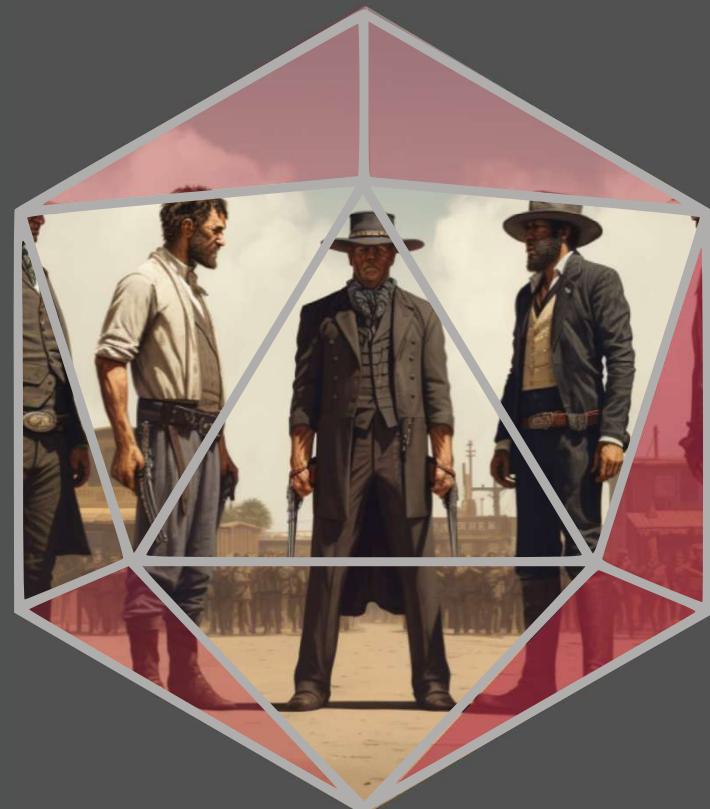




ADVANCING
ANALYTICS

Data Modelling Showdown

Unravelling the mysteries of Different
Data Modelling Approaches



ABOUT ME



Ust Oldfield (he/him)

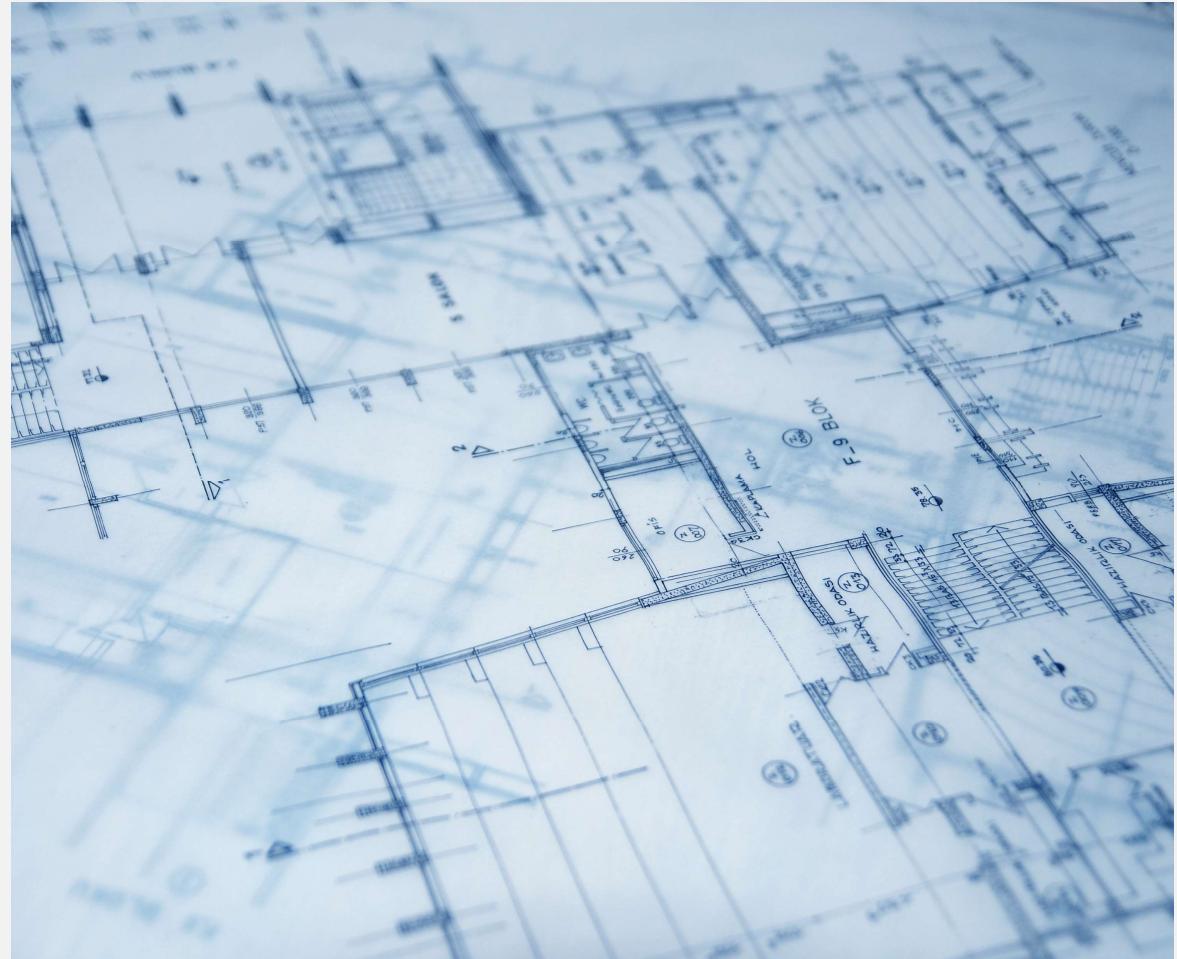
Head of Analytics



EVERYTHING, EVERYWHERE, ALL AT ONCE



WHAT IS A DATA MODEL?



NOUNS AND VERBS



Customer Buys a Product
Employee Orders Stock
Company Manufactures a Product

ARE ALL MODELS EQUAL?



ARE ALL MODELS EQUAL?



ARE ALL MODELS EQUAL?



