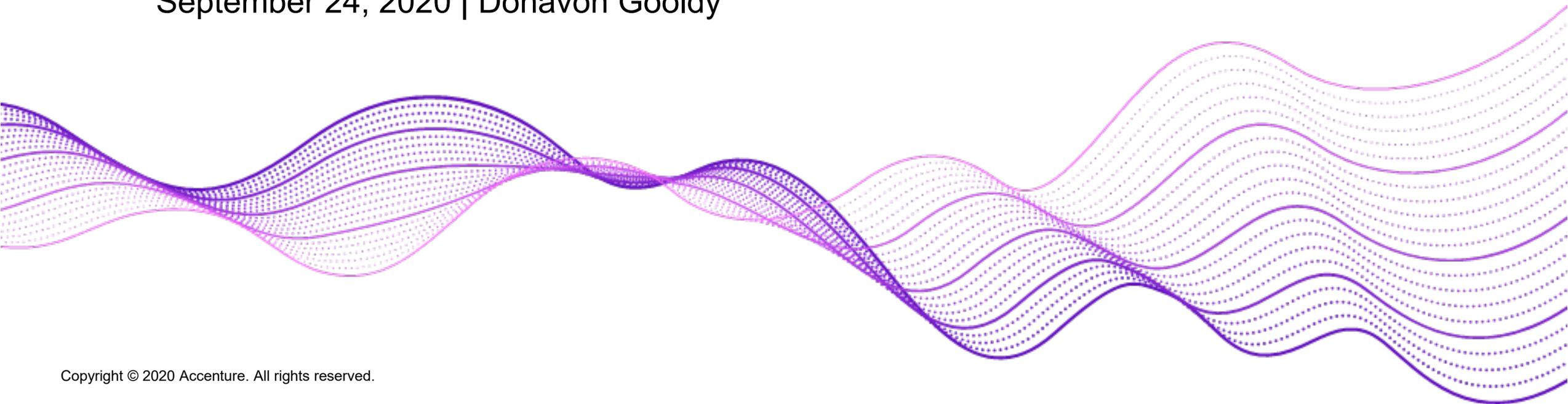


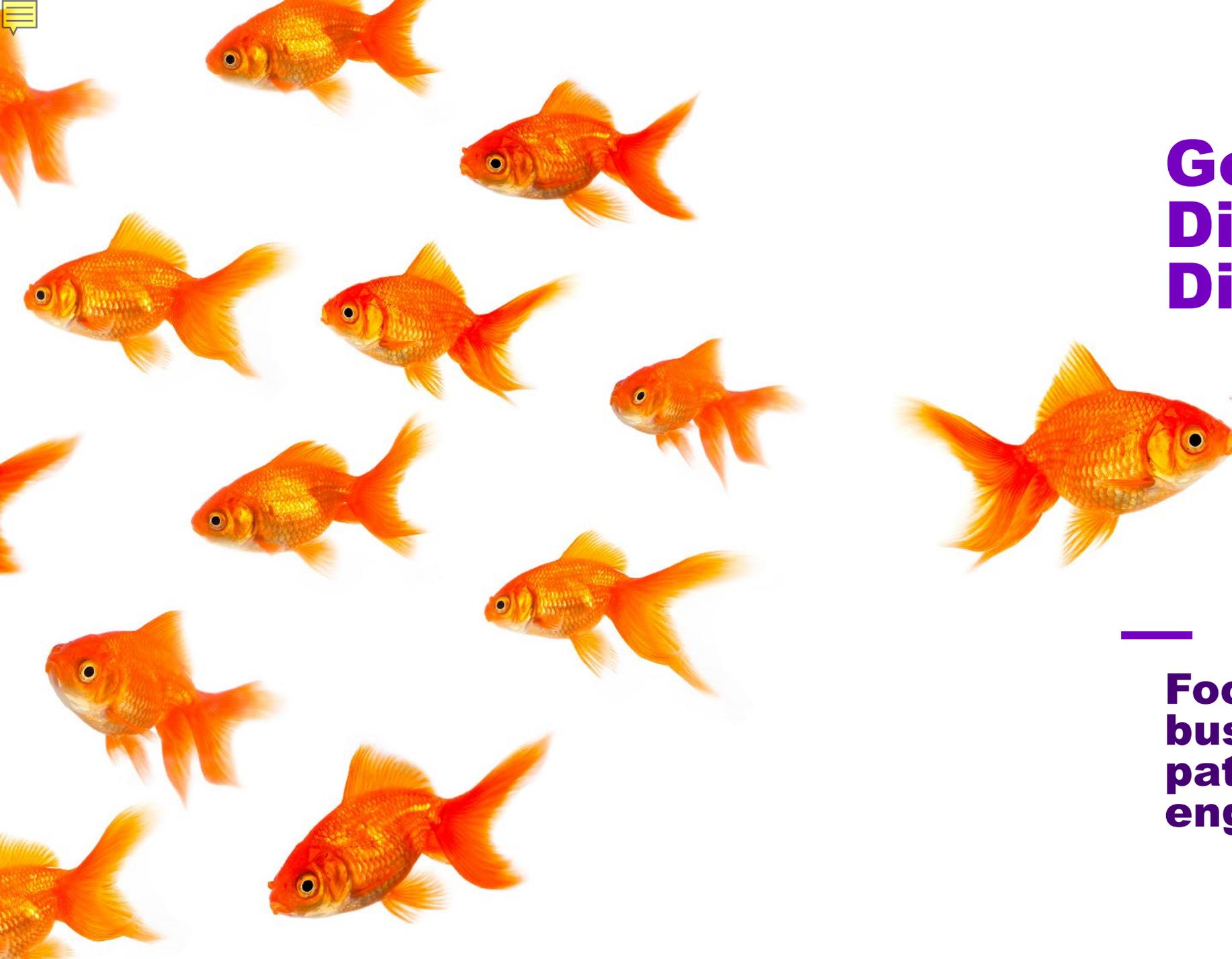


# Business Architecture Modeling

**Foundation for Data Architecture and Data Governance**

September 24, 2020 | Donavon Gooldy





# Going a Different Direction



**Focusing on data's  
business architecture  
pattern instead of  
engineering**



# Agenda

**01**  
Introduction

**02**  
Guiding  
Principles

**03**  
Planning  
Analytics /  
Consumption

**04**  
Creating Data  
Solutions

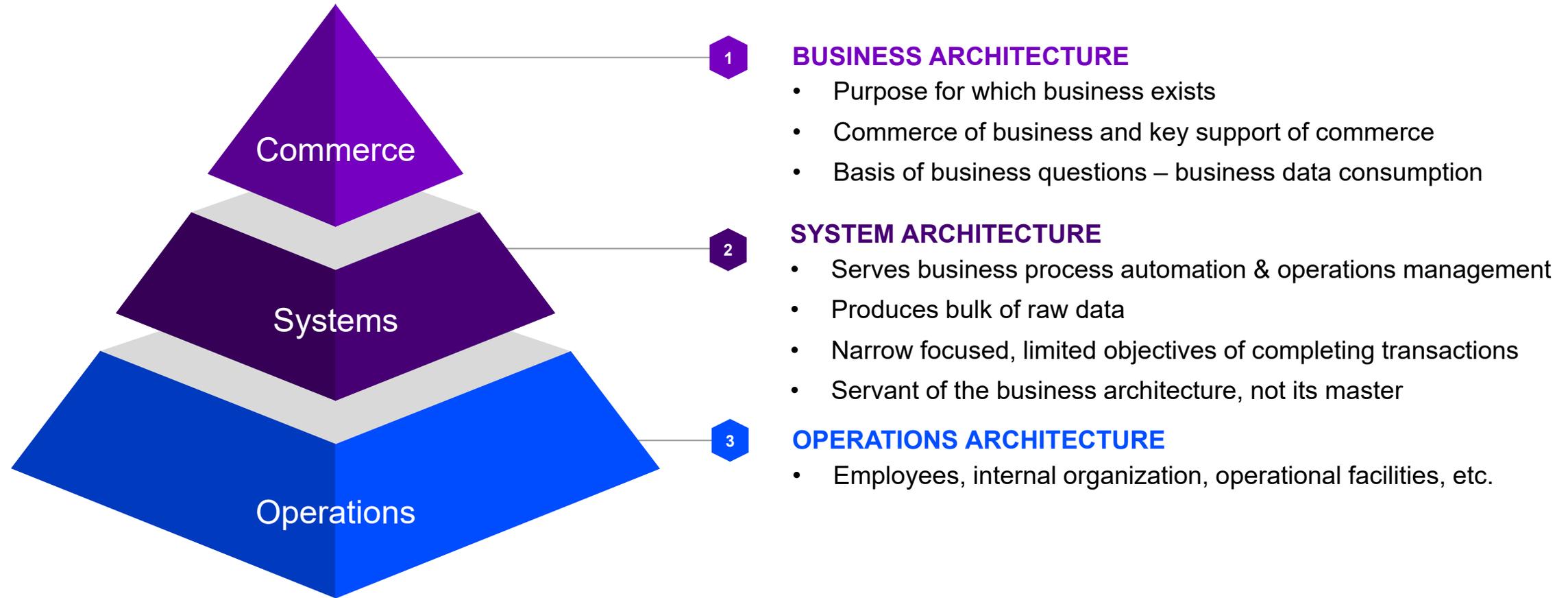


# Introduction

What we model, why we model, how we model

# Three Architecture Levels of Business

What we Model - Target the right architecture





# Business Architecture

## What we model - Common foundation for architecture and governance

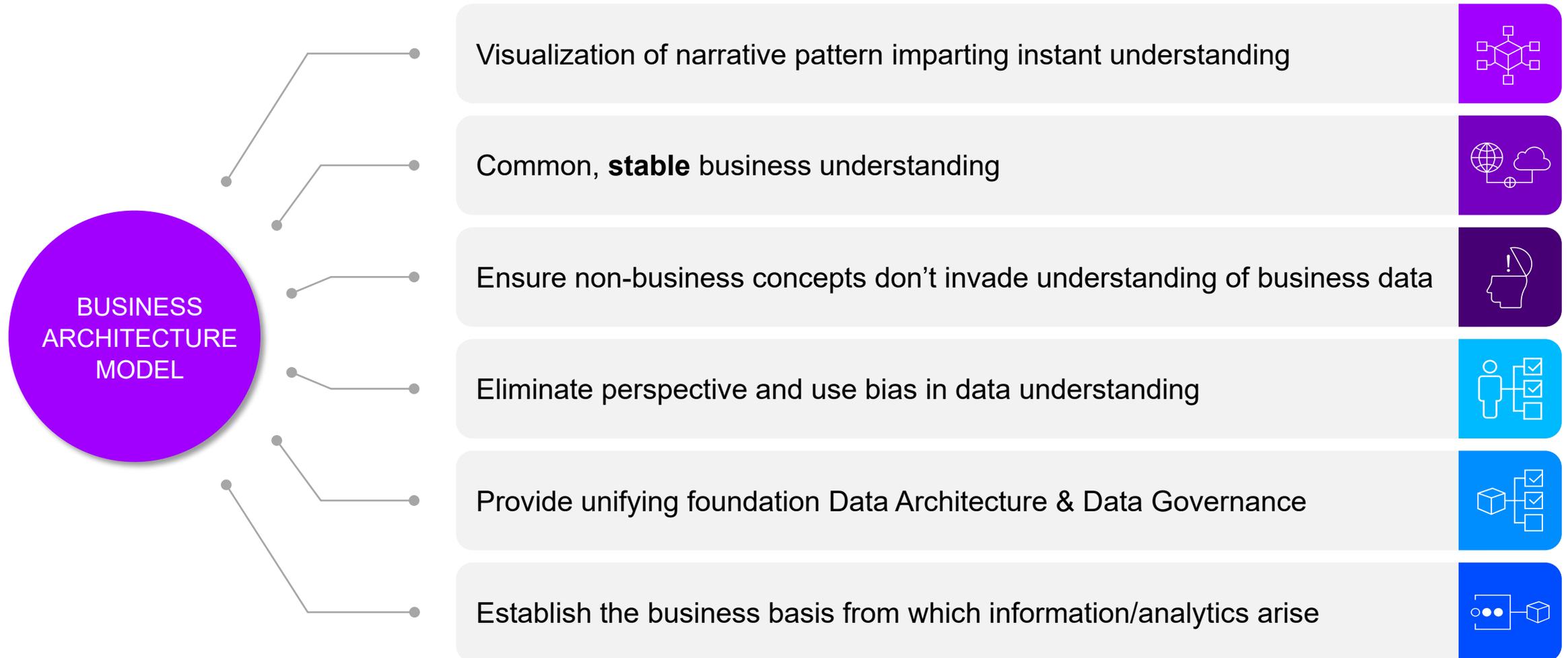
Functional pattern established by business process, of business **Actors** engaging in the commerce (**Transactions**) of **Products**, in accordance with **Agreements/Contracts**, utilization the organization's **Assets**, the results of which are captured in the **Events** of those business process, which is the basis business accounting (GL journaling)

All business questions, all data consumption adhere to the business architecture

SQL's declarative structure created to naturally state business questions in terms of business function and business relationships

# Business Architecture Discipline

## Why we model – Isolation of business narrative





It is the pervading law of all things organic and inorganic, of all things physical and metaphysical, of all things human, and all things superhuman, of all true manifestations of the head, of the heart, of the soul, that the life is recognizable in its expression, that form ever follows function. *This is the law.*

– Louis Sullivan

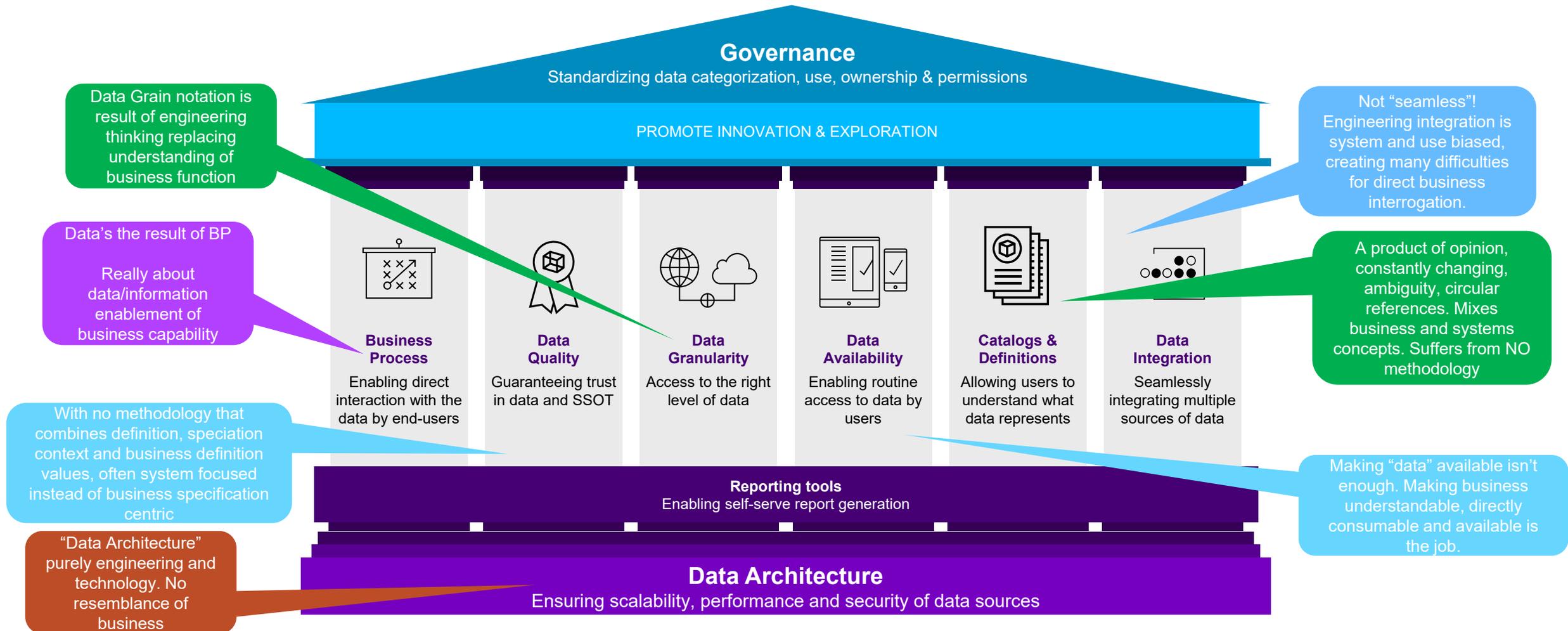
Form follows function – that has been misunderstood. Form and Function should be one, joined in spiritual union.

