Database Answers

Review of a Dozen Canonical Data Models

Barry Williams
barryw@databaseanswers.org

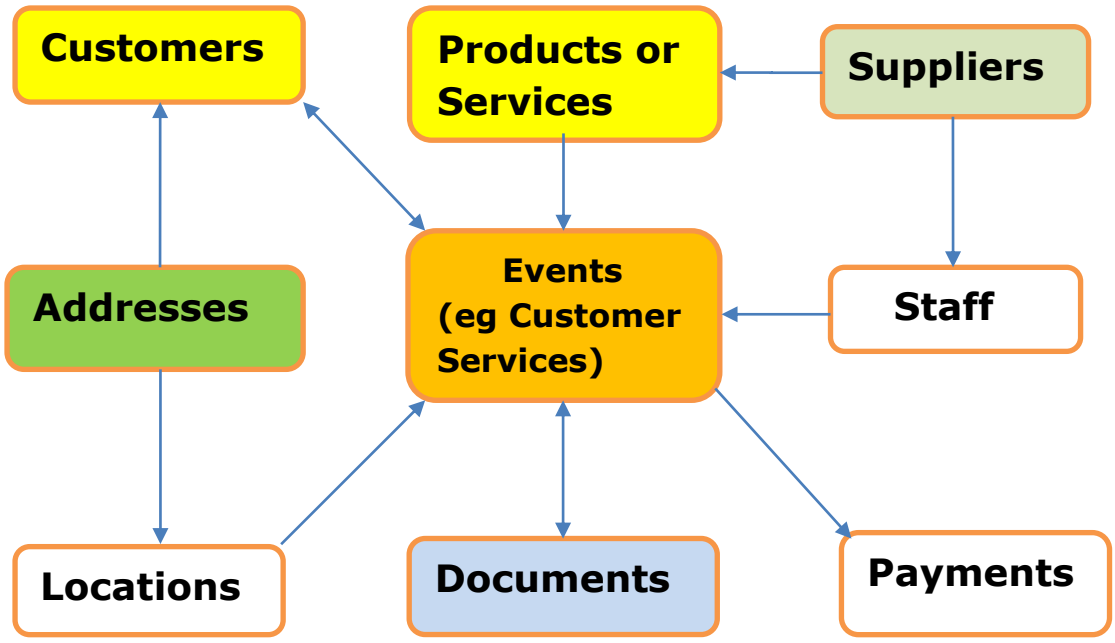
1. Purpose of this Document

The purpose of this document is to define an approach to Enterprise Data Models (EDMs) based on Canonical Data Models with associated Subject Area Models.

The analysis includes :-

- Canonical Data model
- Events Template

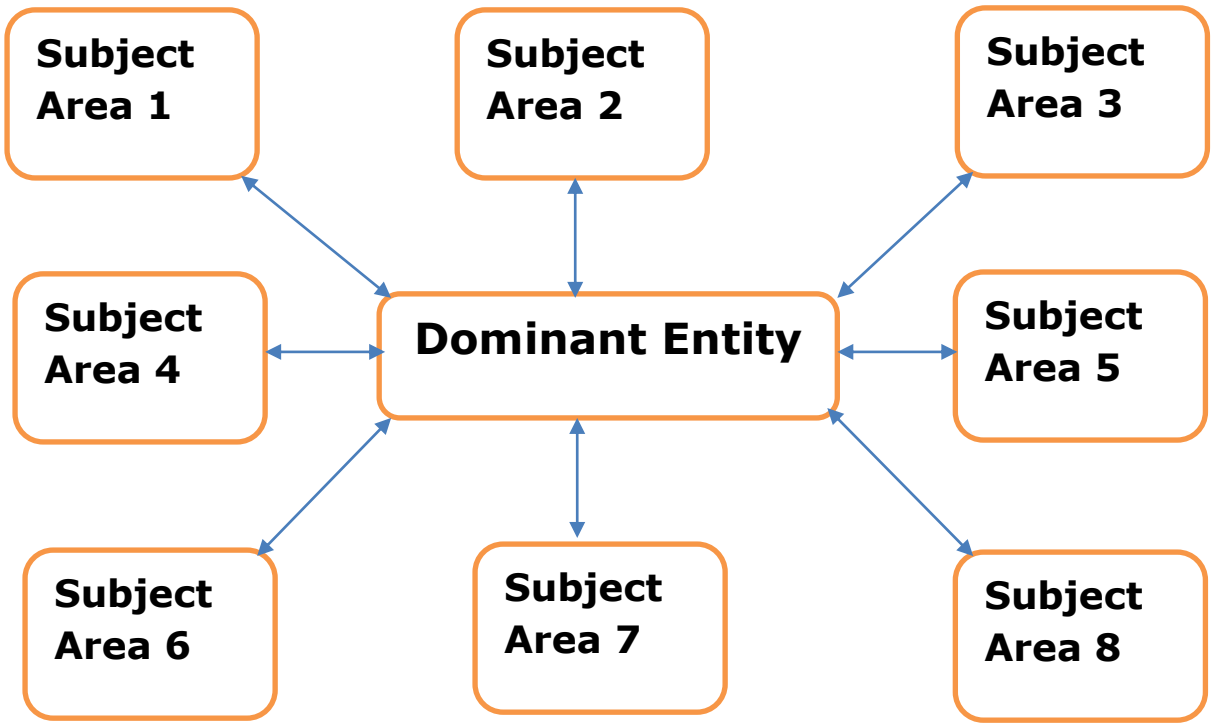
We use this Template for all the Industry Models that we explore in this Blog.



- Analysis of 10 Industry CANONICAL DATA MODELs
- Plan for first Phase of Implementation
    - Banking
    - Everyday Events
    - Logistics

2. Canonical Data Models

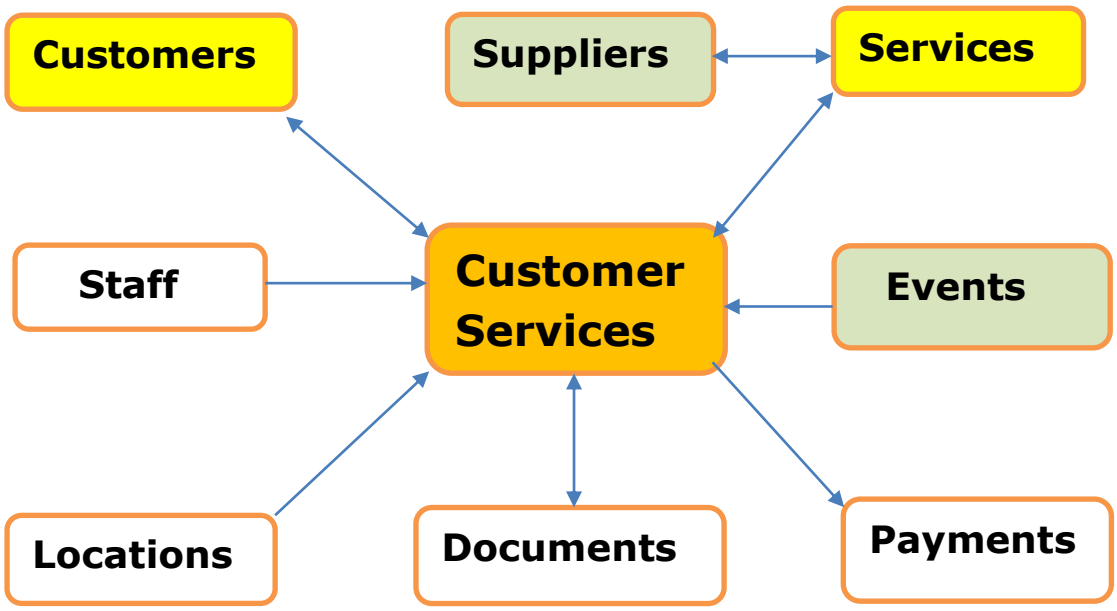
Our Canonical Data Models show the design with a Dominant Entity and associated Subject Area Models.
Each of the Subject Areas can have its own Data Model.



3. Data Model Templates

3.1 Customer-Services Template

This shows how the Vanilla Template applies to the very common situation of Customer Services. We use this Template for all the Industry Models that we explore in this Blog.



4. Application of the Template

The remainder of this document shows how our Customer-Services Template can be applied to create a number of Industry Models.

I would like to show the steps involved so I will provide three steps for each Industry Model to clarify the thinking involved at each Step and show how we arrive at our final design.

5. Examples of Canonical Data Models

These examples are from my experience and are published on my Database Answers Web Site.

Here we show how our recommended HTML Approach applies to a broad range of industry sectors.

