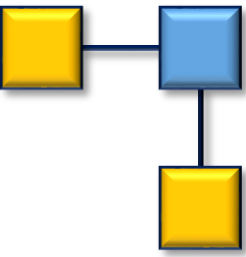
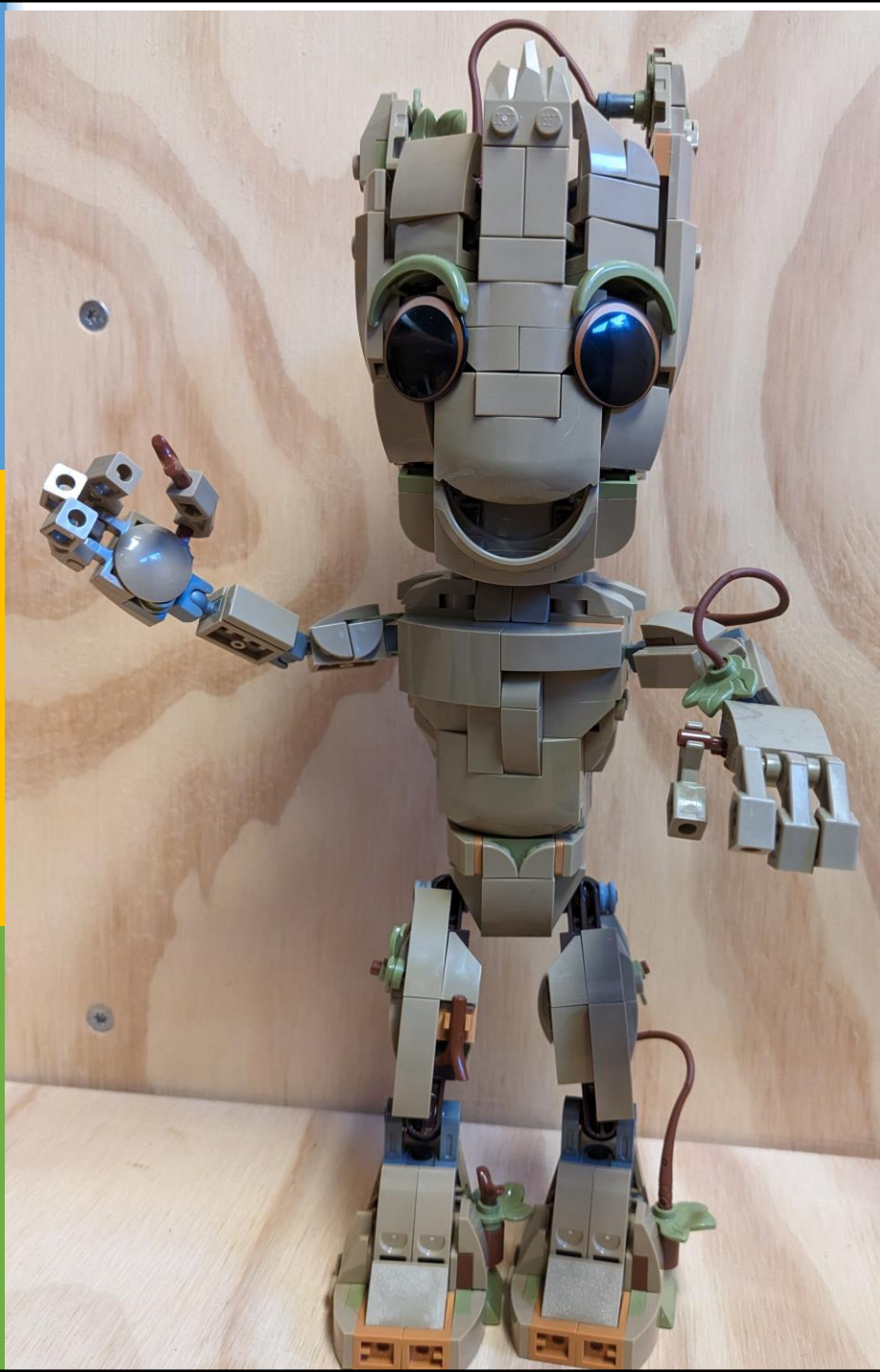




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Willibald & ELM

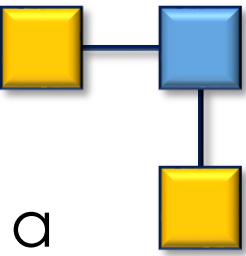
June 12, 2024



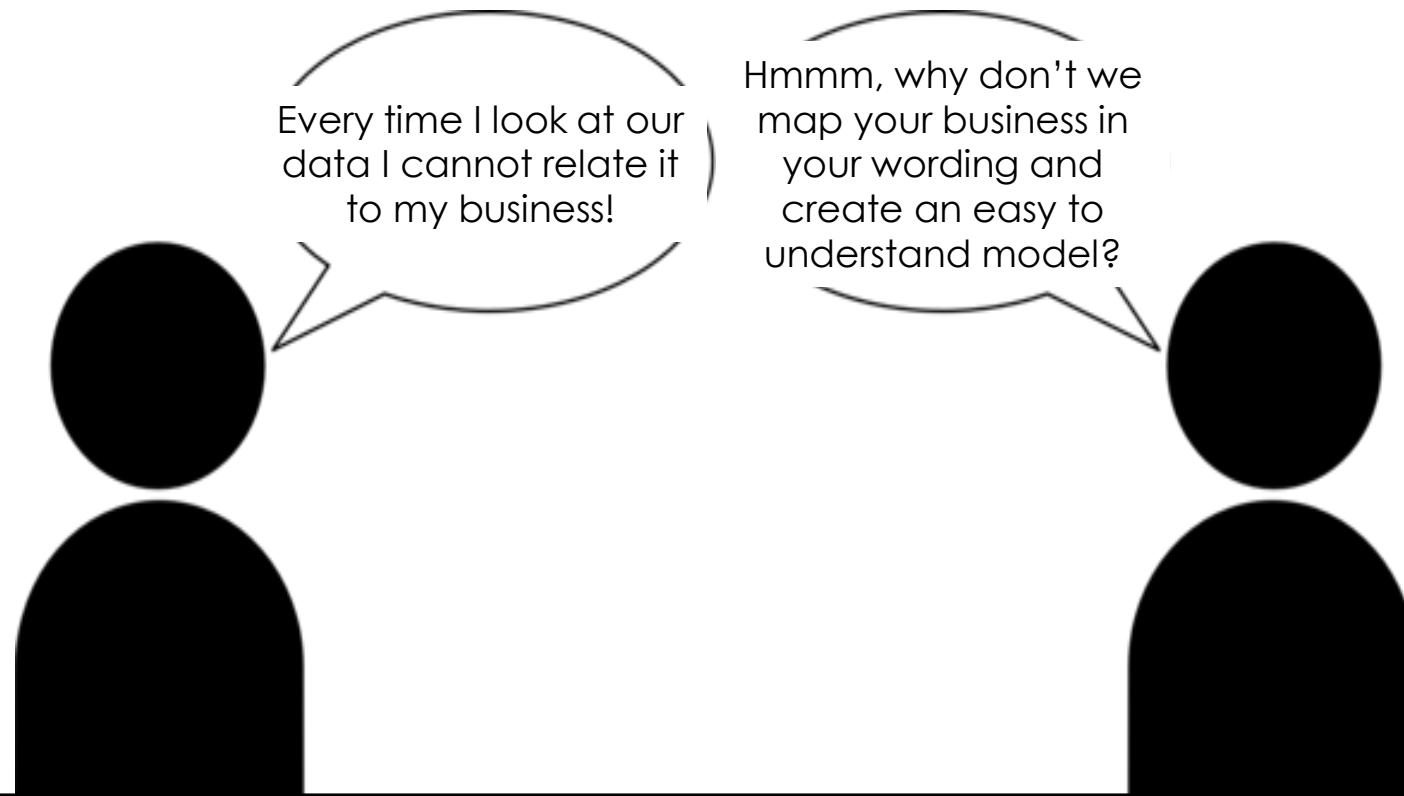
I AM....

Remco Broekmans
Genesee Academy
Trainer
Coach
Data modeler
Dutch
Rock climbing
Walking
.....

What is ELM?



- A non technical approach to map the business concepts into a aligned and refined model (logical model).
- Relates to a family of multiple agile modelling patterns like Data vault, Anchor Modelling and Focal Point.
- The first approach where business is leading over sources.

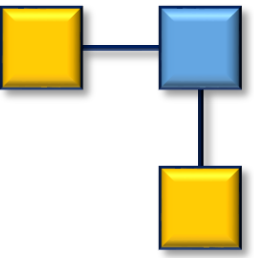


Align – Refine - Design

- Instead of Conceptual – Logical – Physical modeling
- Terminology closer to business
 - easier to understand
 - Less techy
- Invite Business into a workshop to be “Aligned” with them.