– Frank Lloyd Wright

Data Architecture  
is data design  
(form) that mirrors  
business function

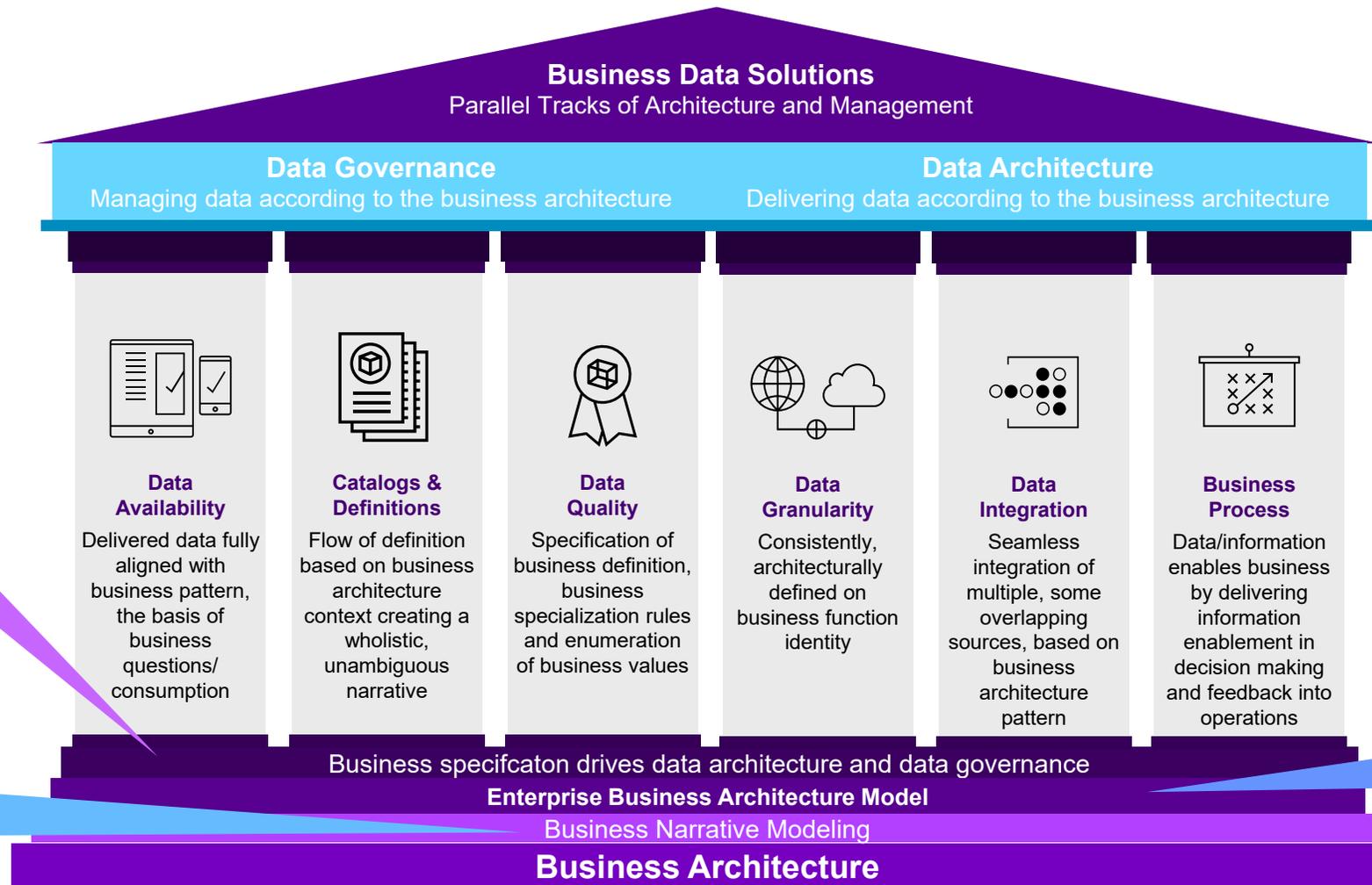
# Silos of Data Architecture and Data Governance

## Why we model – How IT shapes Governance and Data Architecture



# Unified Data Architecture and Data Governance

## Why we model – How Business shapes Governance and Architecture



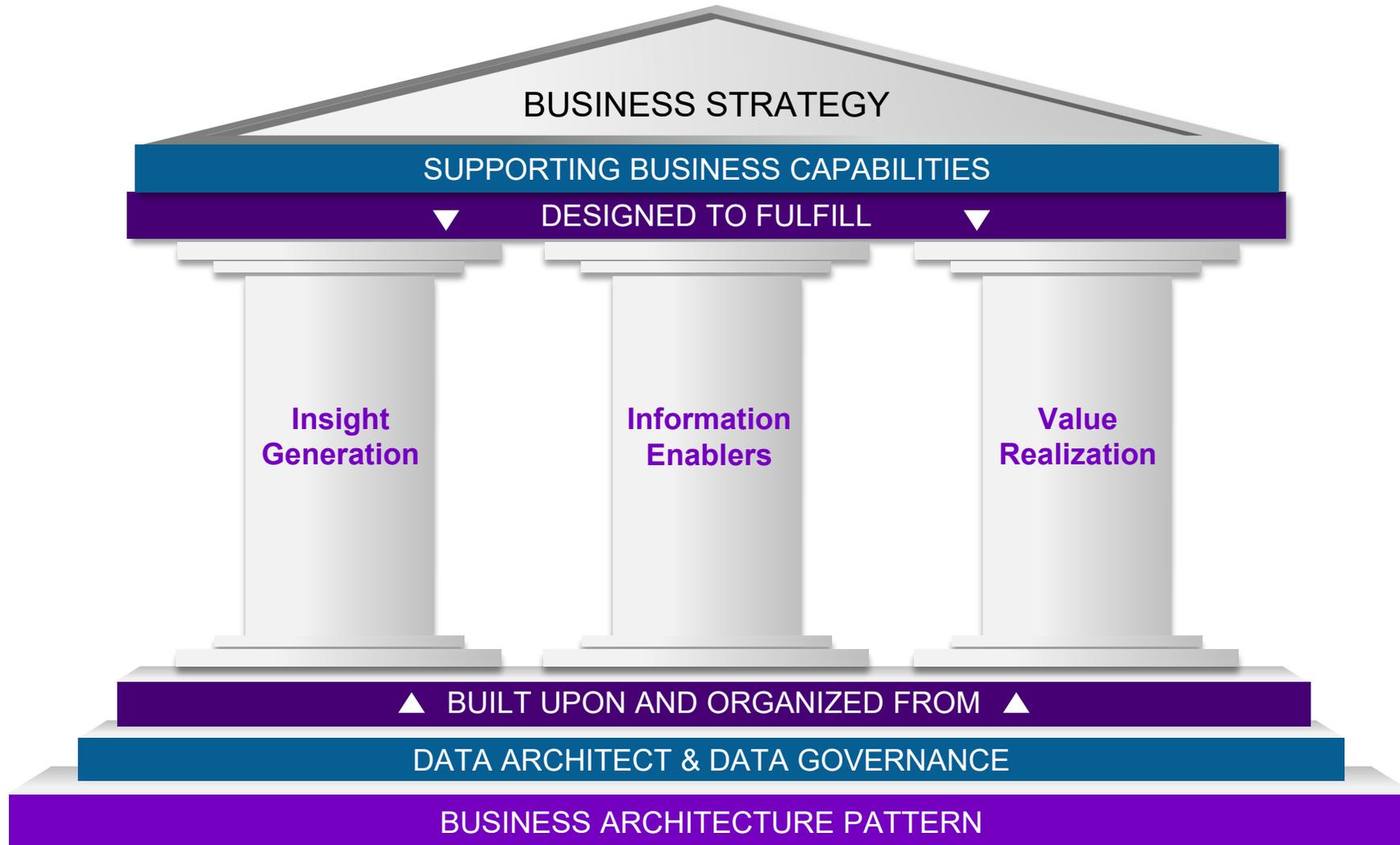
Model produces a specification of content sufficient to define data, control quality, define granularity and deliver true business data integration

Narrative modeling is an analysis and documentation methodology producing a data definition mirroring the business pattern established by the organization's business processes

Business Architecture Model is created well ahead of any solution development. New subject content reconciles prior to solution inclusion.

# Architectural Enablement

Why we model – Foundation for information enablement of business



# Superior Data Foundation

## Why we model – Aligns Governance with the business architecture

1 Focus Data Governance on commerce level of business, not operations/systems

2 Glossary definition a product of model's business narrative methodology

- Flows from narrative method of modeling
- Robust precise definitions of business function and attributes

3 Data quality specification a natural product of modeling method

- Robust definition of attributes in context of function
- Business rules of function specialization applied
- Valid business reference values integral to business architecture narrative

4 Stewardship alignment with business and data architecture

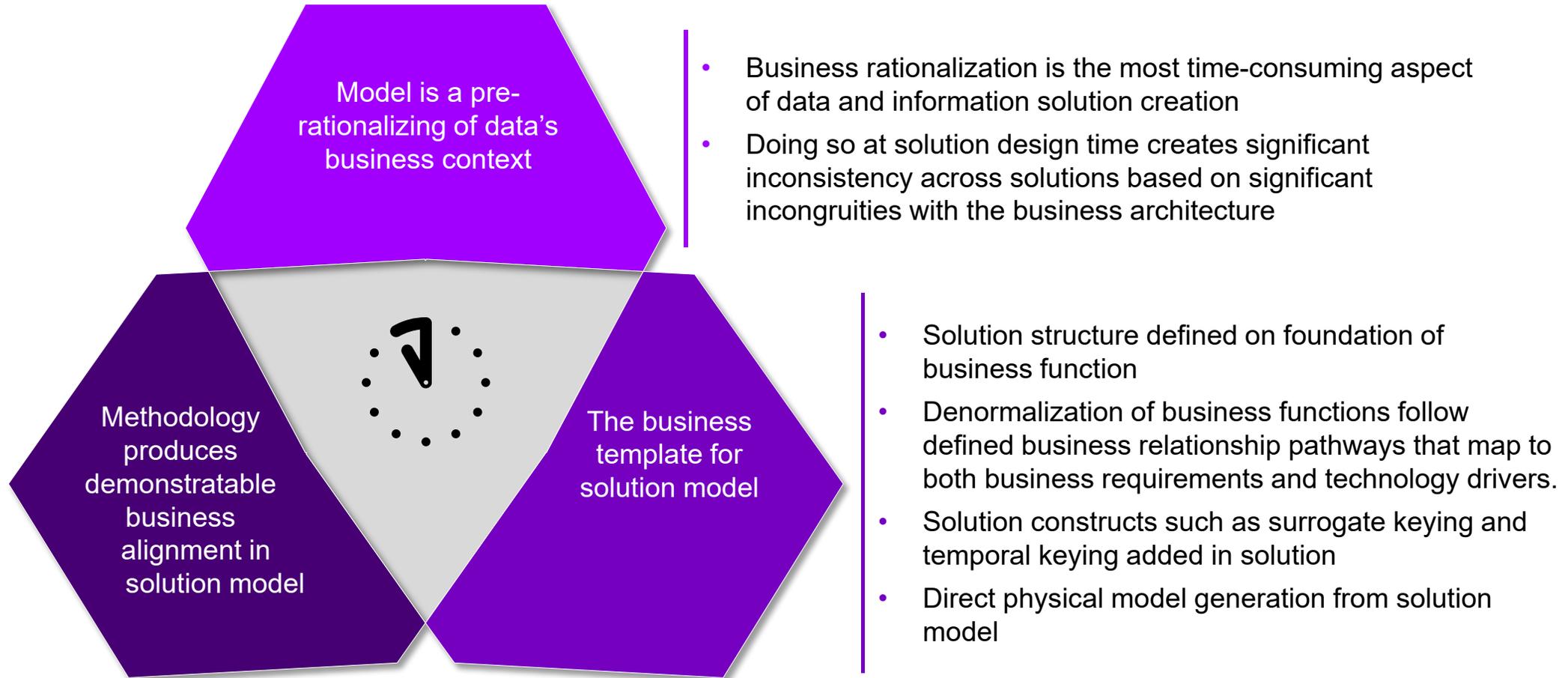
- Stewardship scope business function and business architecture domains
- Stewardship contributes as SME and leverages Glossary and DQ inputs

Business Architecture creates a union between data architecture and data governance at the foundational level of data definition

Data Governance is to be exercised based on commerce definition of data and pushed down to systems