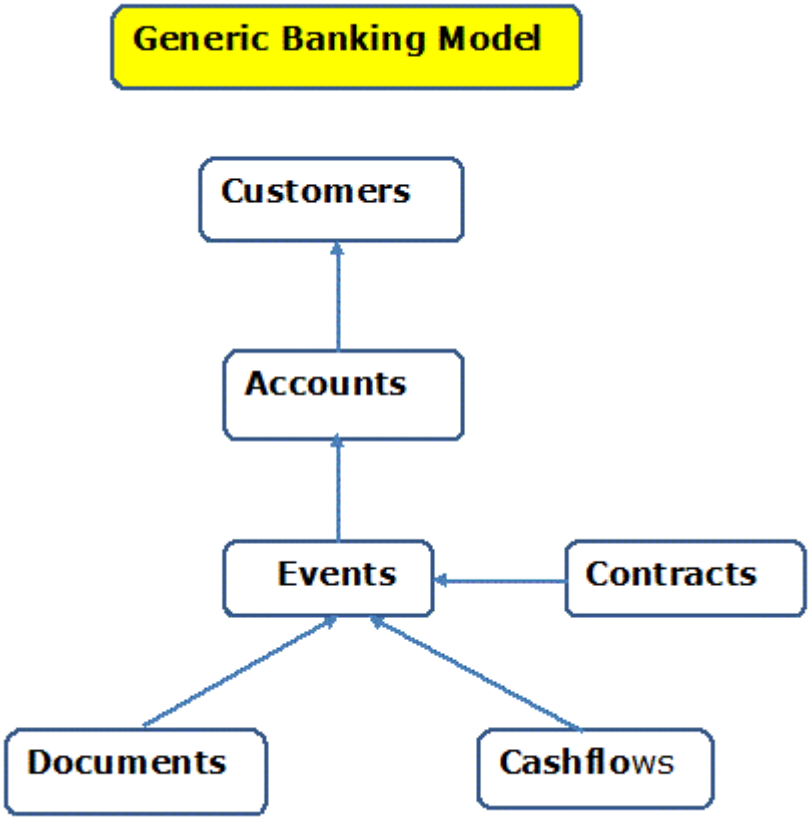
Nr	Industry Sector	Effort Level	EDM Type	3rd. Party	Others
1	Banking	Substantial	Bottom-Up	Teradata (FSLDM)	
	Canonical Data Model				
2	Customer-Services				
3	Defence	Modest	Barry's		
4	Education		Barry's		
5	Insurance				Accord
6	Law Enforcement	Modest	Barry's		
7	Local Government	3 people for 6 months	Bottom-Up		Barry's
8	Logistics				
9	Retail	2 people for 6 months	Bottom-Up	ARTS	Barry's
10	Shipping	Substantial	Bottom-Up	Teradata (FSLDM)	
11	Salesforce	Substantial		Salesforce	
12	Travel				

5.1 Banking

Our Banking CANONICAL DATA MODEL is on this page :-

- http://www.databaseanswers.org/data_models/banking_generic_data_model/index.htm

and looks like this :-



Step 1. My first review of the Model

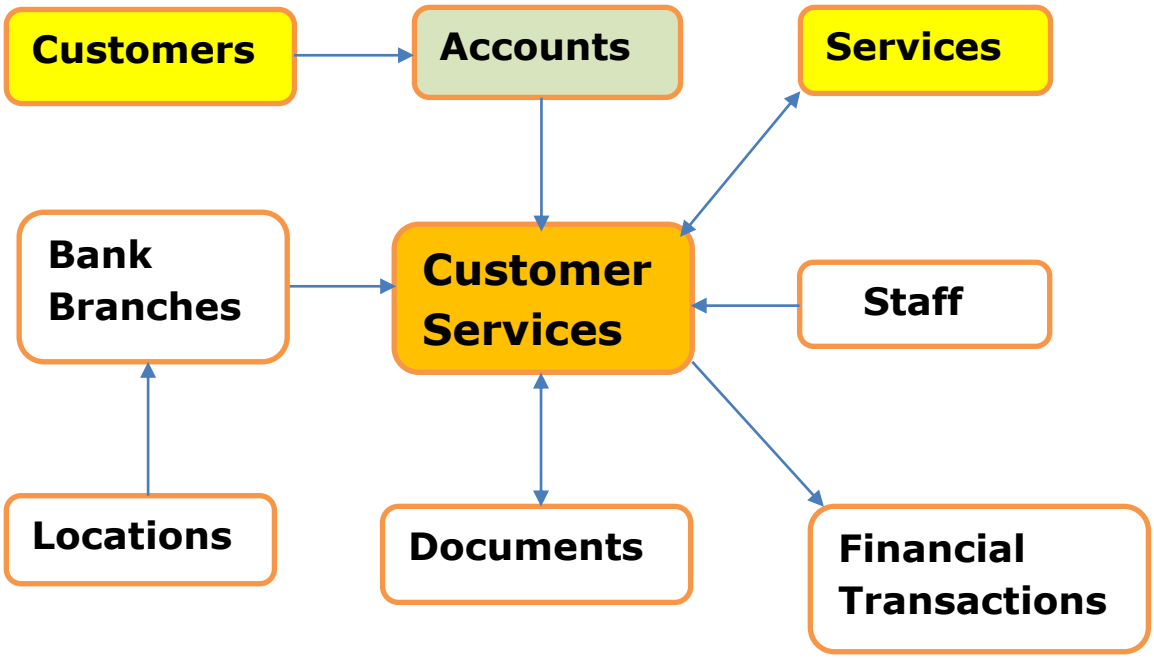
My first thought was that Accounts are fundamental to Banking and therefore have to appear in our final CANONICAL DATA MODEL.

So we have to extend the Template.

In a similar manner, Branches are very important in Retail Banking and they too will have to be included.

We replace Payments by Financial Transactions.
We remove Contracts because it is not a common requirement.
We remove Transactions because we decide all Transactions can be considered Customer Service.
We move Staff so that we can replace it with Branches.

We decide that in Retail Banking every Service is Account-specific rather than Customer-specific.



5.2 Canonical Data Model

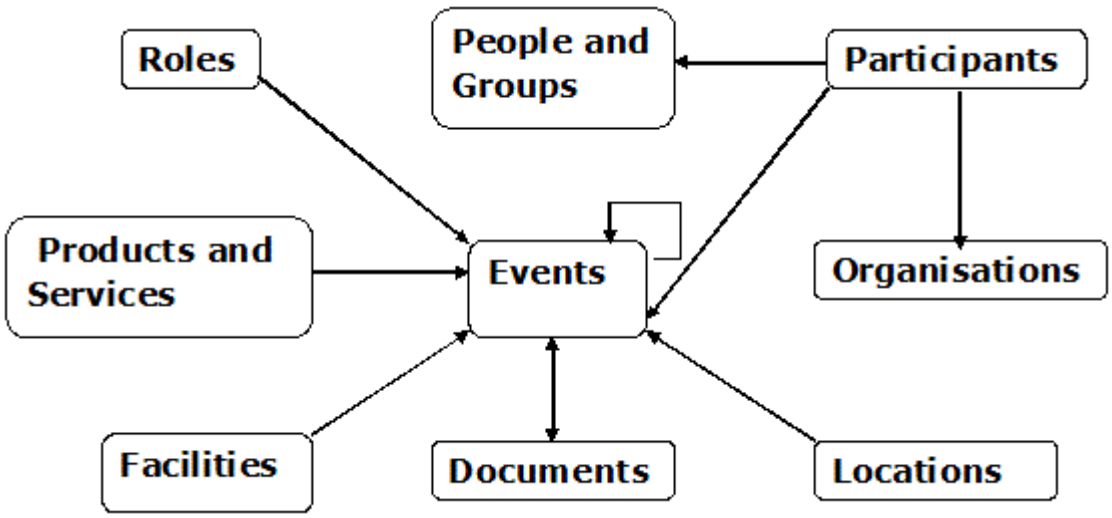
Step 1. My first review of the Model

I decide to postpone the first review.

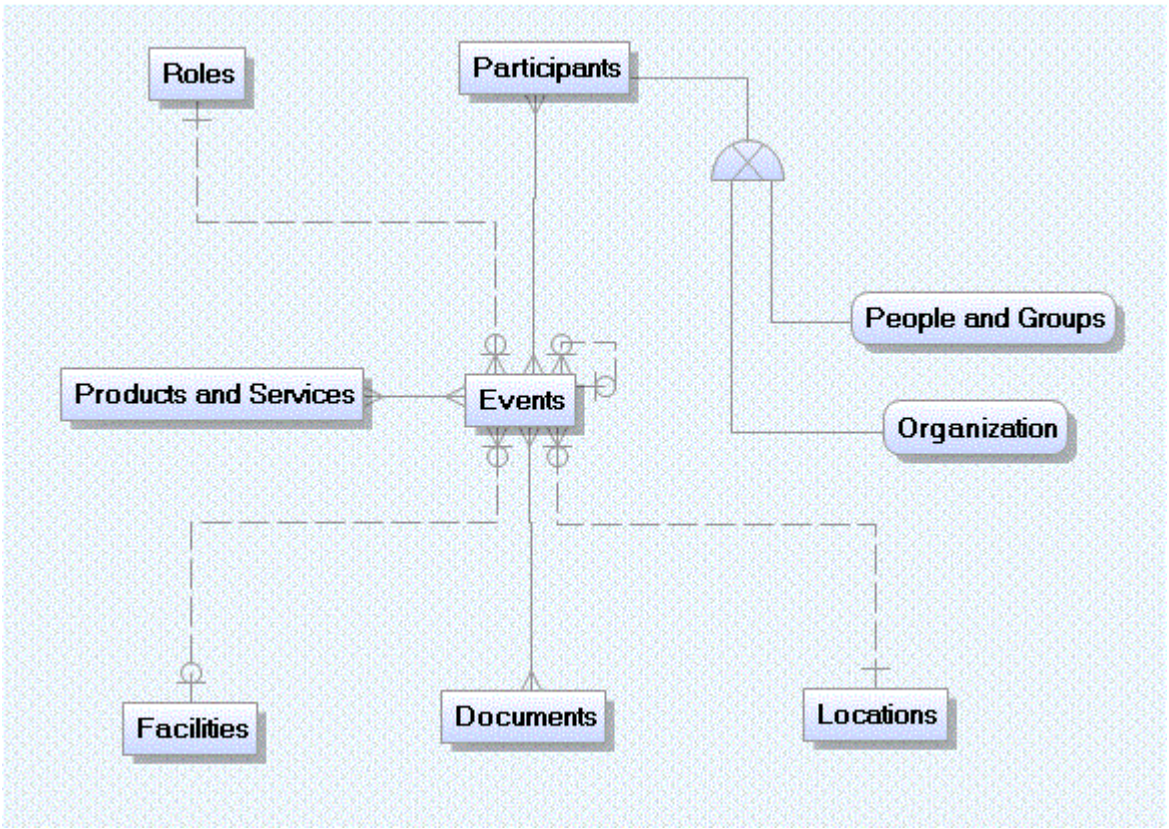
Our Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/canonical_data_models/print_version.htm