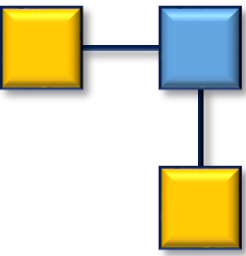
		Relational	Dimensional	NoSQL	ELM
Conceptual	Align (Business Terms)	Terms & Rules	Terms & Paths	Terms & Queries	Core Business Concepts & categorization
Logical	Refine	Sets	Measures with context	Query-focused hierarchy	Events and Natural Business Relationships
Physical	Design (model)	Compromised sets	Star schema or Snowflake	Enhanced hierarchy	Data Vault or Focal Point or Anchor or ...

Original by Steve Hoberman, ELM addition by Remco Broekmans



REFINEMENT Model With the Business

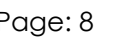
Finding the balance



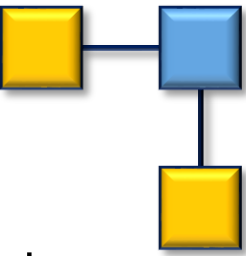
- What is our focus? What is the business talking about?

- This is:
 - An organism
- OR
 - A Plant
- OR
 - A tree
- OR
 - A stem
 - A branch
 - A twig
 - A leaf

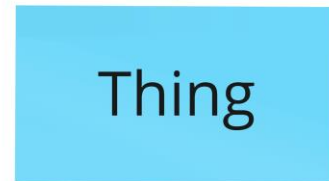
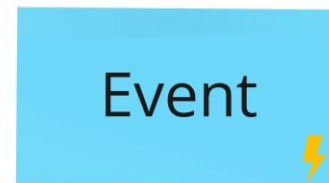




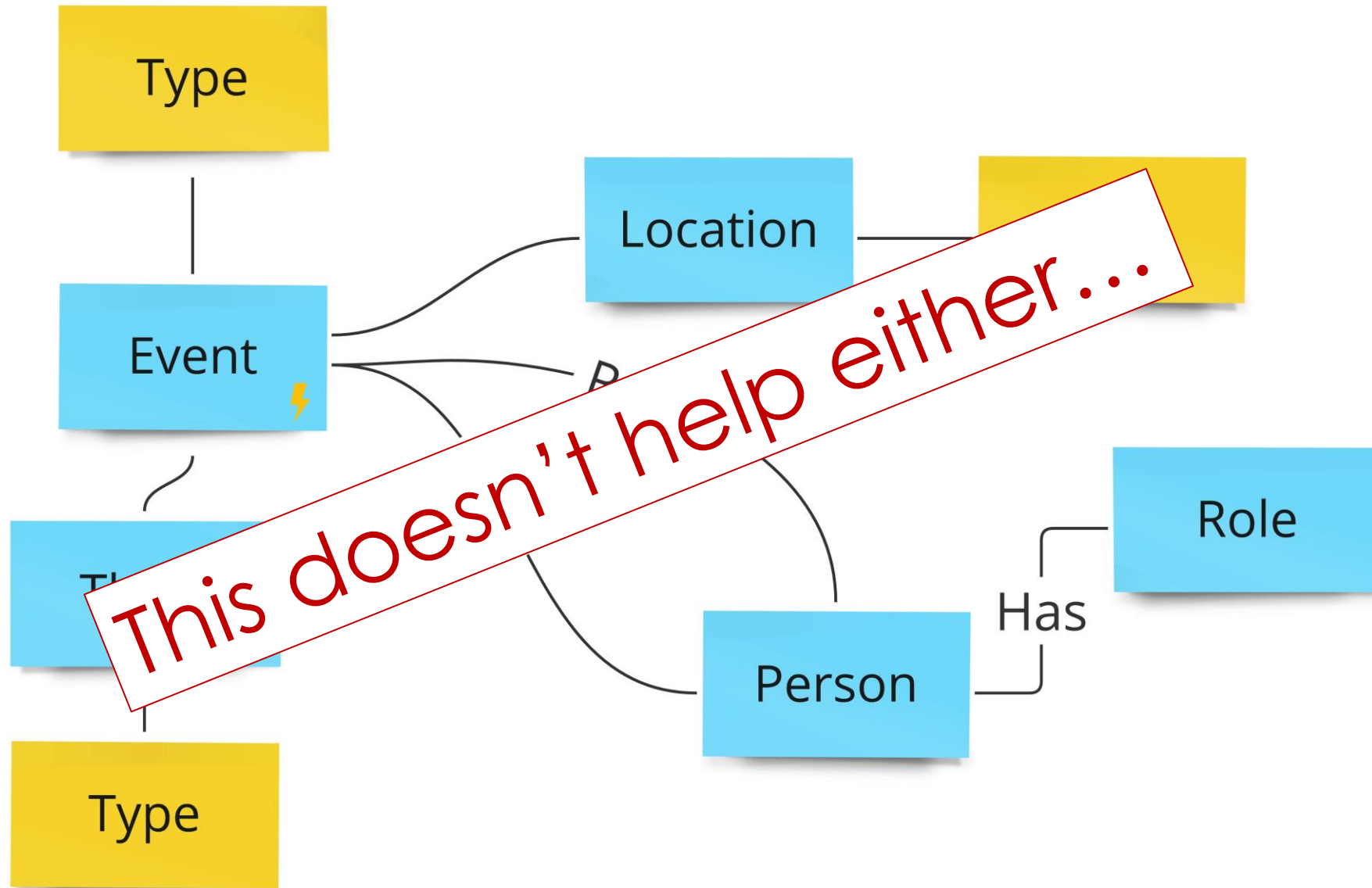
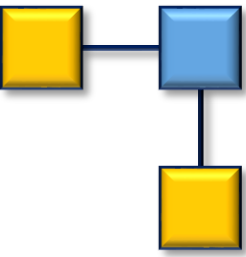
Abstraction doesn't make a clear model



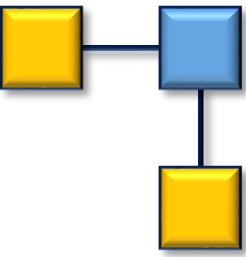
- Remco has an appointment in the hospital with a doctor and got a diagnosis (groin rupture).
- Remco – Appointment – Hospital – Doctor - Diagnosis – groin rupture



Role playing and typing isn't making a model more clear!



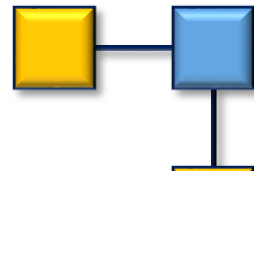
Our road



- Use structured & guided method to get to the Ensemble Logical Model.
 - Business driven over source driven.
 - Walk the path together – business & IT.
 - Keep it simple, clear, understandable and useable for all.
 - Document while we move forward.
 - Be agile and flexible.
-
- Basically, capture what is important for the business which is not perse what is captured in the sources / applications!
 - Don't abstract and generalize!

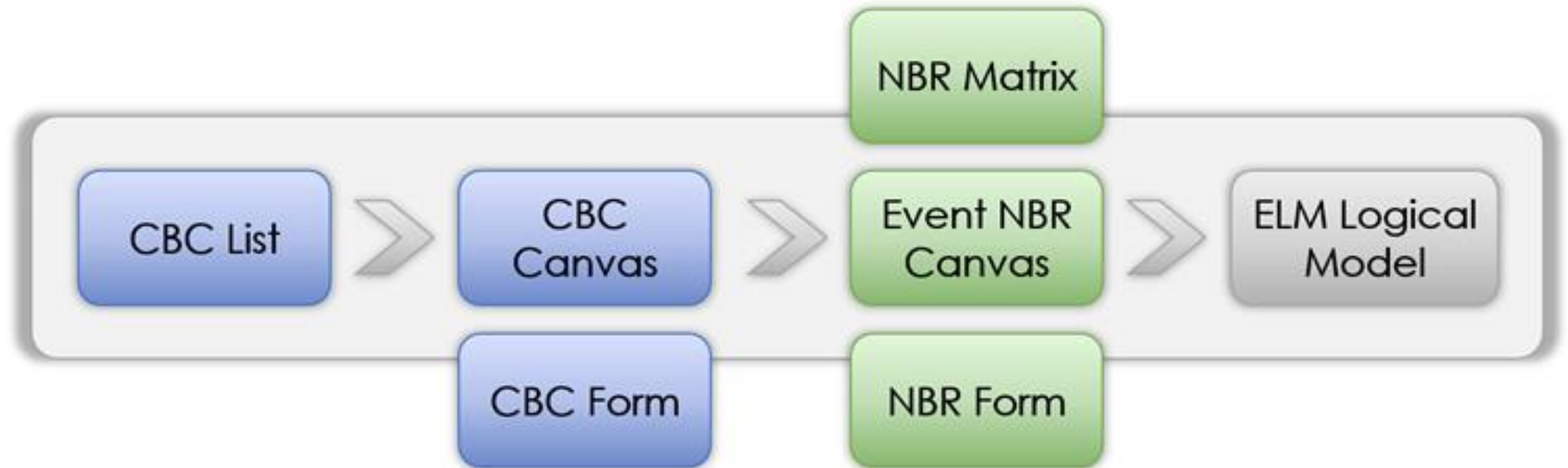
Willibald Case

- Read the Willibald case as given on <https://dwa-compare.info/en/start-2/>

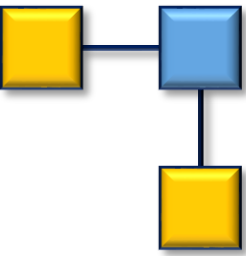


Ensemble Modeling Process

- Step-by-Step: its all about the Business



The ELM Process



- 1) Identify, List & describe the Core Business Concepts;
 - What does your organization/department do?
 - Elevator pitch (keep it short and to the point).
 - Make sure it is told in an easy to understand way, as for someone without extensive business knowledge.
 - What happens in your organization/department on a given day?
 - What do you think other departments / people in the organization tell me what your department is doing and/or is responsible off?
- ELM Artifact 1-3: CBC List, CBC Form, CBC Canvas

