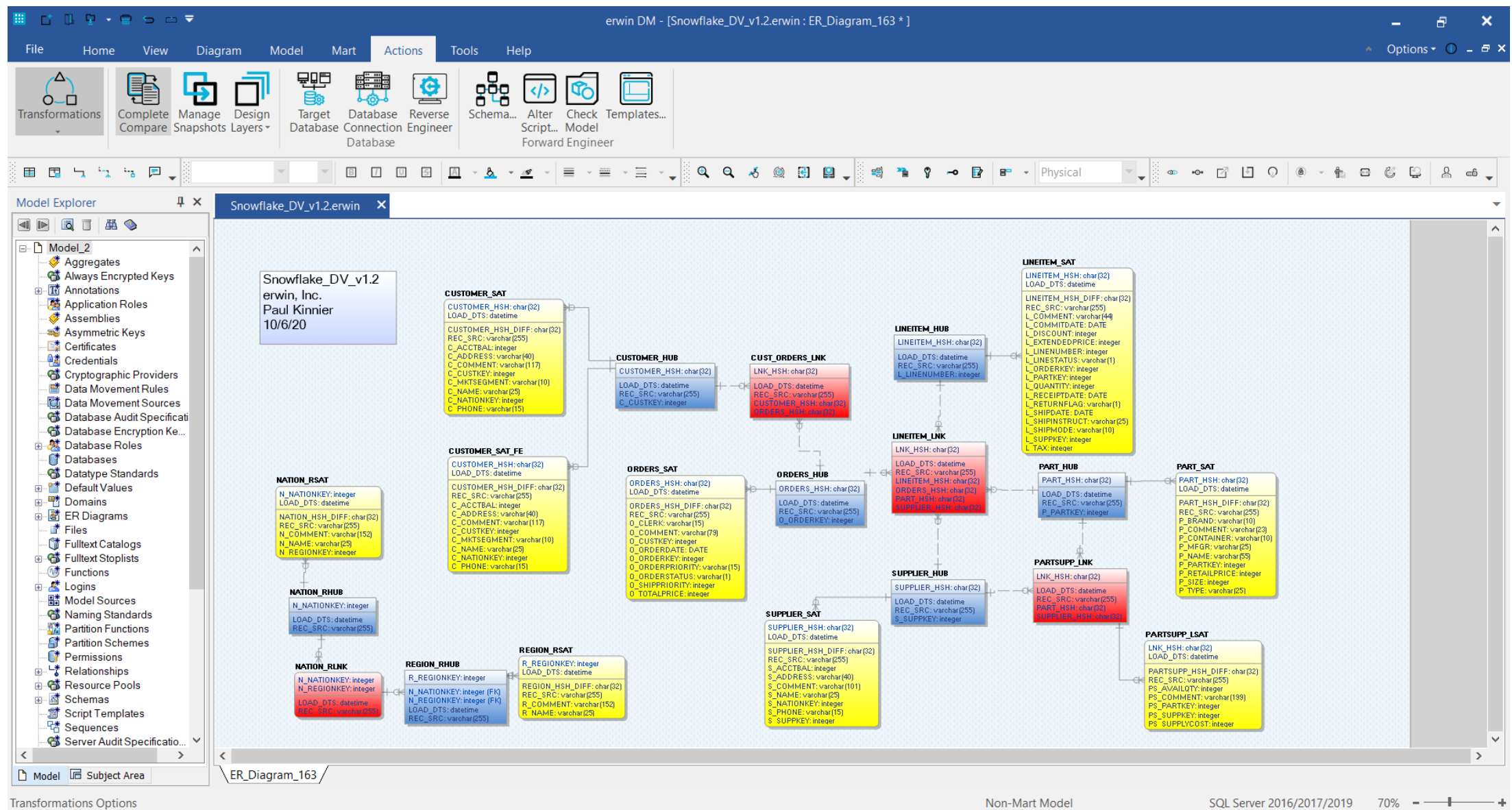
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# Add Split and Second Source Satellites





## Add Reference Objects



# Data Vault Automation Approaches

## Bottom-Up

- Metadata-driven Data Vault design
- Heavily dependent on source system structure design prior to automation
- Fastest route to output
- May require manual metadata manipulation post automation
- Requires naming conventions to leverage in the source
- Doesn't allow easy integration for multiple data sources