and looks like this :-



and the Logical Data Model looks like this :-

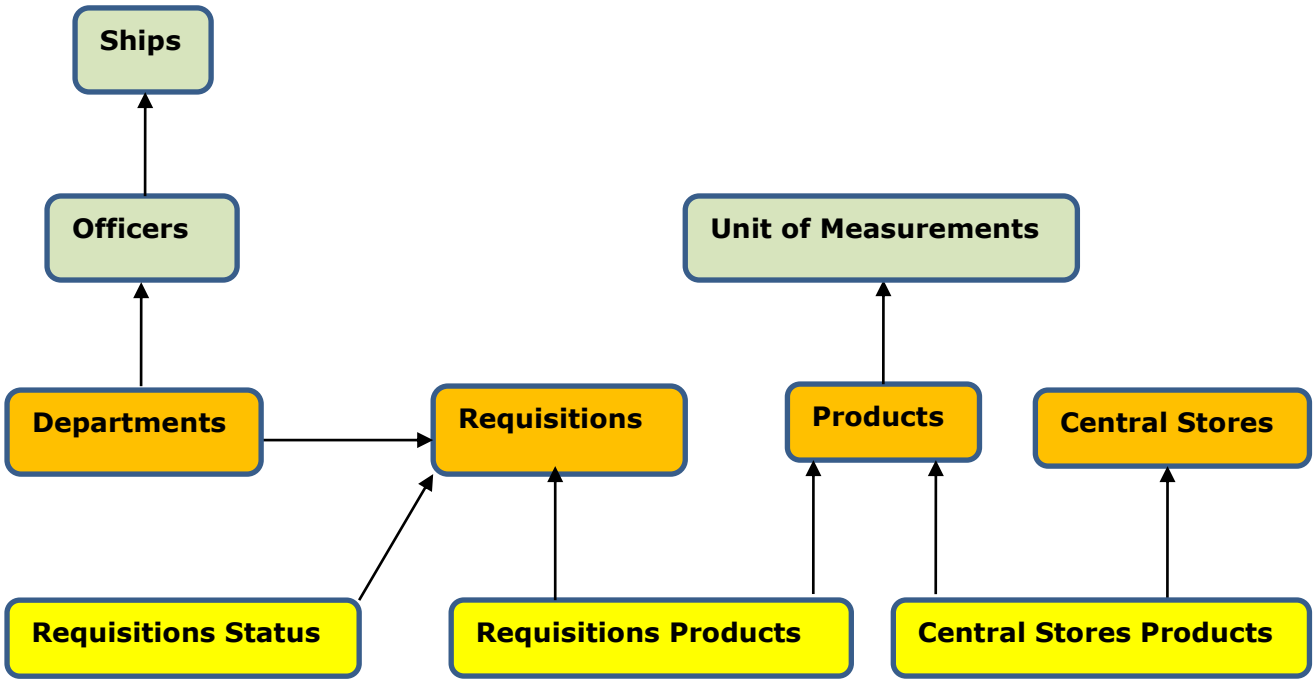


5.3 Defence Logistics Requisitions

The CANONICAL DATA MODEL is on this page :-

- http://www.databaseanswers.org/data_models/defense_logistics/index.htm

and looks like this :-



Step 1. My first review of the Model

I decide to remove the Unit of Measurement because it is not important enough to justify its inclusion at the top level.

Similar thinking leads me to remove the Requisition Status because we all know that a Requisition has a Status and we do not need to show it explicitly at this level. We probably included it original because in discussion with users, it was emphasised that Status was very important operationally but later from a Data Modelling point of view, we decide we should not include it.

I decide to add a Shipments Entity because Requisitions are always followed by shipments of the Products in the Requisitions to the Officer who originated the Requisition.

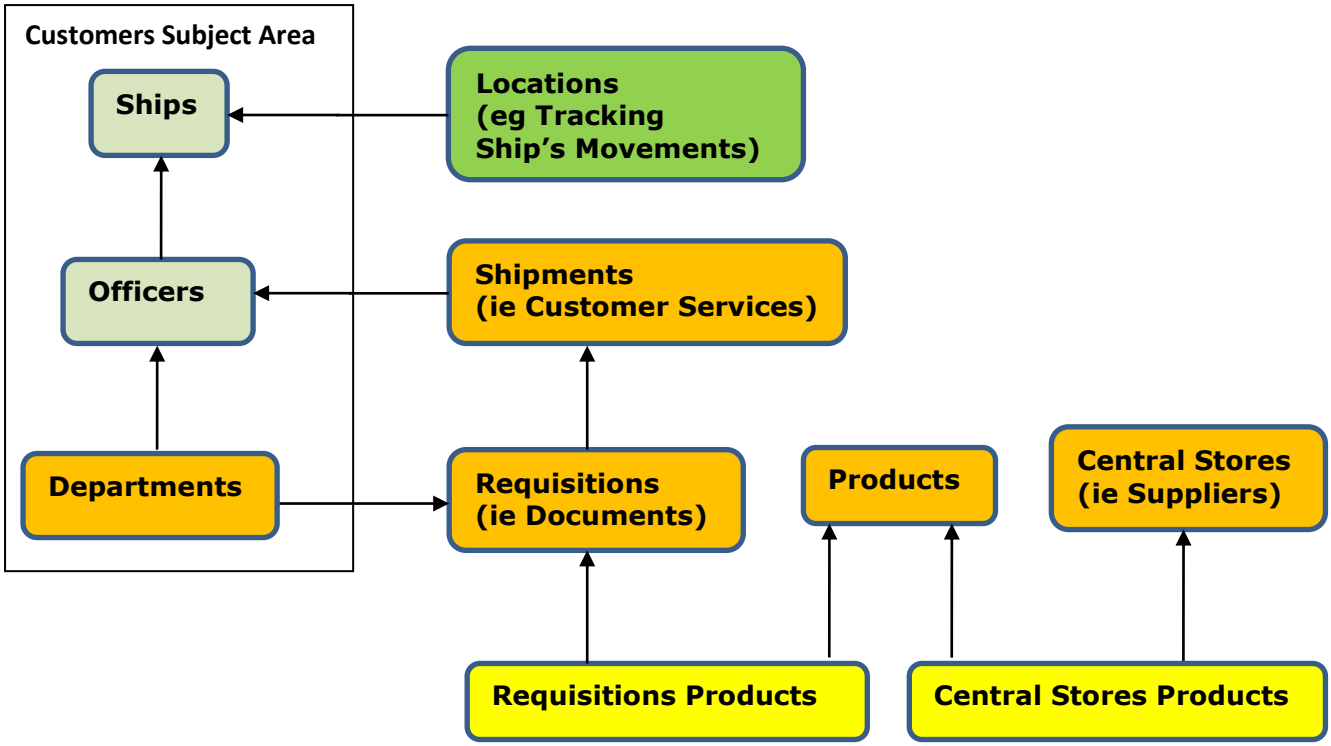
I decide that Ships, Officers and Departments are all part of the Customers Subject Area

I notice that Staff do not appear because they are not visible to the Customers.

I decide that Locations are important and should be included because a Ship can be at sea and its location can be constantly changing.

I decide that Payments should not be included because no cash changes hands in Requisitions.

Inter-departmental budgetary transfers will usually be requested and approved in a Requisition.

