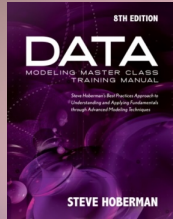


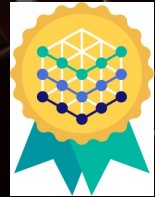
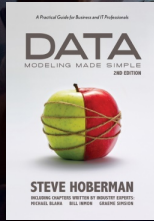
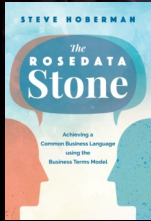
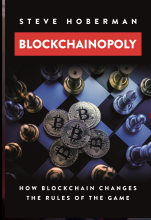
Digital Transformation and the Business Terms Model



Steve Hoberman, DMC

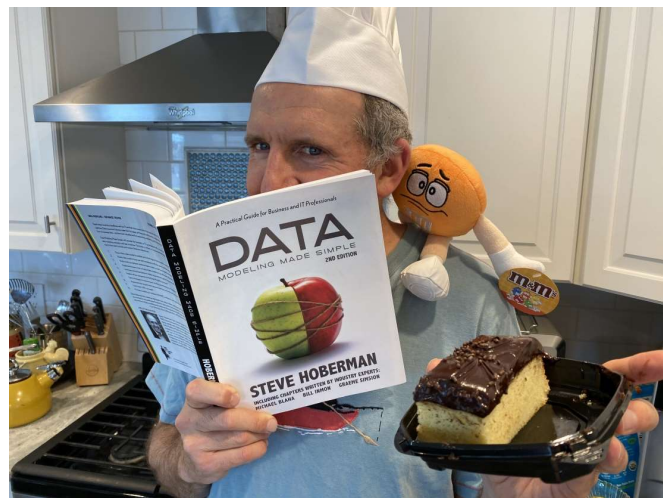
me@stevehoberman.com, www.stevhoberman.com

TechnicsPub.com, www.DataModelingZone.com, www.DataModelingInstitute.com



Session Objective

Be able to apply the techniques and approach to maximize the value of the business terms model



The Business Terms Model

Challenges

Needs

Solution

Construction

Focus

Stretch

Interference

Engage

Chat, chat, chat

Pencil and paper

2 min rule

“Candy”




Challenges

Technology

Expectations

Ambiguity



The illustration shows a person standing at a bakery counter with a dog. The person is looking at a sign that says 'Bakery' and has a thought bubble above their head. The dog is looking at a biscuit on the counter and has a thought bubble above its head. A sign above the counter says 'BUY 1 GET 1 FREE ON BISCUITS'. The bakery is filled with various baked goods.

Technology

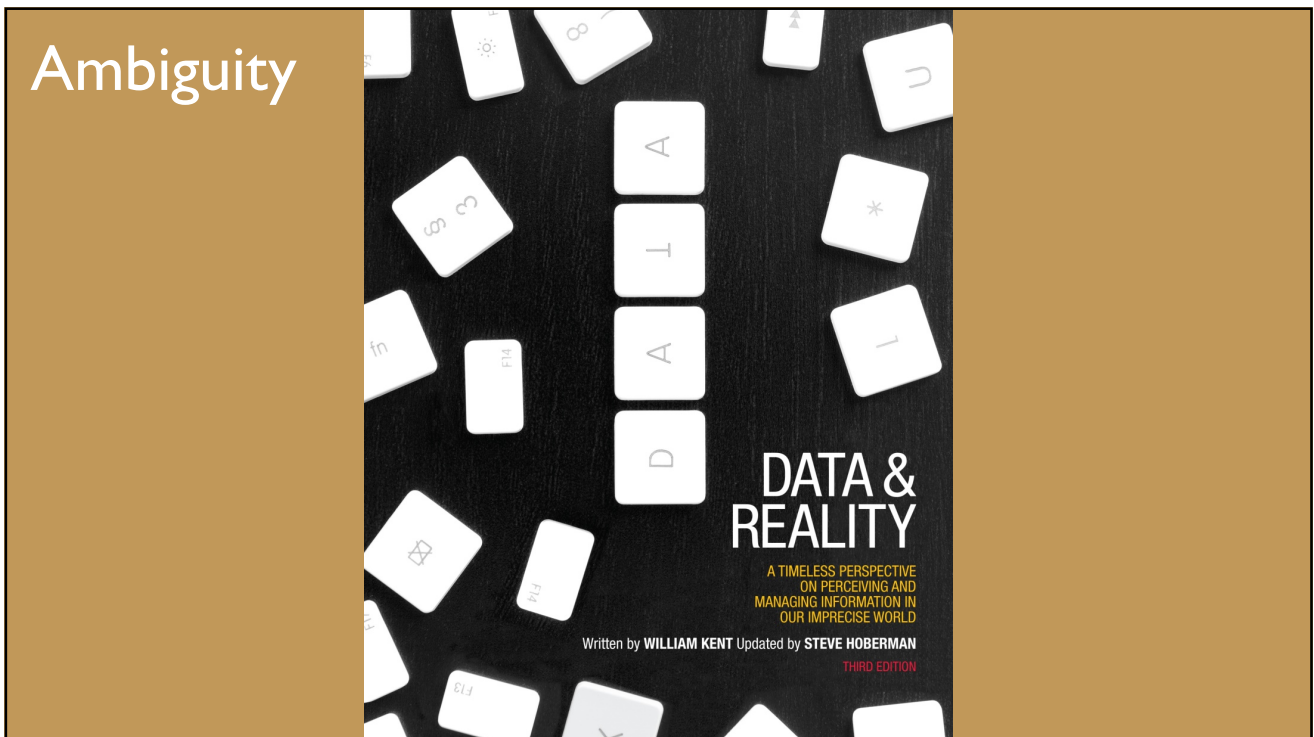


The image is a collage. On the left, there is a stack of books. In the bottom left corner, there is a gift box wrapped in brown paper with a white snowflake ornament. The background is a dramatic, stormy sky with dark clouds and bright lightning bolts.

Expectations



Ambiguity

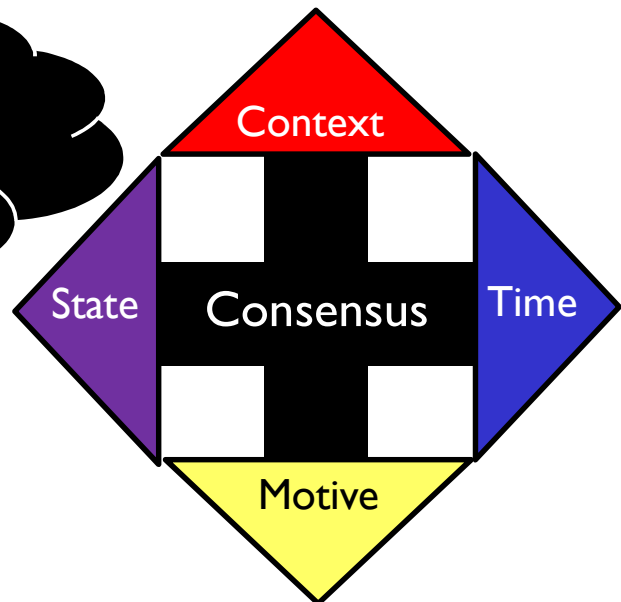


“ We are dealing with a natural ambiguity of words, which we, as human beings, resolve in a largely automatic and unconscious way, because we understand the context in which the words are being used. When a data file exists to serve just one application, there is, in effect, just one context, and users implicitly understand that context; they automatically resolve ambiguities by interpreting words as appropriate for that context. But when files get integrated into a database serving multiple applications, that ambiguity-resolving mechanism is lost. The assumptions appropriate to the context of one application may not fit the contexts of other applications.”

William Kent, **Data and Reality**

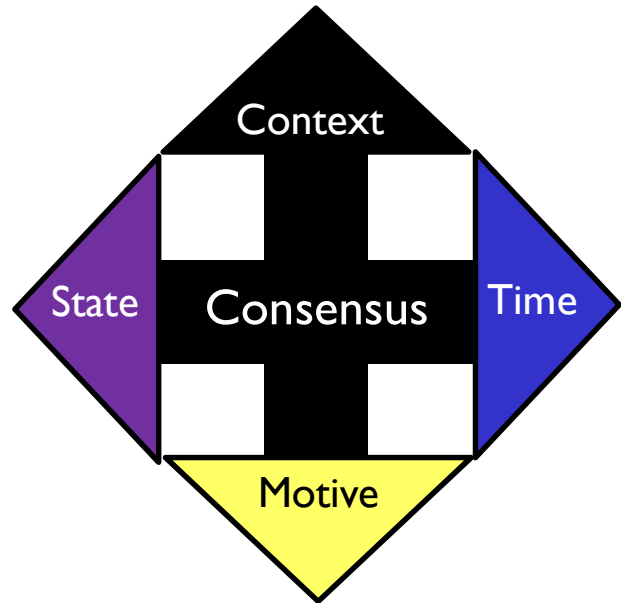
4 major factors lead to ambiguity

Understanding the factors causing ambiguity is the first step to resolution.