FOUR PERSPECTIVES TO MODEL

User, Conceptual, Logical & Physical



USER MODEL

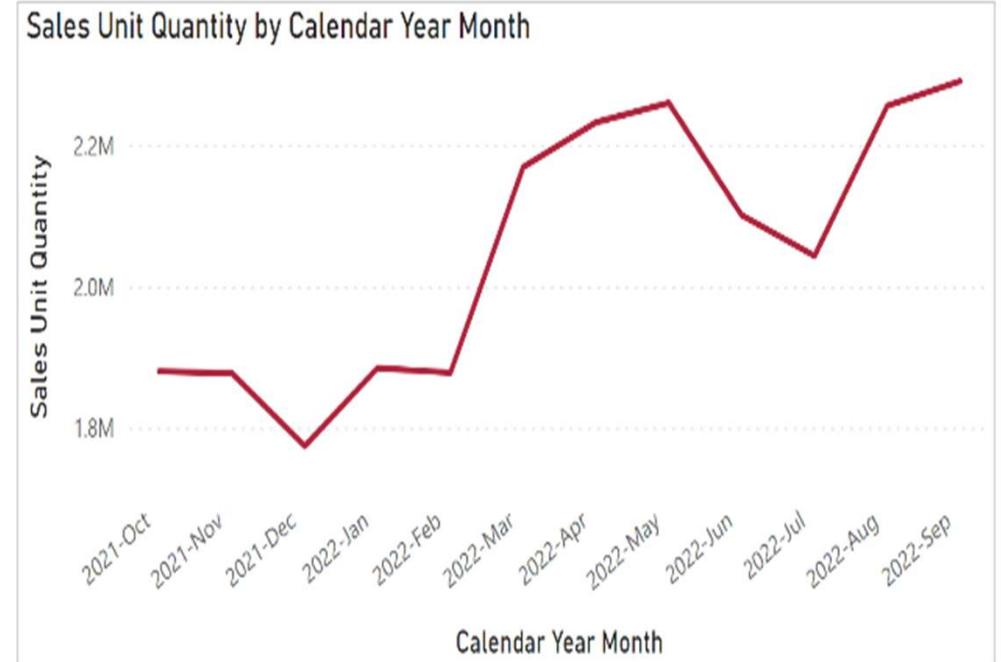
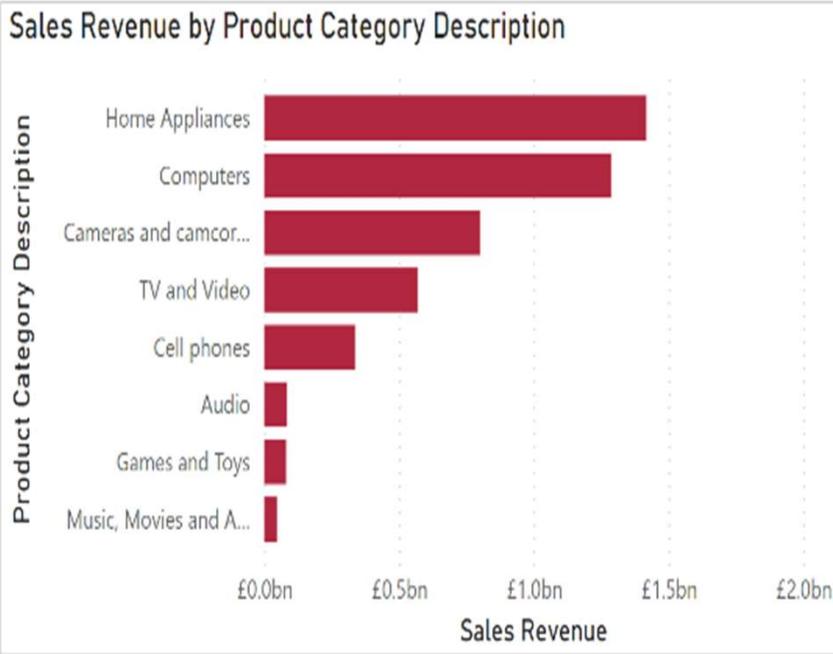


Traditional

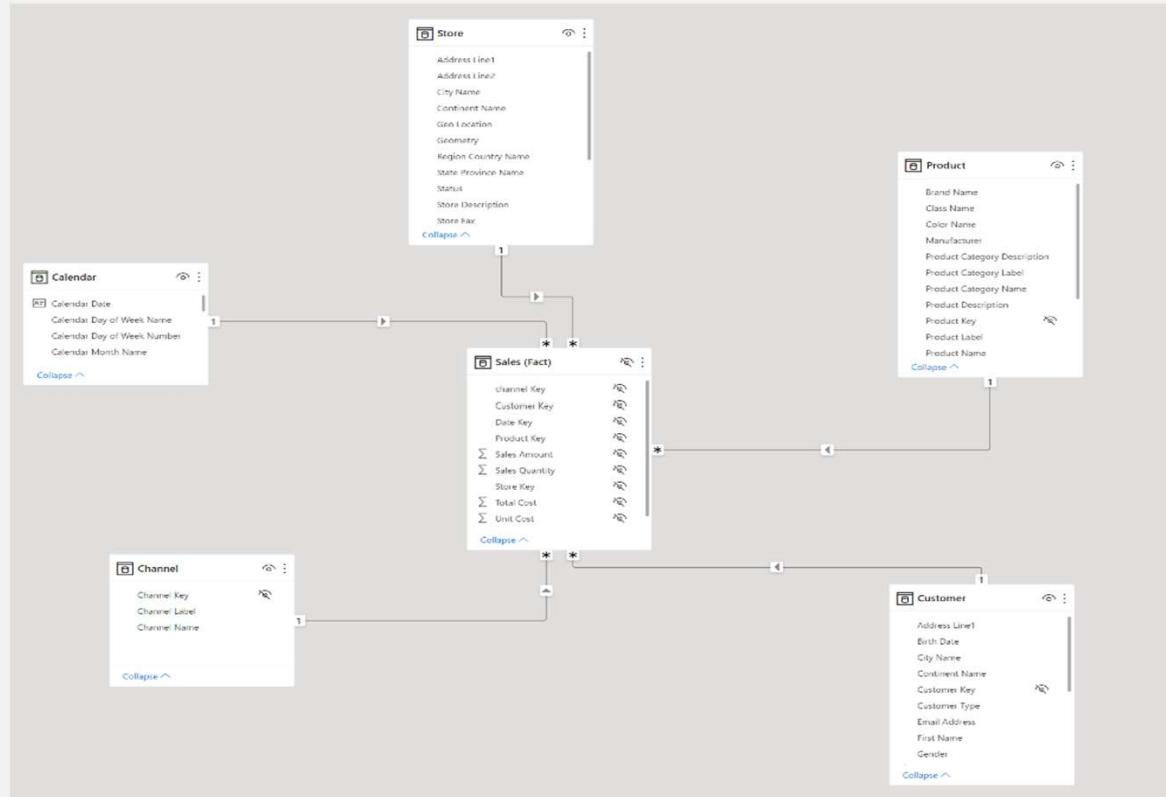
Brand Name	Product Category Description	Sales Revenue	Sales Unit Quantity
Fabrikam	Cameras and camcorders	£487,526,342	883,067
Contoso	Home Appliances	£409,170,649	882,783
Litware	Home Appliances	£385,483,883	1,573,761
Wide World Importers	Computers	£330,211,537	695,956
Adventure Works	Computers	£320,481,334	702,509
Proseware	Computers	£309,664,690	1,187,117
Fabrikam	Home Appliances	£269,066,882	696,947
The Phone Company	Cell phones	£215,784,039	821,932
A. Datum	Cameras and camcorders	£200,888,455	824,994
Adventure Works	TV and Video	£166,734,817	322,470
Contoso	Computers	£153,596,659	1,384,550
Litware	TV and Video	£151,118,320	292,627
Fabrikam	Computers	£145,913,491	262,156
Southridge Video	TV and Video	£126,161,992	494,359
Total		£4,623,947,002	24,648,387