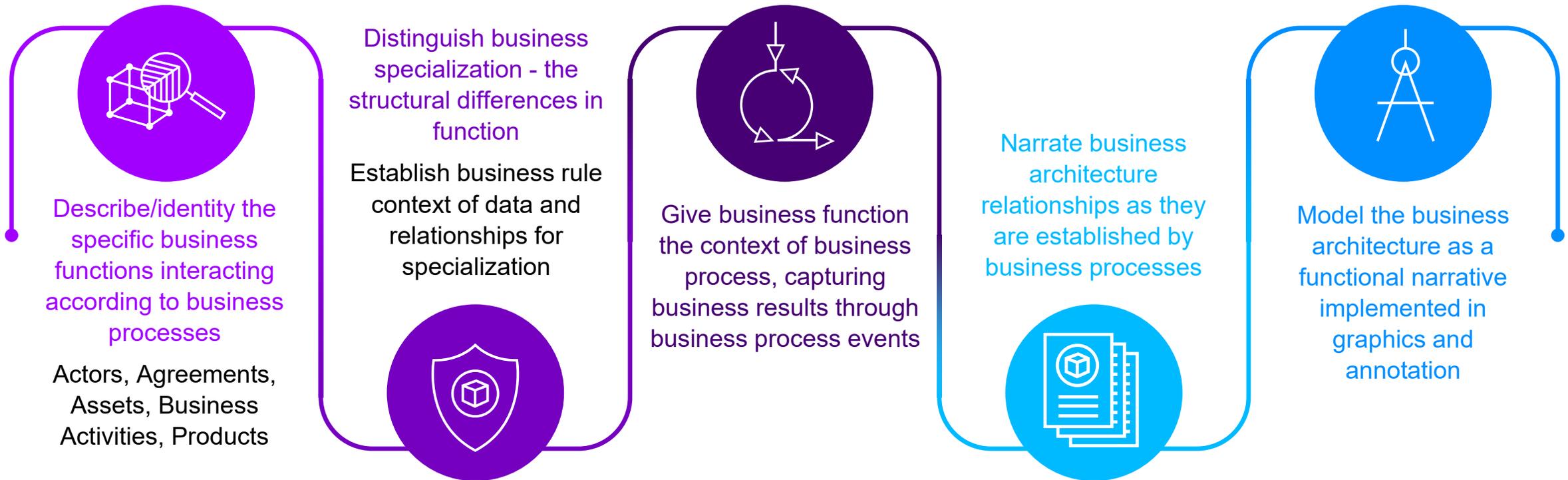
# Shortening Time to Solution

## Why we model – Know the business architecture before solutioning



# Superior Data Foundation

## How we model – Illustrating the business narrative of data





# Guiding Principles

Making Data Tell the Story of Business Architecture Function



# 12 Principles

**Not data management - Not data architecture**

**Not described by operational systems**

**Business processes make it relational**

**Every aspect is a narrative**

**Model is business pattern visualization**

**Not generalization - Not "Things"**

**Model functions of the business processes**

**Function identity according to business context**

**Socialization distinguish data business rules**

**Relationships require meaningful narratives**

**Attribute narrated according to function context**

**Contracts and business process events key elements**



# Business Architecture is NOT Data Management

## Segregates business understanding from IT and DM concepts

1

Business architecture modeling occurs well before *Data-at-Rest*

- *Data modeling not table structuring – Its modeling the business with data*

2

Business architecture models used more broadly than defining *Data-at-Rest*

- Foundation preceding Data Governance
- Foundation for Data-in-Motion – messaging driven by subject function hierarchies
- Enlightens consumption of Data Lake – map to difference between systems data and business data
- Foundational basis in planning Information Architecture

3

It's not Data Architecture; it determines whether we have data architecture

- Data Architecture only occurs when our data describes the business architecture



# Not Described by Operational Systems

## System bias responsible for solution dysfunction

1 Operational Systems data do not describe the business architecture

- Defined and designed to fit narrow operational objectives
- Design often compromised by generalized structuring, design quirks
- High degree of operator manipulation fracture business function and impacts data quality
- System automate & control business processes, but don't define the business architecture
- System keys don't align with business keys
- System fixation responsible for numerous dysfunctional EDW and MDM implementations

2 Systems fixation focuses Data Architecture & Data Governance on the wrong definition of data

- Goal - define data and governance on commerce architecture - push down to system architecture
- Systems should serve business, business should not be limited by its systems

3 Portions of the business architecture we model may not be supported by systems

- Reporting hierarchies, sales/marketing references, etc.



# The Business Architecture is Relational

## Purpose is to eliminate use bias in our understanding

1

Business pattern one of logical relationships, established by business process

- Multiple distinct business process relationships between two functions possible, even probable
- Understanding business pattern requires unbiased expression of business relationship

2

ER and UML modeling provides the best method of expressing the unbiased presentation of relationship

- Demonstrates all relationship paths to answer any relevant business question, precluding none
- Alternative is physical relationship – denormalization – bakes in use bias

3

Dimensional and other denormalizations are NOT data models

- Data model describes the business – Star Schema model purpose is to measure the business
- Implements logical relationships as physical denormalization, eliminates other business relationships
- Create significant use bias to answer certain questions, but prevents others from being asked



# Every Aspect is a Narrative

## Articulation of business's functional pattern

1

Business understood through narrative

- Narrative development integral to producing a valid business model

2

Model must tell story how business commerce works

3

Graphics/annotations mirror business architecture's structured narrative

4

Business architecture narrative produces the only stable foundation for Data Governance

- Rich business glossary based on context of business functions
- Data Quality rules established by definition, specialization context and business reference domains
- Drives fit for purpose data quality standard
- Stewardship alignment with business architecture unifies Data Architecture and Data Governance

# Visualizing Data's Context

Reality of the business pattern from which data arises

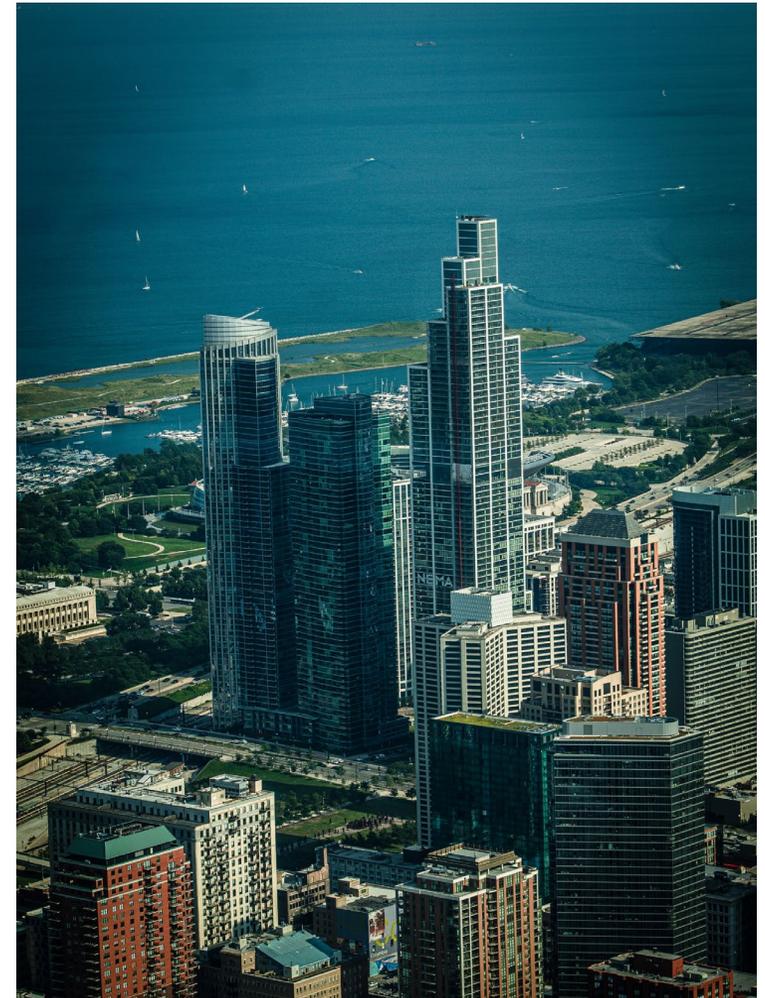
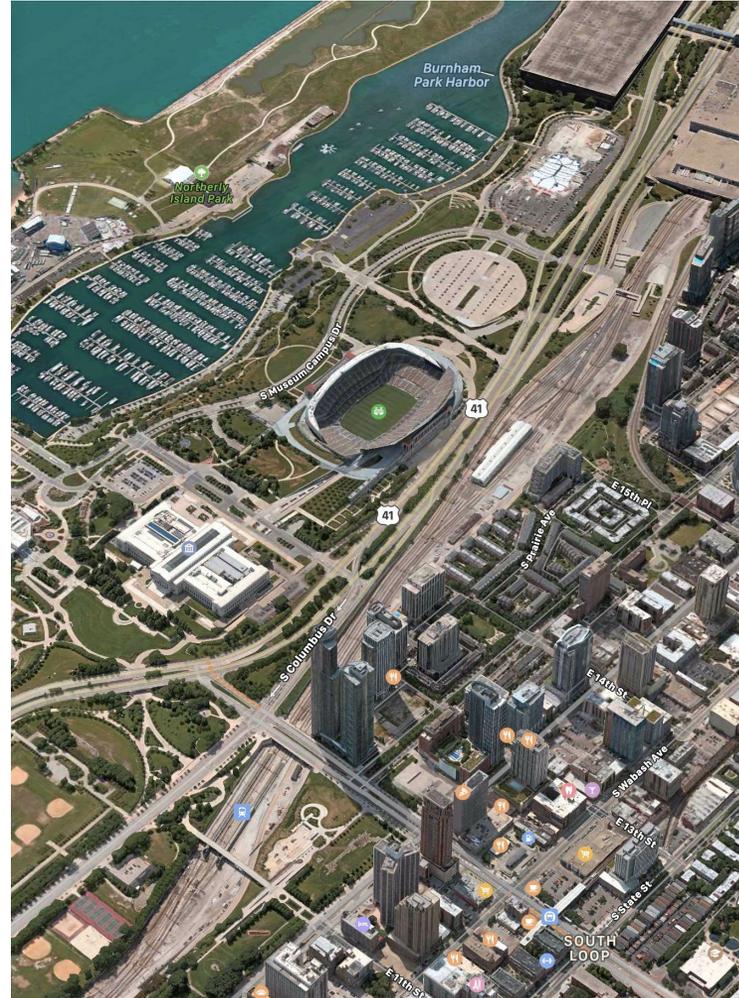
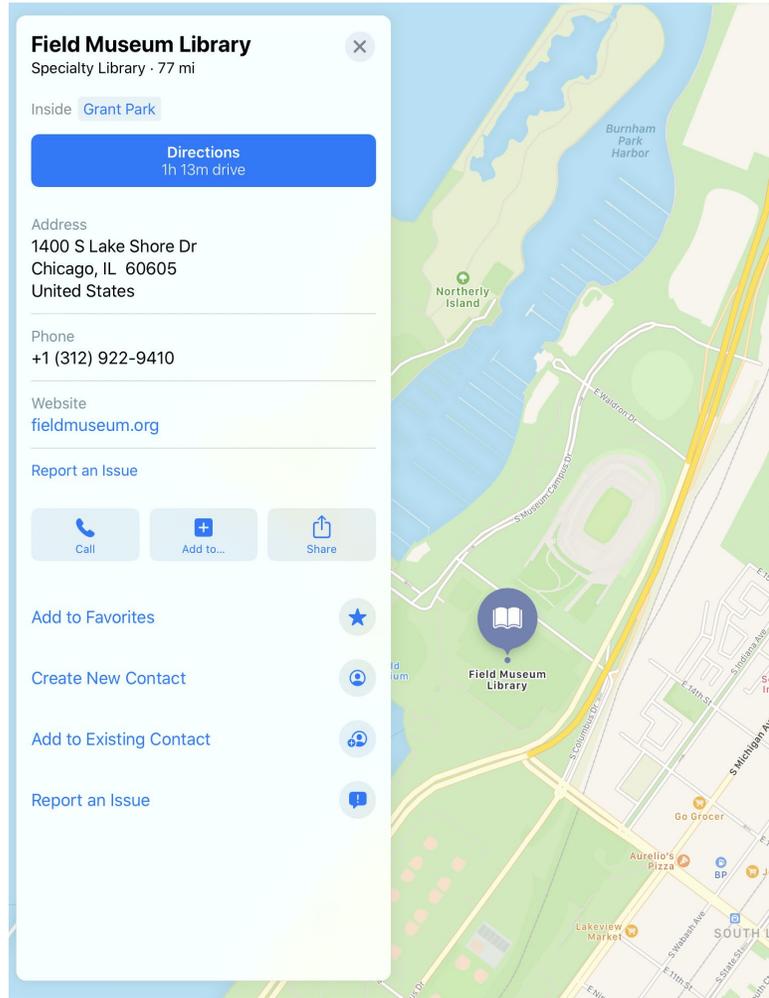


Photo by Srinivas Venkatesh on Unsplash



# The Model as a Business Pattern Visualization

## Visualization is central to understanding

1

Model is the data pattern visualization of business architecture narrative

- Marriage of narrative and graphics – facilitates superior knowledge flow, mass communication, validation
- Functions, data business rules, relationships - structure of the business architecture

2

Visualization integral to perfecting data's context and definition

- Collaboration, critical review and validation dependent on detailed narrative visualization
- Visualization is the key methodology element required to define data

3

If data examples needed, the model fails its purpose

4

If modeler speaks more detailed than the canvas presents, the model is incomplete



# No Generalization of Business Function

## Modelling the real subjects of business – NOT abstracted “Things”

1 “Party” does not exist in the business architecture

- No business questions about Party

2 Dysfunctional Canonical/ELDMs are modeled to the “class of things” level.

- Party, Agreement/Contract, Event, Transaction entity generalizations are the refuges of the uncertain
- Dysfunction is created by fracturing business subject’s functional narrative, falsely stating business

3 Business questions are asked about specific business architecture functions, not generalization

- Healthcare Payer: Member, Patient, Benefit Plan, Product, Benefit Network Contract, Practice Agreement, etc.
- Insurance: Policy Holder, Agent, Insurable Asset, Product, Quote, Policy, Claim, Claimant, etc.
- We hear the narrative in the questions business asks



# Model Functions of the Business Processes

What it does within this business architecture, defines what it is

1

Prime Entities – They are functions defined by narrative of specific, discrete thing they do

2

Child entities narrated as sub-functions supporting the parent function (entity)

- Complex aspect of function

3

Business Key as narrative of how attributes identify the function

4

Relationships narrative tell specific functional story of functional support or functional interaction

5

Precise, unambiguous story of function, eliminates incongruity

6

Vague or general narratives are incomplete, incorrect models

7

Business Architecture is a commerce story

- How various business actors engage to exchange one asset for another in fair and open trade

# Definition Made for the Glossary

## Definitions with the context of the business architecture

A Claim is a request for compensation for services, healthcare equipment, medication or other healthcare goods rendered by a Provider to a Member based on Plan Benefit and Cost Share of the Member's Plan, as well as in accordance with Network Contracts with the Healthcare Supplier.