**vs.**

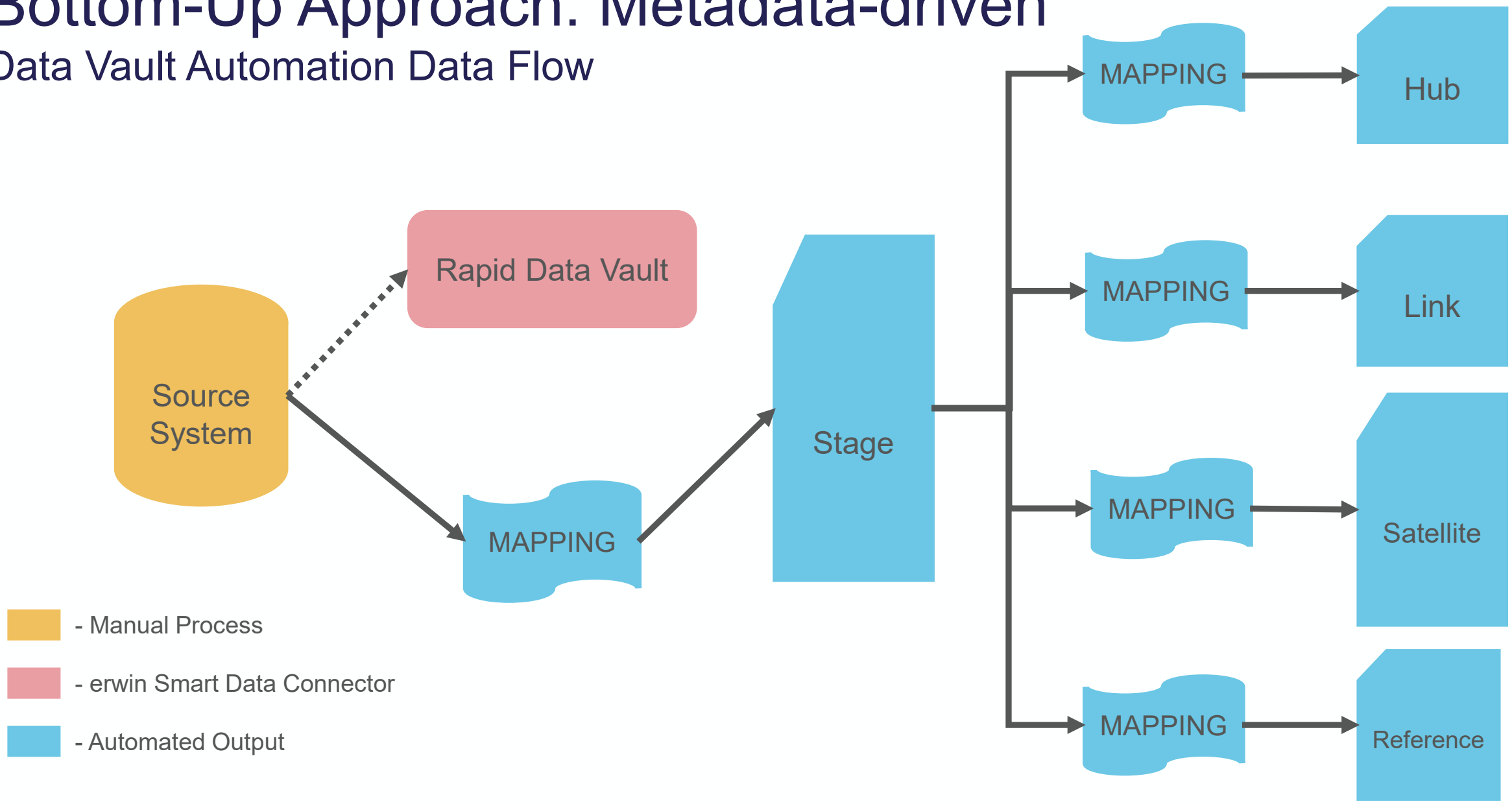
## Top-Down

- Business-driven Data Vault design
- Combines data modeling + mapping
- Data source structures less of a factor
- Minimal manual efforts post automation
- Naming conventions leverage from the enterprise business view
- Allows easy integration for multiple data sources