USER MODEL

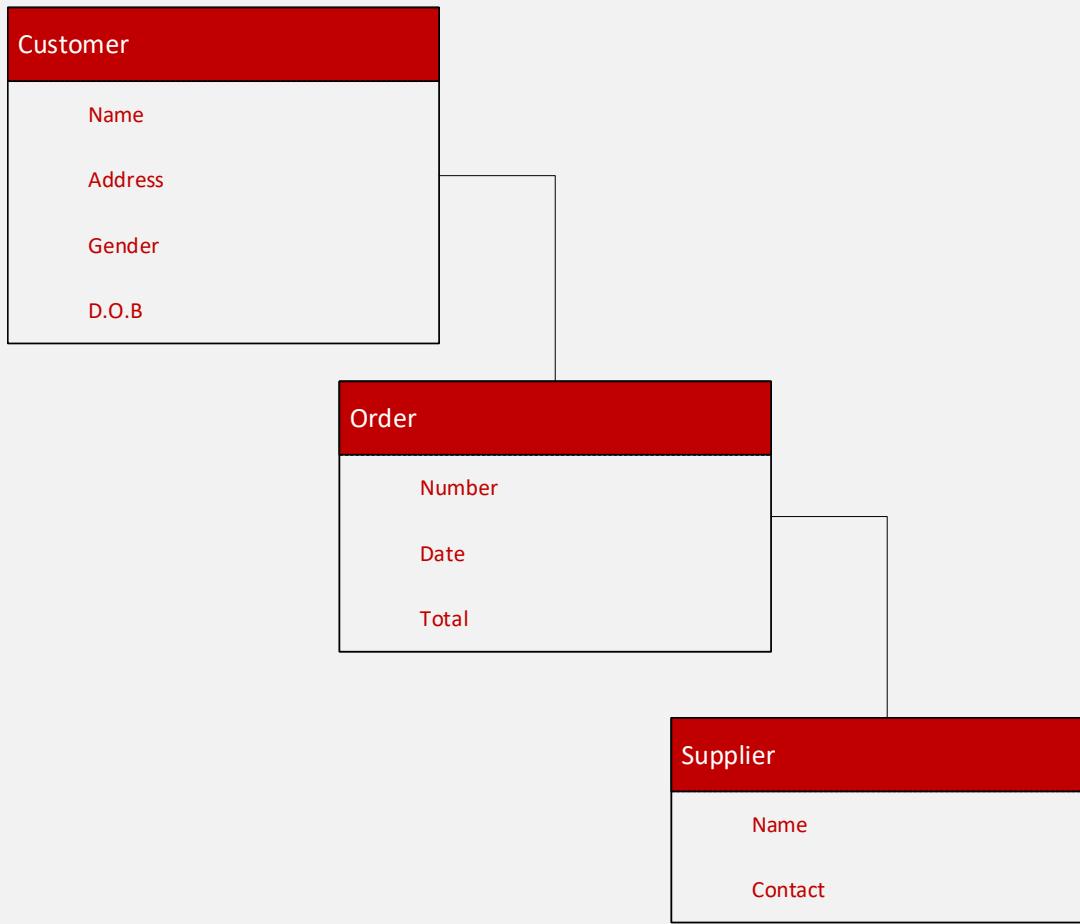
Enhanced



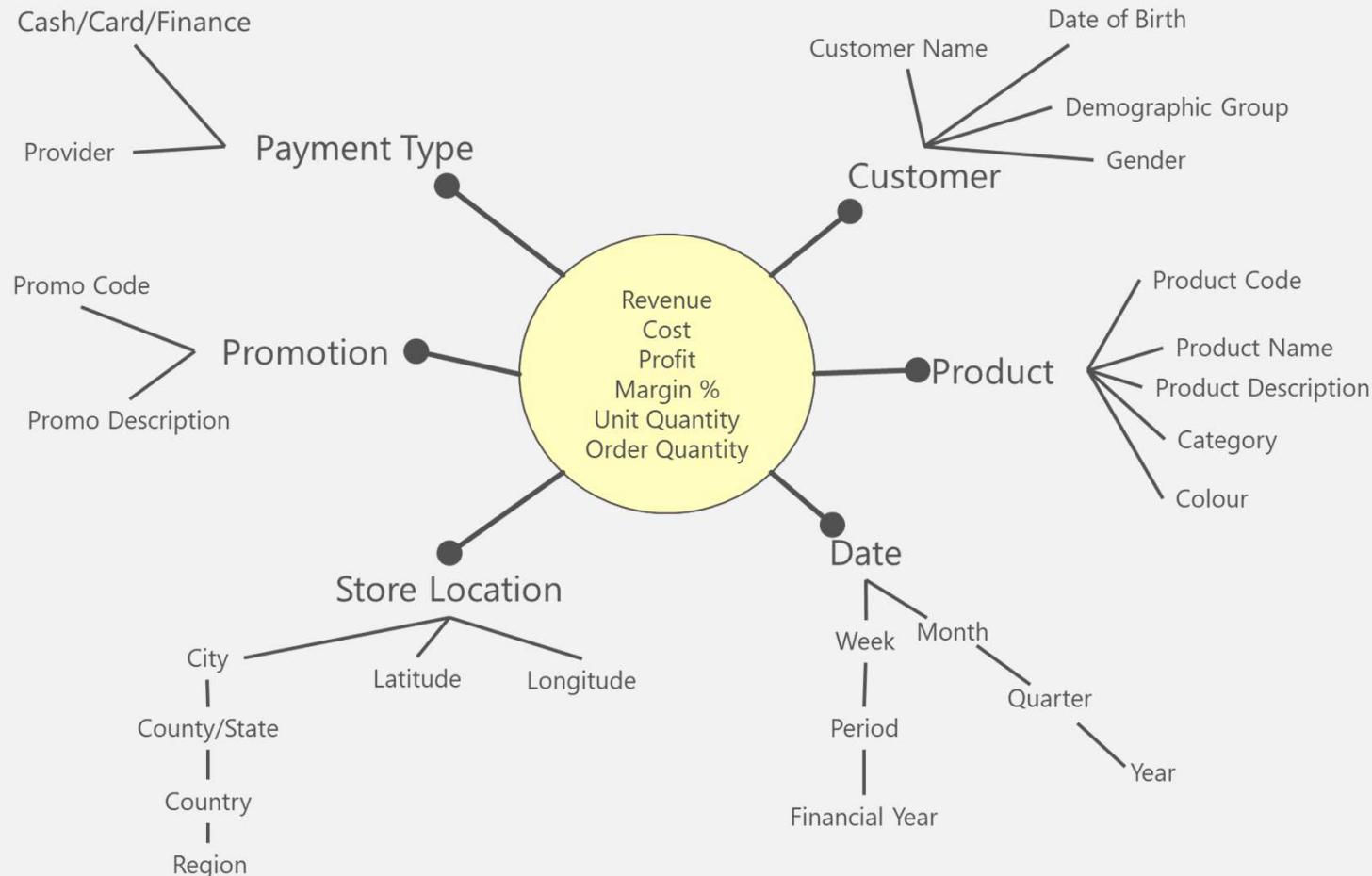
PHYSICAL MODEL



LOGICAL MODEL



CONCEPTUAL MODEL



WHAT IS A TRAIN?