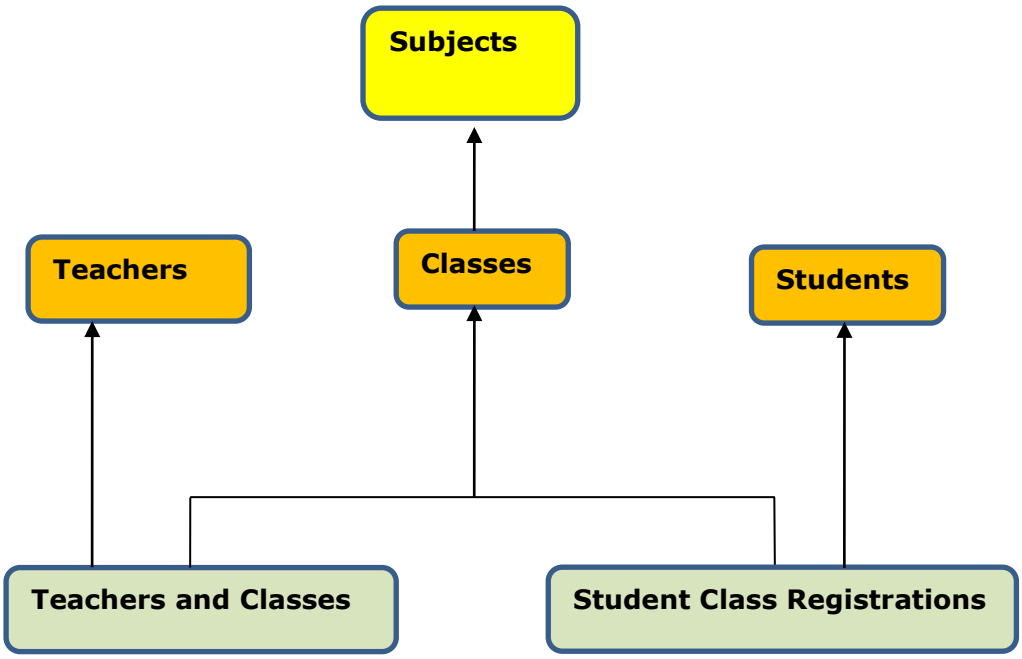


5.4 Education

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/enterprise_data_model_for_education/index.htm

and looks like this :-



Step 1. My first review of the Model

When I look at this Model, my first thought is that Student Registrations are the only Services shown.

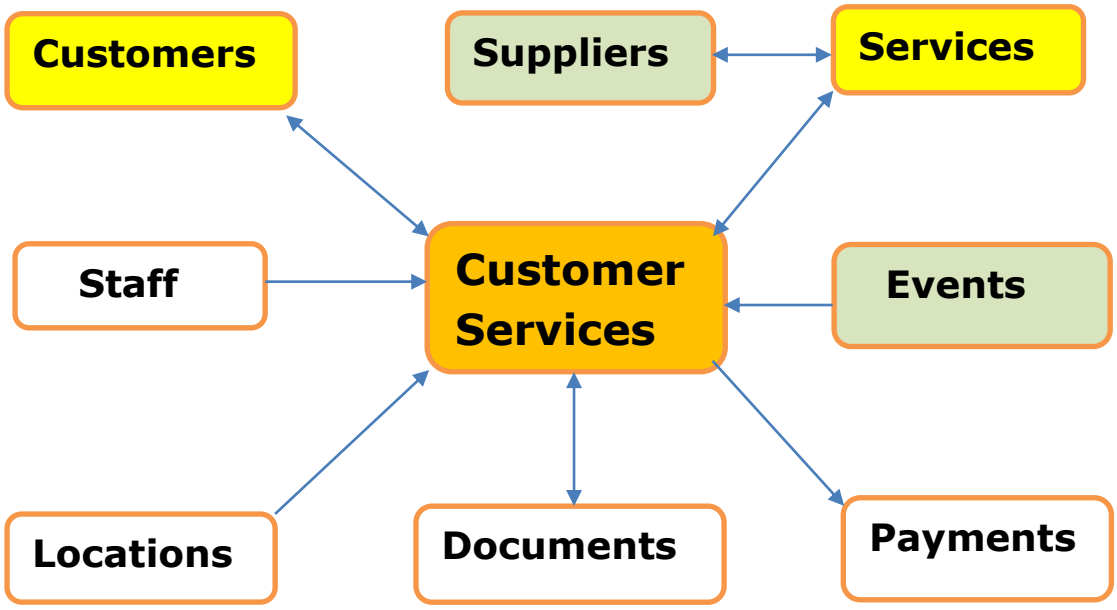
I decide that Teachers are Staff and Services include Assignments and Attendance.

Then I decide that Students play the role of Customers who use Services provided by Schools who play the role of Suppliers.

I like this approach because it is elegant, compact and very general so I feel confident that it will help me.

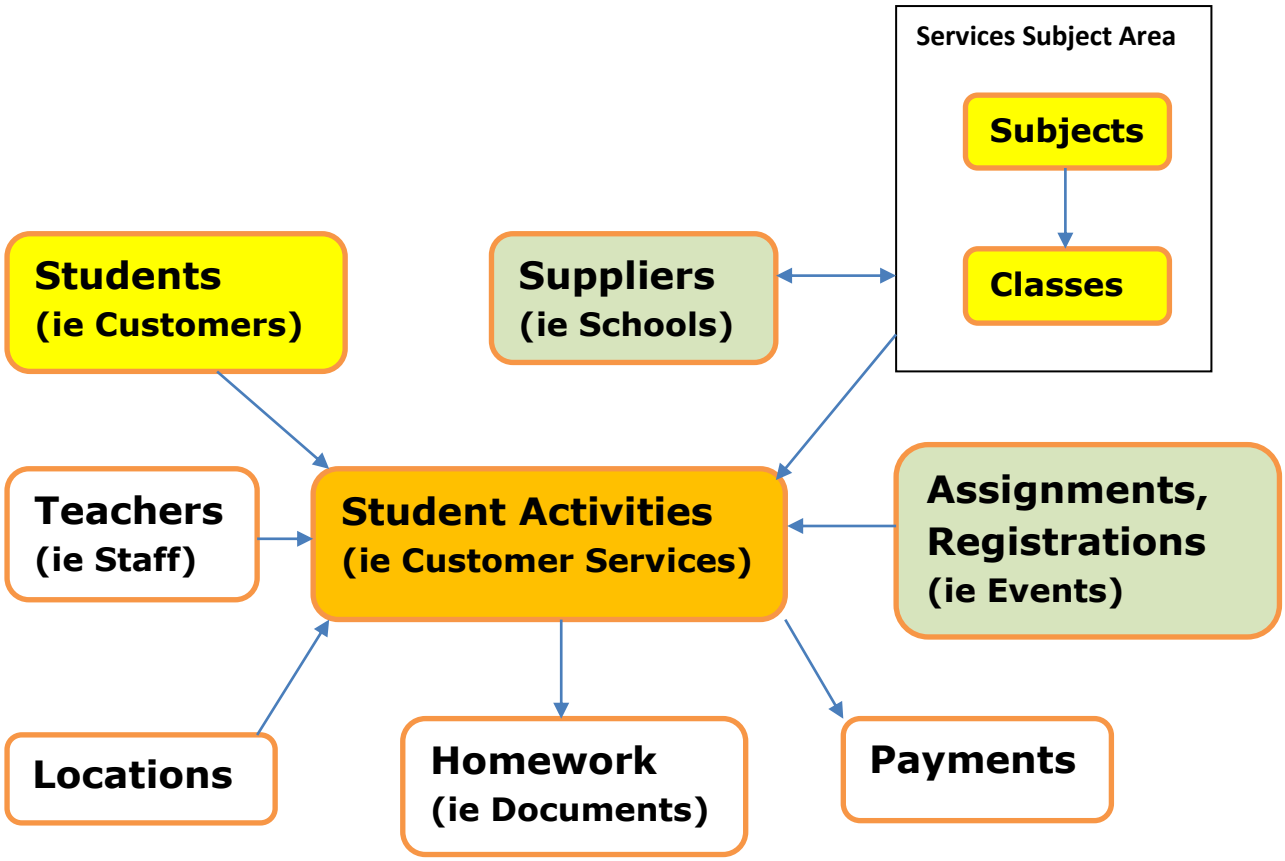
So I decide to start with the Customer-Services Template that is shown below.

This shows how the Vanilla Template applies to the very common situation of Customer Services. We use this Template for all the Industry Models that we explore in this Blog.



So now the first draft of my Model looks like this :-

This shows how the Vanilla Template applies to the very common situation of Customer Services.
We use this Template for all the Industry Models that we explore in this Blog.
I decided to leave the Payments Entity in because Payments do not occur very often but when they do, they are very important and cannot be represented by any other Entity.
In other words, I have to include Payments for the rare occasions when it is required.