The Claim is the fulfillment of the contractual commerce relationships between Member and Carrier based on Benefit Plans, as well as the commerce relationship of Provider and Carrier based on Benefit Network Contracts.

The Claim is typically filled by the Healthcare Supplier for direct payment of services, but may also be for reimbursement to the member, who paid in full or partially for the services.

The Claim may be in compensation of an Encounter, an Episode of Care.

A Claim is specialized as:

- Institutional
- Professional
- Pharmacy

It is also be classified according to Product Lines of:

- Mental Health
- Medical
- Dental
- Optometric

The Claim request is the beginning point of a Claim Business Process described by Adjudication Events that redetermine the Claims disposition and amounts paid to the Provider or are the responsibility of the member based on Cost Share.

Claim identity is established by the:

- The Billing Healthcare Supplier that files the claim for compensation
- The Billing Provider (NPI) the Billing Tax Entity file the claim for
- The Member that the claim was filled on behalf of by the Billing Health Tax Entity
- The Group or Plan the Subscribe is member to, and upon which Claim is made
- The Claim Service From Date, noting the first day that the services are rendered to the member

Function Defined on What It Does

Functions context to Business Architecture

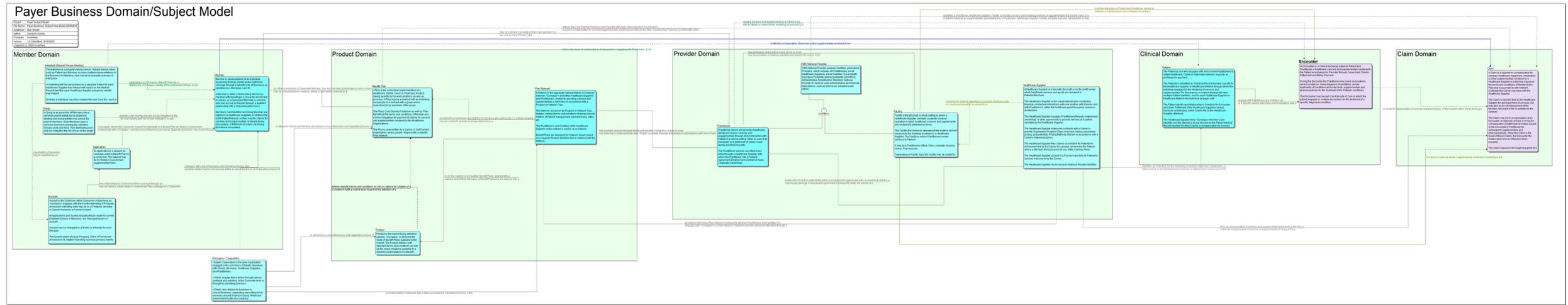
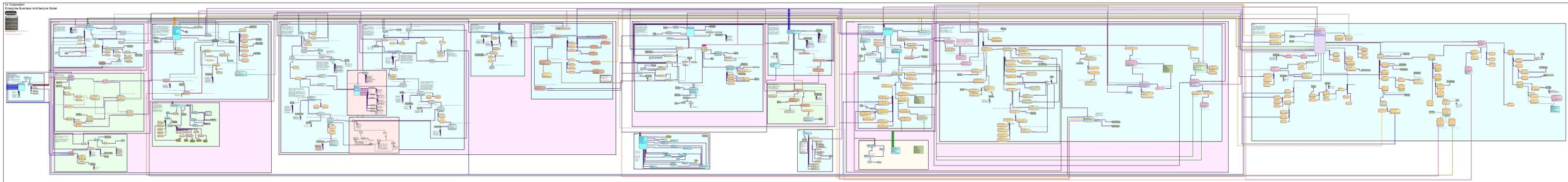
Significant specializations

Functions business process Interactions

Functions business identity narrative

# Definition from Context in Business Architecture

We draw on the relational narrative to build definition



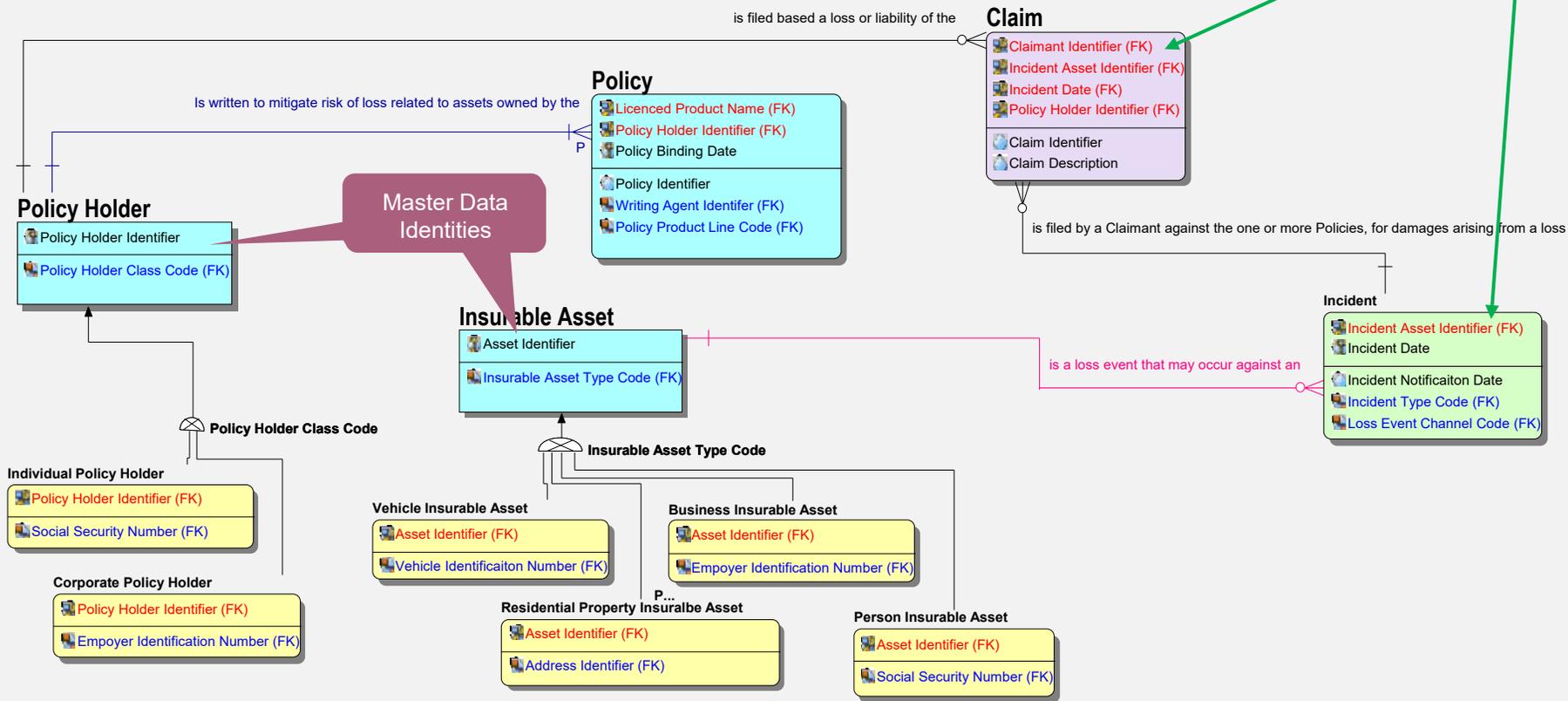
# Function Identity from Business Attribution

Its not grain, it's the function's identity

Identity narrative of business attributes

A Claim is filed by a Claimant who experienced the loss based on an incident involving an insurable asset that is the responsibility of a Policy Holder, who is either liable for the loss or experienced the loss

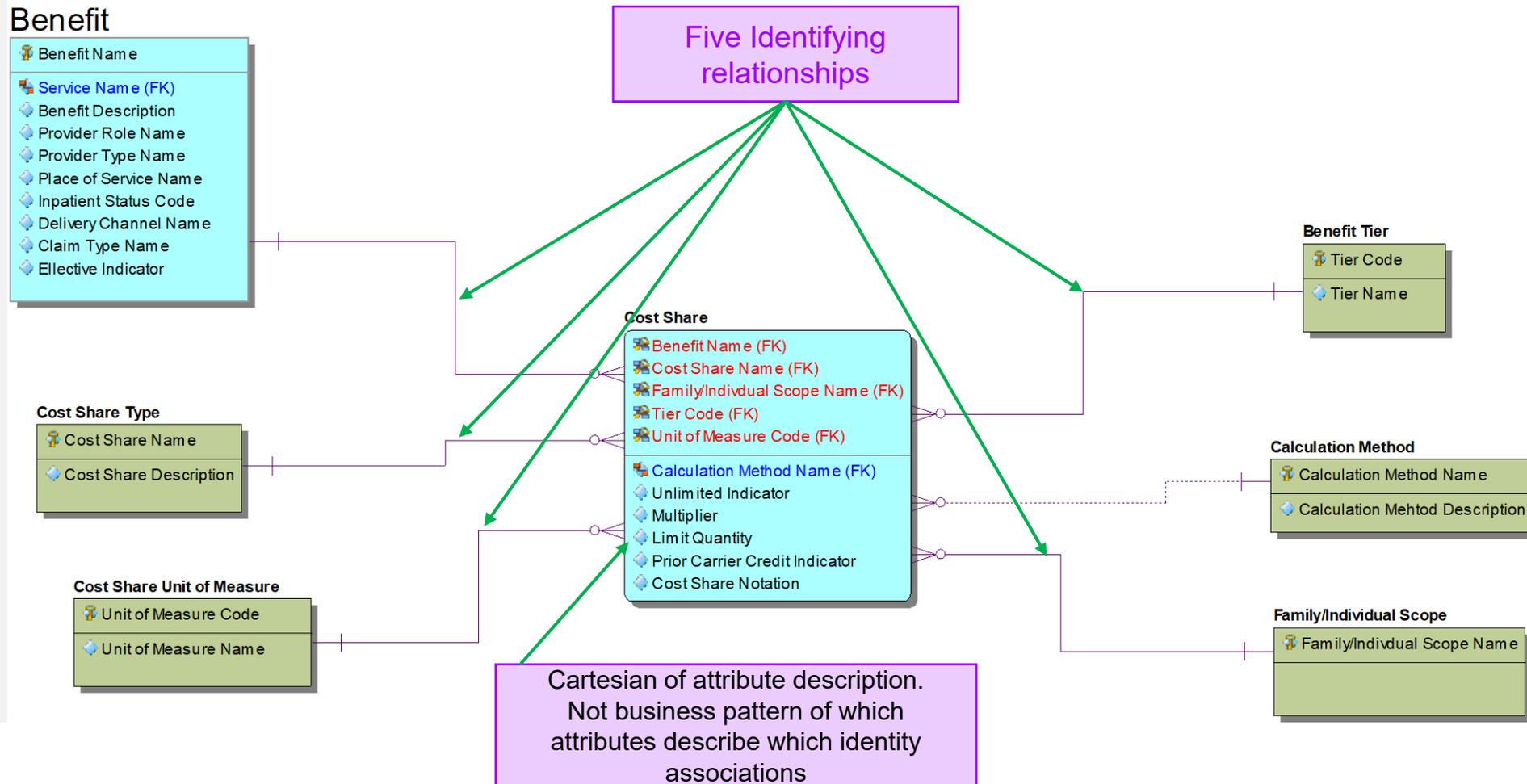
Business identifying attributes



- Business Identity established by business attributes expressing a identity narrative
- "Grain" is artificial concept that obscures function identity
- System IDs often do not conform to function identity

# Each Entity - A Discrete Business Function

Were we go wrong with function identity - overloading

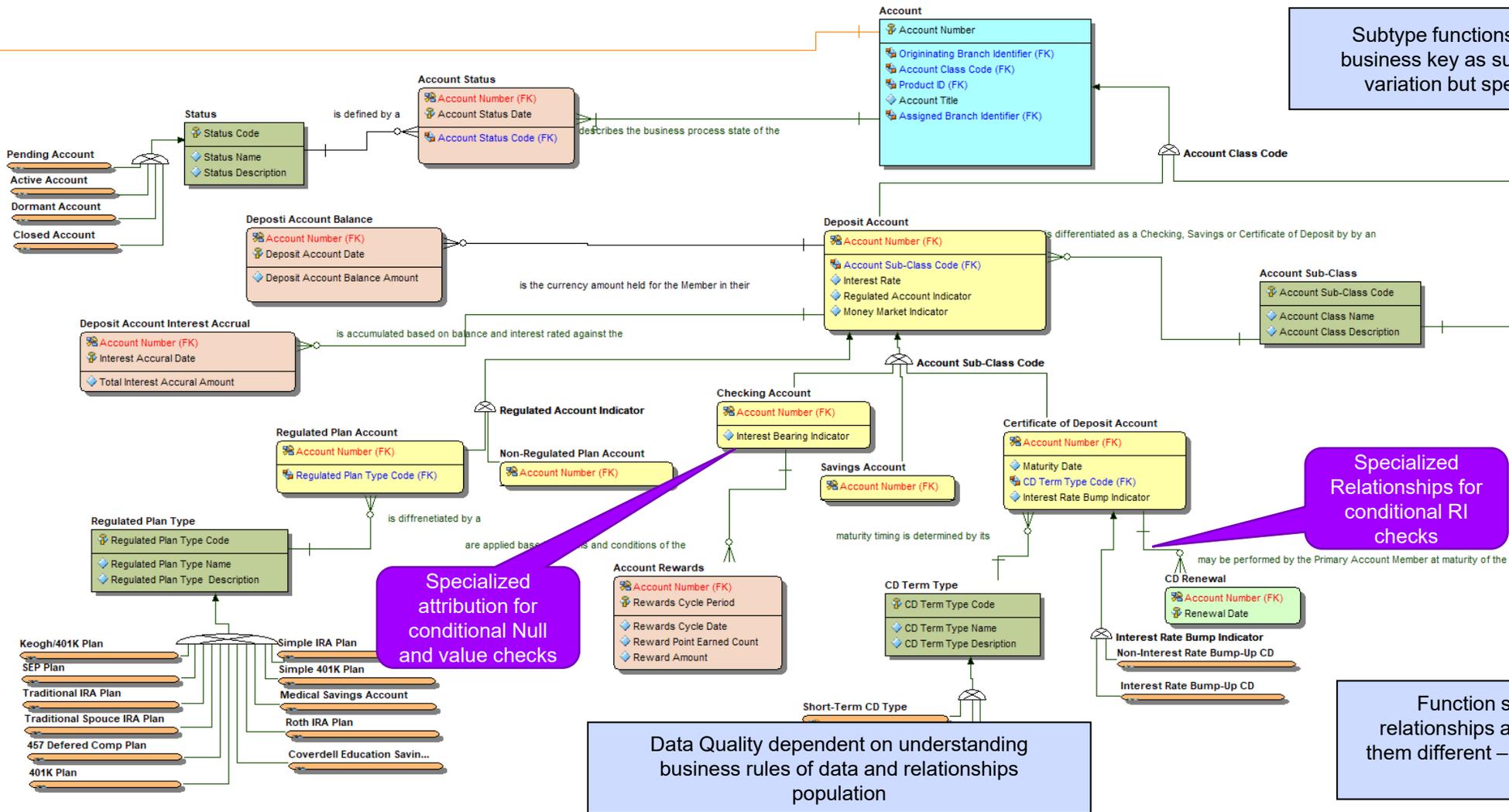


- Function overloading destroys data context
- Imposes difficulty when interrogating discrete function and functional aspects