- Made up of rolling stock – carriages and an engine
- 12:09 from Gare du Nord to St Pancras
- Today's 12:09 from Gare du Nord to St Pancras
- Marketing concept e.g. Orient Express



The Showdown





DATA VAULT



GRAPH





DIMENSIONAL



Star Schema
Snowflake



ENTITY CENTRIC



ONE BIG TABLE



WHEN TO CONSIDER WHICH MODELLING APPROACH



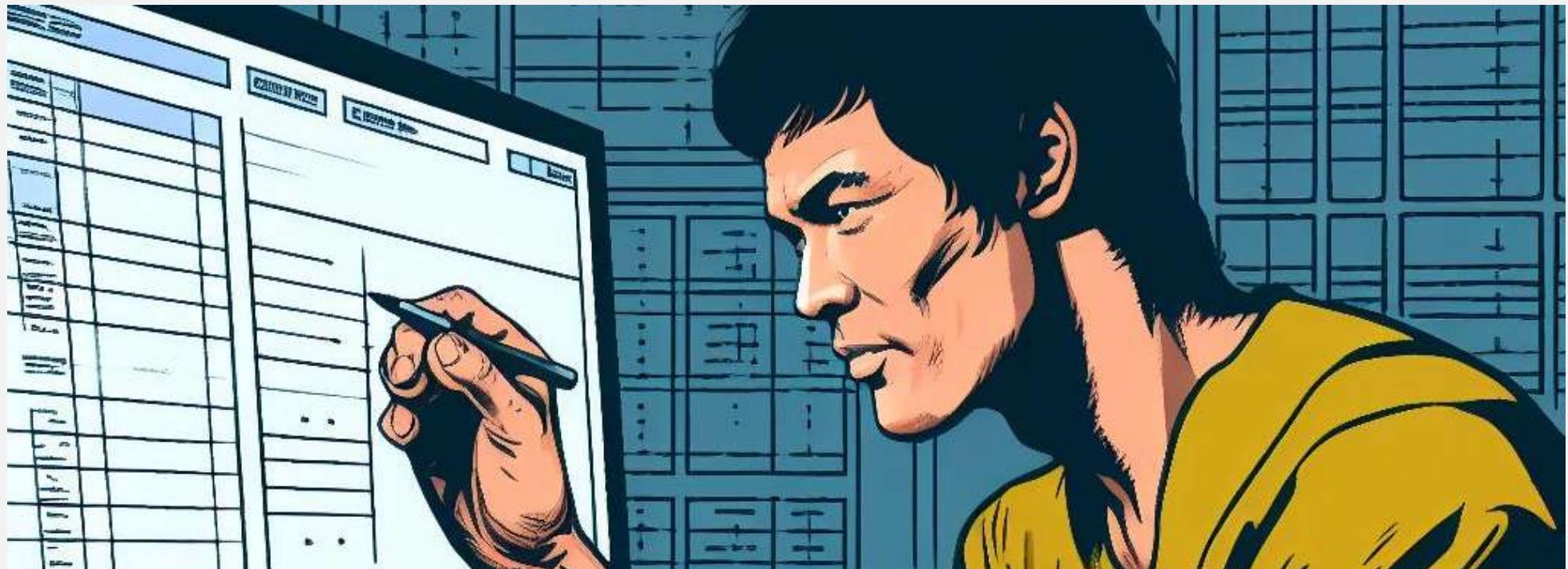
Scenario	Dimensional	Data Vault	Graph	One Big Table	Entity Centric
Change Tracking	✓	✓	✓		
Detailed Change Tracking		✓			
Simplified Queries	✓			✓	✓
Complex Relationships		✓	✓		
Complex Hierarchies	✓	✓	✓		
Performance & Scalability	✓	✓		✓	✓
Ad-hoc Analysis & Reporting	✓				
Data Analytics	✓			✓	✓
Consistency	✓	✓			
Ease of Maintenance	✓				✓
Separation of Business Rules		✓			
Geospatial Analysis	✓		✓		

THE VICTOR



MIXED MODEL ARTS

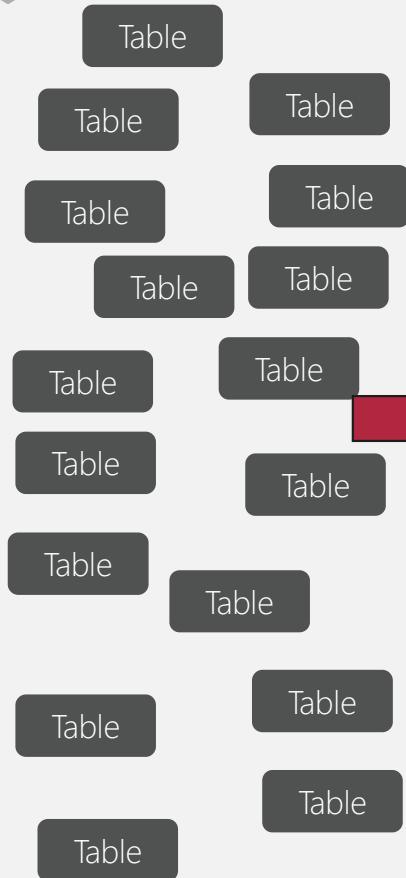
For when one approach doesn't satisfy all use cases