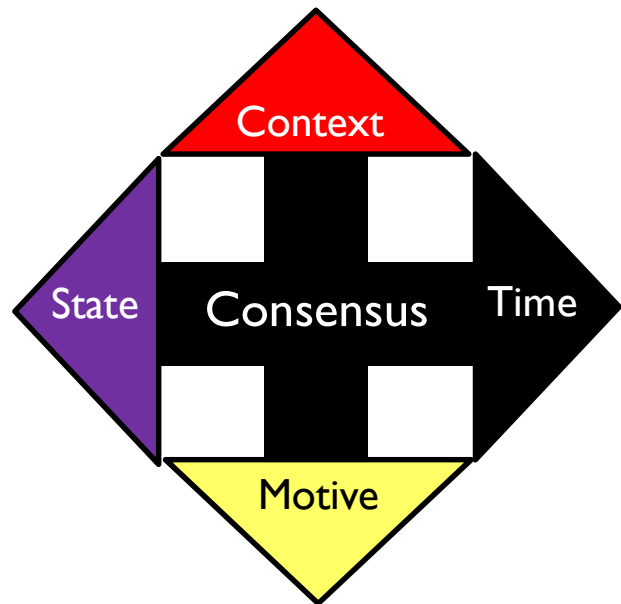
Factor 1: Context

- Dept vs. Org
- Dept vs. Dept
- Org vs. Vendor



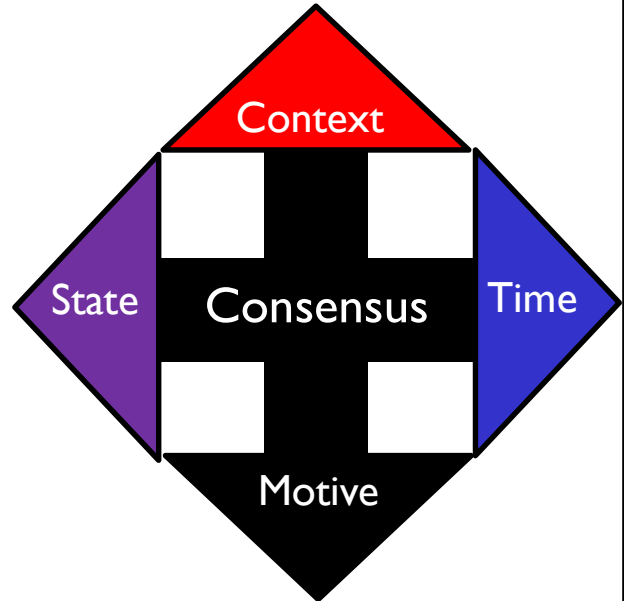
Factor 2: Time

- Today vs. Past
- Today vs. Future



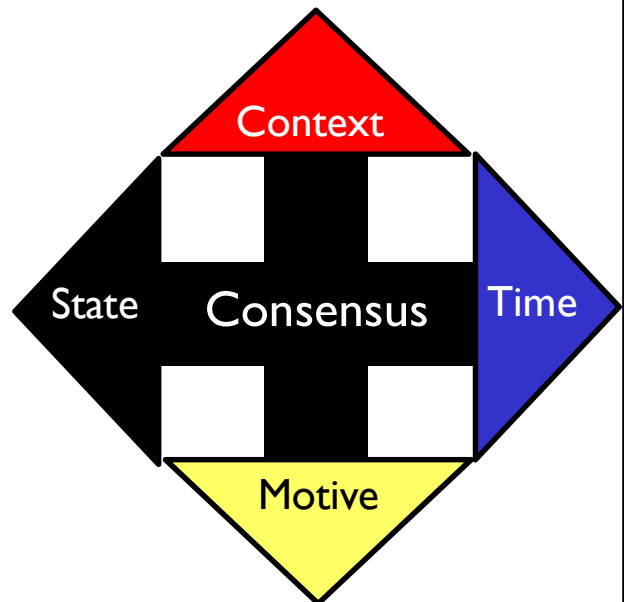
Factor 3: Motive

- Incentives vs. GAAP
- Mine vs. Yours



Factor 4: State

- State vs. State
- State vs. Org



The Business Terms Model

Challenges

Needs

Solution

Construction

Needs

Precise

Common Business Language

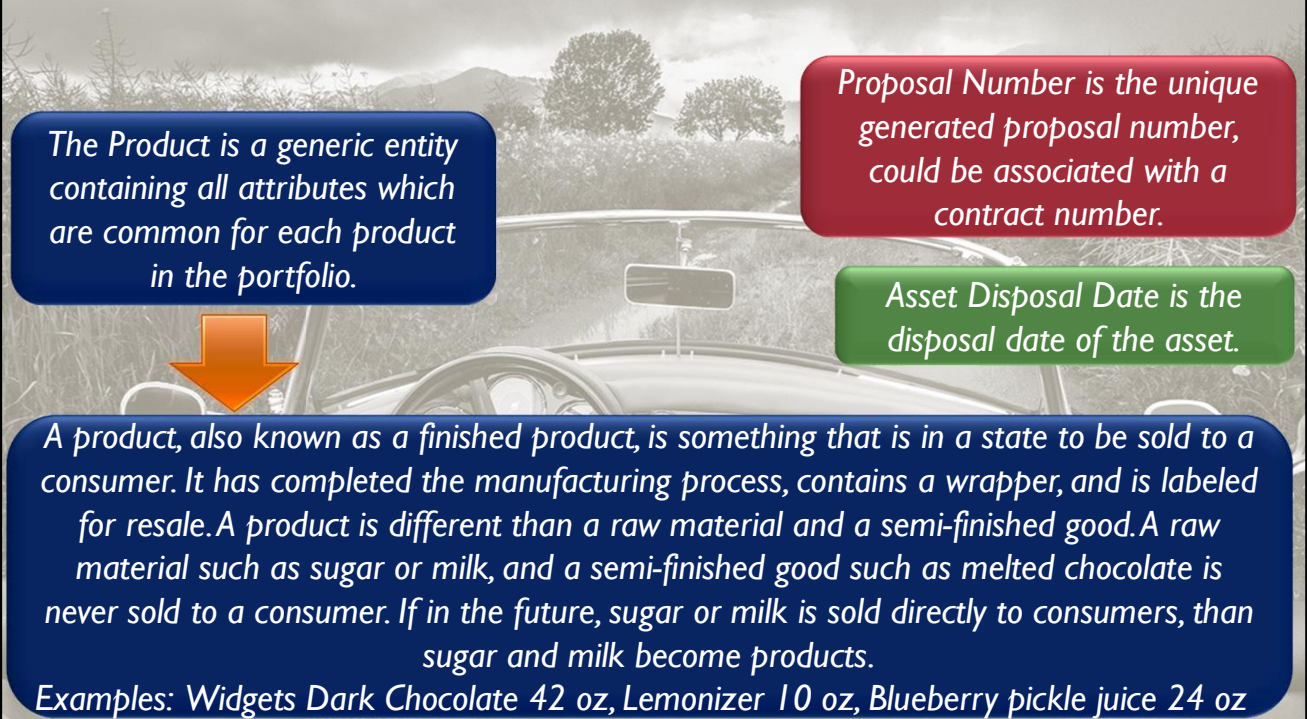
Scope

Minimal

Visuals



"I know this is hard Ms. Egg, but point to the person who beat you."



The Product is a generic entity containing all attributes which are common for each product in the portfolio.

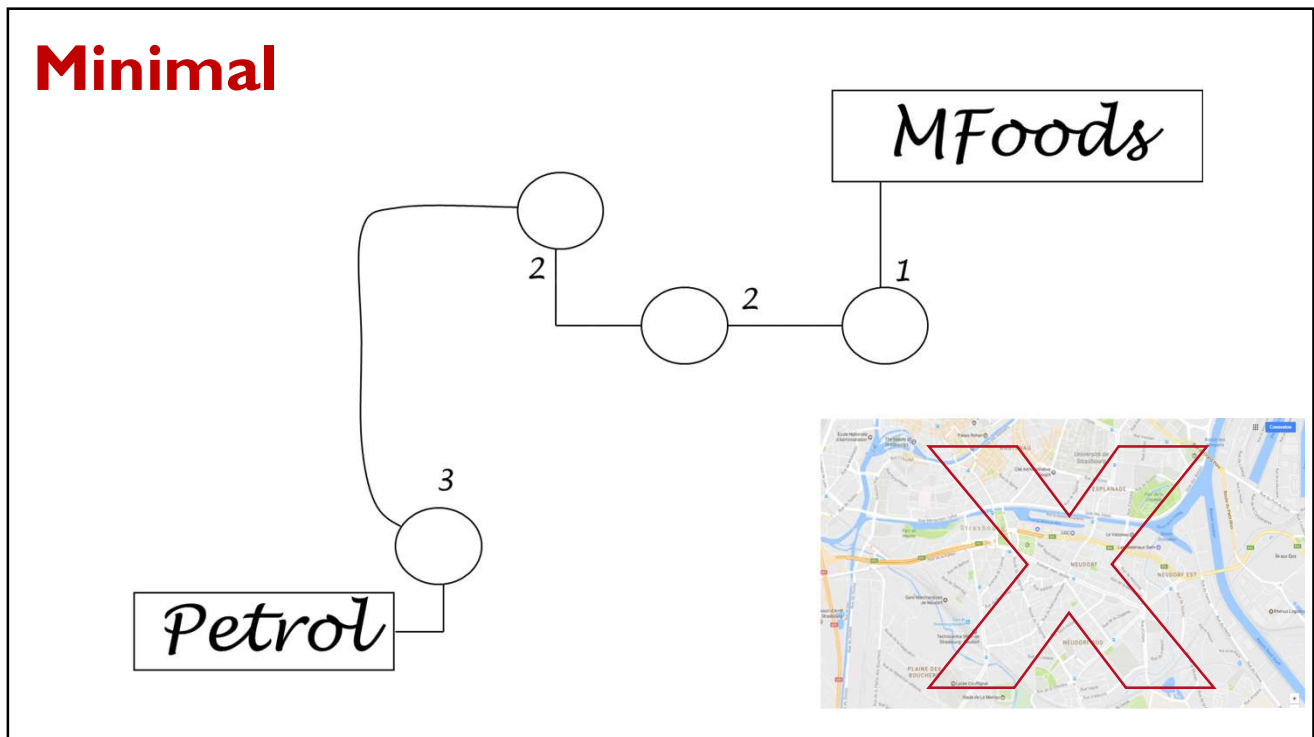
Proposal Number is the unique generated proposal number, could be associated with a contract number.