# Function Specialization And Data Business Rules

## Business rules aid use and drive data quality measurement



Subtype functions share same business key as super-type - Not variation but specializations

- Model defines data's business rules by function specialization
- NO nullable attributes
- NO non-identifying **optional** relationships

Specialized Relationships for conditional RI checks

Specialized attribution for conditional Null and value checks

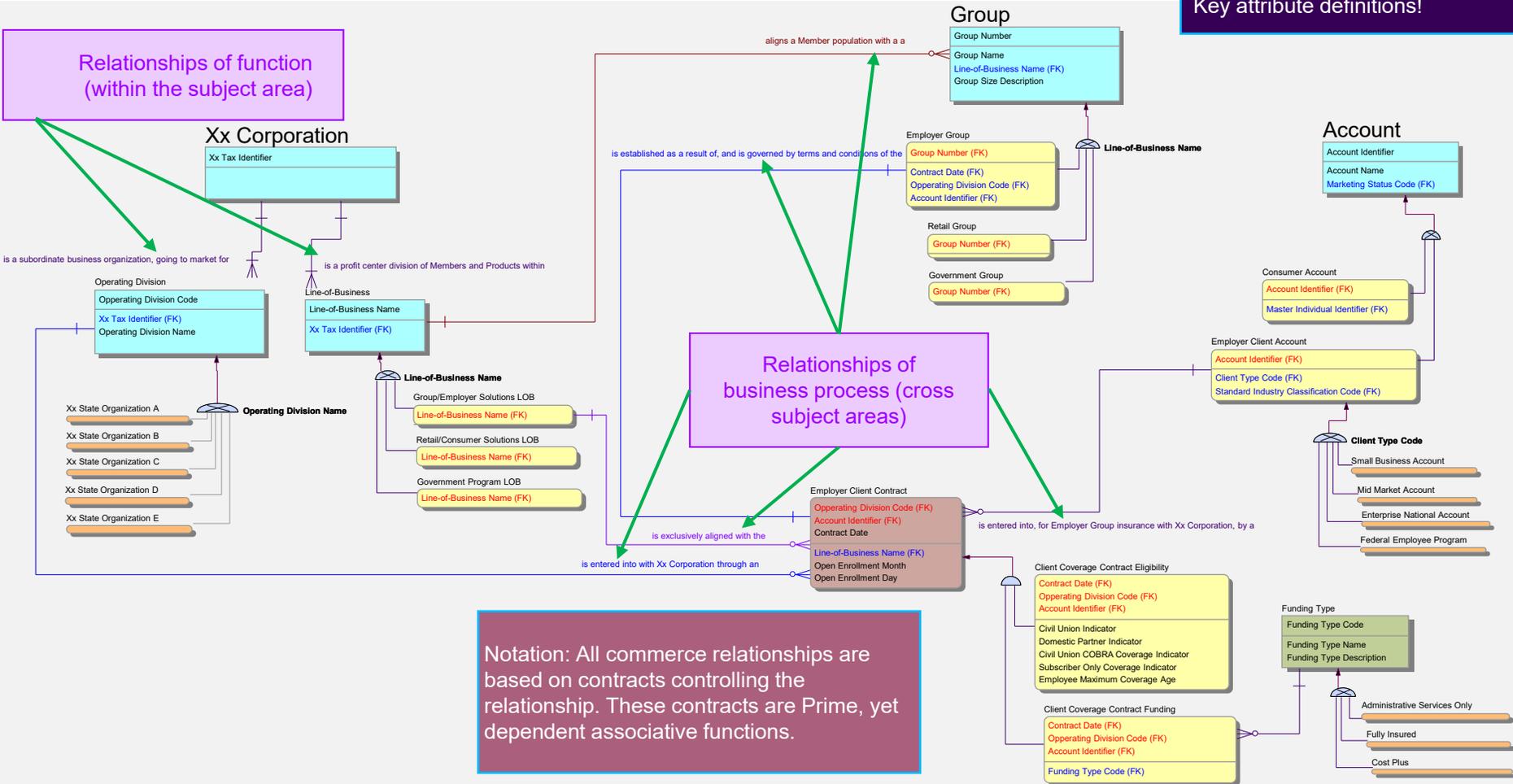
Data Quality dependent on understanding business rules of data and relationships population

Function specialized because relationships and attributes describing them different – specialization of function narrative

# Relationships of Function and Business Process

## Narrative promotes function understanding, gives BP "life"

Relationship Narratives define the Foreign Key attribute definitions!



Notation: All commerce relationships are based on contracts controlling the relationship. These contracts are Prime, yet dependent associative functions.

- The structure of the narrative
- Functions inherit much from their relationships
- Relationships defined by business process between business functions
- Narrating relationships perfects understanding of the function

# Business Process Events

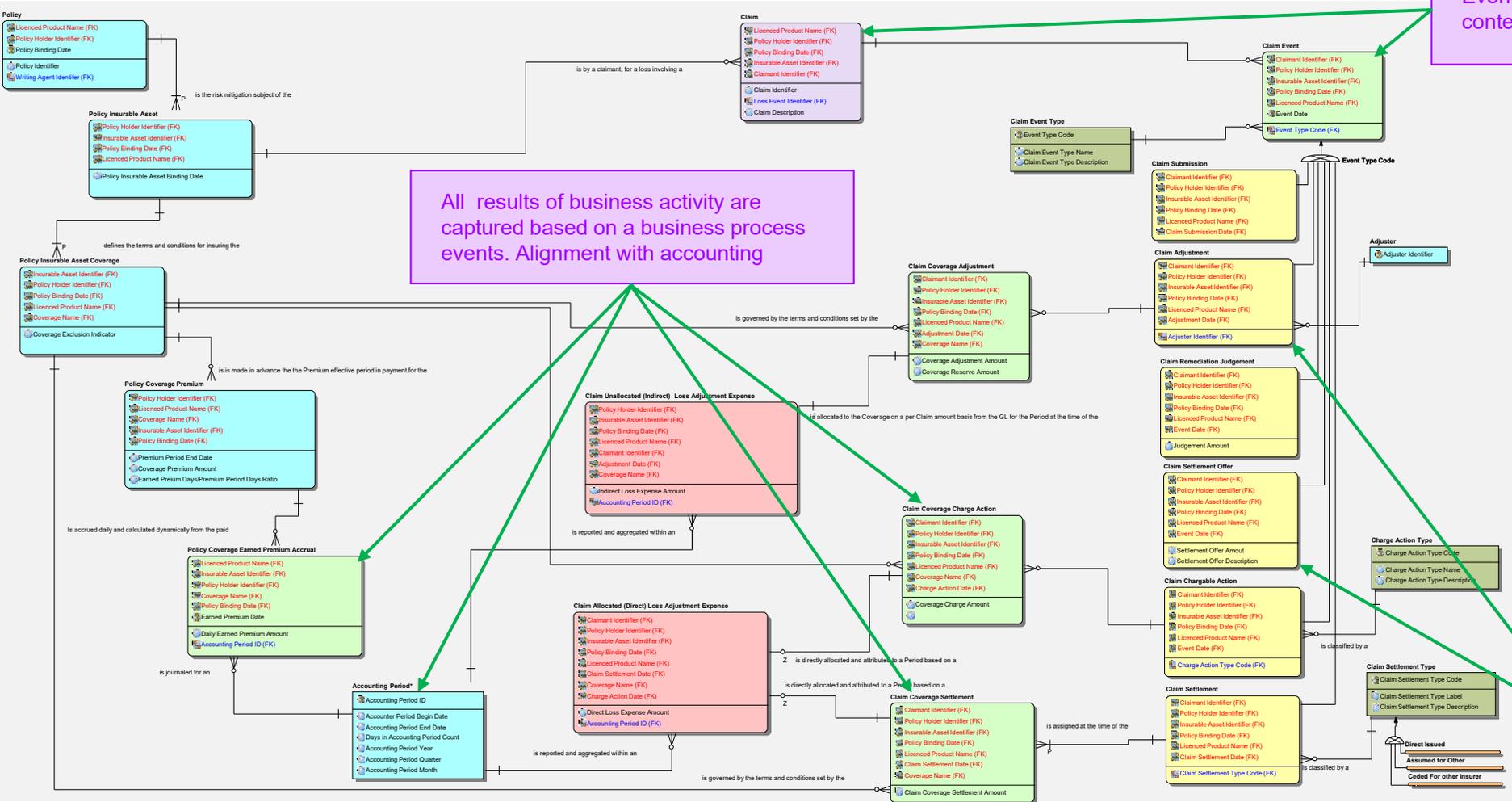
## Bringing business process life and capability to the model

Events give business process context to business functions

All results of business activity are captured based on a business process events. Alignment with accounting

- Gives Business Process Context to Business Function
- Gives true context to attribution
- Captures the results of commerce activity
- Event based analytics
- Giving Accounting KPIs business architecture context and granularity

Events establish business BP context of attribution and relationships



# Attribute Narrative

## Context to the function, specialization, business process – Best glossary

Claim Service Date is the date on which the services or supplementals were rendered/issued, or in the case of a course of therapy/treatment billed, the last services were rendered covered under the Claim.

The Claim Service Date is either the date of an Encounter for which the Claim was filled, or it is the last date of Encounter in a string of Encounters that are billed, such as in Episode of Care payments, or in payment for a course of therapy, such as physical therapy.

Full Business Name of the Attribute

The Aspect of the Function that is described

Identity of the function that is described

Variations in how the attribute is determined in specialized situation

All business functions of the business architecture are identified by Capitalization

For Code attributes enumeration of business values would be stated here

# Commerce Expression in The Model

## Considerations for telling data's commerce story

- 1 Contracts are associative Prime functions that govern the relationship between counterparties
- 2 All commerce relationship are based on contracts  
Accounts, Insurance Policy, Subscription, Sale, etc.
- 3 Contract Identity is not a "Contract ID" but the relationship (identifying) between two actors.
- 4 Contract Identity may substitute the product that is offered by one of the counterparties
- 5 Some Transactions are contracts (retail sale, orders, security trades)
- 6 Many transactions are fulfillment of contracts (sales returns, loan payments, interest payments)
- 7 Transactions are not events, but are a business processes that fulfill the commerce goals of the business
- 8 The function we refer to as a transaction is the initiation of a business process
- 9 Events document the completion of each business process step on the way to process completion - Results of the commerce between actors are recorded based on events



# **Analytics Perspectives**

**Planning Business Data Consumption**





# Organizing Analytics Perspectives

**Model must also tell the story of business data consumption**

1

A perspective within the Business Architecture Model

- Business architecture basis to measure/prediction business with common functional context
- Limits the functional context and relationship pathways
- Precursor to creating use bias in information delivery

2

Aligns data by function with information enablers of business capabilities

- Required to define data value by business function

3

Planning Mechanism for Analytics

- Depending on solution, may wish to conduct in Business Solution Model of data warehouse
- Some consideration for separate information architecture model warranted