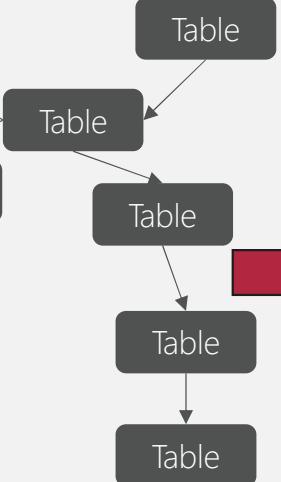
PRACTICAL MIX & MATCH



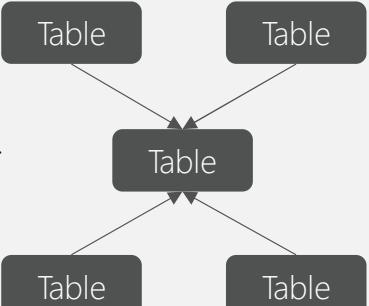
Incoming from Source



Data Vault Modelled



Dimensional Modelled

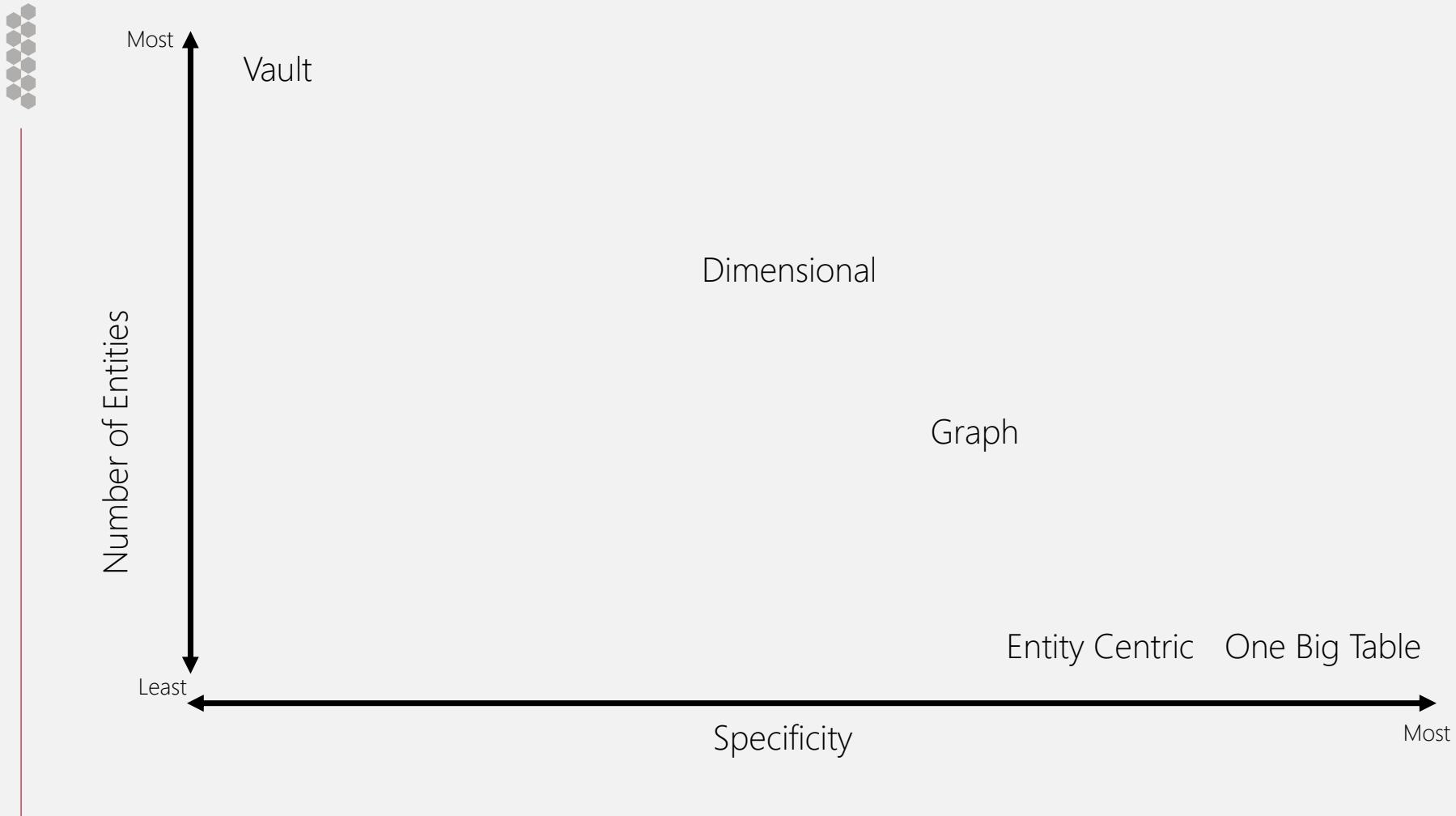


Niche Modelled



Entity

GENERIC TO SPECIFIC



DESIGNING A MODEL

In an Agile manner



WHAT IS BEAM*?