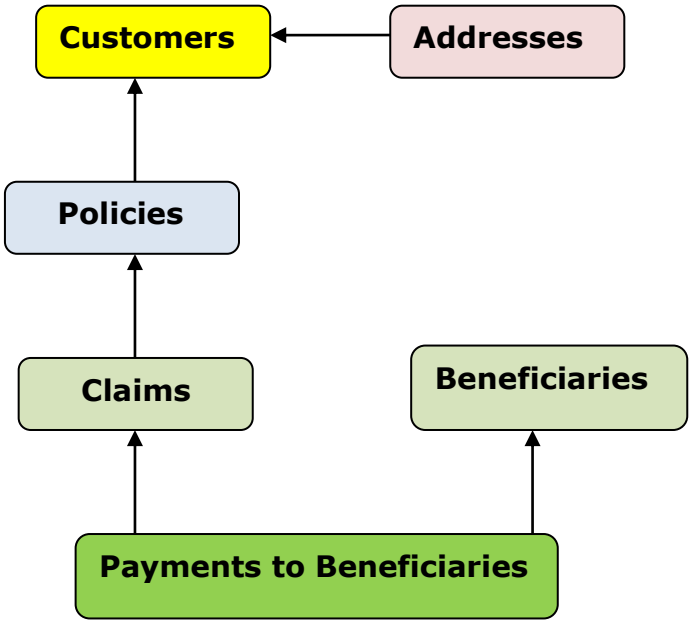
5.5 Everyday Events

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/insurance_policies_and_claims/policies_claims_and_beneficiaries.htm

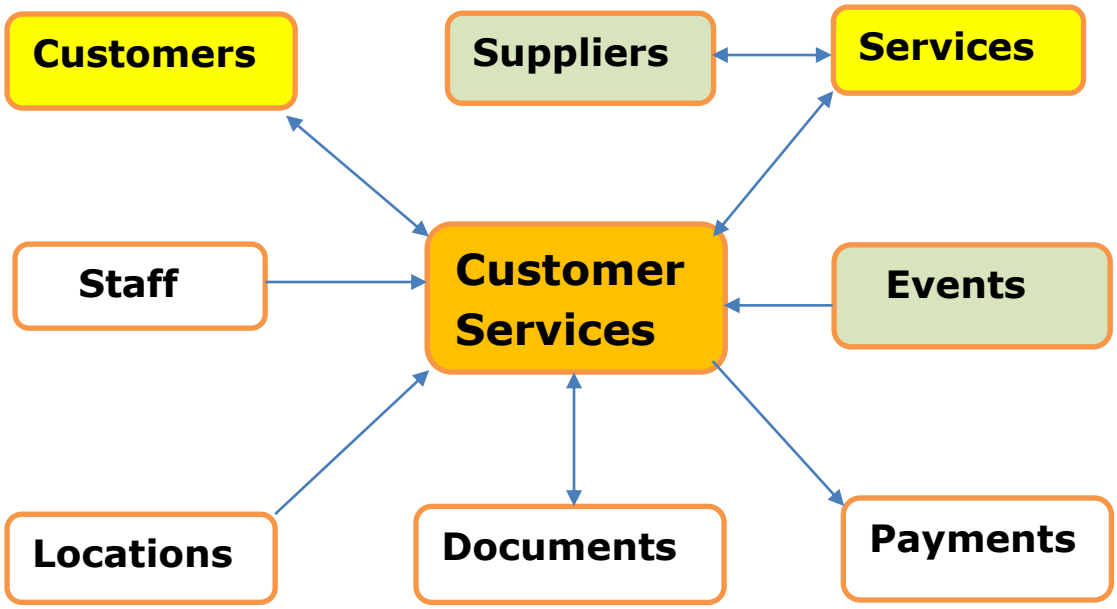
and looks like this :-

Note that Arrows point from Children to Parents.

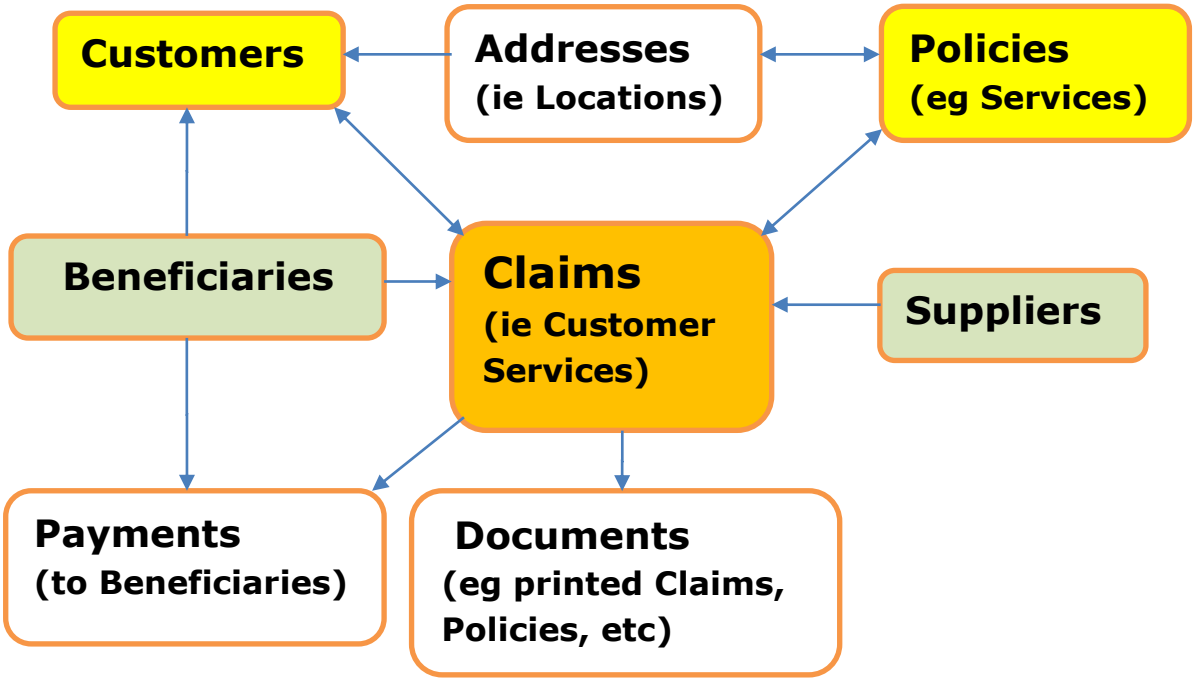


5.5.1 Customer-Services Template

This shows how the Vanilla Template applies to the very common situation of Customer Services. We use this Template for all the Industry Models that we explore in this Blog.



5.5.2 Applying the Template for Everyday Events



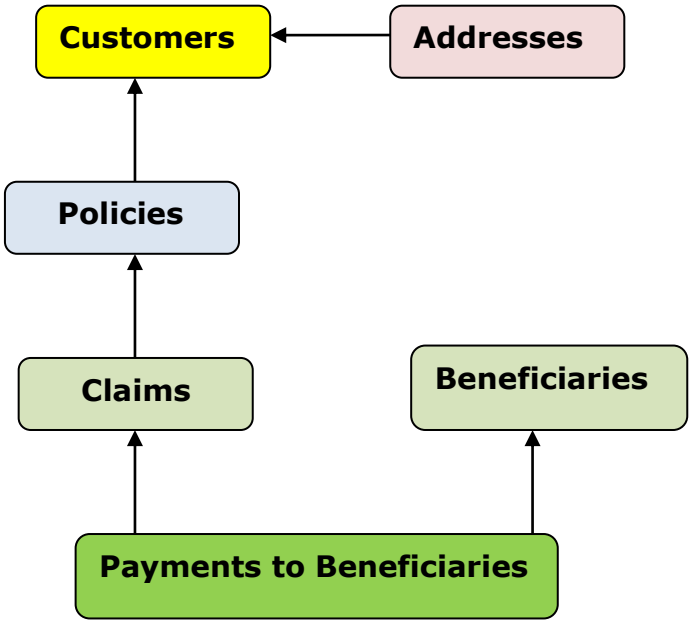
5.6 Insurance

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/insurance_policies_and_claims/policies_claims_and_beneficiaries.htm

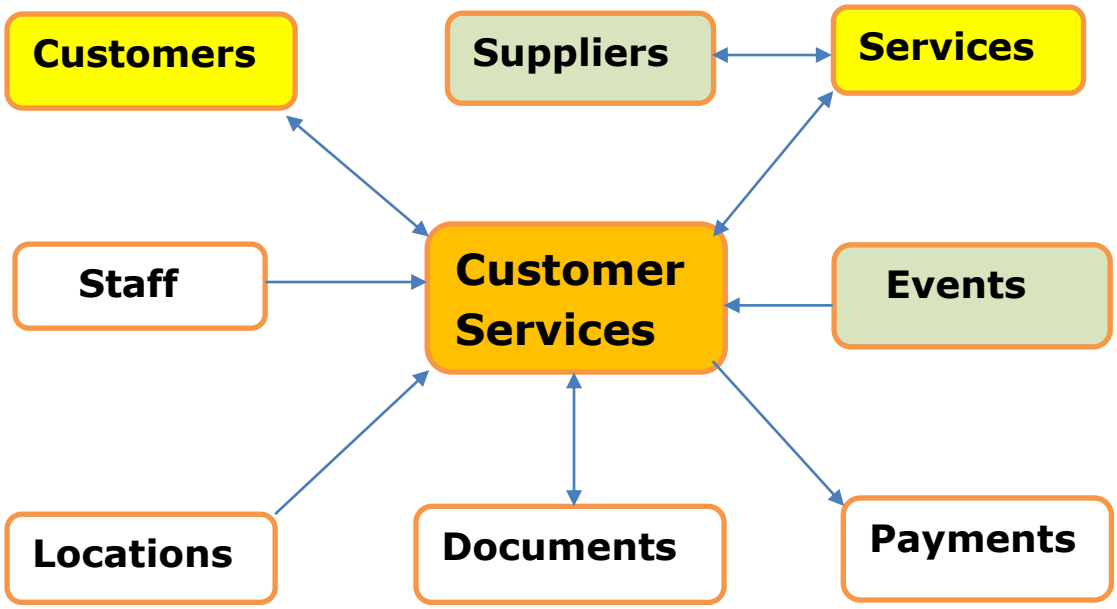
and looks like this :-

Note that Arrows point from Children to Parents.