CBC List

	Event	Person	Place	Thing	Other Concept

Genesis Academy - Proprietary

Version: _____ Date: _____ Owner: _____ Sign-off date: _____

CBC Name: _____ CBC short definition: _____

Back to table

Associated attributes	Associated events
Associated person(s) of related role(s)	Associated place(s)
Associated role(s) of related role(s)	Associated thing(s)
Associated role(s) of related role(s)	Associated other concept(s)

Related CBCs

One higher level concept

Intermediate

Related lower level concepts

Attribute name

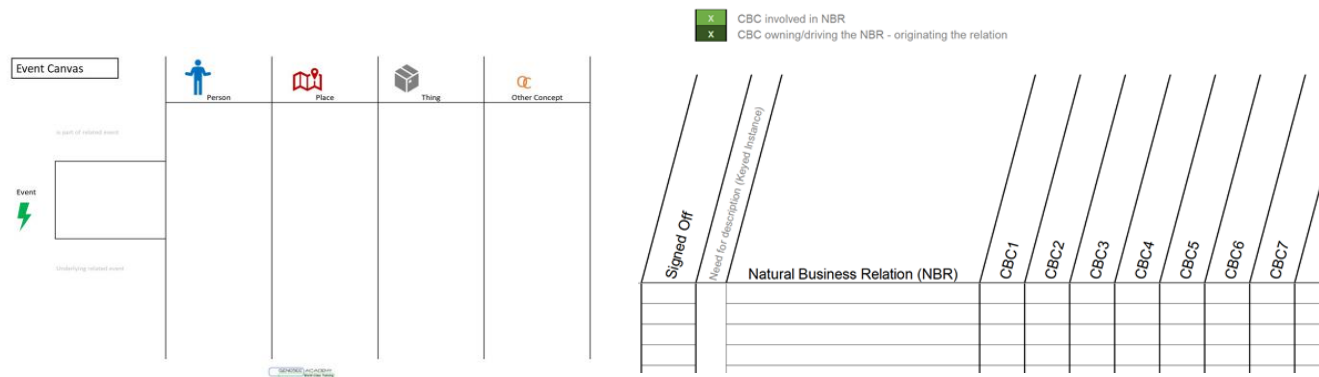
Domain	Concepts	Events	Places	Things	Other Concepts	Relationships

CBC Canvas

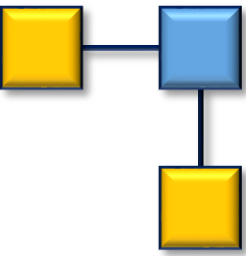
Event	Person	Place	Thing	Other Concept

- What is the relationship between the CBC's.
- How do we know?
- Is this relationship a driver for your organization/department?
- Is the relationship unique & specific?
- Avoid redundancy & sparsity.

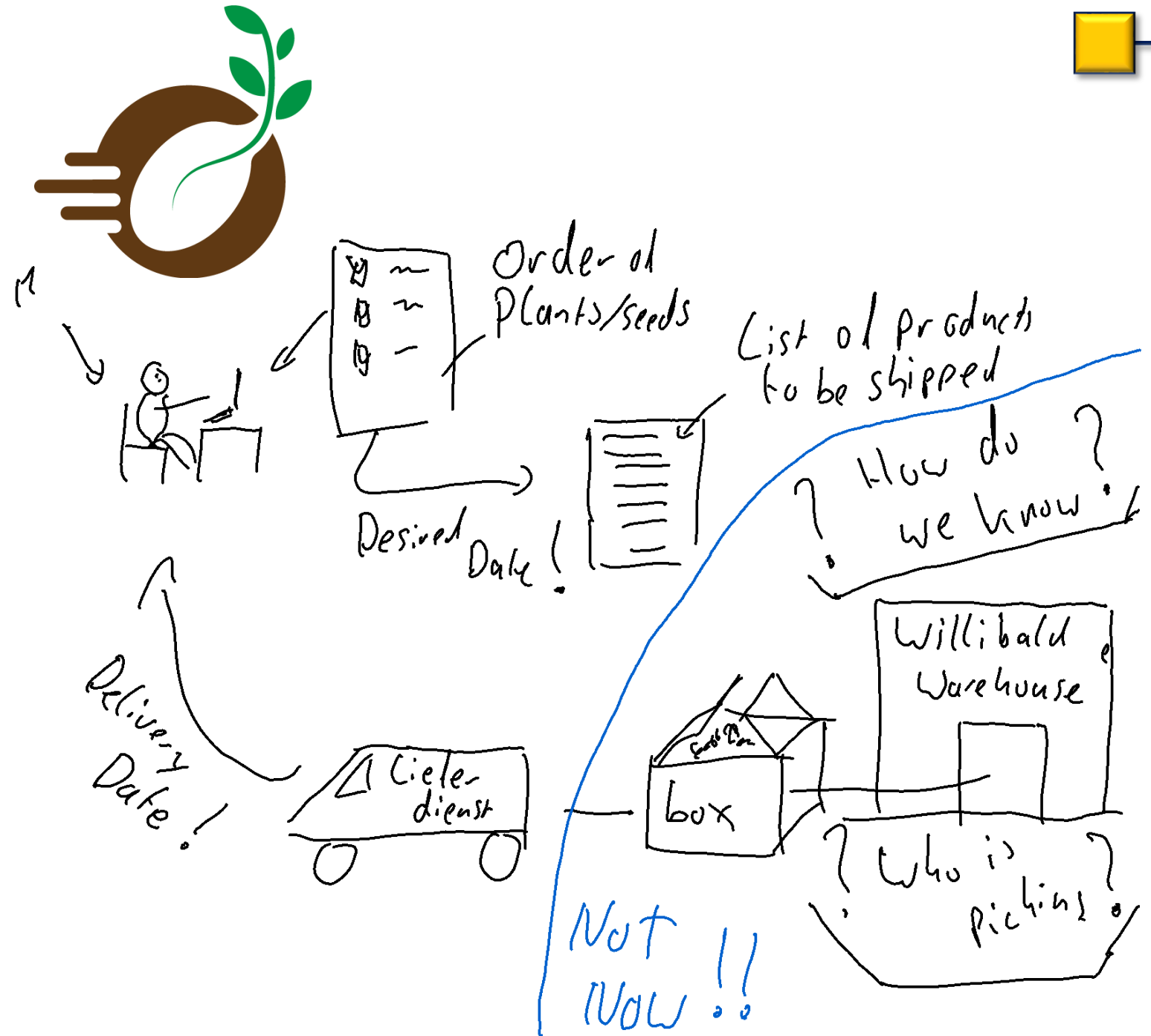
- ELM Artifact 4-6: Event Canvas, NBR Matrix, NBR Form

[illegible]

The Willibald case



The online ordering process

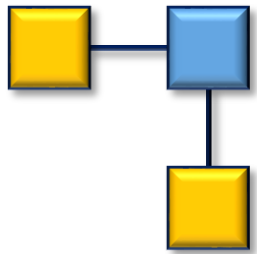


The complete list of Verbs & Nouns out of the business case. Noted in the order it is mentioned.