Agile Data Warehouse Design

*Collaborative Dimensional Modeling,
from Whiteboard to Star Schema*

Lawrence Corr
with Jim Stagnitto



THE 3 D's



Discover, Describe, Document



THE 7 W's

WHO

WHAT

WHERE

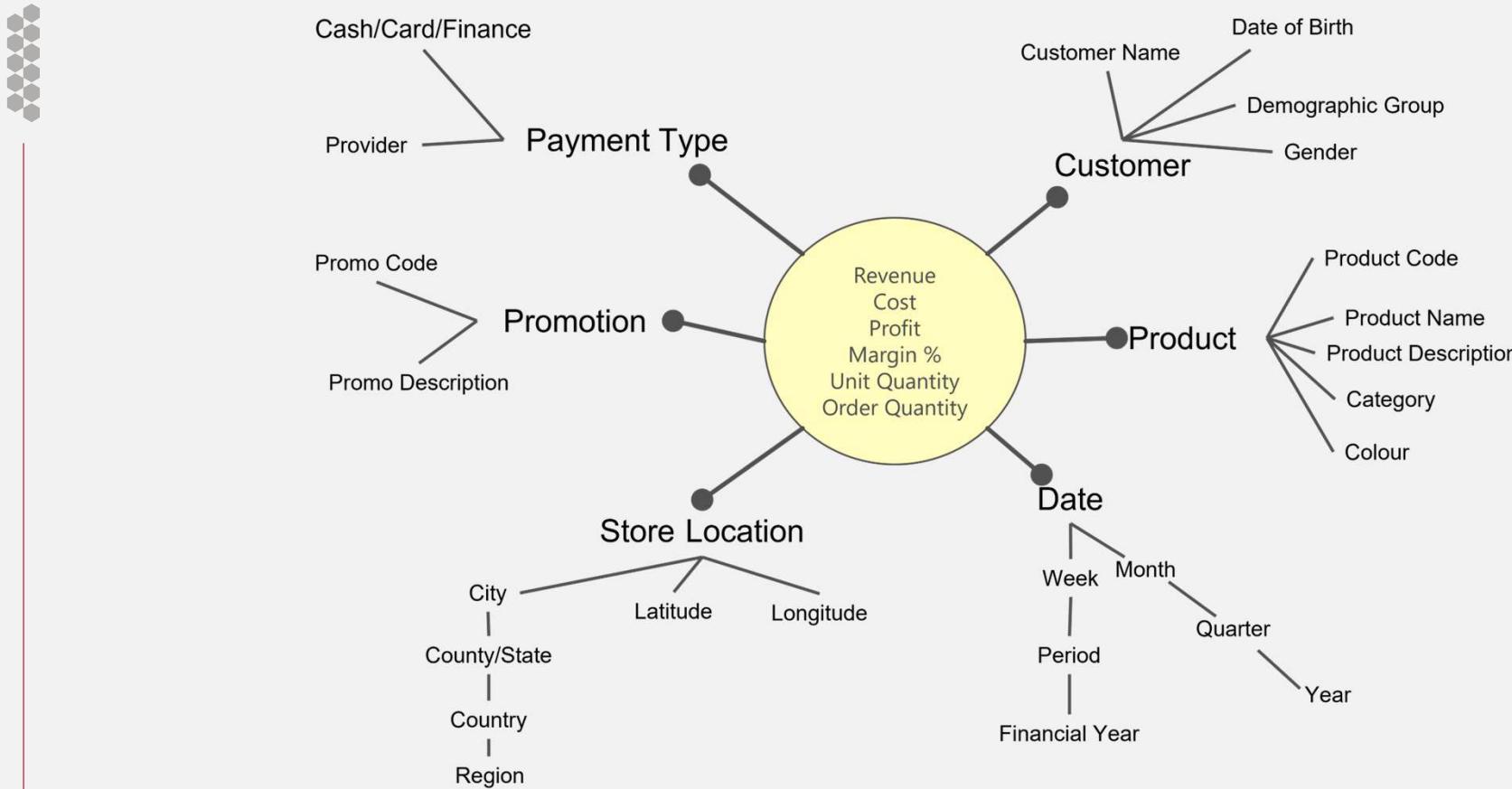
WHEN

WHY

HOW

HOW MANY

WHAT IS SUN MODELLING?