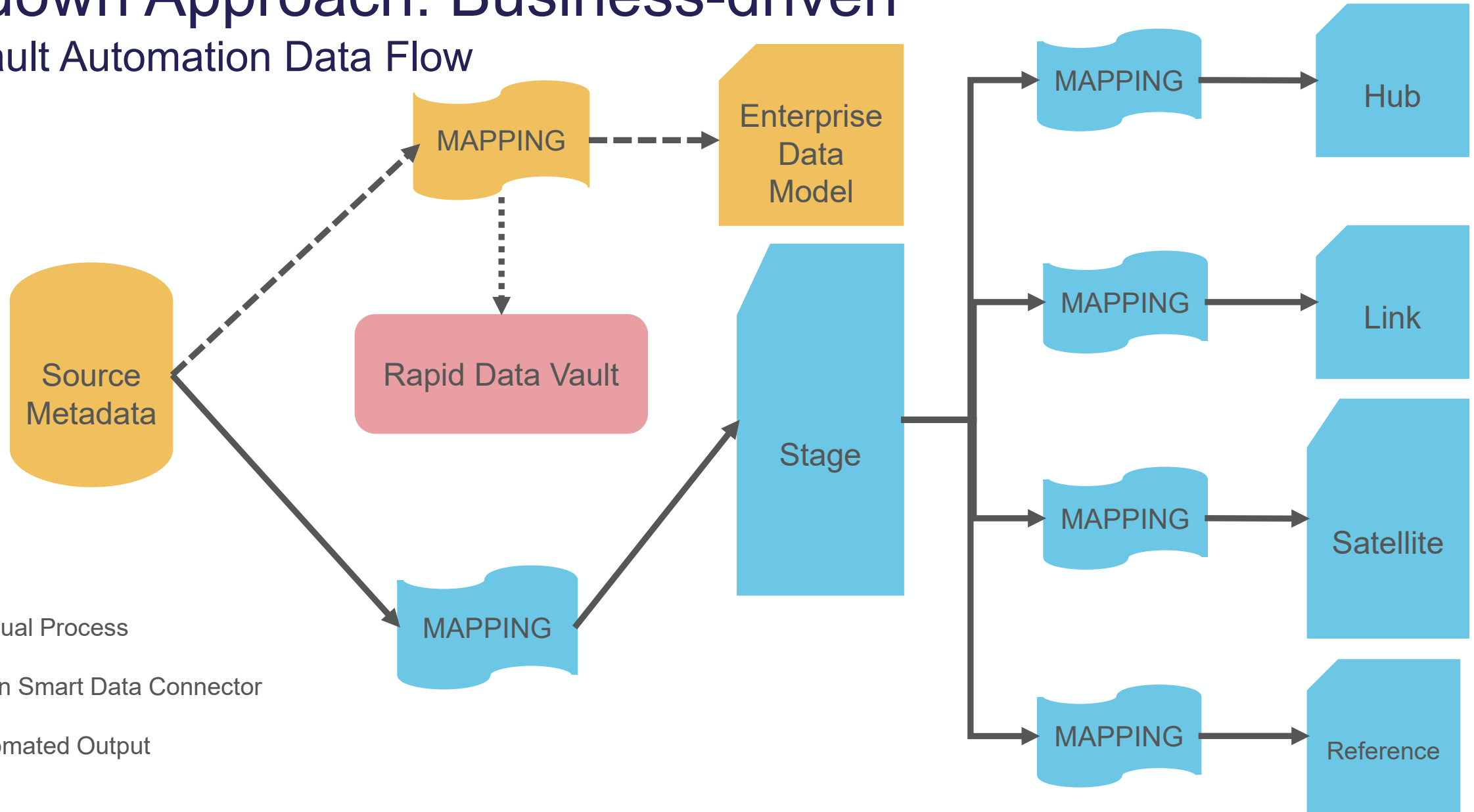
# Bottom-Up Approach: Metadata-driven

## Data Vault Automation Data Flow



# Top-down Approach: Business-driven

## Data Vault Automation Data Flow

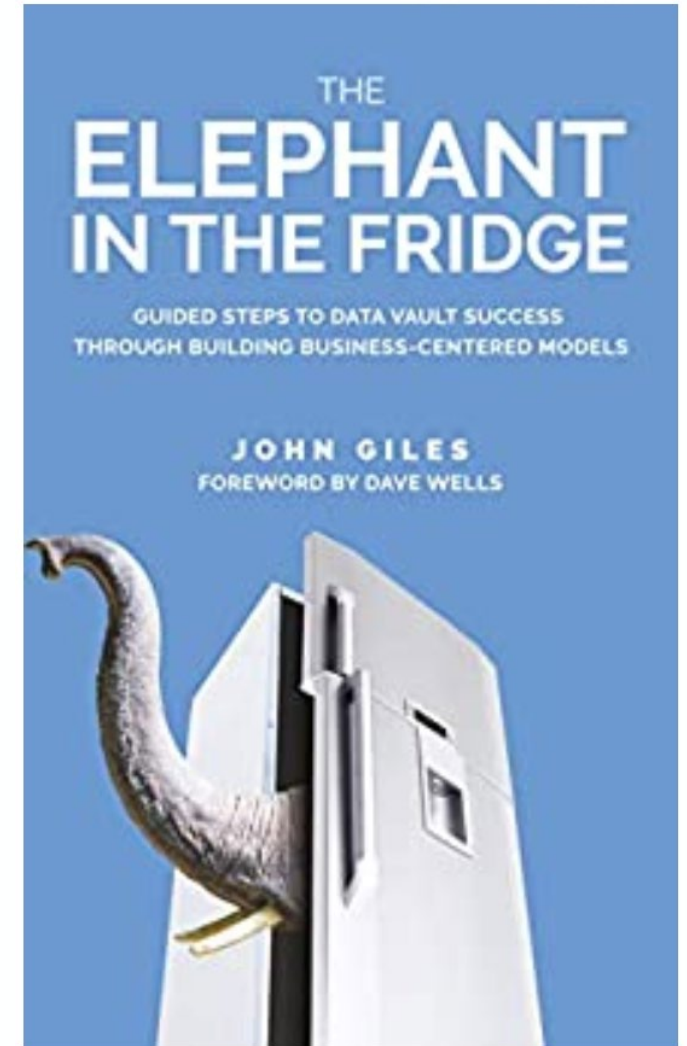




# Steps toward Data Vault Automation

1. Define how the business sees the data
2. Perform bottom-up source-to-EDM mapping
3. Generate the Data Vault based on the business view
4. Define associated business rules