38 terms

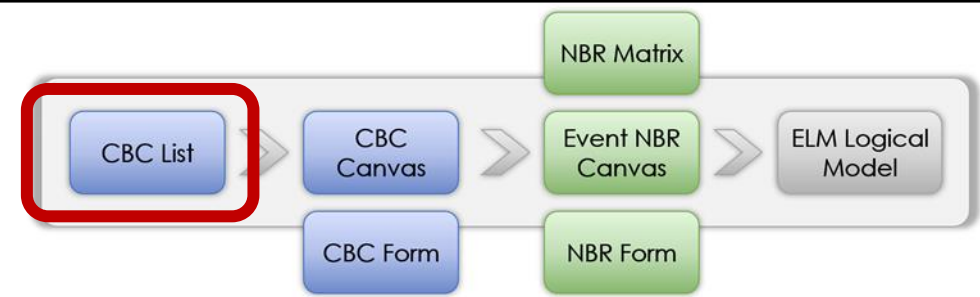
CBC List

	Event	Person	Place	Thing	Other Concept
Seeds					
Plants					
Sold					
Catalogue					
Webshop					
Plant supply shop					
Ordering					
Website					
Delivery date					
Customer					
Products					
Places order					
Delivery address					
Order item					
Delivery					
Shipping					
Shrubs					
Trees					
Delivery services					
Vereinspartner					
Marketing					
Allotment and horticultural associations					
Contact person					
Receive					
Associations benefits					
Senior boss					
Road show					
Organize					
Small festivity					
Sell					
Turnover					
Donated					
Seasonal goods					



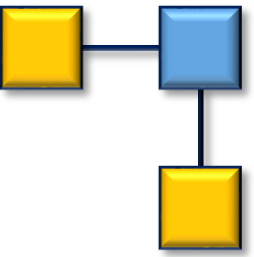
ELM artifact 1: CBC List

- The CBC List is our starting point;
- A listing off all verbs & nouns mentioned in workshops/interviews;
- Organized in Event, Person, Place, Thing, Other Concept;
- Completely driven by business terms;
- Ask questions!



CBC List					
	Event	Person	Place	Thing	Other Concept

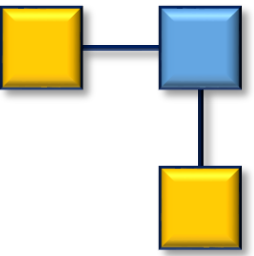
A short example!









**A customer is ordering plants
& seeds from our website**

A is &
from our

	Event	Person	Place	Thing
Customer		✓		
Ordering	✓			
Plants				✓
Seeds				✓
Website			✓	



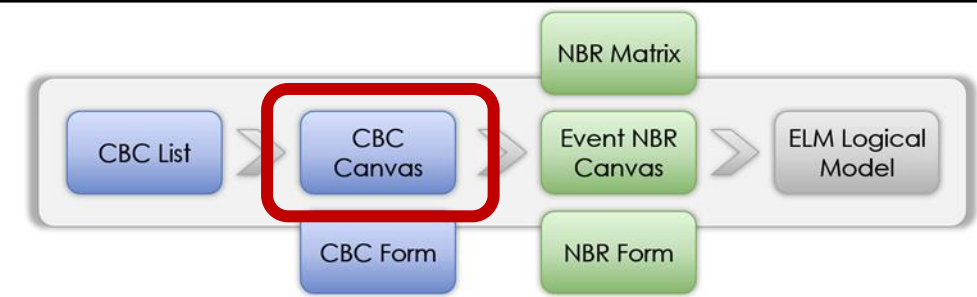
CBC List






	 Event	 Person	 Place	 Thing	 Other Concept	 Context	
Seeds						x	A type of product
Plants						x	A type of product
Sale	x						
Catalogue							Old name - is now webshop
Webshop			x				Website is a synonym
Plant supply shop						x	Chamber of Commerce indication No SOURCE - Out of Scope now
Ordering	x						
Delivery date						x	Context on Customer and/or on Delivery/Shipping
Customer		x					
Product				x			"seeds, plants, trees, shrubs" are all products (which can be seasonal or not -> context)
Delivery address						x	Context on Customer and/or on Delivery/Shipping
Order item					x		
Delivery	x						Delivery & Shipping synonyms
Shipping	x						Delivery synonyms
Shrubs						x	A type of product
Trees						x	A type of product
Delivery services					x		
Vereinspartner		x					
Conditions						x	Context on Sale and Ordering
Discounts						x	Context on Sale and Ordering
Contact person						x	Context on Vereinspartner
Receive							The result of the delivery - not in scope
Associations benefits						x	Context on Sale and Ordering plus on Vereinspartner
Senior boss		x					is this a role of Employee? And or is a employee involved in the different business processes?
Road show			x				What information do we need on Road Show - how to identify?



ELM artifact 2: CBC Canvas

- Transfer all CBC's from the **CBC List** onto the canvas.
- All within the designated category.
- Discuss in the workshop what is the correct name to use.
- Use the **CBC Form** to guide in clarification.



CBC Canvas				
 Event	 Person	 Place	 Thing	 Other Concept

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World Class Training

Willibald - ID: 10976

Event

Sale

Sell

Ordering

Places
Order

Delivery

Shipping

Person

Customer

Vereinspartner

Allotment &
Horticultural
Associations

Club
Partner

Senior_boss

Place

Webshop

Website

Catalogue

Roadshow

Small
Festivity

Thing

Products

Plants

Seeds

Shrubs

Trees

Other Concept

Cash_register_system

Delivery
Services

Order_Item

Product
Category

Context

Plant_Supply_Shop

Seasonal_goods

Customer_number

Delivery_Date

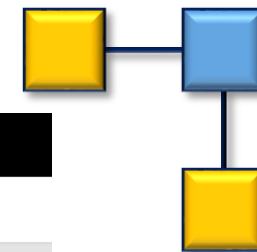
Delivery
Address

Conditions

Associations_benefit

Discounts

Contact_Person



ELM artifact 3: CBC Form

- The CBC Form is the artifact where we document the CBC's.
- Most important is a short definition of the CBC. Just enough to get consensus in understanding the CBC;
 - (we agree that prospect is not a customer).
- Any available business glossary can be helpful as a starting point.
- All CBC's should have a documented CBC Form or refer to a documented CBC Form (in case of synonyms);
 - All reference data or disconnected concepts also need to have a CBC Form (yet will not have related CBC's or Events).

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graph LR
    A[CBC List] --> B[CBC Canvas]
    B --> C[Event NBR Canvas]
    C --> D[ELM Logical Model]
    B --- E[CBC Form]
    F[NBR Matrix] --- C
    G[NBR Form] --- C
    