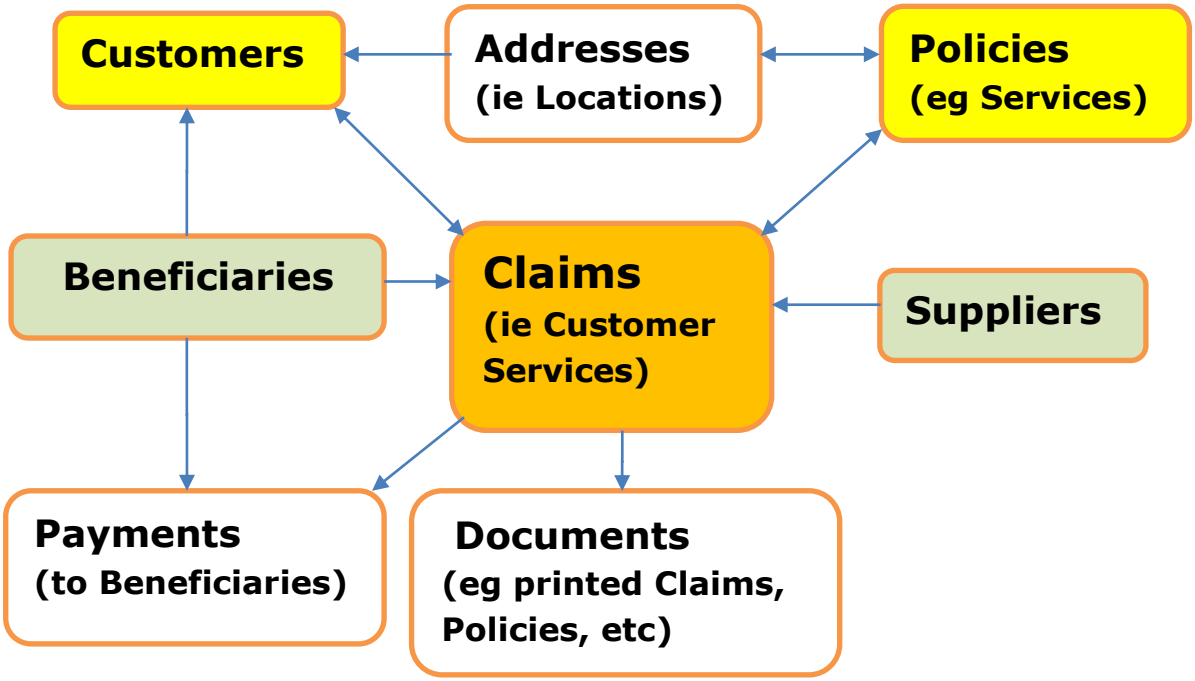


5.6.1 Customer-Services Template

This shows how the Vanilla Template applies to the very common situation of Customer Services. We use this Template for all the Industry Models that we explore in this Blog.



5.6.2 Applying the Template for Insurance

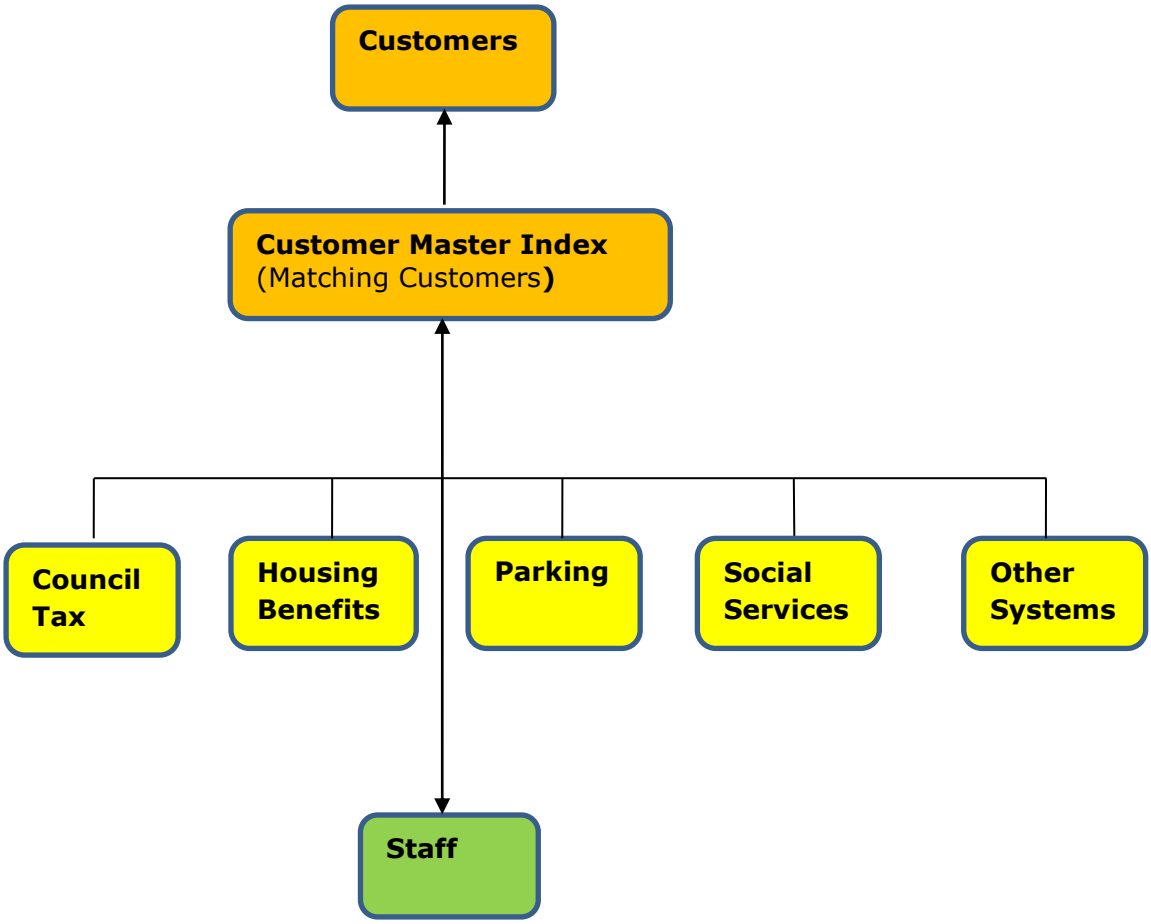


5.7 Law Enforcement

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/local_govt_top_level/index.htm

and looks like this :-



Step 1. My first review of the Model
At this point, I decided to change from a Customer-Services Template to an Events Template.

When I look at this Model, my first thought is that it emphasises Master Data and Customer Data.

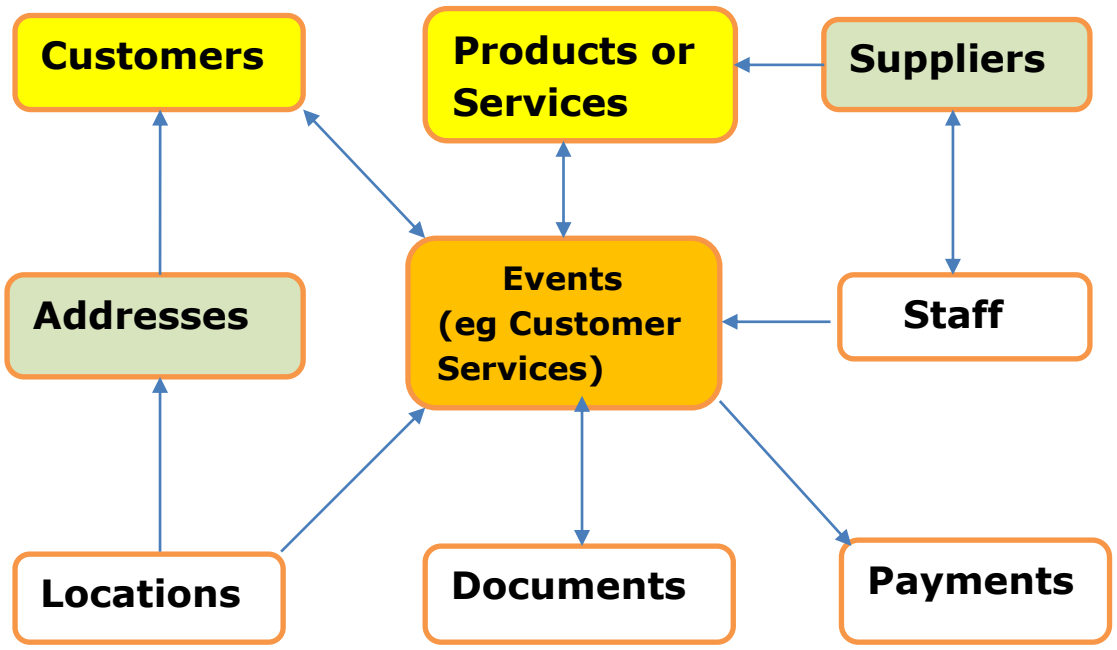
The role of Customers in requesting Services is not shown.