Asset Disposal Date is the disposal date of the asset.

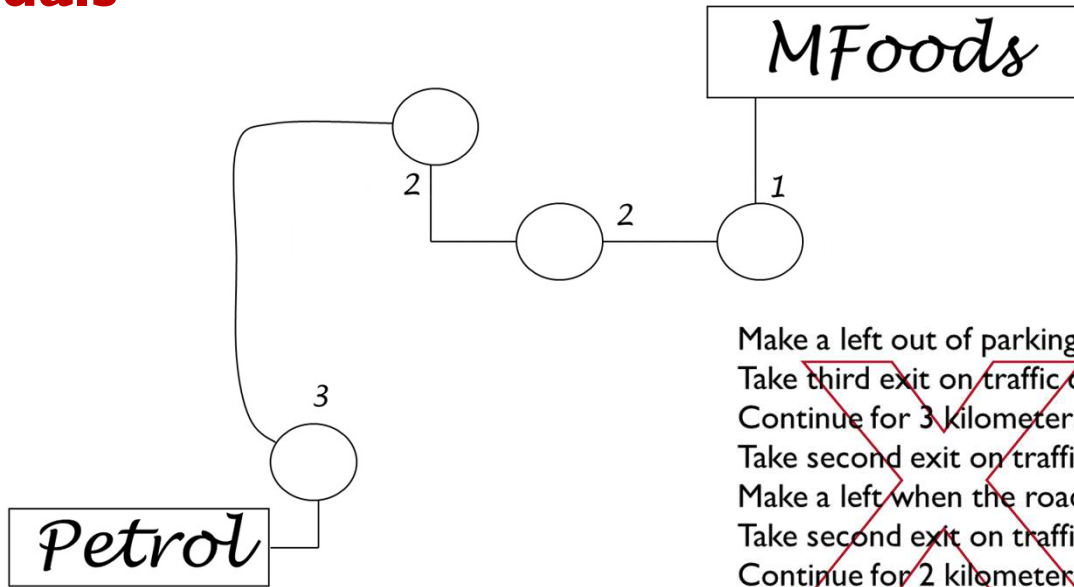
A product, also known as a finished product, is something that is in a state to be sold to a consumer. It has completed the manufacturing process, contains a wrapper, and is labeled for resale. A product is different than a raw material and a semi-finished good. A raw material such as sugar or milk, and a semi-finished good such as melted chocolate is never sold to a consumer. If in the future, sugar or milk is sold directly to consumers, than sugar and milk become products.

Examples: Widgets Dark Chocolate 42 oz, Lemonizer 10 oz, Blueberry pickle juice 24 oz



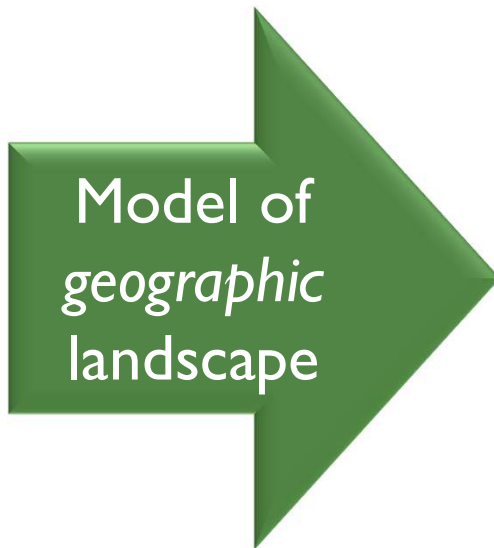


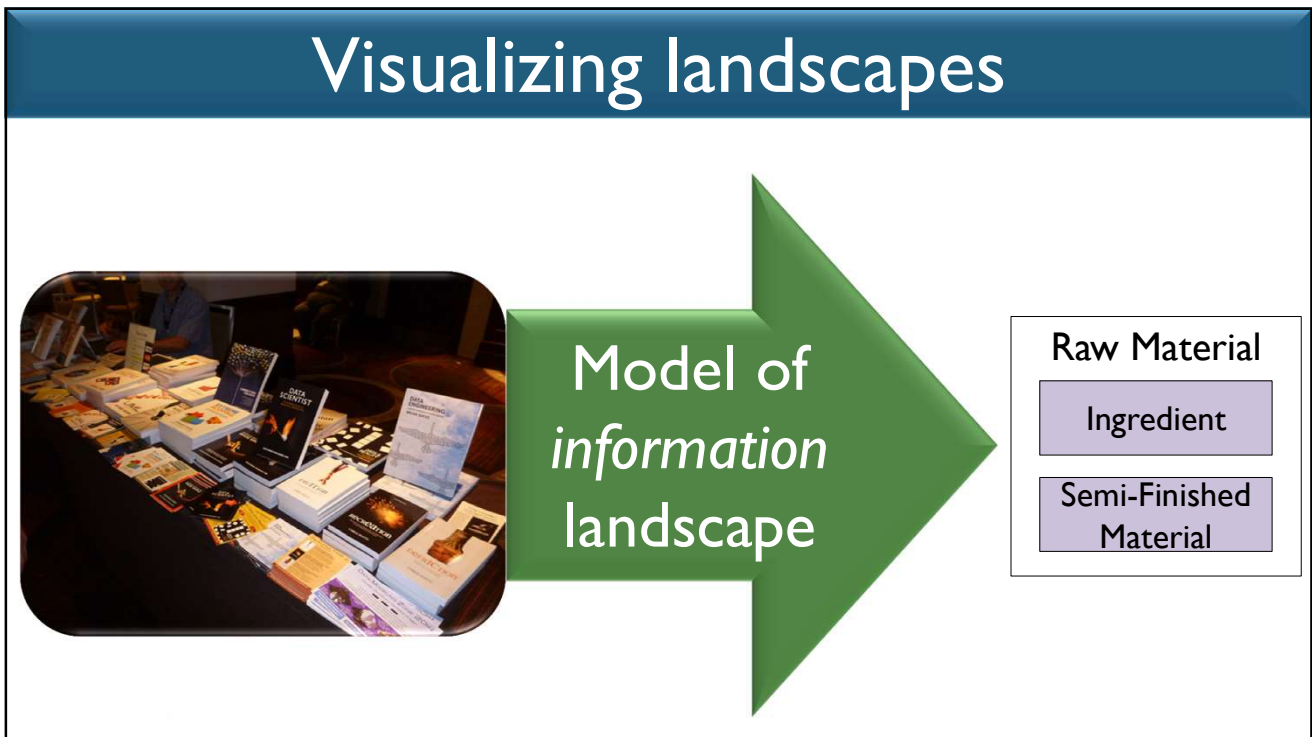
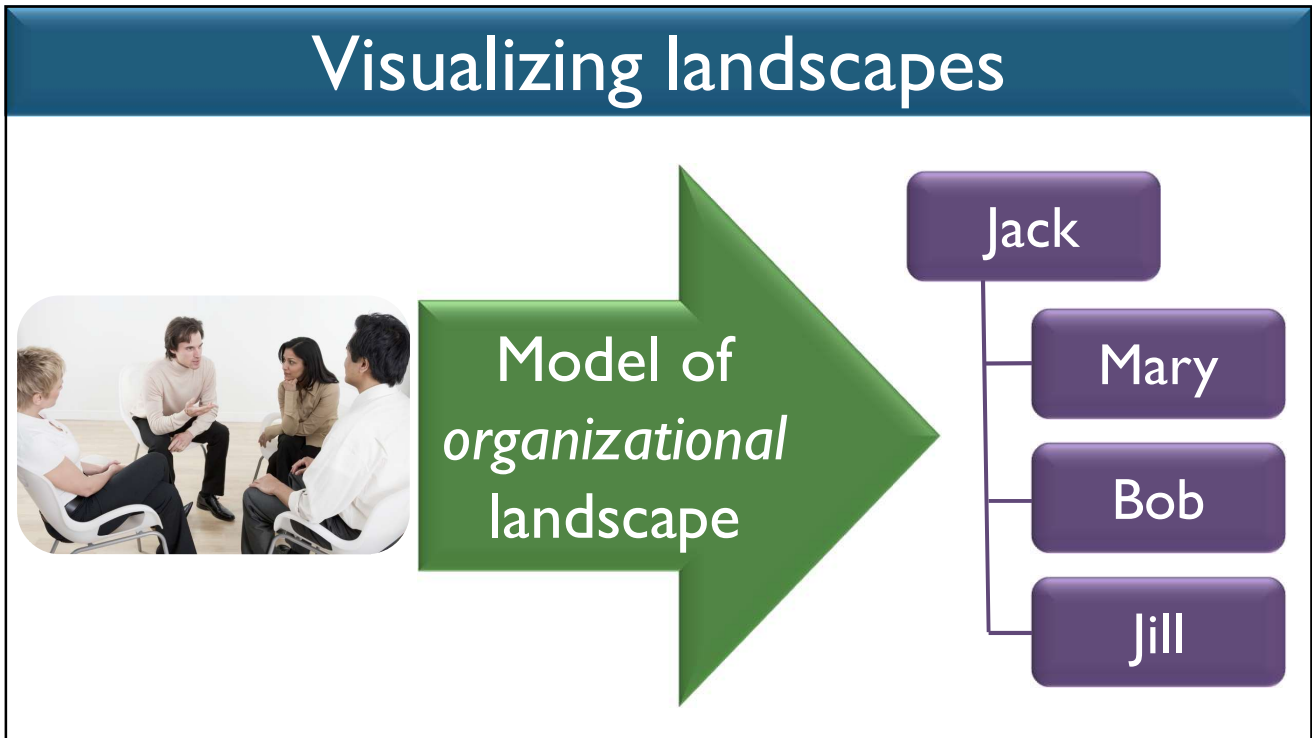
Visuals



Make a left out of parking lot.
Take third exit on traffic circle.
Continue for 3 kilometers.
Take second exit on traffic circle.
Make a left when the road ends.
Take second exit on traffic circle.
Continue for 2 kilometers.
Take first exit on traffic circle.