```

Version		Owner	
Date		Sign off date	

CBC-Name	CBC-short definition
<i>main context attribute</i>	<i>subject area</i>
<i>Identifier (can consist of multiple attributes)</i>	<i>Reference to workshop/model requirements document/etc</i>


[Back to main](#)

<i>Related CBCs</i>	<i>Related Events</i>
<i>is a (higher level concept)</i>	<i>could be (lower level concepts)</i>

Attribute name	context	classification	location	measure	date/time	status/state	reference	identification

Version	1
Date	01/07/2023

Owner	Senior Boss
Sign off date	07/07/2023
Comes from workshop/etc	Workshop at Willibald Office with Management team d.d. 30/6/2023

	Customer	A customer - can be a member (or contact person) of a vereinspartner - is a natural person who orders or buys products from Willibald
---	----------	---

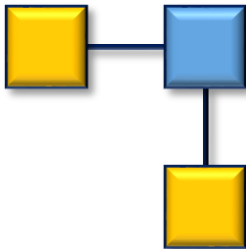
Fname (Vorname)	KundID
Lname (Name)	



Vereinspartner	Sale
----------------	------

Name	describe	classify	locate	measure	date/time	status/state	reference	identity
Fname (Vorname)	x							
Lname (Name)	x							
Sexe (Geschlecht)		x						
Date of Birth (Geburtsdatum)					x			
Phone (Telefon)	x							
Mobile (Mobil)	x							
Email			x					
Credit Card (Kreditkarte)	x							
Valid to (Gultigbis)						x		
Credit Card Company (KKFirma)							x	
Delivery Street (Strasse)			x					
Delivery street nr (Hausnummer)			x					
Delivery address addition (Adresszusatz)			x					
Delivery Point Code (PLZ)								



Example



Genesee Academy - Proprietary

Version		Owner	
Date		Sign off date	

[Back to main](#)

	Customer	A natural person who is buying products (could be books or coffee) in our store. We know who our customer is because they all use our loyalty card.	
<i>main context attribute</i>		<i>subject area</i>	
Name		Sale	
Address		CRM	
<i>Identifier (can consist of multiple attributes)</i>		<i>Reference to workshop/model requirements document/etc</i>	
Loyalty card number			
Country name			
<div><div><i>Related CBCs</i> Store Product Employee</div><div></div><div><i>Related Events</i> Sale Delivery</div></div>			
<i>is a (higher level concept)</i>		<i>synonyms</i> Kund, Client	<i>could be (lower level concepts)</i>









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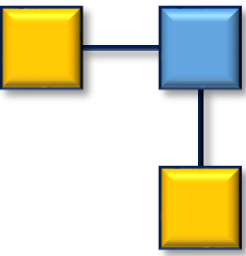


A customer is ordering
plants & seeds from
our website

	Event	Person	Place	Thing
Customer		✓		
Ordering	✓			
Plants				✓
Seeds				✓
Website			✓	

CBC Canvas			
 Event	 Person	 Place	 Thing
	 Employee		

Data Vault Modeling Process