I decide that the role of Customers is played by Residents who request Services.

5.6.1 New Events Template

This shows my new Events Template looks.
The reasons for my changes are :-

We use this Template for all the Industry Models that we explore in this Blog.

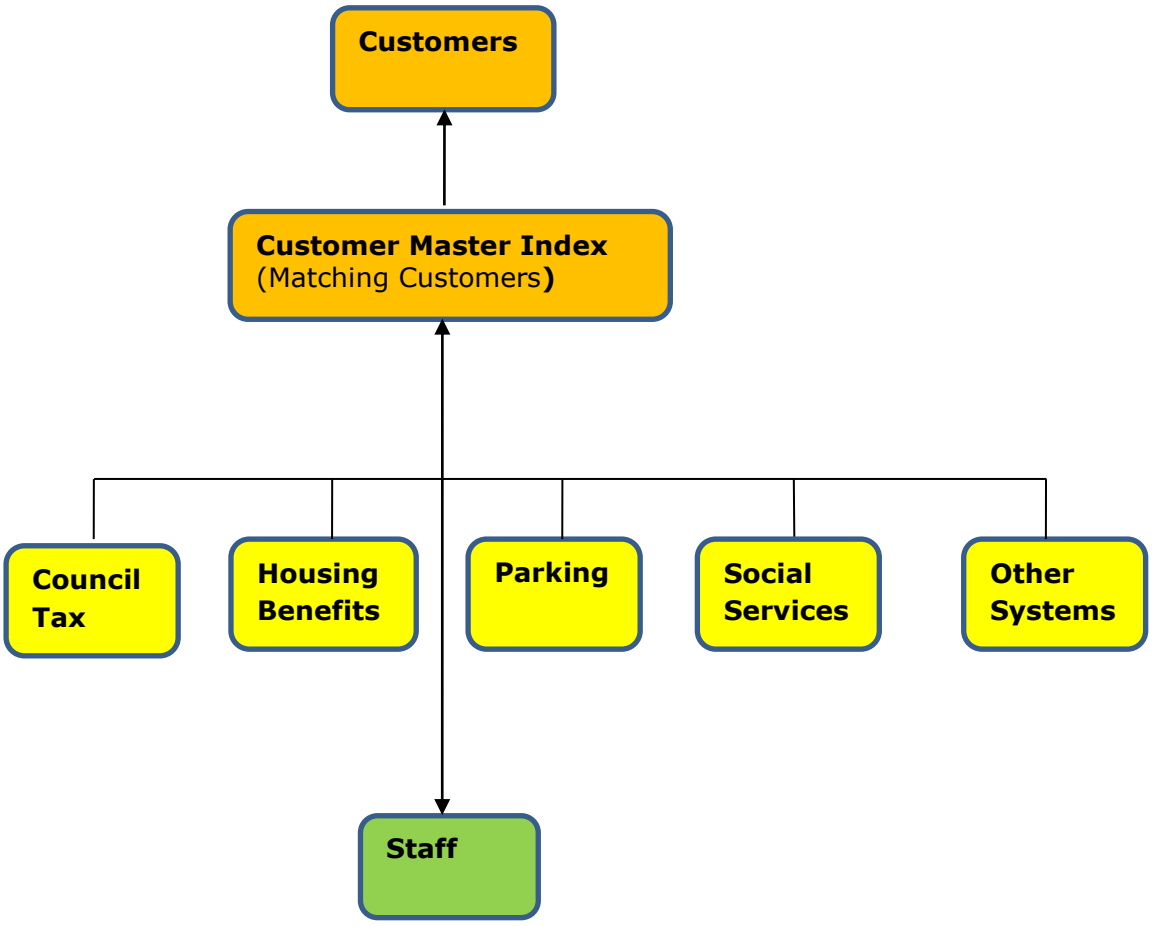


5.8 Local Government

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/local_govt_top_level/index.htm

and looks like this :-



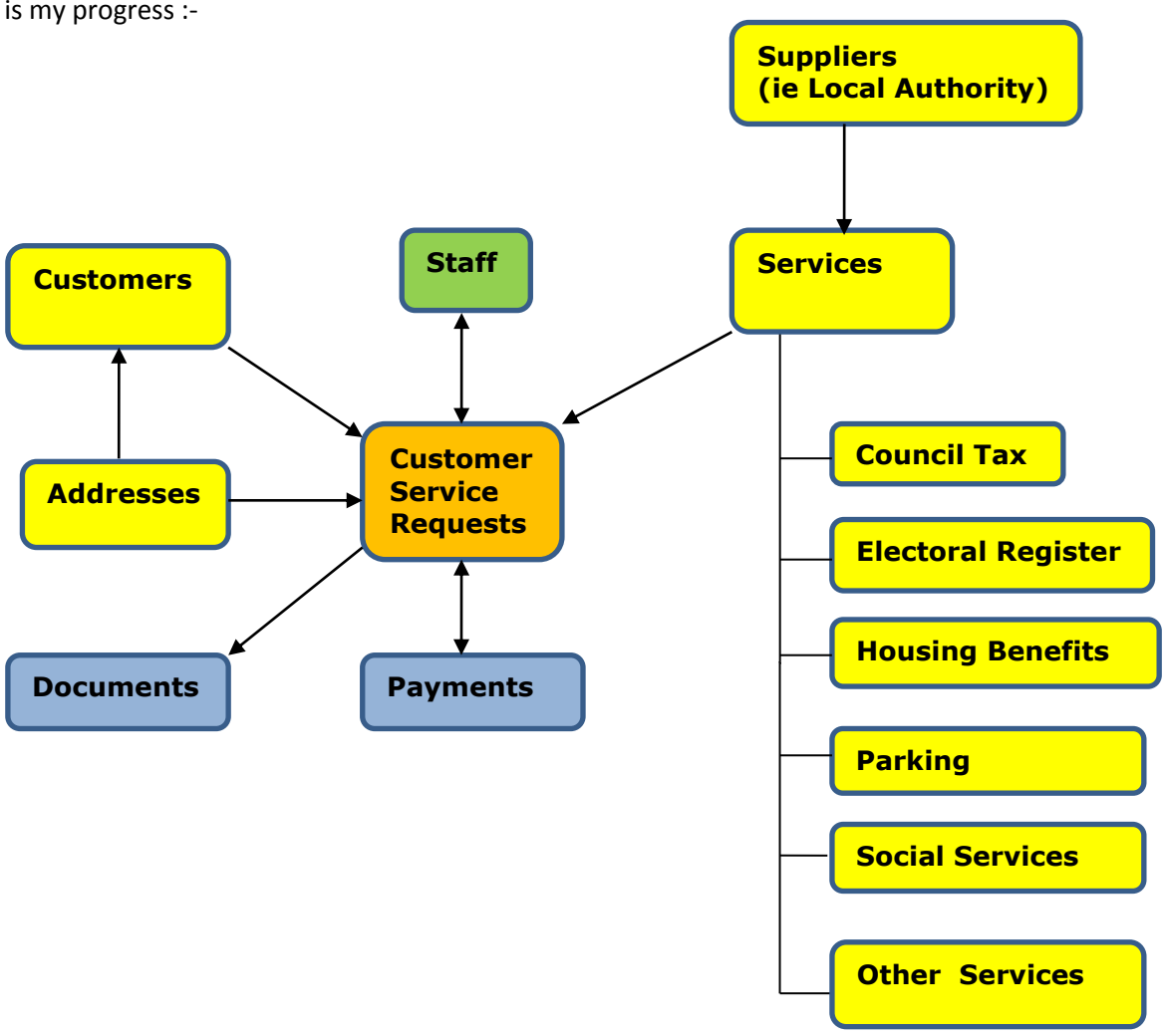
Step 1. My first review of the Model
When I look at this Model, my first thought is that it emphasises Master Data and Customer Data.

The role of Customers in requesting Services is not shown.

I decide that the role of Customers is played by Residents who request Services.

In other words my Customer Services Template is highly appropriate.