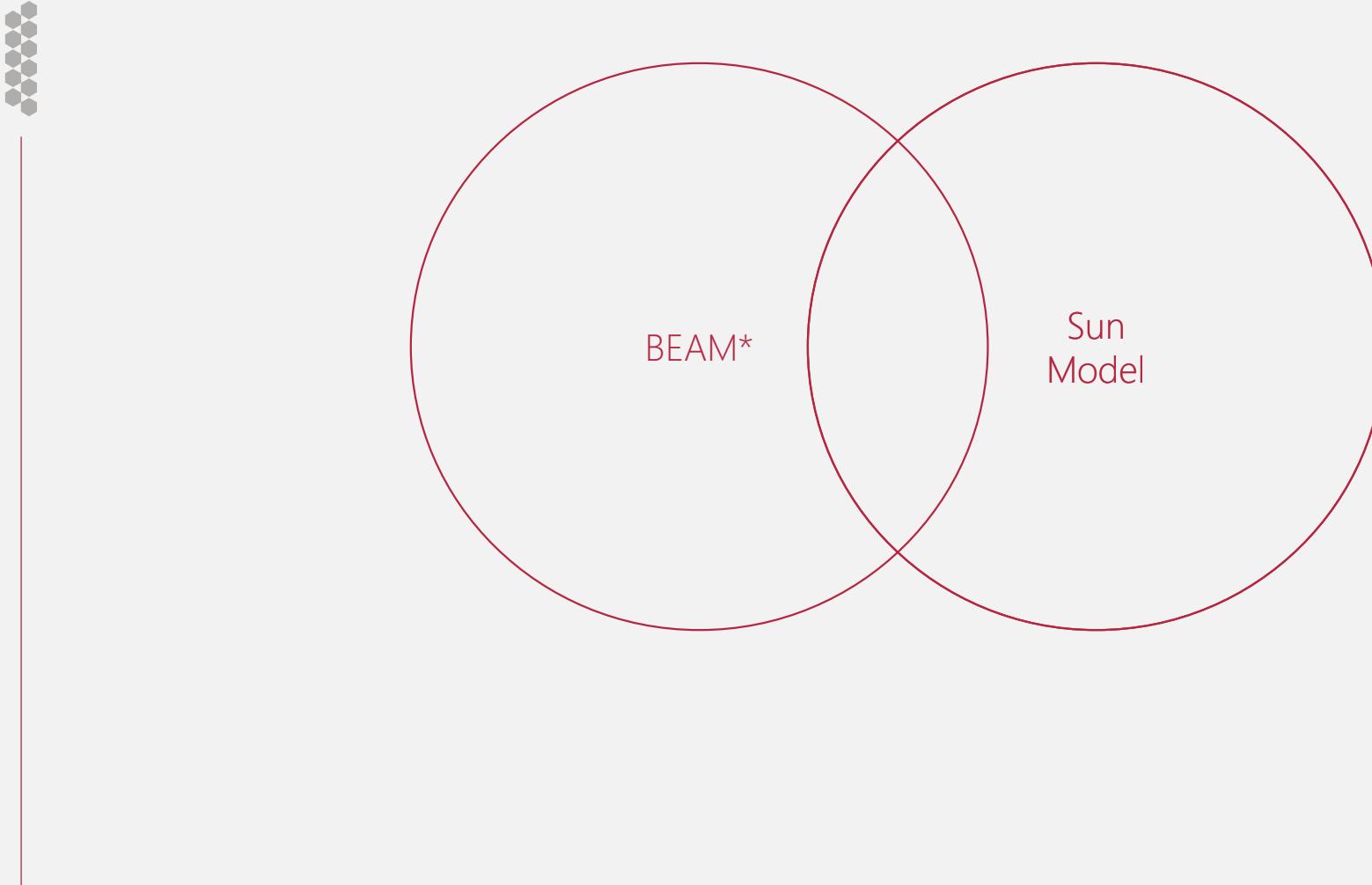




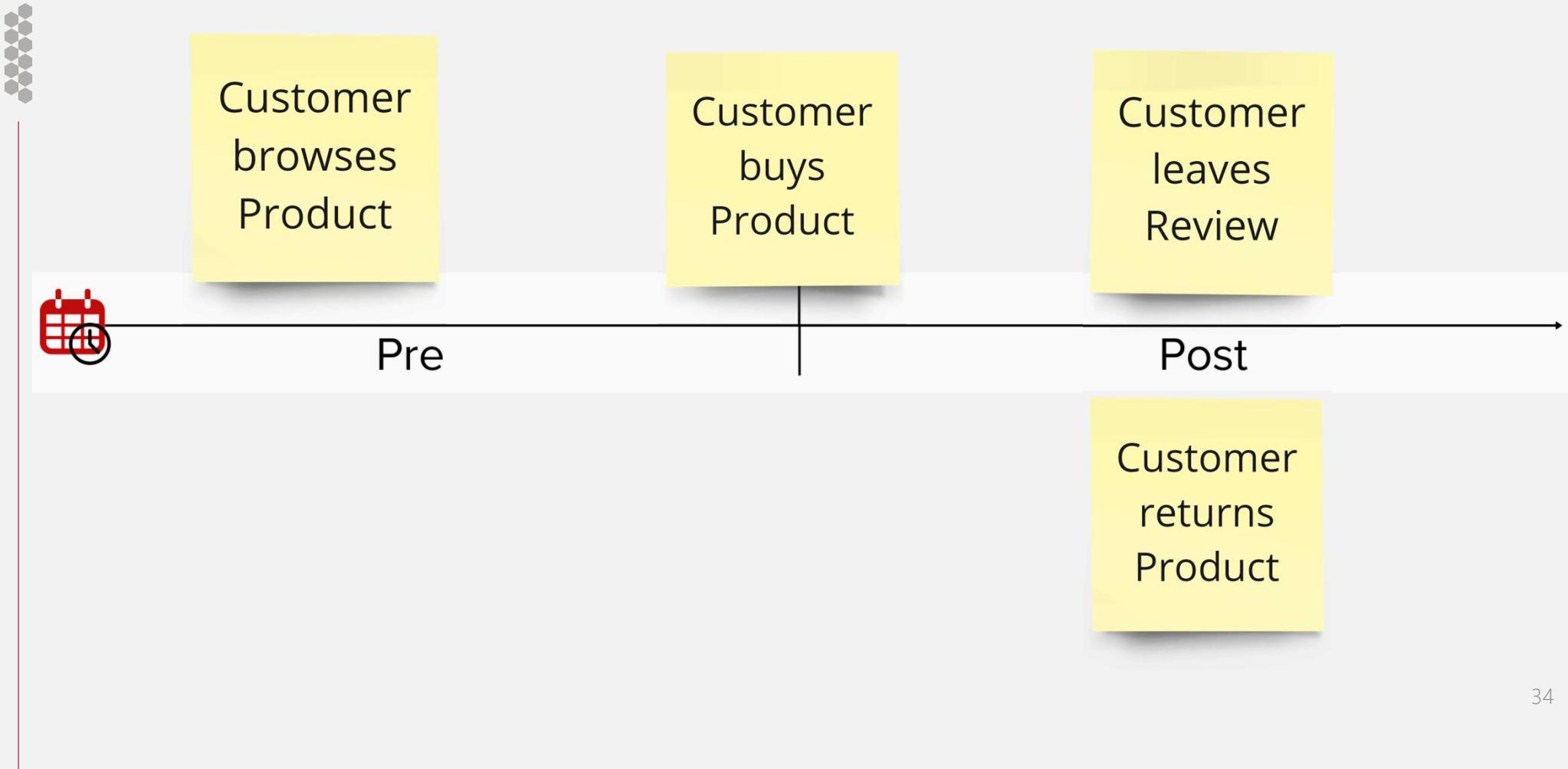
SUNBEAM



WHAT IS SUNBEAM?



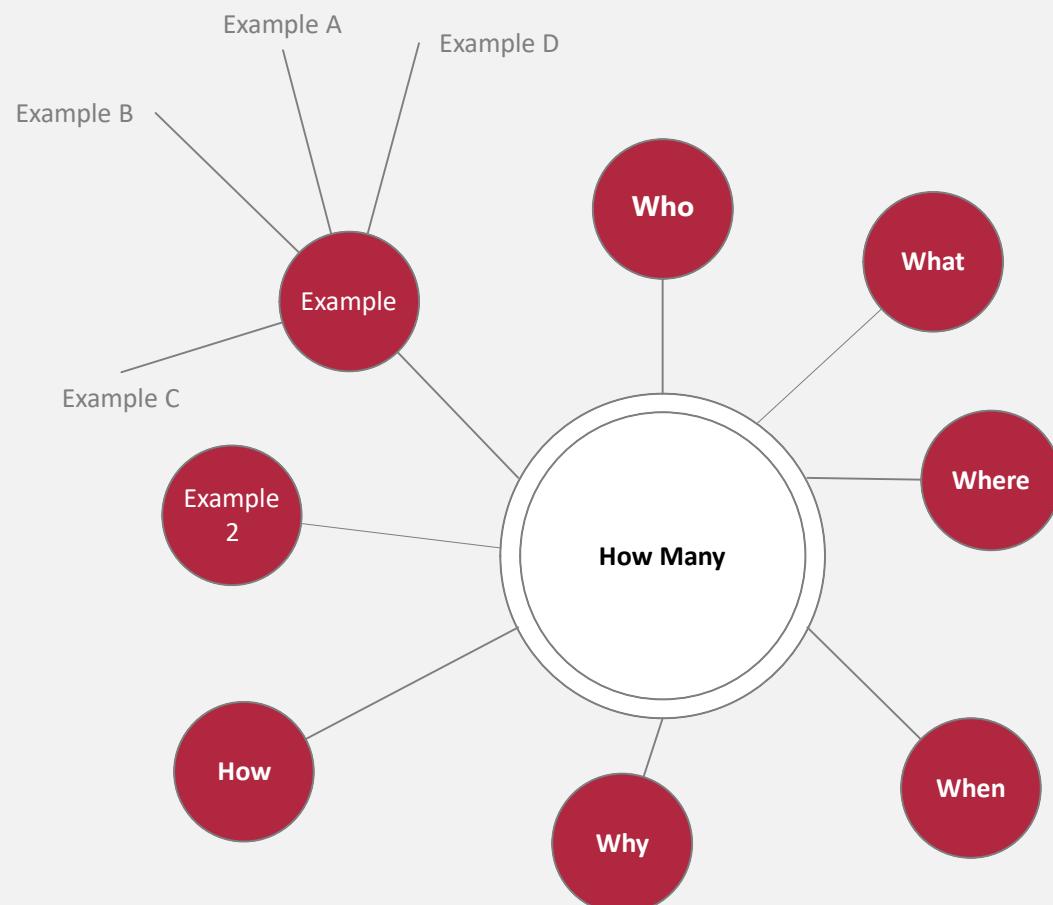
EVENT IDENTIFICATION



WHAT IS SUNBEAM?