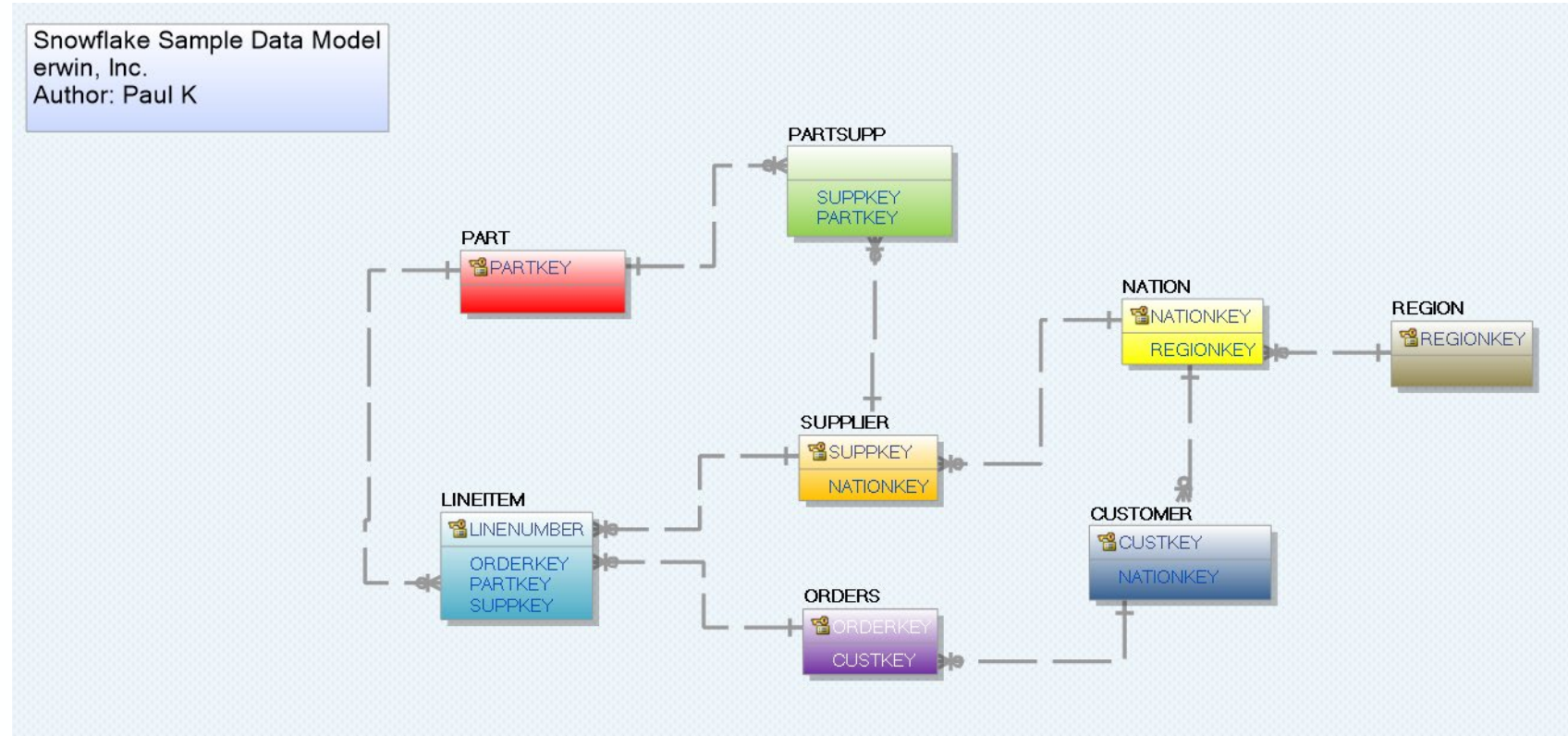
Giles, J. G. April 15, 2019. *The Elephant in the Fridge*. Technics Publications