2) Identify and Model the Natural Business Relationships

- *Specific Unique Relationships*
- *What CBC's seems to be related to each other? What comes together to make things happen?*



NOTE:

Interim Deliverable:

Backbone

ELM

Ensemble Logical Model

- *Be considerate of Grain – don't mix header and detail!*

Event Canvas



Person



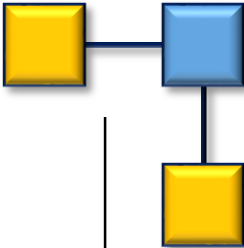
Place



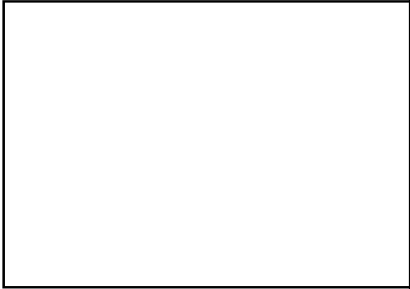
Thing



Other Concept



Event



is part of related event

Underlying related event

Event Canvas



Person



Place



Thing



Other Concept

Customer

Website

Product

is part of related event

Event



Ordering

Underlying related event

Delivery

Event Canvas



Person



Place



Thing



Other Concept

Customer

Roadshow

Product

is part of related event

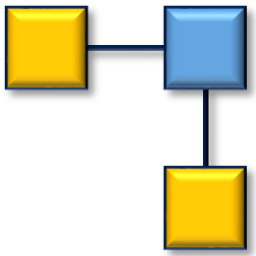
Event



Sale

Vereins partner

Underlying related event



Version	1
Date	14/07/2023

Owner	Senior Boss
Sign off date	
Comes from workshop/etc	Workshop at Willibald Office with Management team d.d. 14/7/2023 Remark: In available

Name	<i>The Sale of Products by Customers in a Roadshow. Customer can buy multiple Products in one Sale.</i>
Sale	

some example records for the relation - check on redudancy and sparsity

Sale	Customer	Vereinspartner	Roadshow	Product	CBC6	CBC7
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Amaranth		
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Rote Bete		
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Blumenkohl		
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Jalapeno		
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Erbse		
RS578	Elgine	Druff1848	Karlsruhe, feb	Topinambur		
RS578	Elgine	Druff1848	Karlsruhe, feb	Koriander		
RS578	Elgine	Druff1848	Karlsruhe, feb	Knoblauchsrauke		

Name	<i>The Delivery of Products to Customer. Each delivery of a product is seen as its own unique delivery</i>
Delivery	

some example records for the relation - check on redudancy and sparsity

Delivery	Customer	Delivery Service	Order Item	Product	CBC6
398 994	Bettina	Henne und Alter OHG	994	Knollensellerie	
398 995	Bettina	Henne und Alter OHG	995	Spinat	
398 996	Bettina	Kauer und Wisniewski Gmb	996	Wildtomate	
678 1694	Elgine	Benja OHG	1694	Aubergine	
678 1695	Elgine	Benja OHG	1695	Buschbohne	
678 1696	Elgine	Benja OHG	1696	Kürbis	



Sale	Customer	Vereinspartner	Roadshow	Product
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Amaranth
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Rote Bete
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Blumenkohl