Visualizing landscapes





The Business Terms Model

Challenges

Needs

Solution

Construction

Solution

Precise

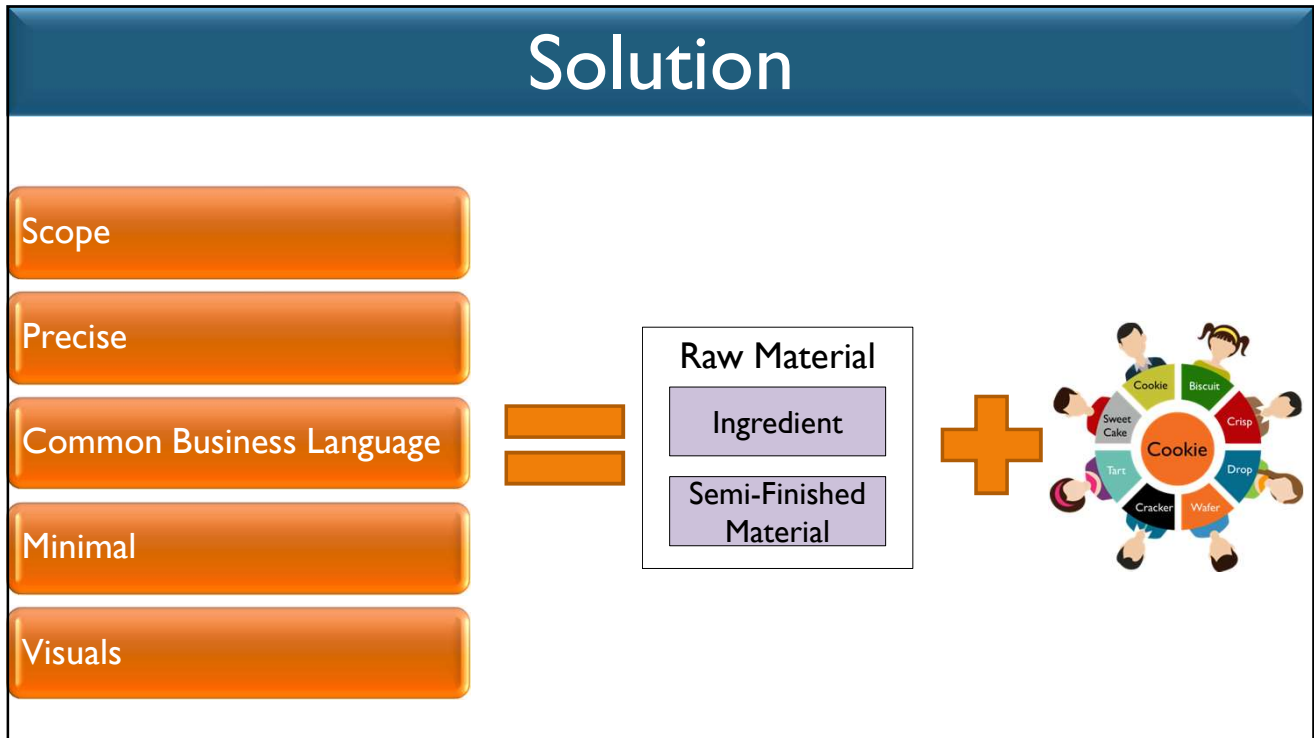
Common Business Language

Scope

Minimal

Visuals





Business Terms Model (BTM)

Raw Material

Ingredient

Semi-Finished Material

+

Term	Definition
Raw Material	A material used in creating bakery items that is either a semi-finished material or an ingredient. For example, to create a cake, the ingredients sugar and milk are needed, and the semi-finished materials of frosting and fondant are needed.
Ingredient	A material used in creating bakery items that, from the perspective of the bakery purchaser, cannot be broken down into smaller pieces. For example, to create a cake, the ingredients sugar and milk are needed.
Semi-finished Material	A material used in creating bakery items that, from the perspective of the bakery purchaser, contains multiple ingredients. For example, to create a cake, the semi-finished materials of frosting and fondant are needed. Frosting contains the ingredients of powdered sugar, cream, butter, and vanilla. Fondant contains the ingredients of sugar, water, and corn syrup.

Business Terms Model (BTM)

A BTM is a language of symbols and text which simplifies an informational landscape by providing a precise, minimal, and visual tool scoped for a particular initiative and tailored for a particular audience. Contains Terms, Relationships, Definitions, and optionally Mappings.

Customer
Product
Employee



Product Sales
Manufacturing
Index on CUST_ID



Party
Student Course m-m
Phone Number



Why call it a BTM and not a CDM?

BTM more aligned with the business (and DG)

It is Business Terms!

Conceptual conjures up an optional, theoretical, and vague deliverable

It does not have to be *only* a step towards the logical

It does not have to be created in a data modeling tool



About terms

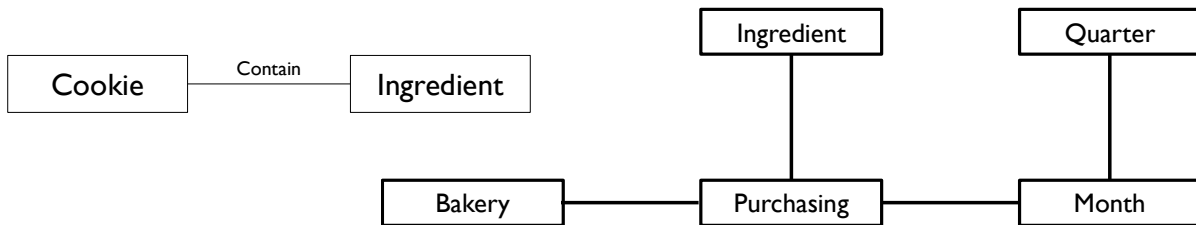
A term is a noun which represent a collection of business data and is considered both basic and critical to your audience for a particular initiative. Basic means this term is mentioned frequently in conversations in discussing the initiative. Critical means the initiative would be very different or non-existent without this term.

- Who is making something happen?
- What happened?
- When did it happen?
- Where did it happen?
- Why did it happen?
- How do you know it happened?

Cookie

Ingredient

Relationships



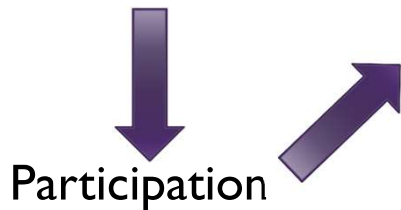
A business connection between two terms

Entities are nouns, Relationships are verbs

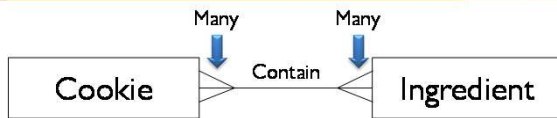
A relationship captures the *reason* two entities interact

- Each Order must **contain** one or many Order Lines.
- Each Product may **appear on** one or many Order Lines.

Relationships: Cardinality

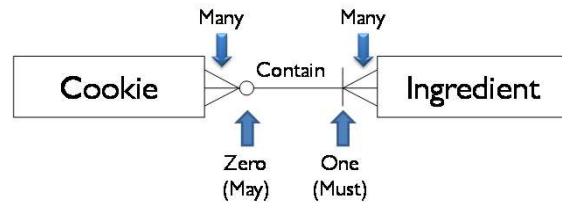


Question	Yes	No
Can a Cookie contain more than one Ingredient?	✓	
Can an Ingredient be used in baking more than one Cookie?	✓	



Existence

Question	Yes	No
Can a Cookie exist without Ingredients?		✓
Can an Ingredient exist without Cookies?	✓	



Each **Cookie** must contain many **Ingredients**.
 Each **Ingredient** may be used in baking many **Cookies**.

Use examples to validate cardinality



Cookie

- Chocolate chip cookie
- Gingerbread cookie
- Sugar cookie
- Butter cookie
- Peanut butter cookie

Ingredient

- Sugar
- Butter
- Egg
- Peanut butter
- Frosting

Supplier and Ingredient

Supplier

↓

Supplier — Provide —> Ingredient

↓

Ingredient

```

classDiagram
    class Supplier
    class Ingredient
    Supplier "1" -- "many" Ingredient : Provide
    
```

Question	Yes	No
Can a Supplier provide more than one Ingredient?	✓	
Can an Ingredient be provided by more than one Supplier?		✓
Can a Supplier exist without Ingredients?	✓	
Can an Ingredient exist without Suppliers?		✓

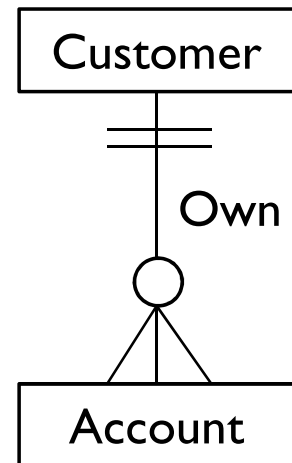
Supplier	Ingredient
IBM	Sugar
ABC	Butter
CBA	Egg
CIA	Peanut butter
HAL	Frosting

Let's practice!