# Step 1: Data Modeling

## Enterprise Data Model

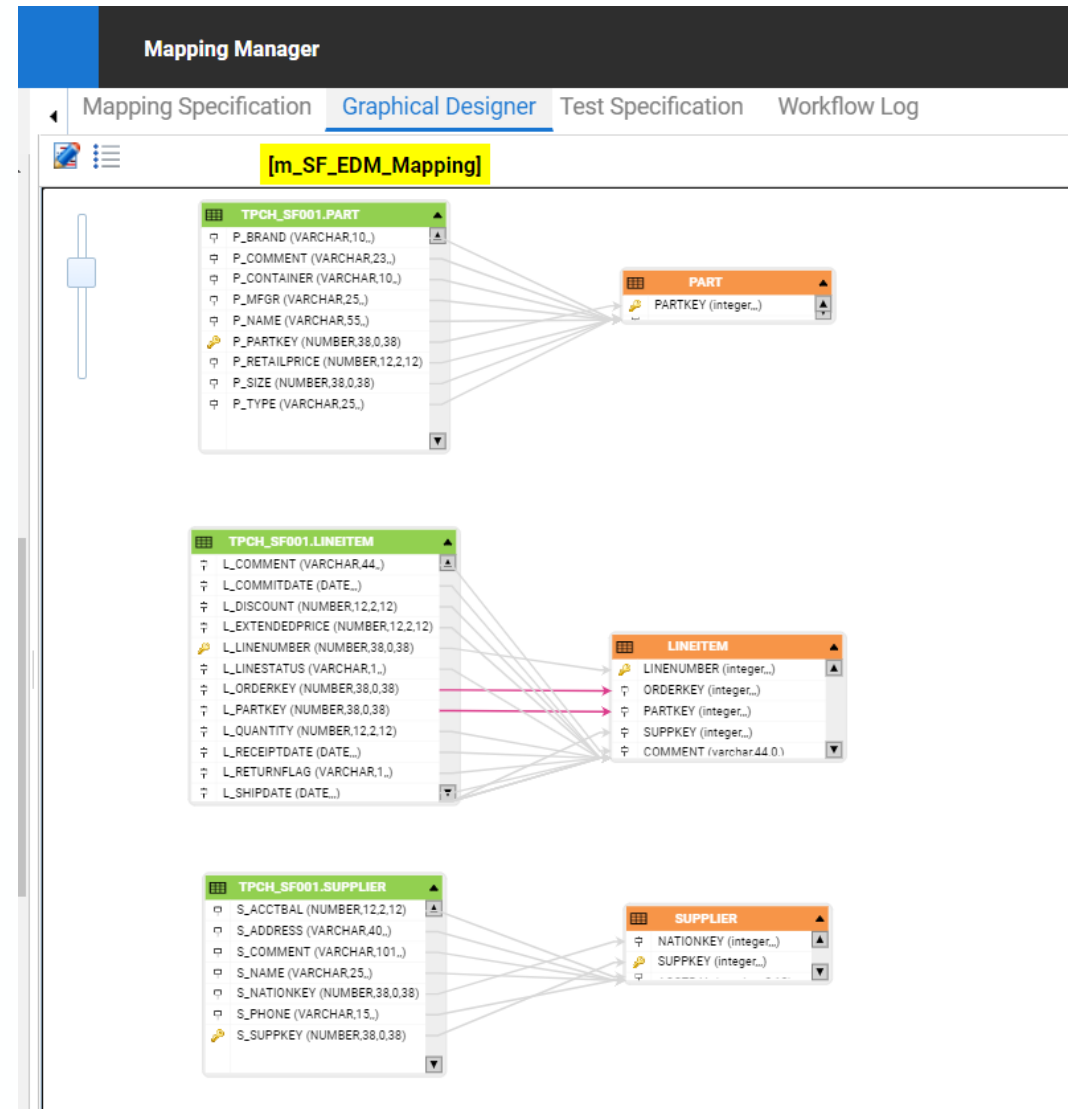
- Business-centric view
- Integrated ontology and taxonomy
- Crucial to Data Vault success
- Multiple data source mapping



# Step 2: Enterprise Data Mapping

## Bottom-up source to EDM mapping

- RDBMS metadata
- Flat file metadata
- Data lake
- Big Data
- HD file system
- Streaming data
- 3NF