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Jalapeno
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	Erbse
RS578	Elgine	Druff1848	Karlsruhe, feb	Topinambur
RS578	Elgine	Druff1848	Karlsruhe, feb	Koriander
RS578	Elgine	Druff1848	Karlsruhe, feb	Knoblauchsrauke

Sale	Customer	Vereinspartner	Roadshow	
RS501	Bettina	Blaetterglueck	Karlsruhe, feb	
RS578	Elgine	Druff1848	Karlsruhe, feb	

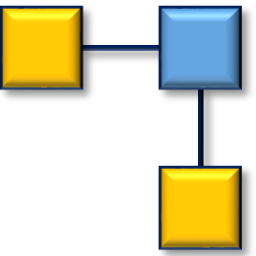
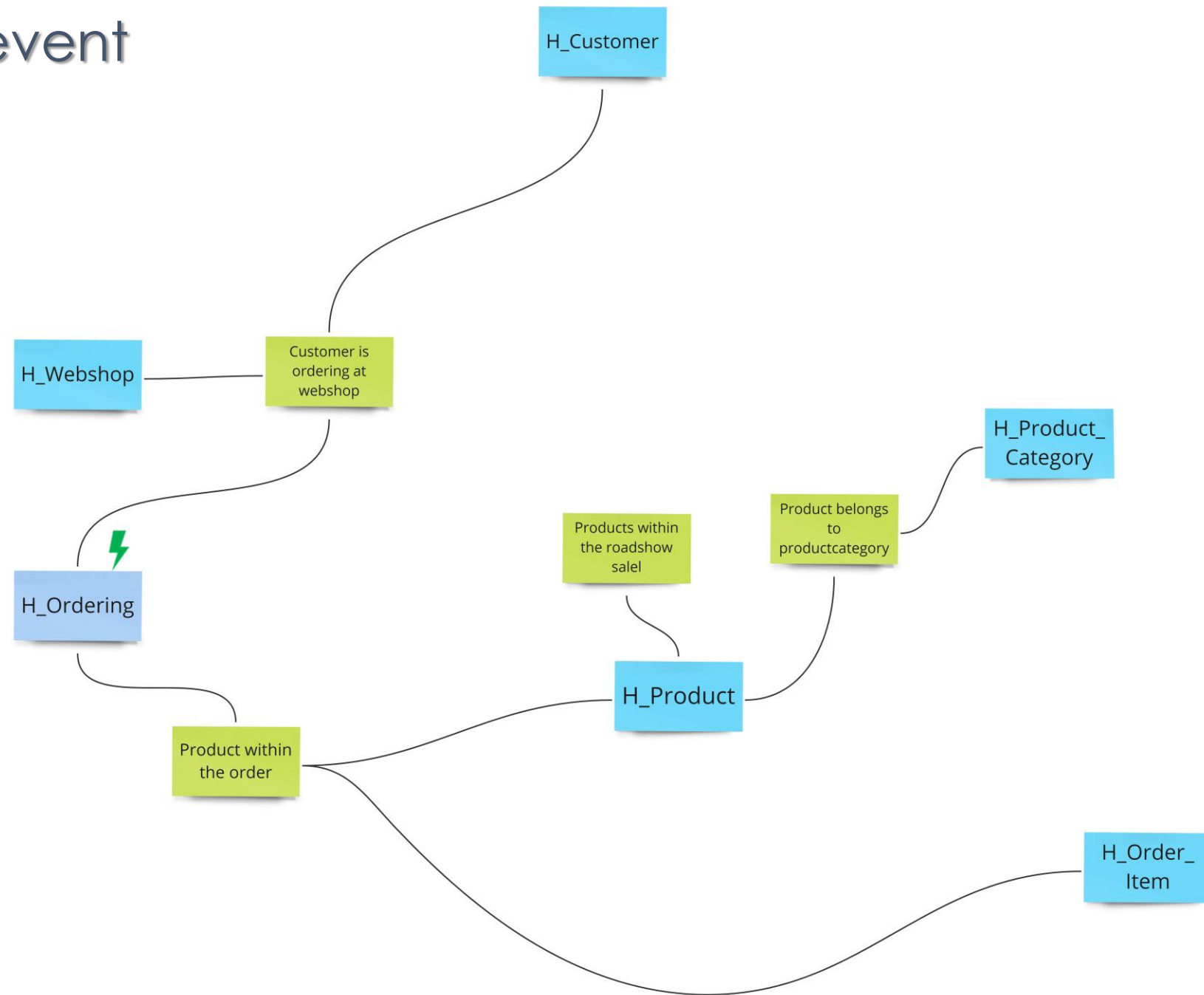
NBR - Header



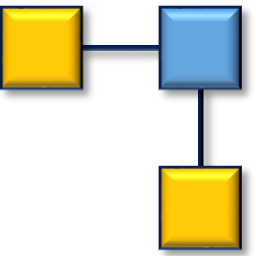
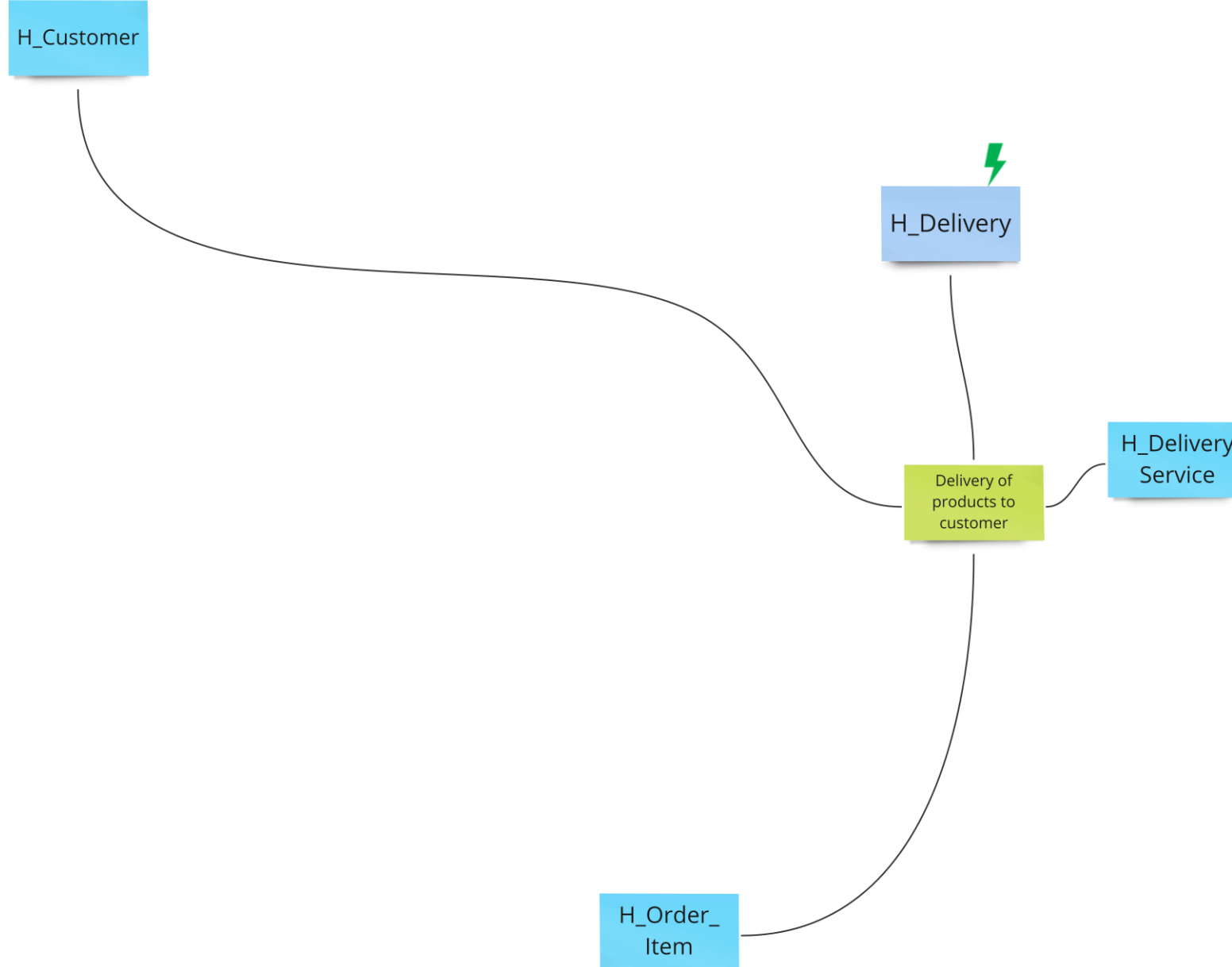
NBR Detail

Sale	Product	
RS501	Amaranth	
RS501	Rote Bete	
RS501	Blumenkohl	
RS501	Jalapeno	
RS501	Erbse	
RS578	Topinambur	
RS578	Koriander	
RS578	Knoblauchsrauke	

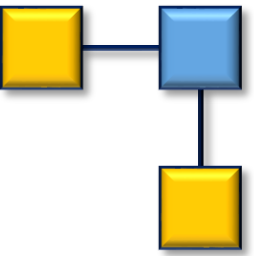
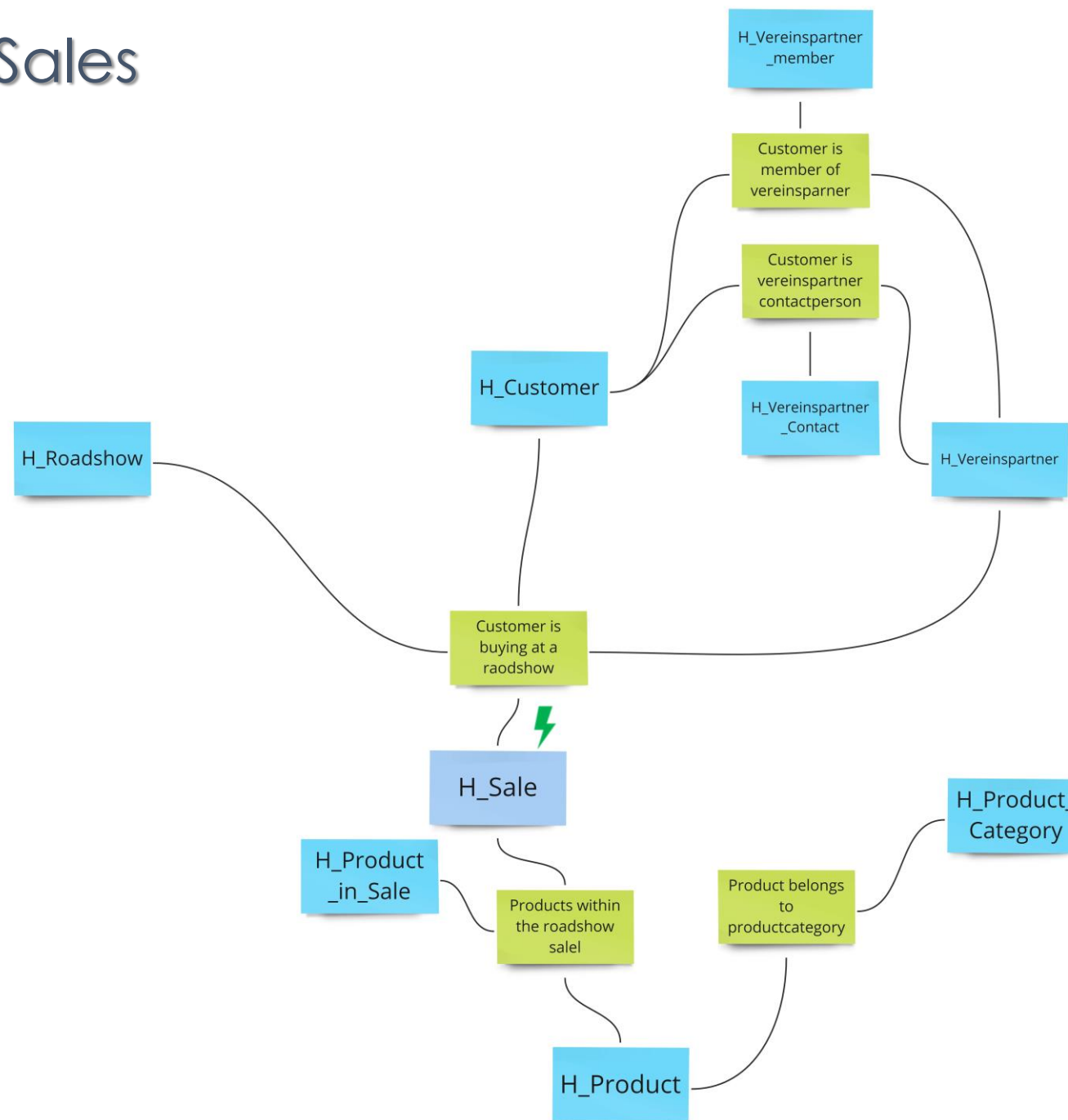
Order event

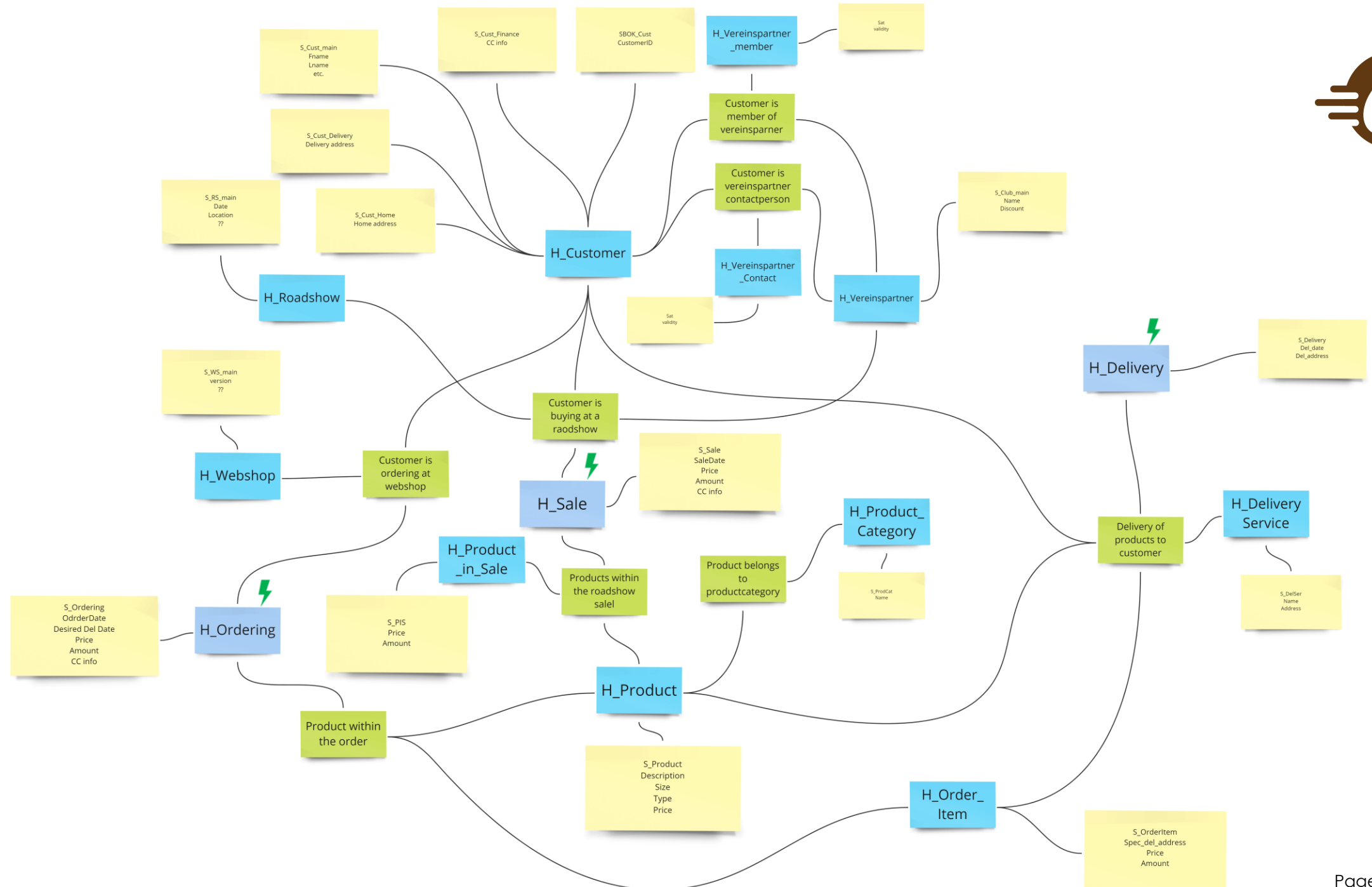


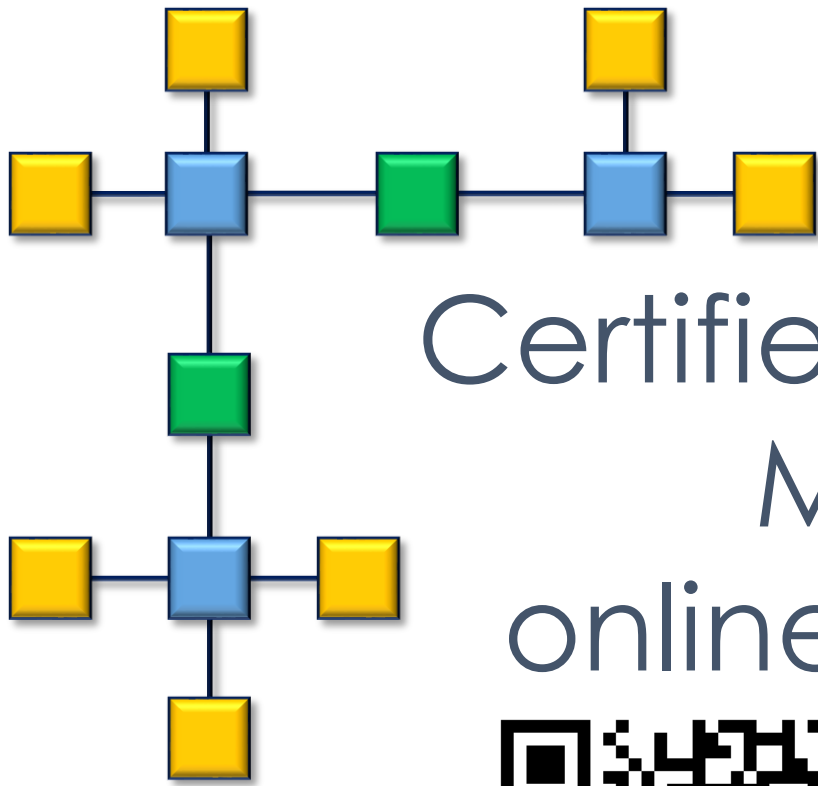
Delivery Event



Roadshow Sales



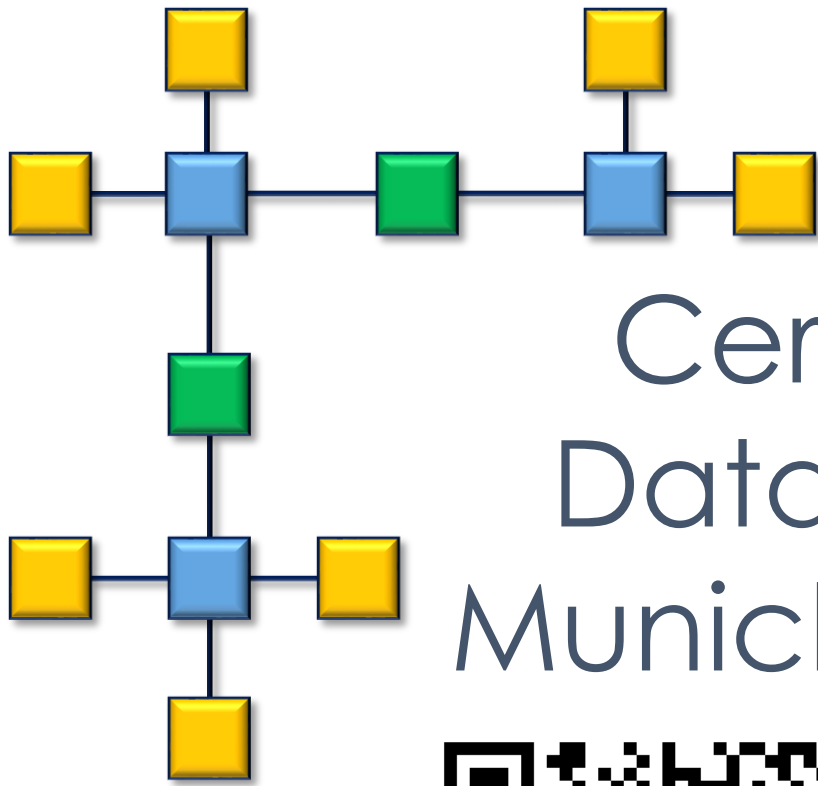




Certified Business Concept Maven training online, November 11-12



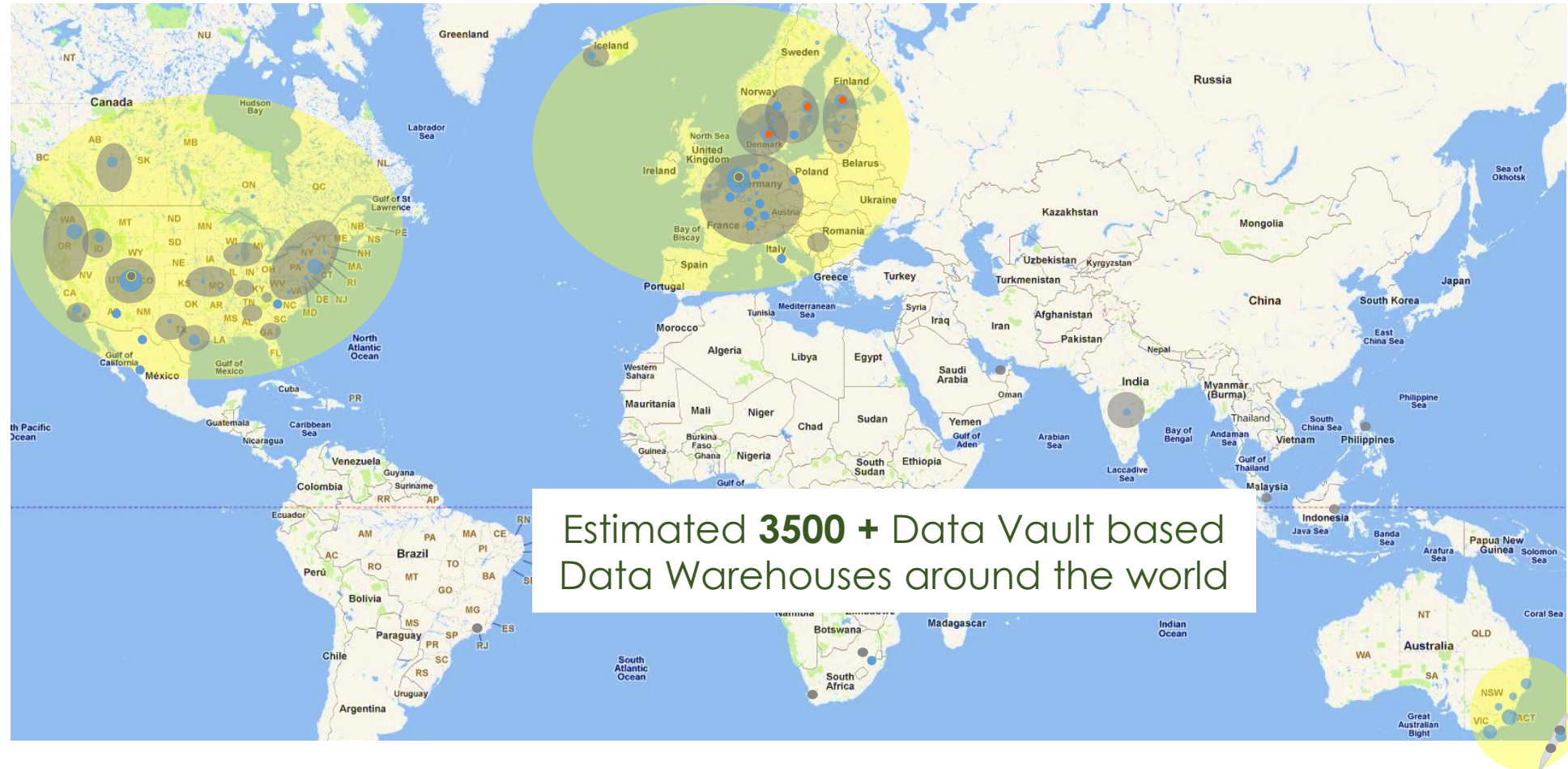
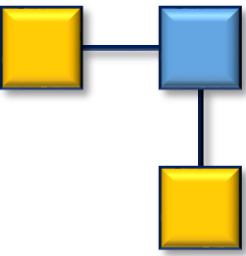
Use Code : WOD200
on the check out page



Certified Data Vault Data Modeler training Munich, September 23-25



Use Code : WOD200
on the check out page



Currently over **2750 +** Data Vault CDVDM Certified Professionals

Ensemble Logical Modeling | ELM

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Agilely Model Your Business

Data Vault and other ensemble modeling patterns (EMPs) are data modeling approaches optimized for enterprise data integration, data historization, big data, streaming, and all situations requiring highly flexible data structures. The guidance and templates presented here are consistent with the guidance from the Data Vault Ensemble Enthusiasts Consortium (DVEE).

Guidance

Here, we explain how to uncover better ways to map the information and data in the ensemble logical model (ELM) by utilizing workshops, interviews, and the ELM artifacts.

[Read more about the guidance](#)

Templates

To ensure best practices are consistently used, we provide site members access to templates consistent with the modeling guidance created by the DVEE.

[Read more about the templates](#)

Definitions

As with all things technical, ensemble logical modeling comes with its own diction. Here, you can find resources about some of the vocabulary associated with ELM.

[Read more about the definitions](#)

ards

standards.com/templates