	Yes	No
Can a Customer own more than one Account?	✓	
Can an Account be owned by more than one Customer?		✓
Can a Customer exist without an Account?	✓	
Can an Account exist without a Customer?		✓

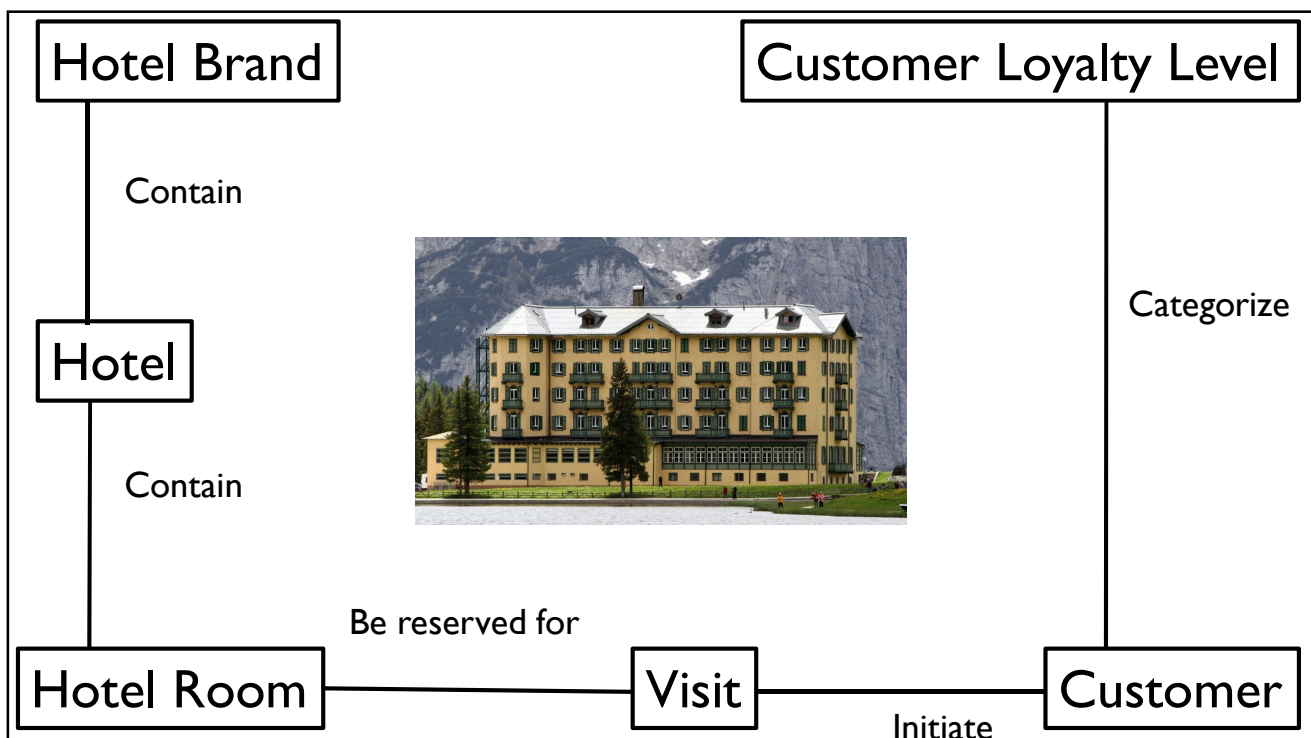
Let's practice!

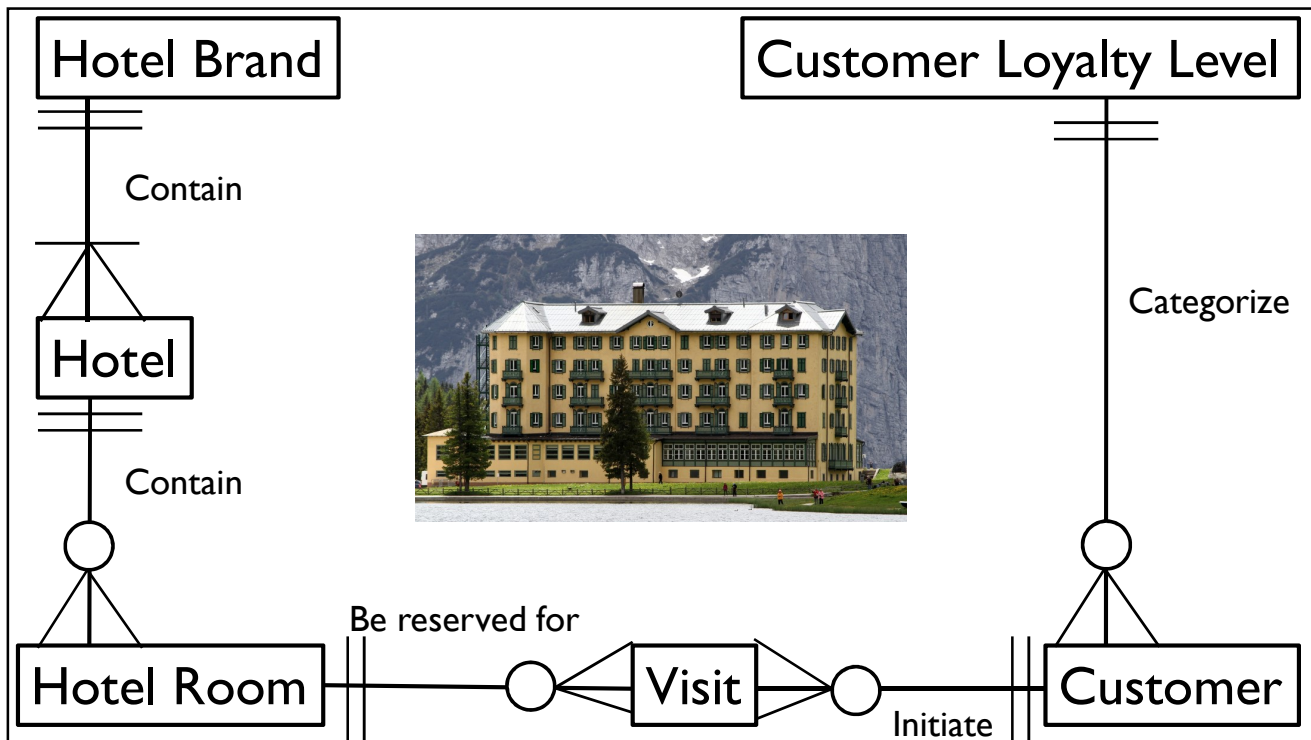
	Yes	No
Can a Customer own more than one Account?	✓	
Can an Account be owned by more than one Customer?		✓
Can a Customer exist without an Account?	✓	
Can an Account exist without a Customer?		✓



Each Customer **may** own many Accounts.

Each Account **must** be owned by one Customer.





Subtyping

- Grouping together common terms
- Benefits
 - Better communication
 - More rules
 - Less metadata redundancy (inheritance)

Supertype

↓

Person

Teacher

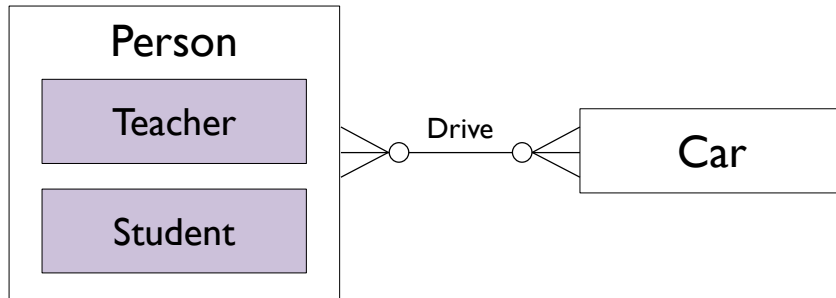
Student

← Subtype

← Subtype

Each **Person** may be either a **Teacher** or a **Student**.
Teacher is a **Person**.
Student is a **Person**.

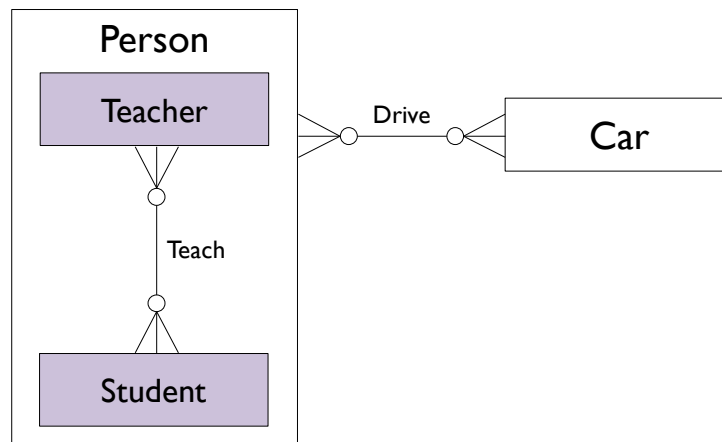
Putting the pieces together



Each **Person** may drive many **Cars**.
 Each **Car** may be driven by many **People**.

Also applies to **Teacher** and **Student**:
 Each **Teacher** may drive many **Cars**.
 Each **Car** may be driven by many **Teachers**.
 Each **Student** may drive many **Cars**.
 Each **Car** may be driven by many **Students**.

Subtypes can relate to each other too



Each **Teacher** may teach many **Students**.
 Each **Student** may be taught by many **Teachers**.

Definitions

Raw Material

Ingredient

Semi-Finished Material

+

Term	Definition
Raw Material	A material used in creating bakery items that is either a semi-finished material or an ingredient. For example, to create a cake, the ingredients sugar and milk are needed, and the semi-finished materials of frosting and fondant are needed.
Ingredient	A material used in creating bakery items that, from the perspective of the bakery purchaser, cannot be broken down into smaller pieces. For example, to create a cake, the ingredients sugar and milk are needed.
Semi-finished Material	A material used in creating bakery items that, from the perspective of the bakery purchaser, contains multiple ingredients. For example, to create a cake, the semi-finished materials of frosting and fondant are needed. Frosting contains the ingredients of powdered sugar, cream, butter, and vanilla. Fondant contains the ingredients of sugar, water, and corn syrup.

What is a customer?