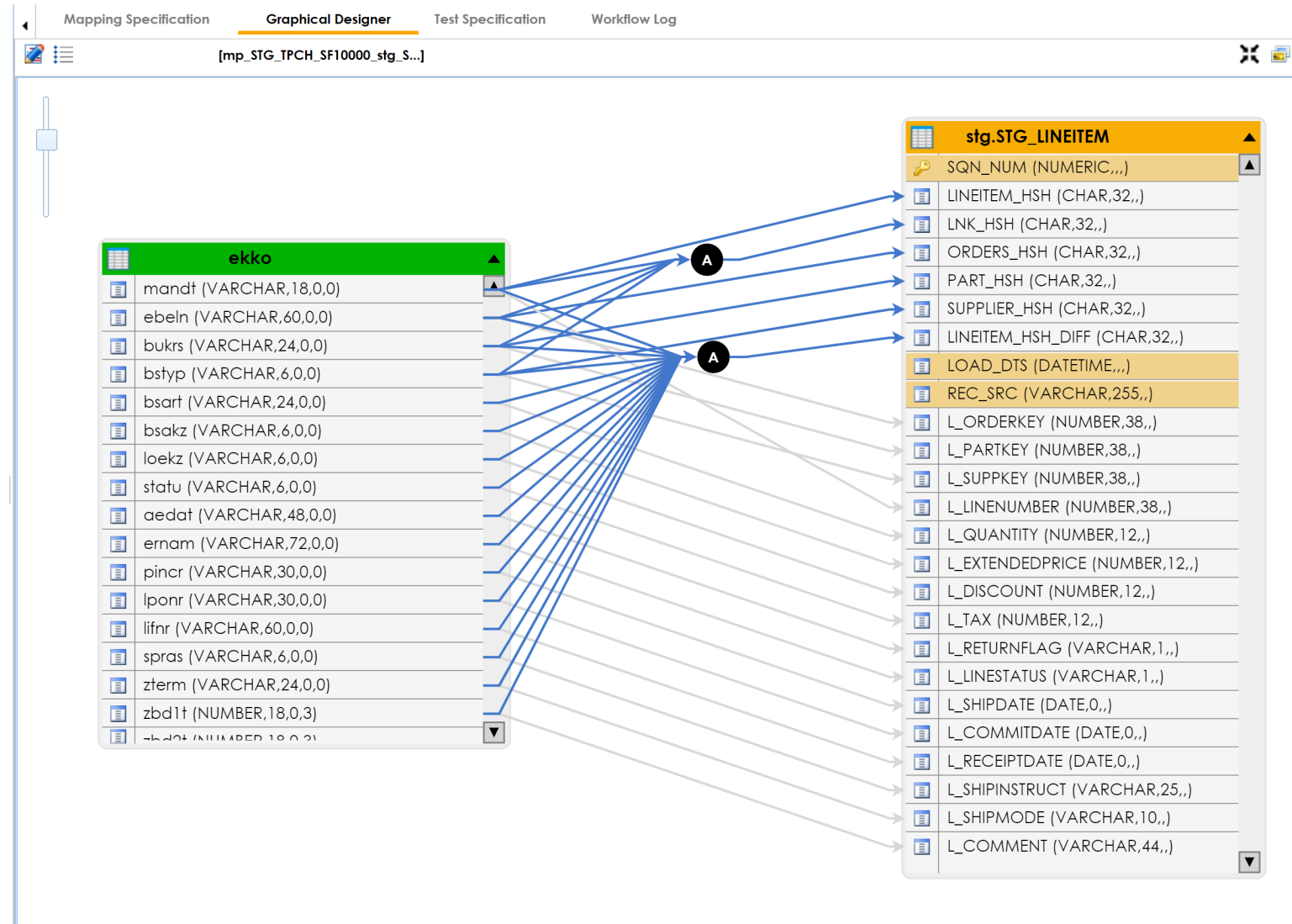


# Step 3: Generate Data Vault Entities

## erwin Smart Data Connectors for Data Vault

Generate stage and/or a raw vault

- DDL
- Metadata
- Source to target mappings
- ETL/ELT



# Step 4: Define Business Rules

## Data vault transformations

- Reusable transformation library
- Drop-down business rule application
- Wildcard implementation

Transformations					
Transformation Details					
#	Transformation Name	SSIS Pseudocode	Informatica Pseudocode	DataStage Pseudocode	Intended Use
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
1	\$HASH_DELIM	'\'			
2	\$NULL_BKEY	'-1'			
3	\$NULL_FKEY	'-2'			
4	1-DataGov(HighDate:12/31/9999)		To_date(mm/dd/yyyy,12/31/9999)		DataGovernance rule - use on all projects
5	2-DataGov(LowDate01/01/0001)		To_date(mm/dd/yyyy, 01/01/0001)		DataGovernance rule - use on all projects
6	3-DataGov(AverageChurn)		Count(active customers)/(Count of Cancelled Customers for current month)		DataGovernance rule - use on all projects where financial reports or Churn KPIs are used.
7	ABORT		ABORT(%1)		ETL Built-In Transformation: Stops the session and issues a specified error message to the session log file. When the Integration Service encounters an ABC stops transforming data at that row. It processes any rows read before the error and loads them based on the source- or target-based commit buffer block size defined for the session.
8	ABS		ABS(%1)		ETL Built-In Transformation: Returns the absolute value of a numeric value.Arguments: %1 = numeric field
9	AccountTrim	Trim(Concat(%))			

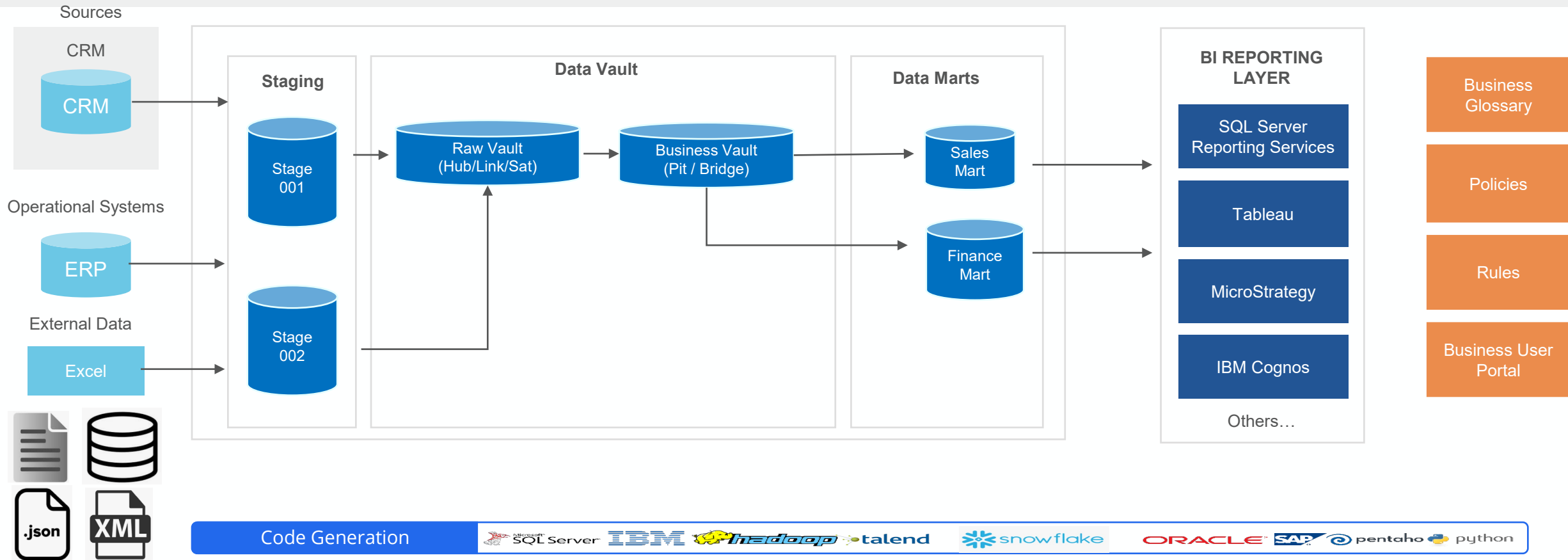
# Automating and Governing Data Vault

erwin Data Intelligence Suite

erwin Data Catalog

erwin Data Literacy

erwin Data Connectors +  
Automation Framework





# erwin Smart Data Connectors for Data Vault

## RapidDataVault\_BottomUp

- Leverage scanned tables to automatically create detailed mappings in erwin Data Intelligence Suite
- Leverage structured metadata into generating stage and raw vault layers (stage, hub, link, satellite)