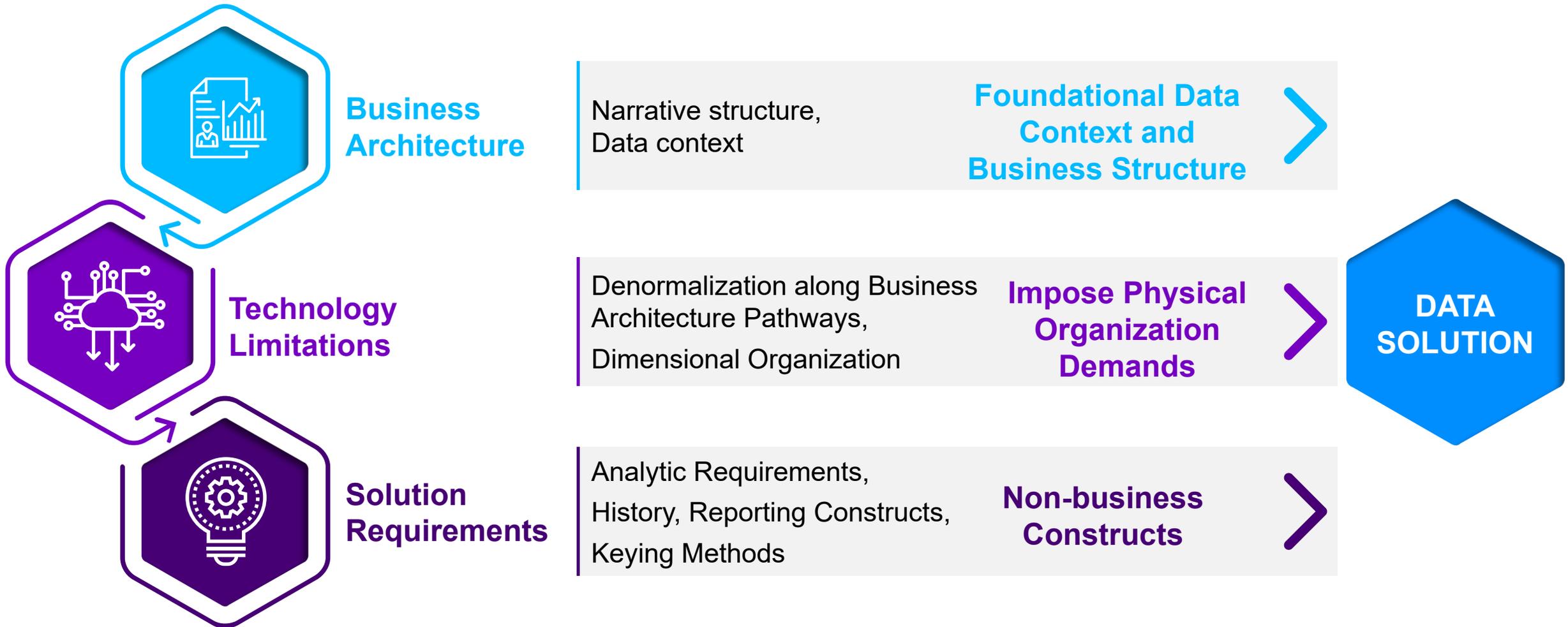


# Creating Data/Information Solutions

The Intersection of Data Governance with Data Architecture

# Controls Architecture Alignment of Solution

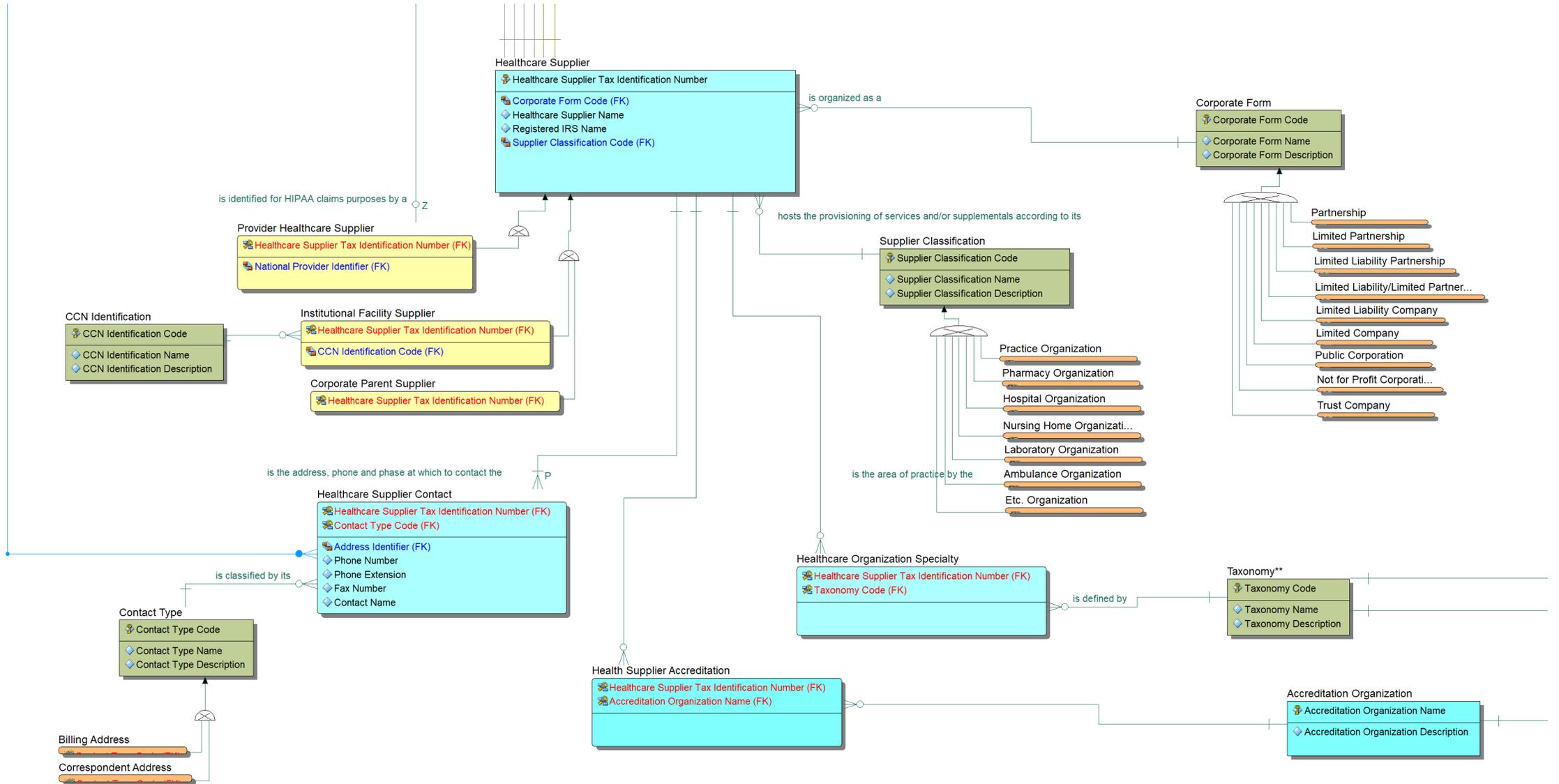
Model must tell the story of how business is measured



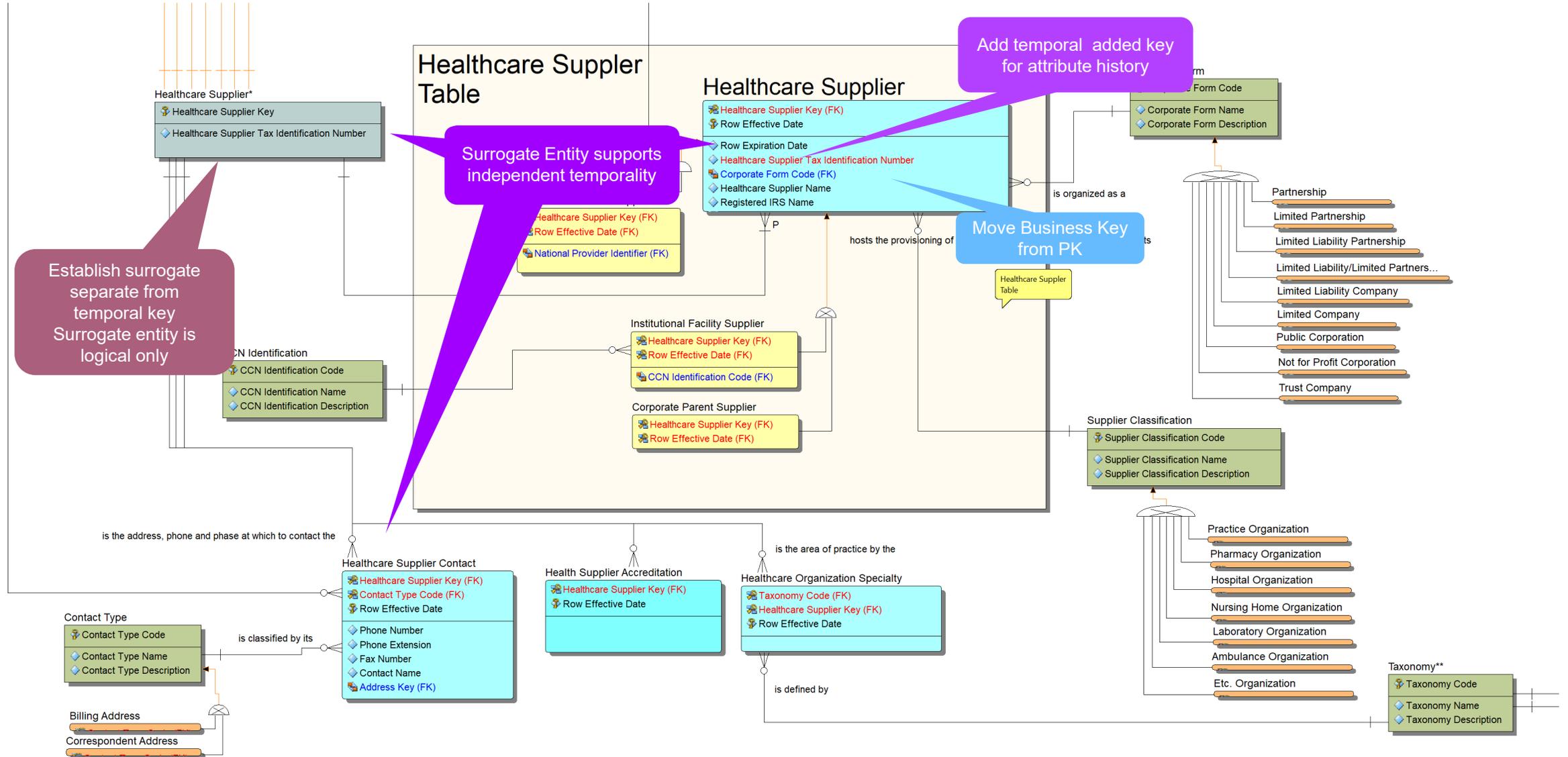


# Data Warehouse Examples

# Business Architecture Starting Point

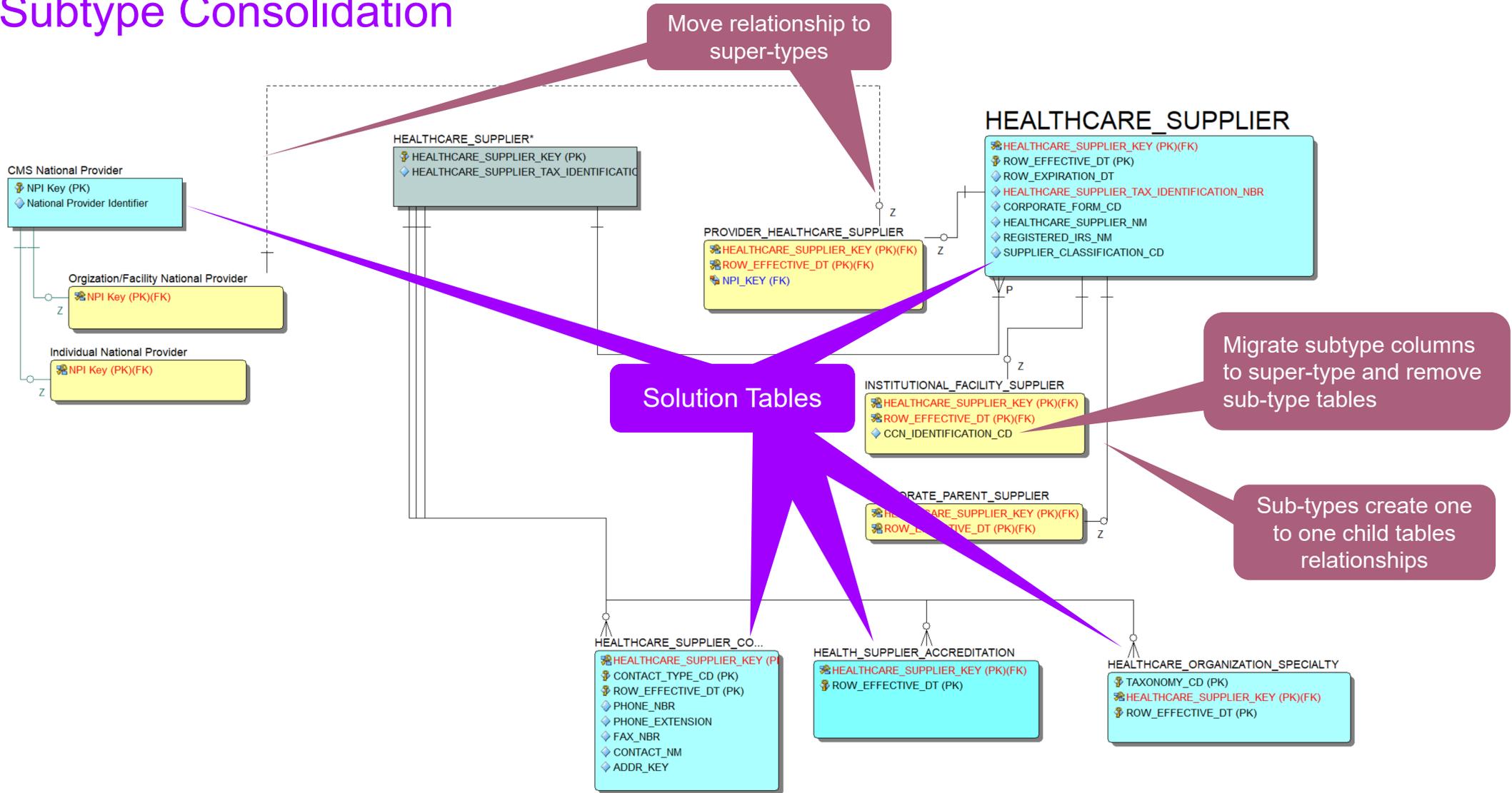


# Surrogate Keys & Data Temporality



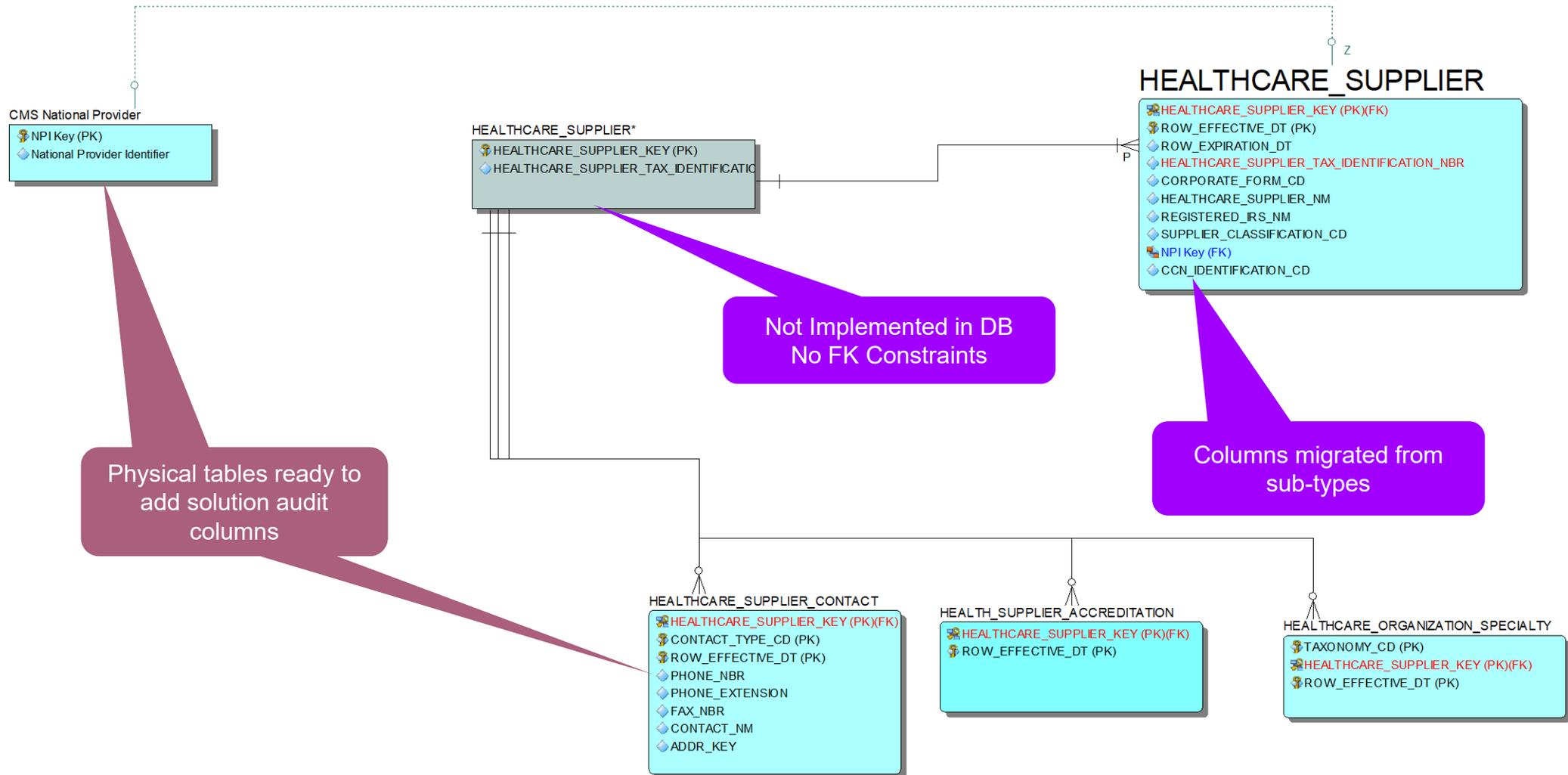
# Generated 1<sup>st</sup> Step Physical Model