A Customer is a person or organization who obtains our product for resale. The Customer normally obtains the product through purchase. An example of a customer who does not purchase our product is the Salvation Army, which receives the product for free as a charity organization. A person or organization must have obtained at least one product from us to be considered a Customer. That is, Prospects are not Customers. Also, once a Customer, always a Customer so even Customers that have not obtained anything in 50 years are still considered Customers. The Customer is different than the Consumer, who obtains the product for consumption as opposed to resale.

Examples:

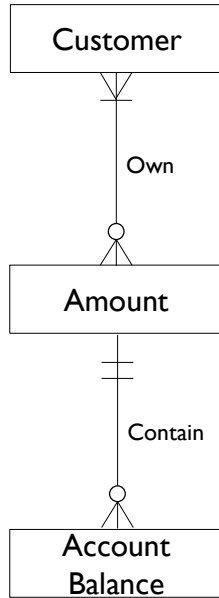
- Walmart
- Bob's Grocery Store
- Military Base 1332

Clear

Complete

Correct

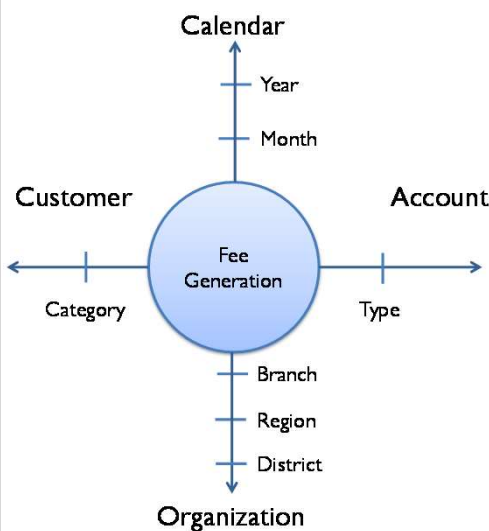
Variations: Relational



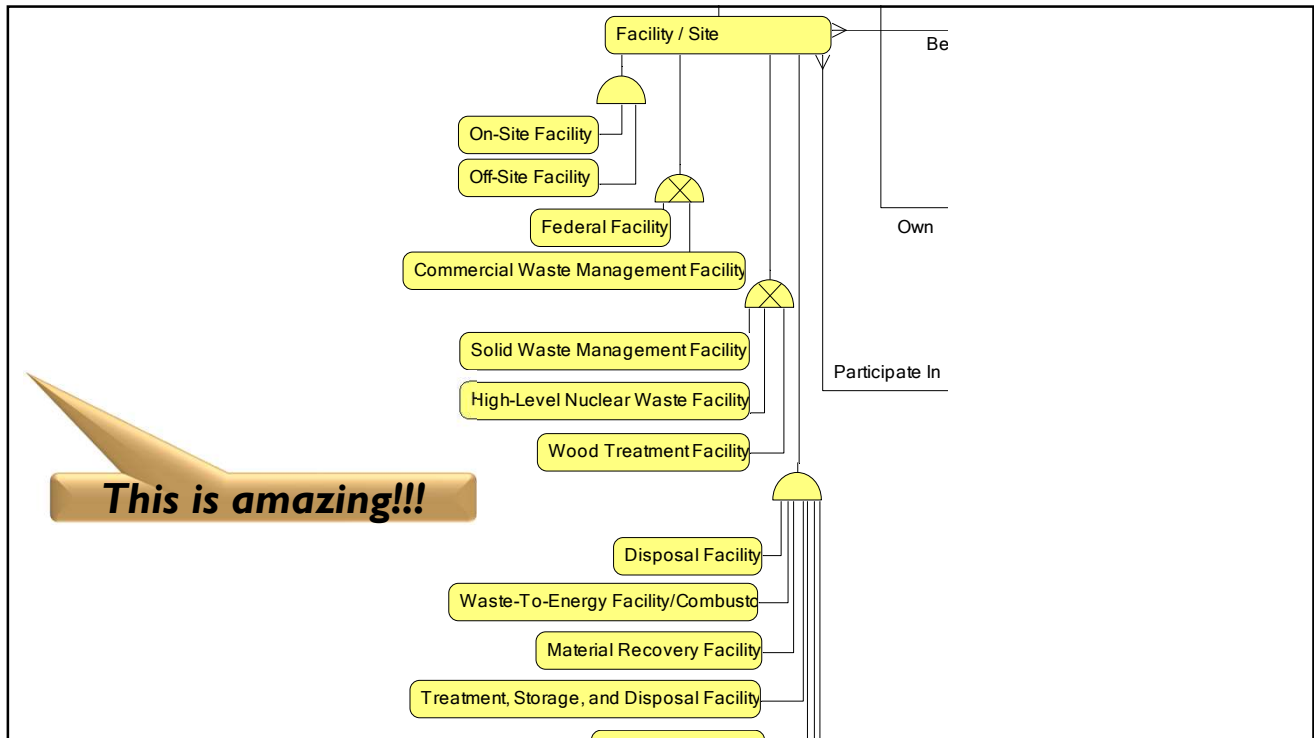
Each **Customer** may own many **Accounts**.
 Each **Account** must be owned by many **Customers**.
 Each **Account** may contain many **Account Balances**.
 Each **Account Balance** must belong to one **Account**.

Customer	A customer is a person or organization who has opened one or more accounts with our bank. If members of a household each have their own account, each member of a household is considered a distinct customer. If someone has opened an account and then closed it, they are still considered a customer.
Account	An account is a contractual arrangement by which our bank holds funds on behalf of a customer.
Account Balance	An account balance is a financial record of how much money a customer has in a particular account with our bank at the end of a given time period such as someone's checking account balance at the end of a month.

Variations: Dimensional



Fee Generation	Fee generation is the business process where money is charged to customers for the privilege to conduct transactions against their account, or money charged based on time intervals such as monthly charges to keep a checking account open that has a low balance.
Branch	A branch is a physical location open for business. Customers visit branches to conduct transactions.
Region	A region is our bank's own definition of dividing a country into smaller pieces for branch assignment or reporting purposes.
District	A district is a grouping of regions used for organizational assignments or reporting purposes. Districts can and often do cross country boundaries, such as North America and Europe districts.
Customer Category	A customer category is a grouping of one or more customers for reporting or organizational purposes. Examples of customer categories are Individual, Corporate, and Joint.
Account Type	An account type is a grouping of one or more accounts for reporting or organizational purposes. Examples of account types are Checking, Savings, and Brokerage.
Year	A year is a period of time containing 365 days, consistent with the Gregorian calendar.
Month	A month is each of the twelve named periods into which a year is divided.



Mapping

Lots of options – think of your audience!

What have been your experiences with creating and maintaining a mapping?