## RapidDataVault\_TopDown

- Leverage source to EDM mappings to create Data Vault mappings and metadata in erwin Data Intelligence Suite
- Leverage structured metadata into generating stage and raw vault layers (stage, hub, link, satellite)

## RapidDataVault\_DDL

- Leverage generated Data Vault metadata into fully functional and customizable DDL statements

## RapidDataVault\_ETL

- Leverage generated Data Vault mappings into fully functional ETL/ELT processes

# erwin Smart Data Connectors for Data Vault Capabilities



- Auto-identification of assigned business keys and foreign key relationships
- Auto-generation of hash key and hash difference calculations with lineage
- Auto-generation of timestamp and record source fields
- Flexibility of incorporating additional derived columns
- Flexible naming conventions for all Data Vault tables and derived columns
- Tool-agnostic DDL generation
- Tool-agnostic ETL/ETL orchestration and generation

Lineage Report- Forward



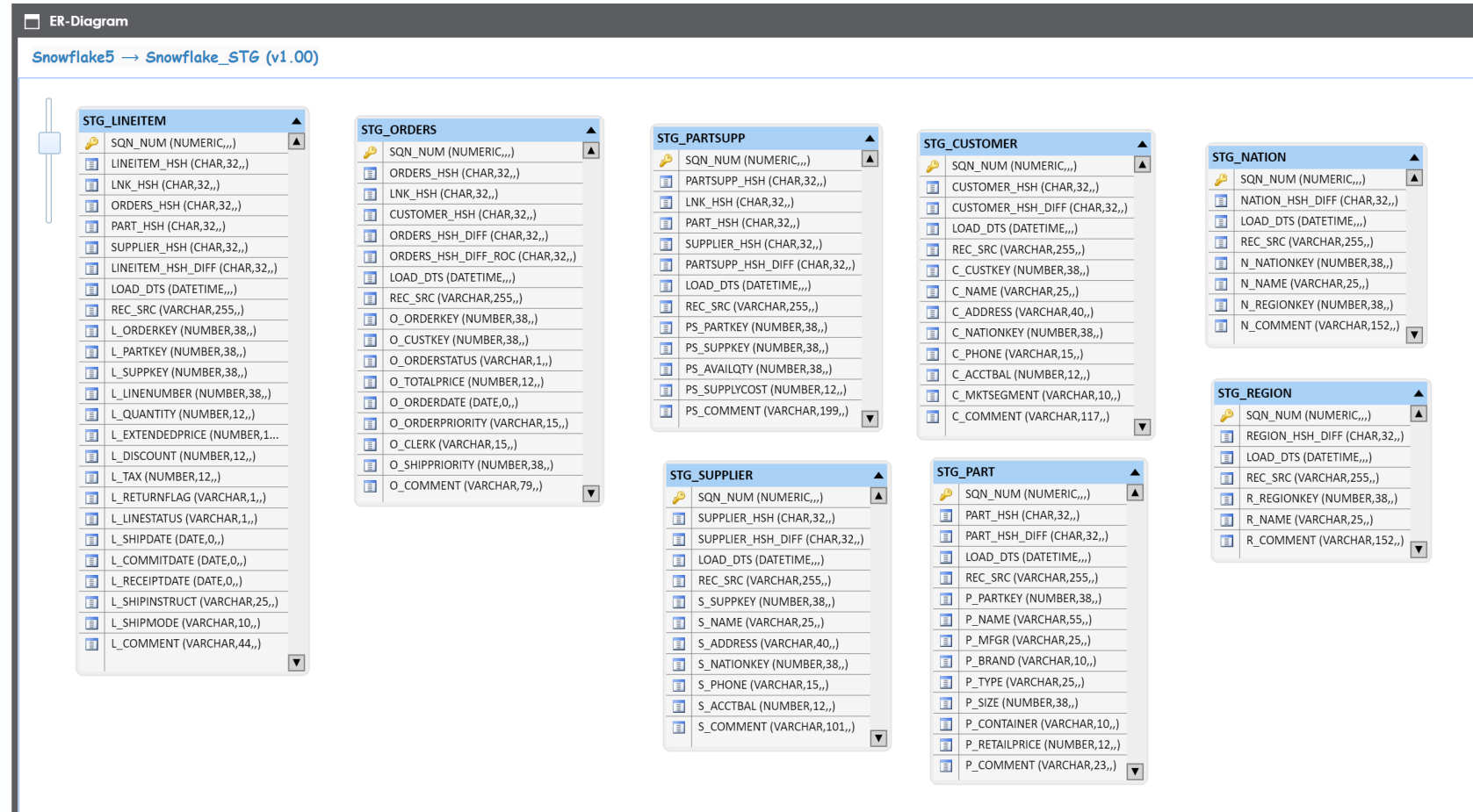
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# Data Vault Staging Layer