- HOW MANY
- WHO
- WHAT
- WHERE
- WHEN
- WHY
- HOW
- HOW OFTEN



CUSTOMER BUYS PRODUCT

HOW MANY

WHO

WHAT

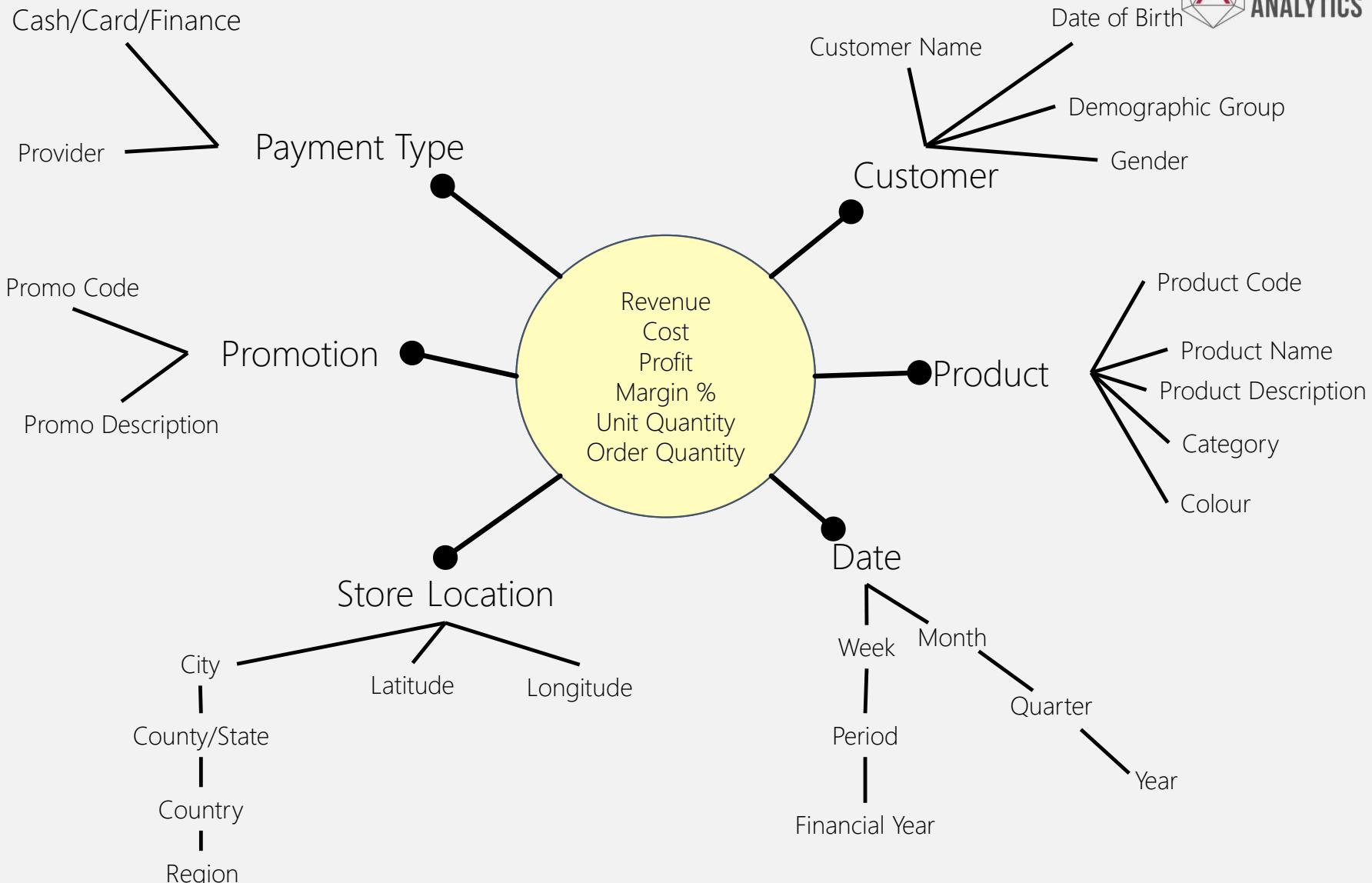
WHERE

WHEN

WHY

HOW

HOW OFTEN



TIPS & TRICKS



THE 3 D's



Discover, Describe, Document

Who Does What?

Use the 8 Ws

Sun Modelling



REDUCE, REUSE, RECYCLE

50%

Of a data model will follow
generic patterns



- 25% will follow industry patterns
- 25% will be unique to an org

ANALYTICAL DATA PRODUCTS

And data models



PRODUCT ATTRIBUTES



DEFINING ANALYTICAL DATA PRODUCTS



A domain-bound set of data services, including the underlying infrastructure & code to produce/maintain

It Is:

- A Data Model
- A Reporting Table
- An ML Model

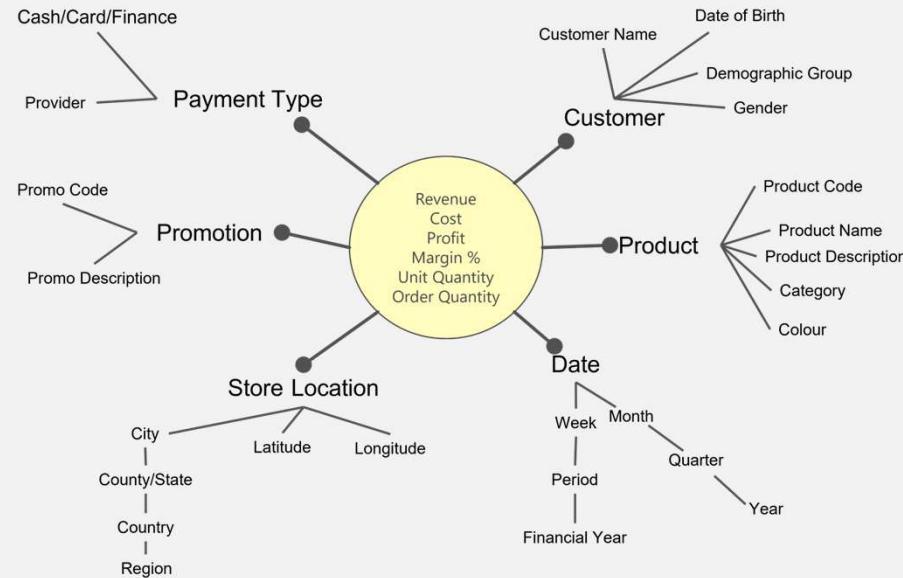
It is NOT:

- A Dashboard
- An Application
- An Entire Data Warehouse / Lake

SunBeam and Analytical Data Products



SunBeam



Analytical Data Products



ASKING QUESTIONS

Of the Conceptual Data Model



Here is your footer/title



DRIVING ACTION

From User Questions



Here is your footer/title



Concept

And data models

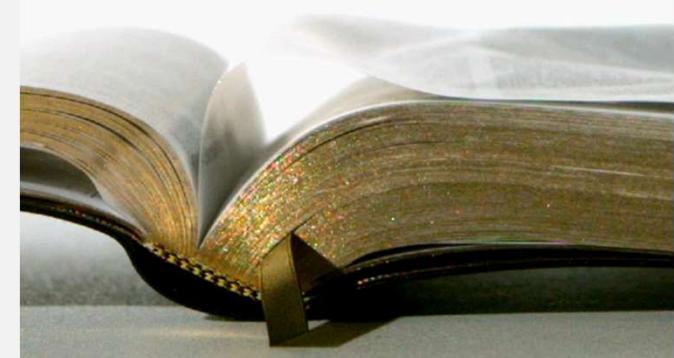


FURTHER READING



To get your brain juices flowing

- [Agile Data Warehouse Design - Corr & Stagnitto \(2011\)](#)
- [The Data Warehouse Toolkit – Kimball & Ross \(2013\)](#)
- [The Nimble Elephant – Giles \(2012\)](#)
- [Building a Scalable Data Warehouse with Data Vault – Linstedt & Olschimke \(2015\)](#)
- [Introduction to SunBeam – Bloye \(2023\)](#)
- [Data Vaulting: From a Bad Idea to Inefficient Implementations – TIMi \(2022\)](#)
- [Data Products For Dummies – Mohan, Adams & Mullen \(2023\)](#)



THANK YOU