## Pre-Subtype Consolidation

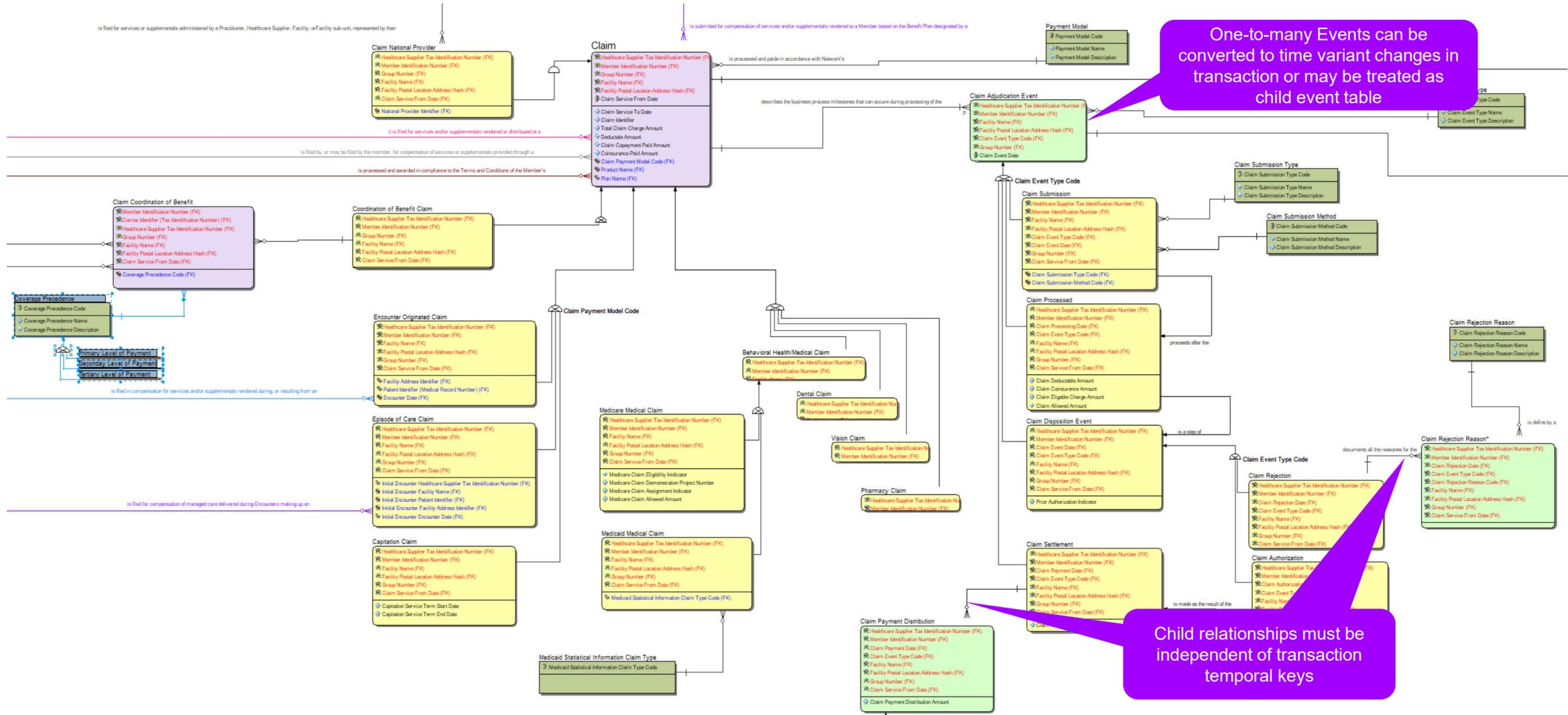


# Physical Model

## Post-Subtype Consolidation



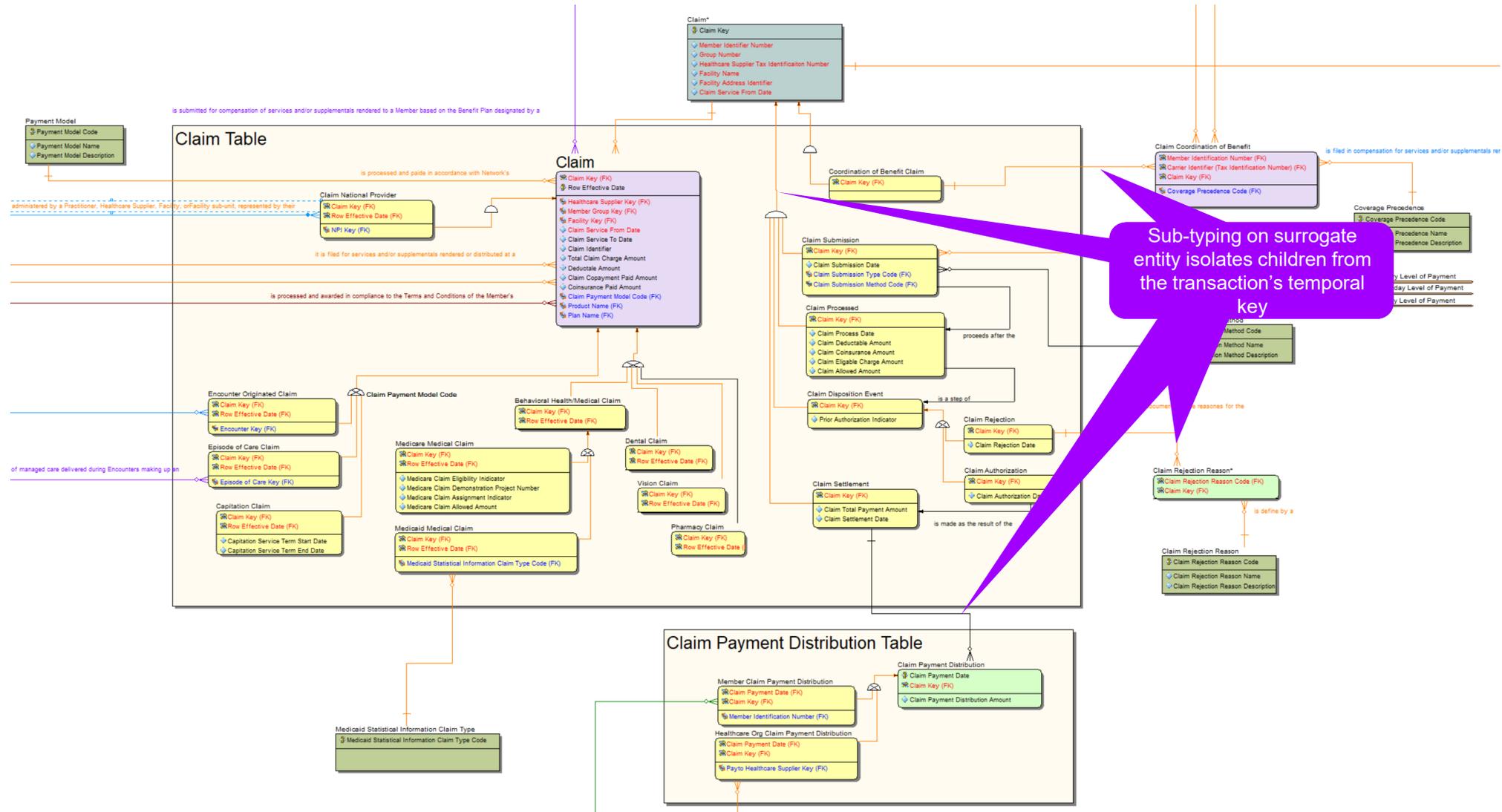
# Business Process Event in Solutions



One-to-many Events can be converted to time variant changes in transaction or may be treated as child event table

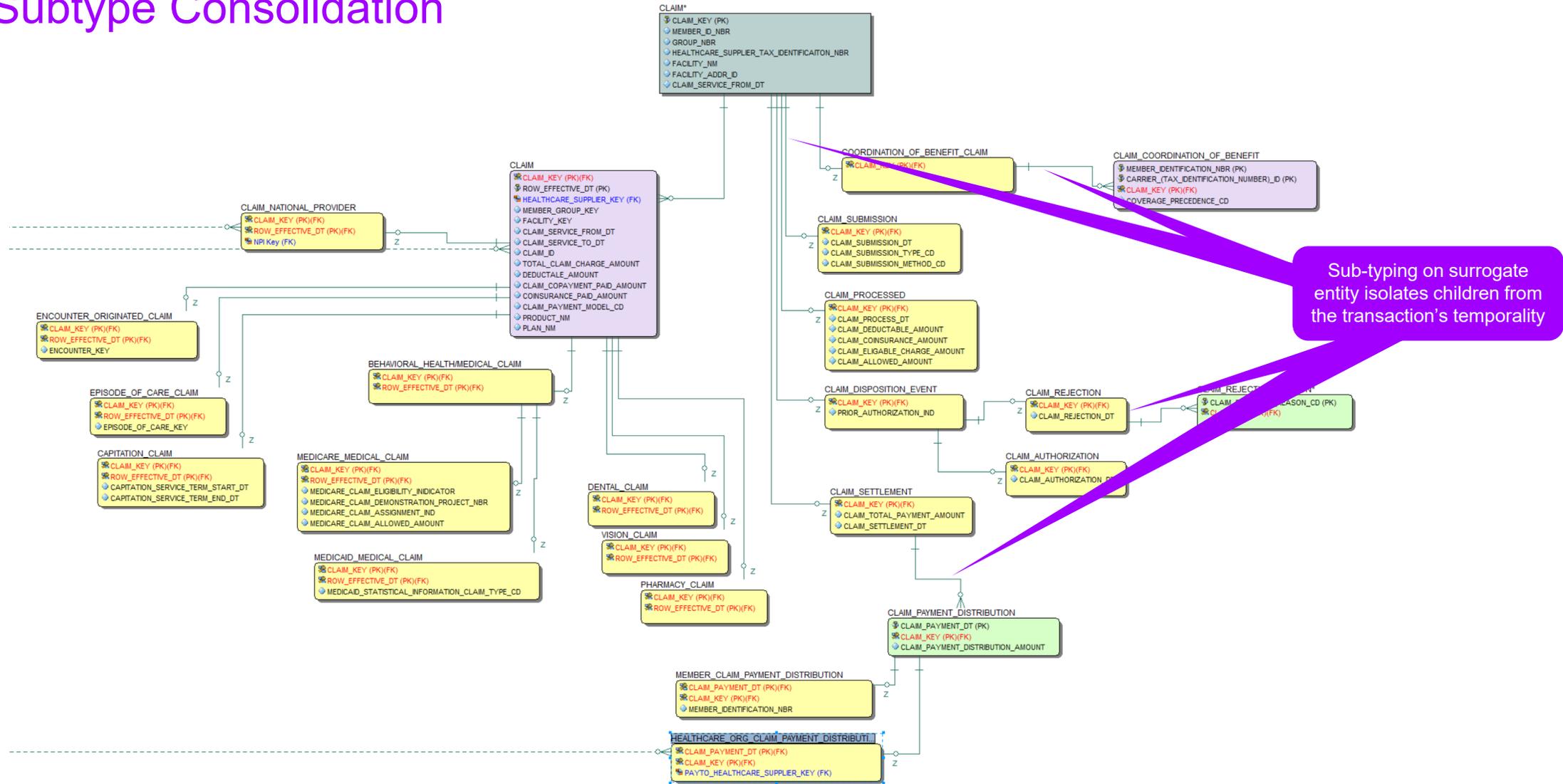
Child relationships must be independent of transaction temporal keys