Store A: Cookie

Corporate Purchaser: Cookie

Store B: Biscuit

Store C: Sweet Cake

Cookie

Biscuit

Crisp

Drop

Wafer

Cracker

Tart

Sweet Cake

Cookie

The Business Terms Model

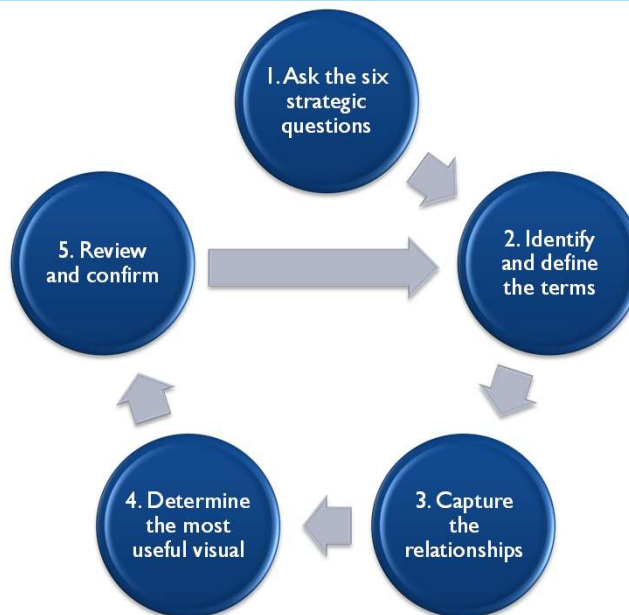
Challenges

Needs

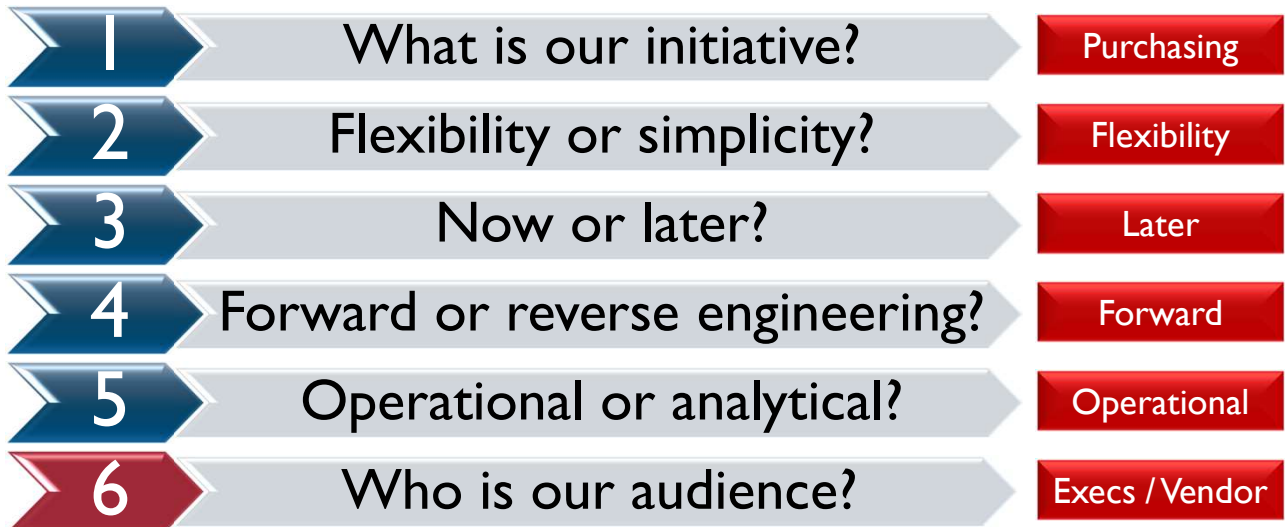
Solution

Construction

Build a BTM



Step 1: Ask the 6 strategic questions

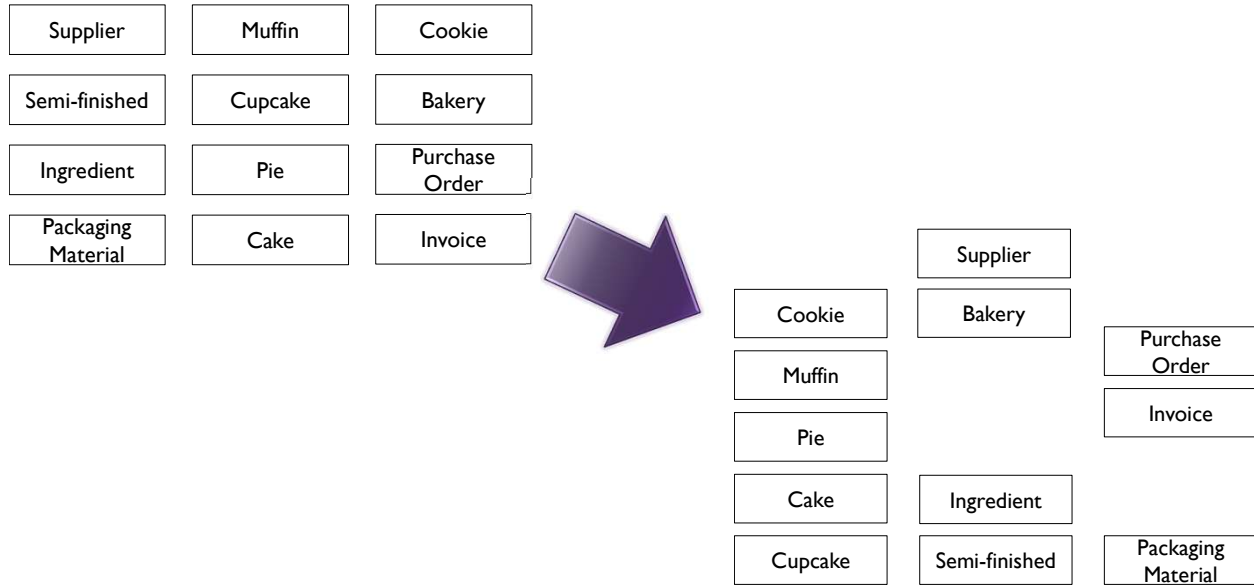


Step 2: Identify and define the terms

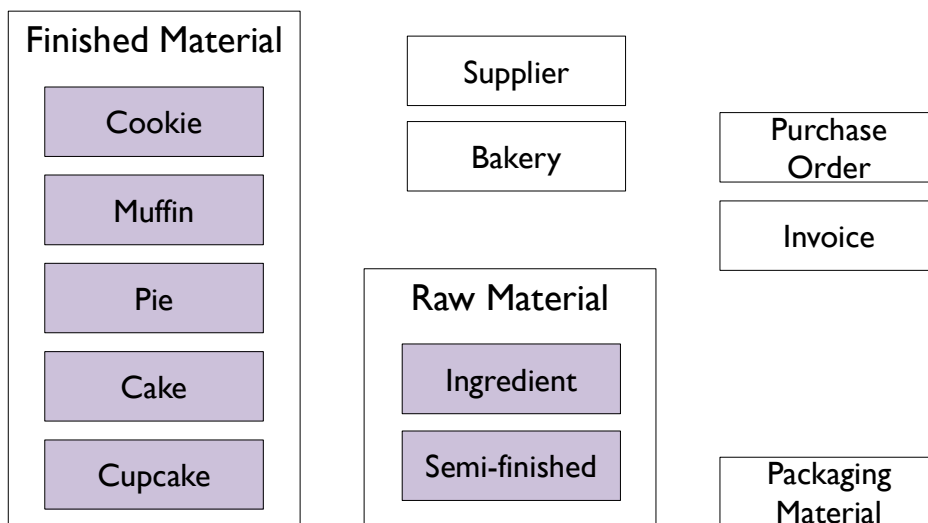
Chips Inc. Purchasing Terms

Who?	What?	When?	Where?	Why?	How?
Consumer	Semi-finished	Expiration Date	Bakery	Order	Purchase Order
Supplier	Material	Holiday		Bill	Invoice
	Ingredient	Season		Shipment	Packing Slip
	Packaging Material				Recipe
	Category				
	Muffin				
	Cupcake				
	Pie				
	Cake				
	Cookie				

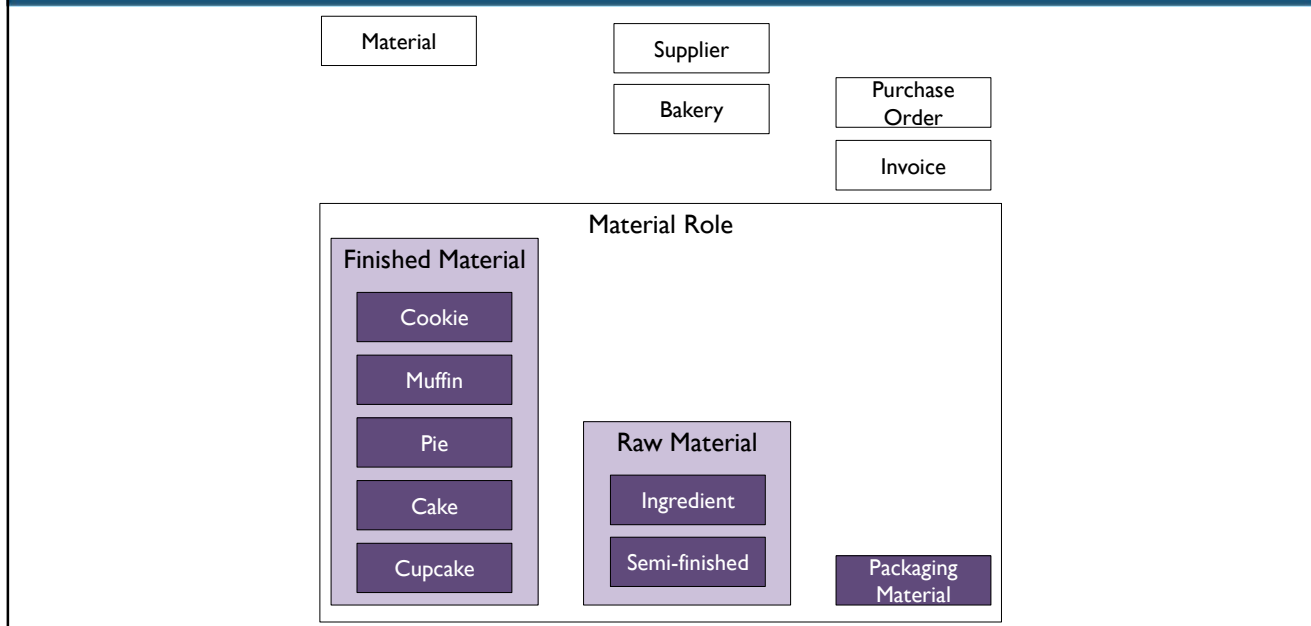
Step 2: Identify and define the terms



Step 2: Identify and define the terms



Step 2: Identify and define the terms

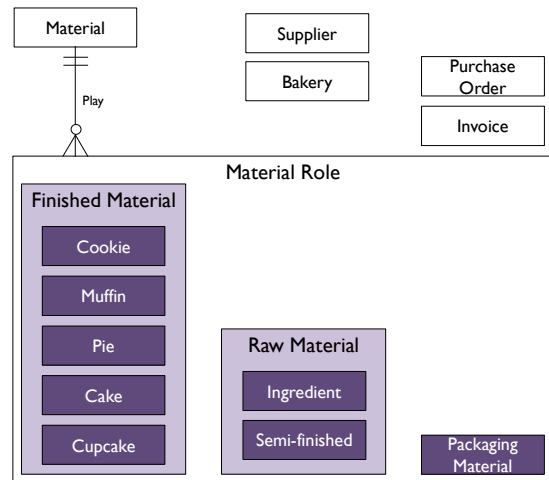


Step 3: Capture the relationships

Question	Yes	No
Can a Material play more than one Material Role?	✓	
Can a Material Role be played by more than one Material?		✓
Can a Material exist without a Material Role?	✓	
Can a Material Role exist without a Material?		✓

Each **Material** may play many **Material Roles**.

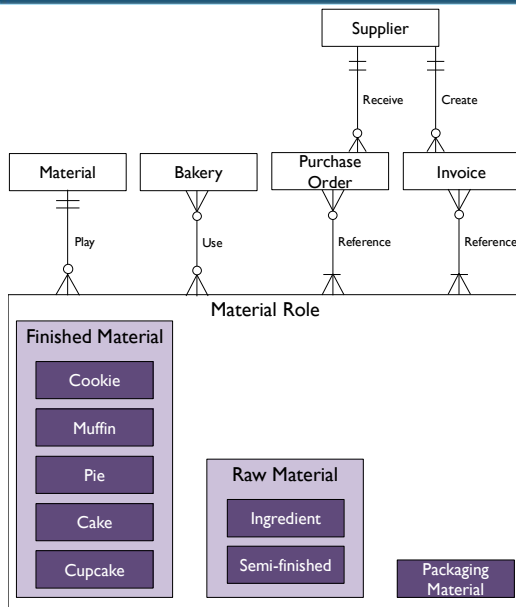
Each **Material Role** must be played by one **Material**.