Update

ELM Standards

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Our Templates for Business Mapping and the ELM Approach

In business mapping and ELM, there are six main templates. Follow the link below the image to learn more about how to fill in that template. If you would like to obtain a copy of the template, please join the website community to gain access to the [template downloads](#). The templates we use are:

The CBC List

[Learn about the CBC List](#)

The CBC Canvas

[Learn about the CBC Canvas](#)

The CBC Form

[Learn about the CBC Form](#)

The Event Canvas

[Learn about the Event Canvas](#)

The NBR Matrix

[Learn about the NBR Matrix](#)

The NBR Form

[Learn about the NBR Form](#)

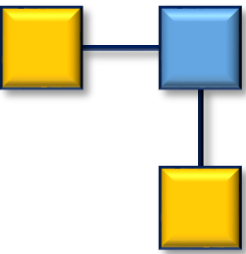
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DATA VAULT & ENSEMBLE MODELING STANDARDS

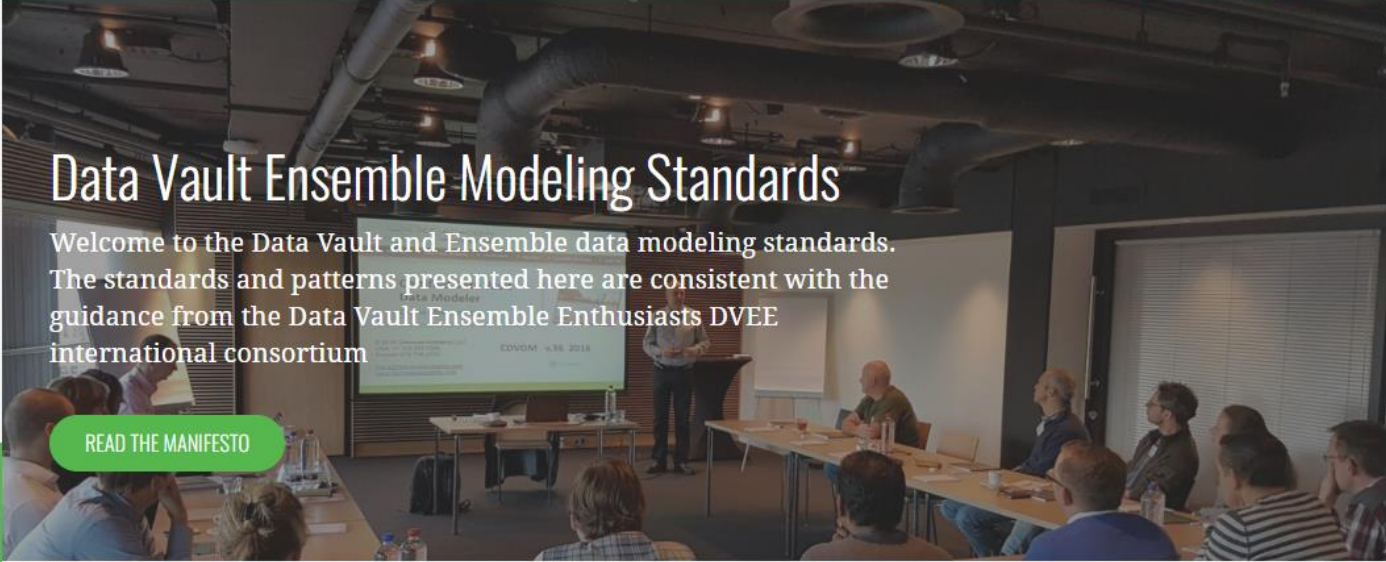
Global standards for agile data modeling with Data Vault and Ensemble modeling


Data Vault and Ensemble Modeling Standards

- About DVEE
- Manifesto
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- Training
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- Definitions
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Data Vault Ensemble Modeling Standards

Welcome to the Data Vault and Ensemble data modeling standards. The standards and patterns presented here are consistent with the guidance from the Data Vault Ensemble Enthusiasts DVEE international consortium

[READ THE MANIFESTO](#)




DATA VAULT ENSEMBLE MANIFESTO

We are uncovering better ways of modeling data by doing it and helping others do it.

Through this work we have come to value:


[Read the Manifesto](#)



DVE MODELING GUIDANCE

Data Vault and Ensemble Data Modeling Guidance. Current guidance on the Ensemble, Data Vault, Focal Point, and Anchor modeling methods.

[Read the Definitions](#)



DVE MODELING STANDARDS

The Data Vault and Ensemble Modeling Standards. This is an evolving set of standards representing best practices consistent with the members of the DVEE.

[Read the Standards](#)

What we Model

Core Business Concepts (CBC)

- Event
- Person
- Thing
- Place
- Other Concept

Context & History

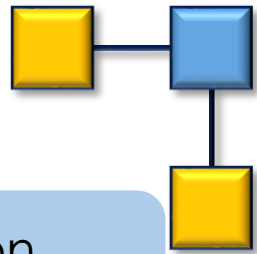
- Descriptive Attributes
- Changing Context over Time
- Types, Classifications, and Categorizations
- Status/State changes over Time

Natural Business Relationship (NBR)

- Unique, Specific NBR
- Based on Naturally Correlated Concepts

Changing

ENSEMBLE



Non changing

SAT

HUB

LINK