- Auto-identify hub, link and link hub hash key given business and foreign key relationships
- Default behavior for generated full hash row and multiple hash differences for split satellites
- Automatic derivation of load date and record source fields
- Options to derive sequence number, load end date, batch ID, multi-tenant ID, business key collision code and bit wise security code





# Thank You

[WWW.ERWIN.COM](http://WWW.ERWIN.COM)

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Thank You

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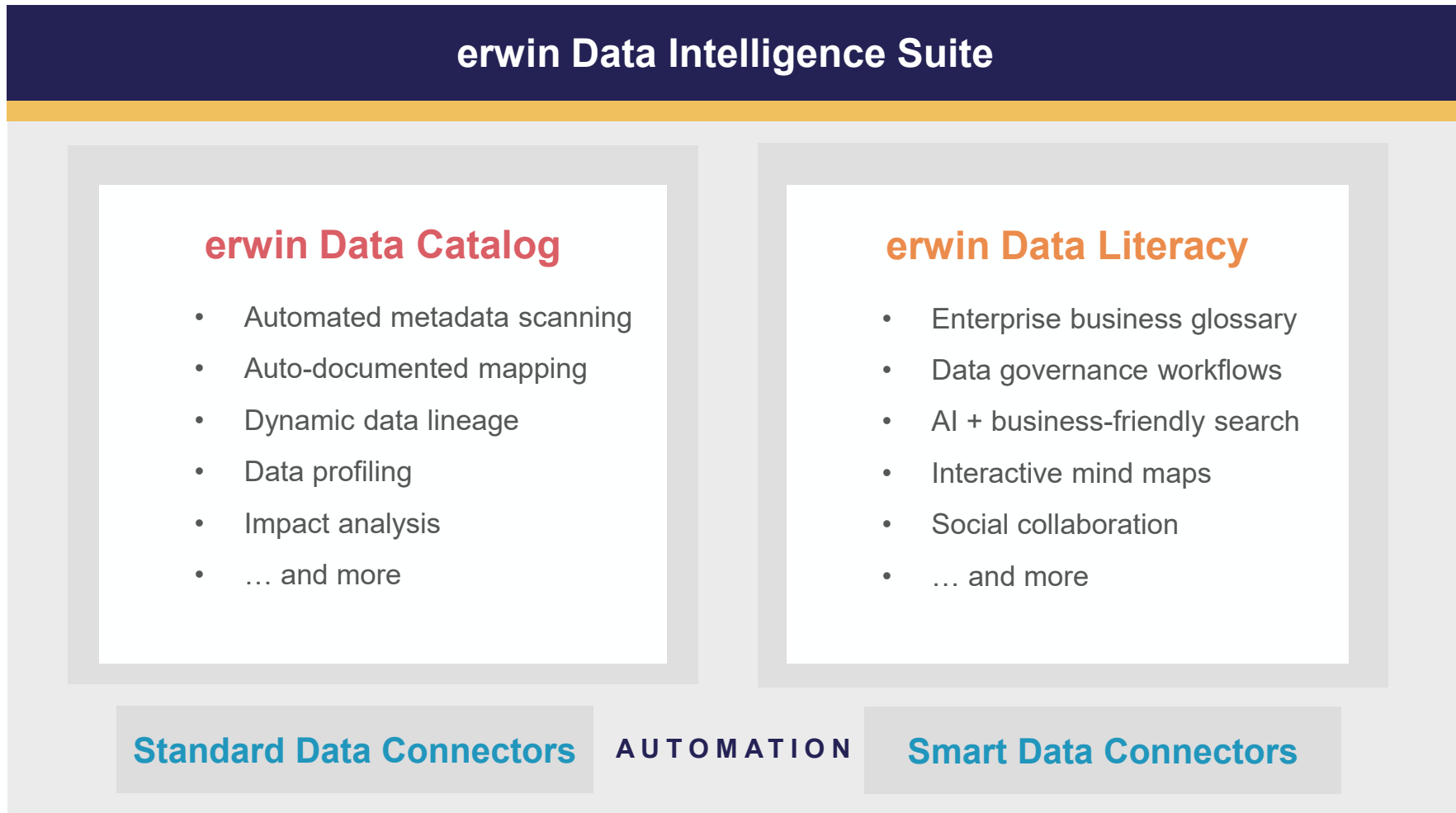
# More erwin Data Intelligence Slides

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# erwin Data Intelligence Suite



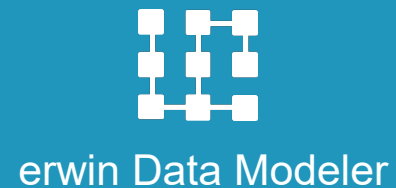
Combines data cataloging and data literacy capabilities to support both IT and business needs, delivering enterprise data governance and business enablement.





# erwin Enterprise Modeling & Data Intelligence Software

## Enterprise Modeling Suites



## Data Intelligence Suite

### erwin Data Catalog

Mapping Manager

Reference Data  
Manager

Lifecycle  
Manager

### erwin Data Literacy

Business Glossary Manager  
with AIMatch

Business User Portal

### Data Automation

Standard Data Connectors

Smart Data Connectors