Step 3: Capture the relationships

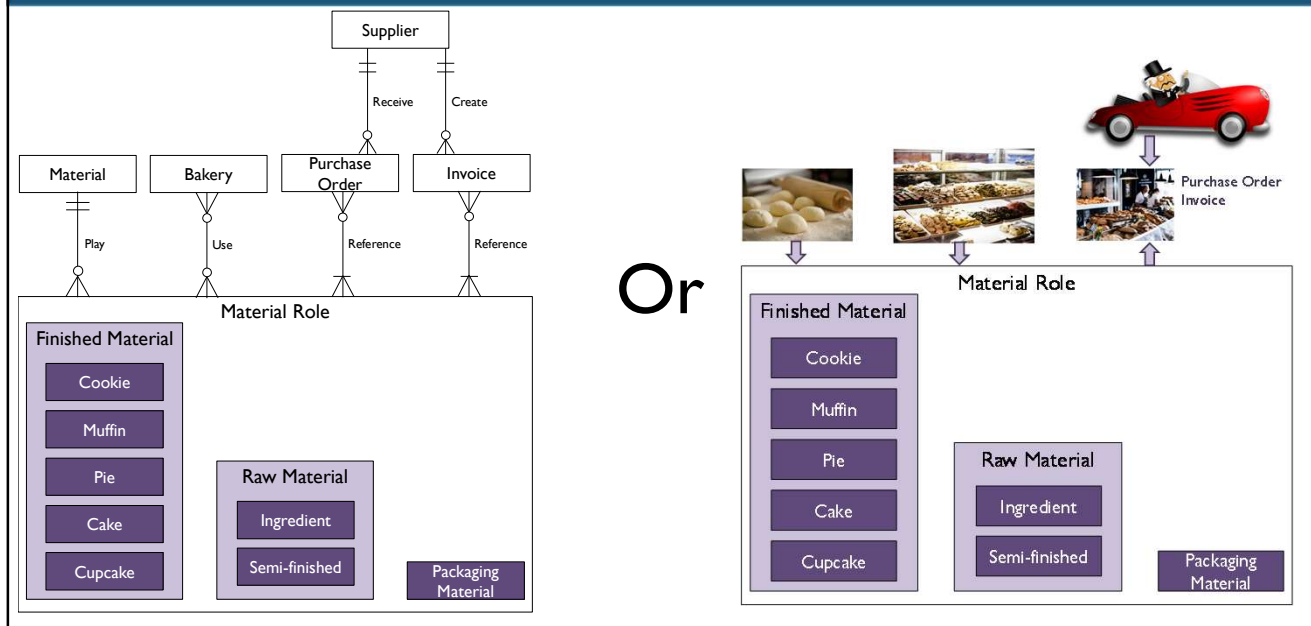
Question	Yes	No
Can a Bakery use more than one Material Role?	✓	
Can a Material Role be used by more than one Bakery?	✓	
Can a Bakery exist without a Material Role?	✓	
Can a Material Role exist without a Bakery?	✓	
Can a Supplier receive more than one Purchase Order?	✓	
Can a Purchase Order be received by more than one Supplier?		✓
Can a Supplier exist without a Purchase Order?	✓	
Can a Purchase Order exist without a Supplier?		✓
Can a Material Role appear on more than one Purchase Order?	✓	
Can a Purchase Order reference more than one Material Role?	✓	
Can a Material Role exist without a Purchase Order?	✓	
Can a Purchase Order exist without a Material Role?		✓
Can a Supplier create more than one Invoice?	✓	
Can an Invoice be created by more than one Supplier?		✓
Can a Supplier exist without an Invoice?	✓	
Can an Invoice exist without a Supplier?		✓
Can a Material Role appear on more than one Invoice?	✓	
Can an Invoice reference more than one Material Role?	✓	
Can a Material Role exist without an Invoice?	✓	
Can an Invoice exist without a Material Role?		✓

Step 3: Capture the relationships

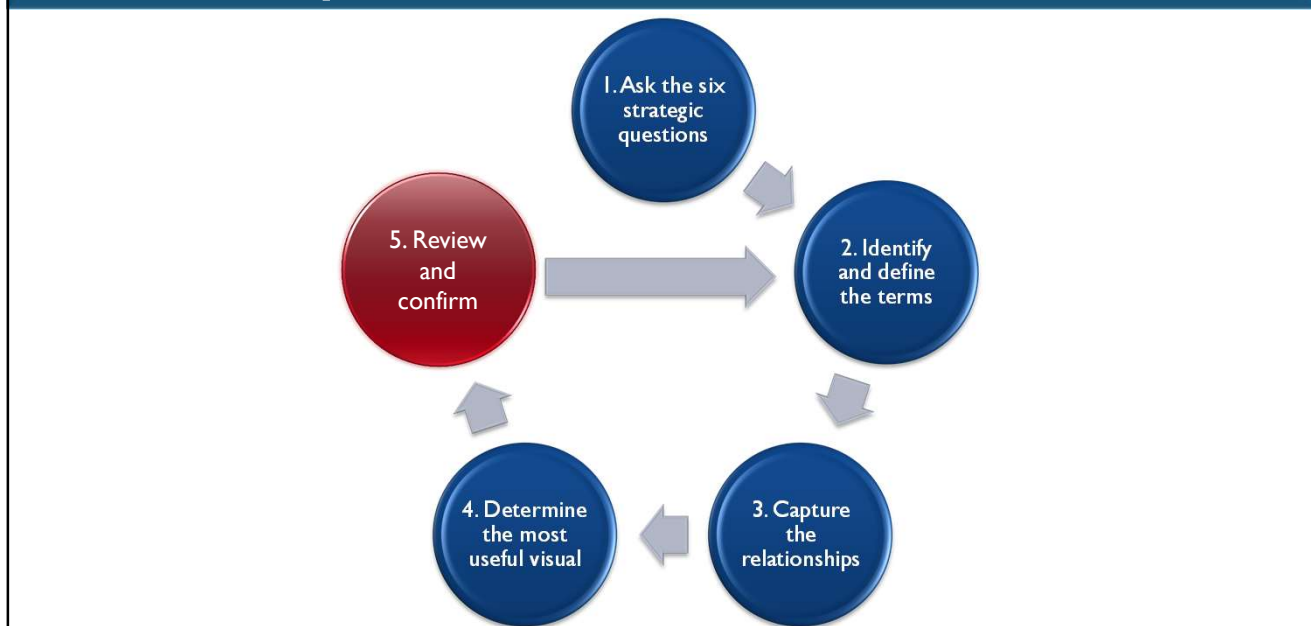


- Each **Bakery** may use many **Material Roles**.
- Each **Material Role** may be used by many **Bakeries**.
- Each **Supplier** may receive many **Purchase Orders**.
- Each **Purchase Order** must be received by one **Supplier**.
- Each **Purchase Order** must reference many **Material Roles**.
- Each **Material Role** may appear on many **Purchase Orders**.
- Each **Supplier** may create many **Invoices**.
- Each **Invoice** must be created by one **Supplier**.
- Each **Invoice** must reference many **Material Roles**.
- Each **Material Role** may appear on many **Invoices**.

Step 4: Determine the visual



Step 5: Review and confirm



Step 1: Ask the 6 strategic questions

1	What is our initiative?	Revenue
2	Flexibility or simplicity?	Simplicity
3	Now or later?	Later
4	Forward or reverse engineering?	Forward
5	Operational or analytical?	Analytical
6	Who is our audience?	Acct / Execs

Step 2: Identify and define the terms

1. What are our costs, sales, and profit by bakery and across all bakeries, for a particular date, quarter, and year, and for one or more finished materials?
2. What are our costs, sales, and profit by bakery and across all bakeries, for a particular day of the week and for one or more finished materials?
3. What are our costs, sales, and profit by bakery and across all bakeries, for a particular holiday and for one or more finished materials?

Step 3: Capture the relationships

The Measure Matrix

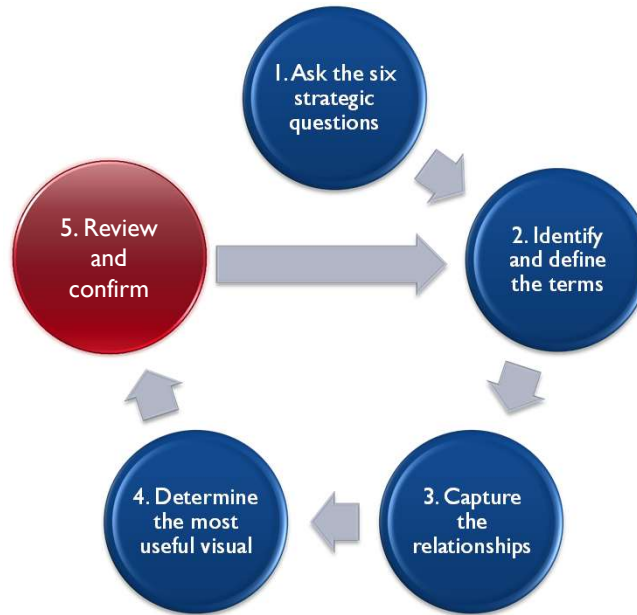
	Costs	Sales	Profit
Date	1	1	1
Quarter	1	1	1
Year	1	1	1
Day of Week	2	2	2
Holiday	3	3	3
Bakery	1,2,3	1,2,3	1,2,3
Finished Material	1,2,3	1,2,3	1,2,3

3. What are our costs, sales, and profit by bakery and across all bakeries, for a particular holiday and for one or more finished materials?

Step 4: Determine the most useful visual



Step 5: Review and confirm



The Business Terms Model

Challenges

Needs

Solution

Construction