# Option One – Monolithic Claim Function



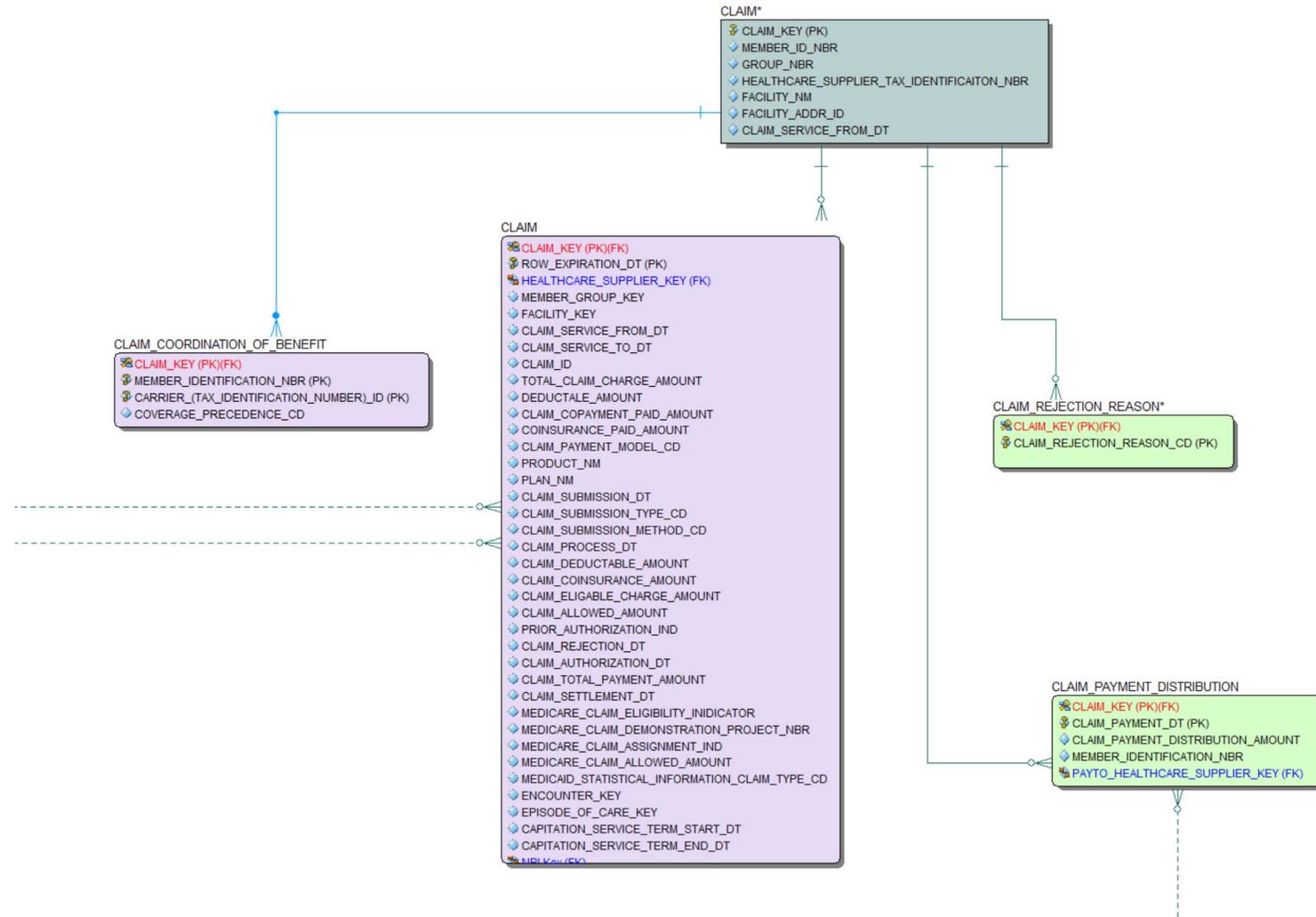
# Option One Physical Monolithic Claim

## Pre-Subtype Consolidation

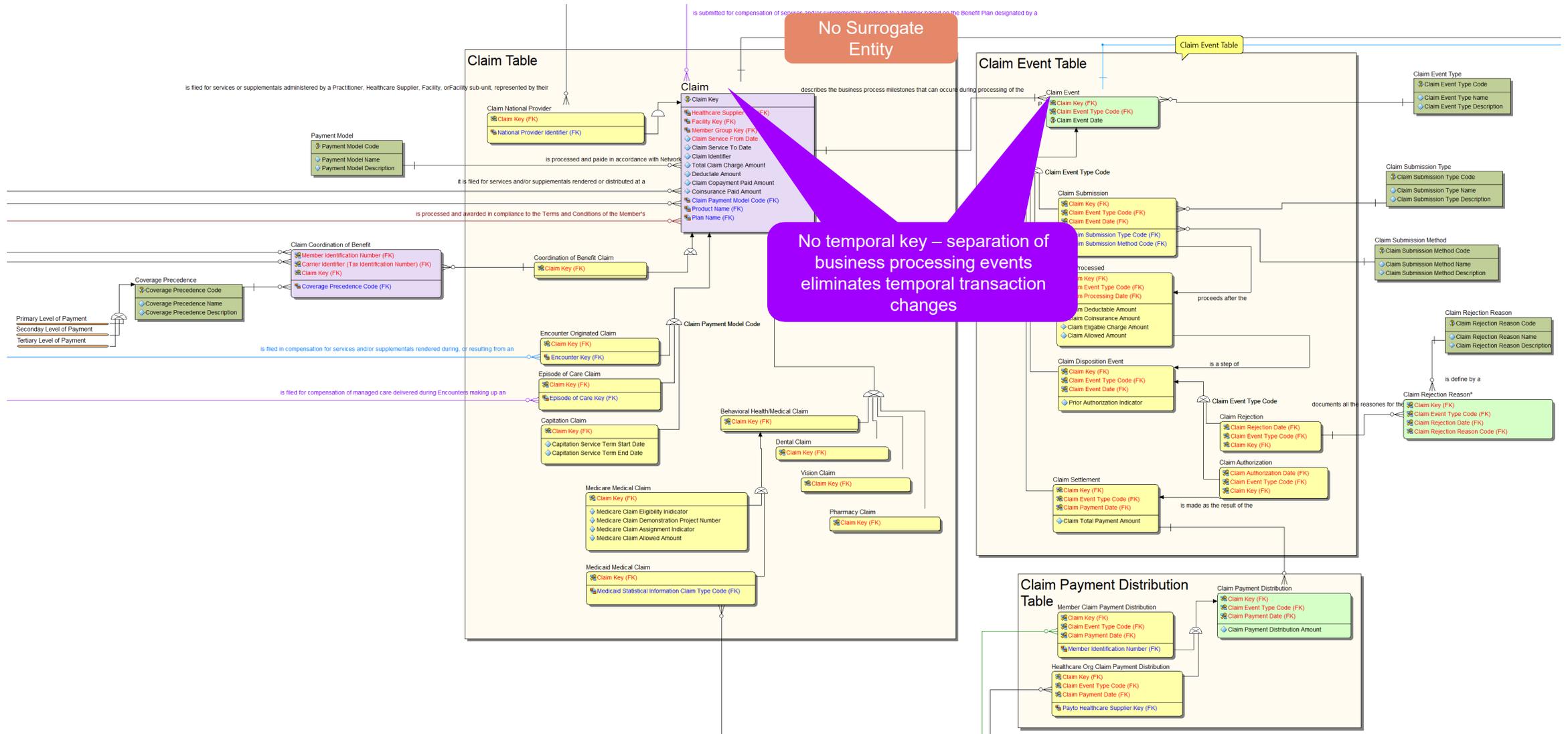


# Option One Physical Monolithic Claim

## Post-Subtype Consolidation

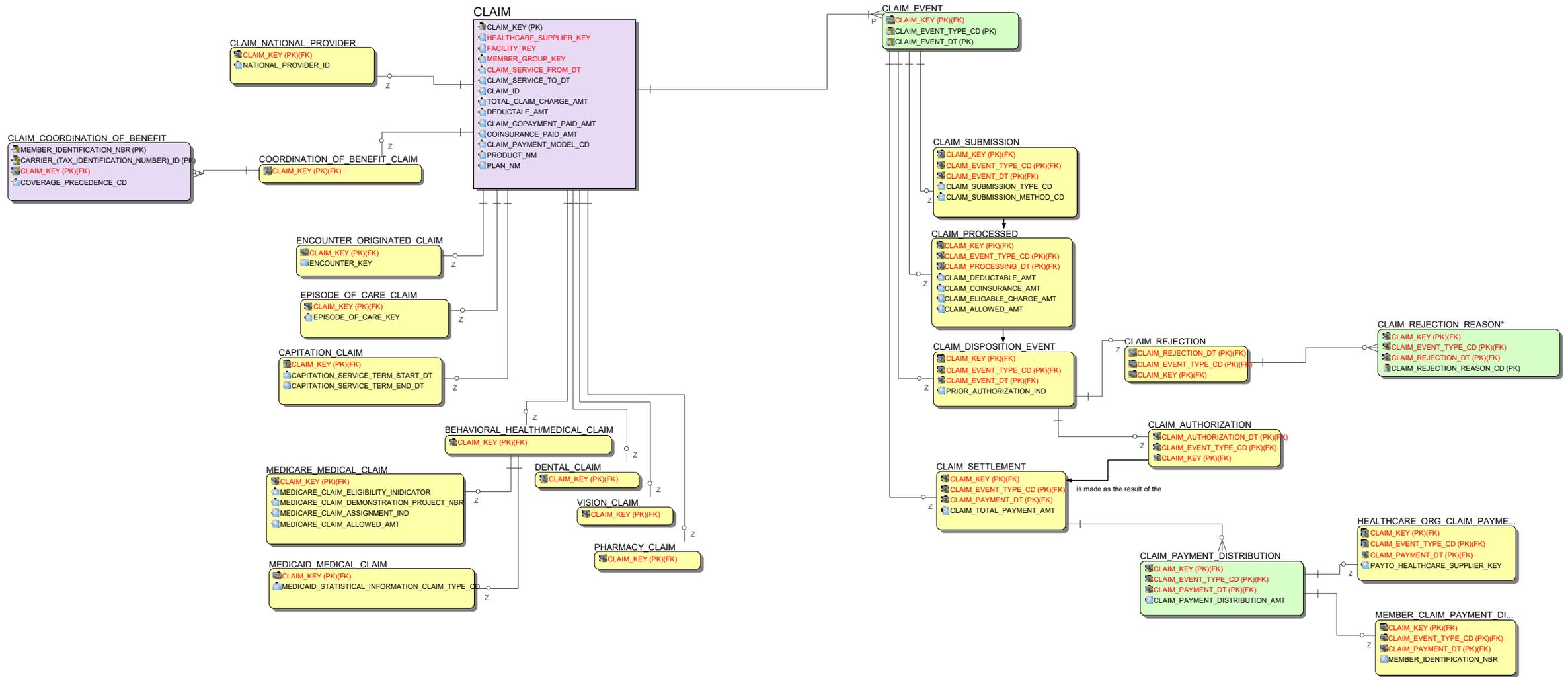


# Option Two – Event Analytics Capability



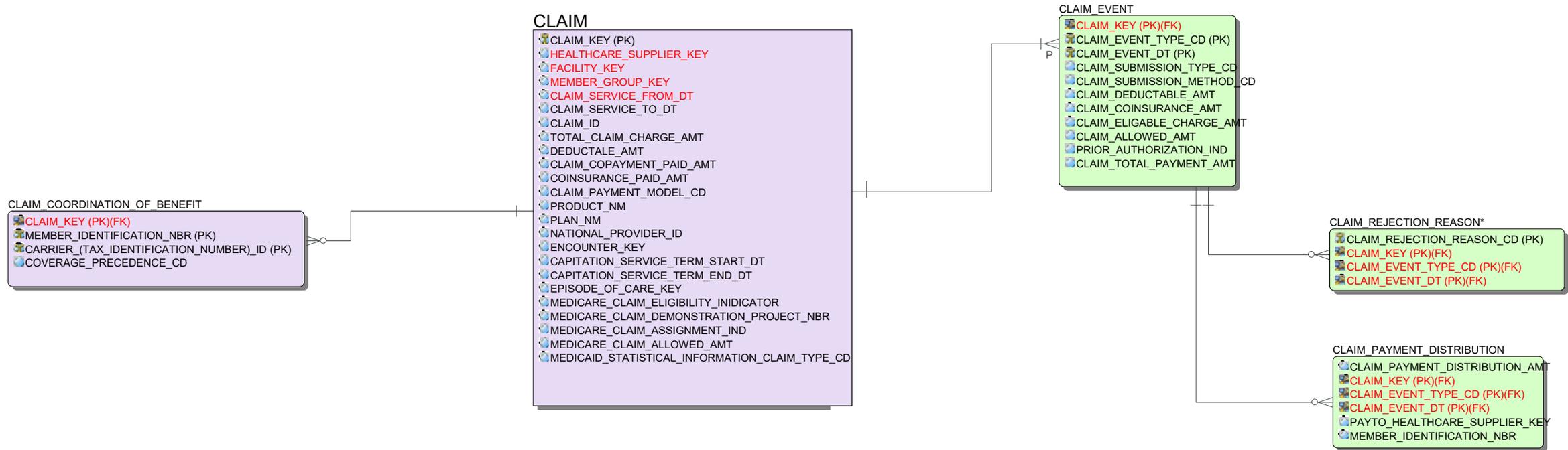
# Option Two Physical Claim-Even

## Pre-Subtype Consolidation



# Option Two Physical Claim-Even

## Post-Subtype Consolidation



# Questions

# Speaker Information



**Donavon Gooldy**

Senior Principal

Data Architecture Innovation  
and Thought Leadership

Phone: +1 (630) 248-7084  
Email: [donavon.gooldy@accenture.com](mailto:donavon.gooldy@accenture.com)



LinkedIn Articles

# Appendix

The image features a futuristic, white, curved architectural space. The walls and ceiling are composed of numerous white, curved panels that create a sense of depth and perspective. The floor is a checkered pattern of light and dark gray squares. The word "Appendix" is written in a large, bold, purple font across the center of the image.

# Modeling to Communicate



# Presentation and Utility Increase Model Value

1

Formatted for easy digestion of narrative increase value of the model

- Broadens the audience of uses
- Easier read imparts greater understanding

2

Focus communication on business architecture narrative alone

- Included only what is relevant for communication
- Maximize relevant information with graphics, color, placement, naming, annotation

3

Organization model to rapidly create custom presentations

- Layout to create custom presentation specific content in minutes, rather than hours

- Data Architect:
  - A Business Analyst
  - A Business Writer
  - A Graphic Illustrator

# Format for Easy Digestion

1

Order model according to narrative flow

- Left to right subject flow
- Left to right, top down story of subject function

2

Canvas real estate is cheap, use it liberally

- Group related content and space for separation of concepts
- Framing where useful

3

Use Entity Color Classification

- Breaks up canvas – visually separates function canvas, making model easier to follow

4

Relationship line discipline

- Use relationship channeling technique between subject areas
- Avoid relationship line cross over – never pass behind non-relationship objects

5

Study graphic composition – how viewers naturally follow flow of inform

- Practicing based on how viewer follow graphic presentation enhances information transfer

# Focus on Business Architecture - Commerce

1

Include only what's relevant to business understanding

- No indexes, surrogate keys, operational keys, alternate key, temporal keys, reporting constructs, etc.
- Class words denote business use, imply data types – no data types or domains on the canvas

2

Use content enumeration as visual cue of classification or aspect concept basis

- Basis should be reflected in the name as well

3

Use relationship narratives to promote function understanding

- Relationship phrasing tells function's story on the canvas

# Organize for Rapid, Custom Presentation Creation

1

Order the model according to a coherent subject narrative - customer actor to commerce transactions

- The story makes the model digestible and memorable
- Linear story layout enhance model utility as well as banner printing

2

Organization model to rapidly create custom presentations

- Layout to create custom presentation specific content in minutes, rather than hours
- Use sub-models liberally for customized communication/review