So here is my progress :-



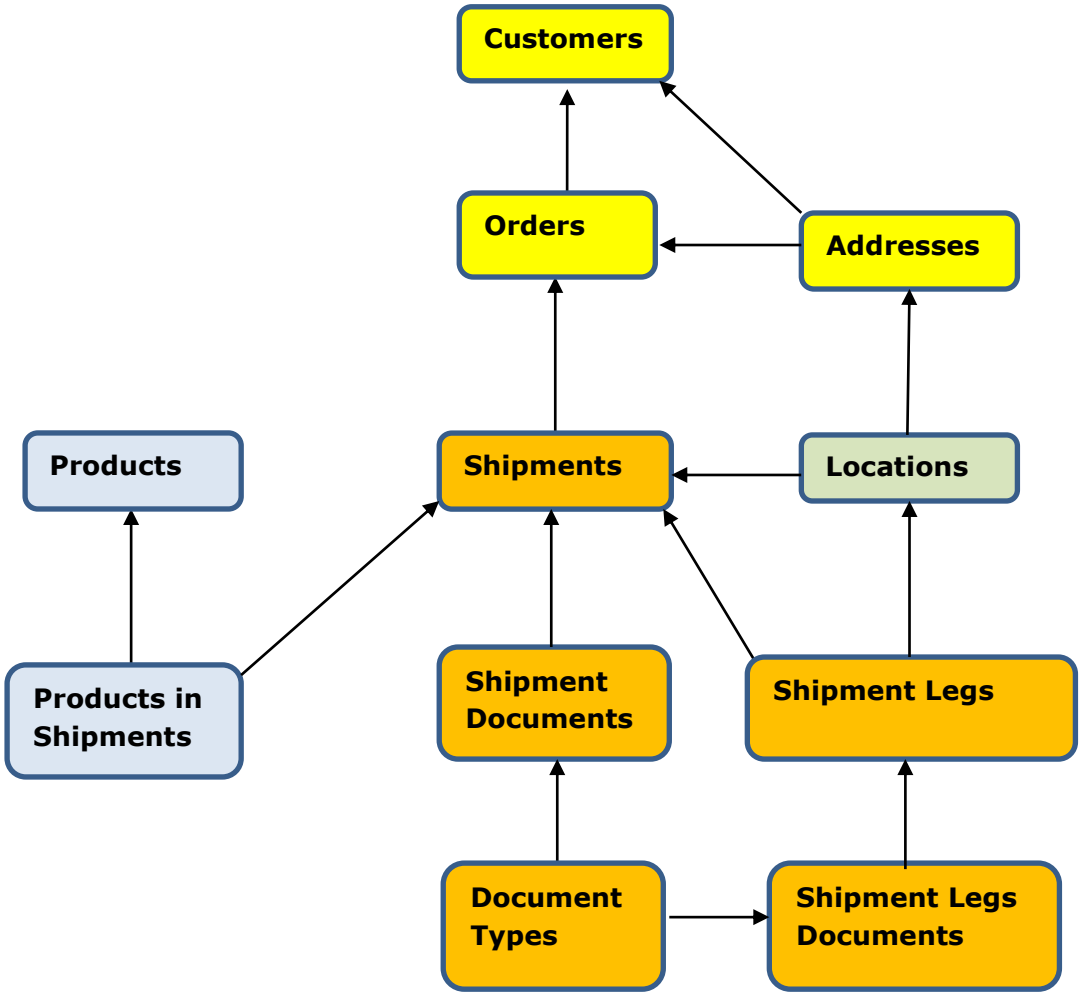
5.9 Logistics

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/enterprise_data_model_for_logistics/index.htm

and looks like this :-

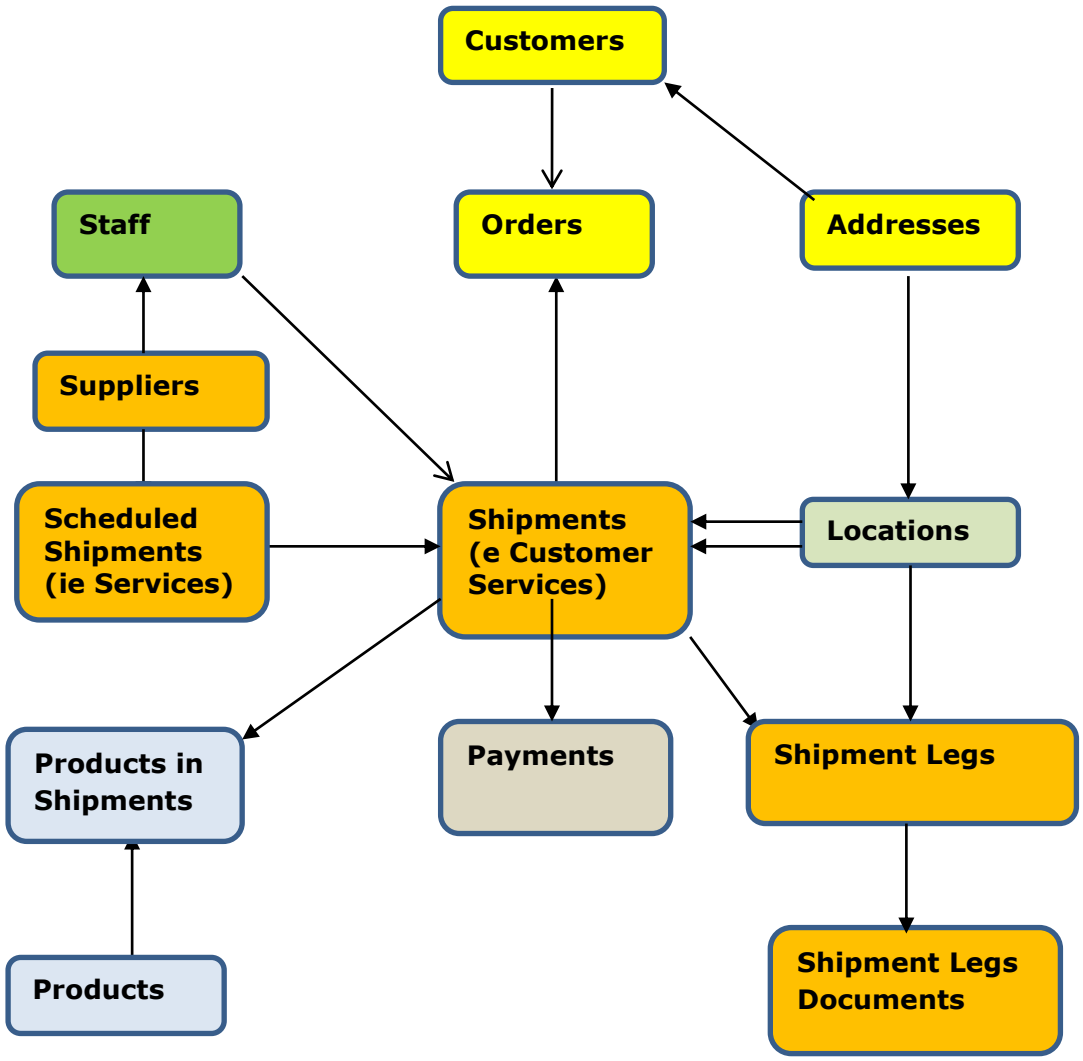
Note that the arrows usually go from Child to Parent.



Step 1. My first review of the Model

When I look at this Model, my first thought is that Planned Shipments are Services that are not shown and the Shipments that are shown are Customer Services.

I decided that Document Types are Reference Data and are not important enough to justify a place at the High Level Data Model.

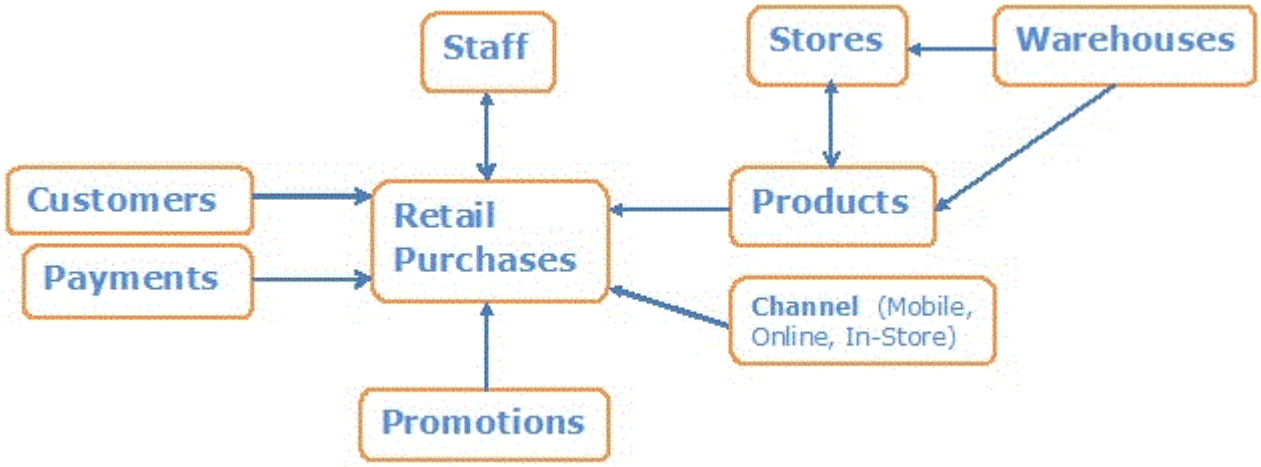


5.10 Retail

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/enterprise_data_model_for_retail/index.htm

and looks like this :-



Step 1. My first review of the Model

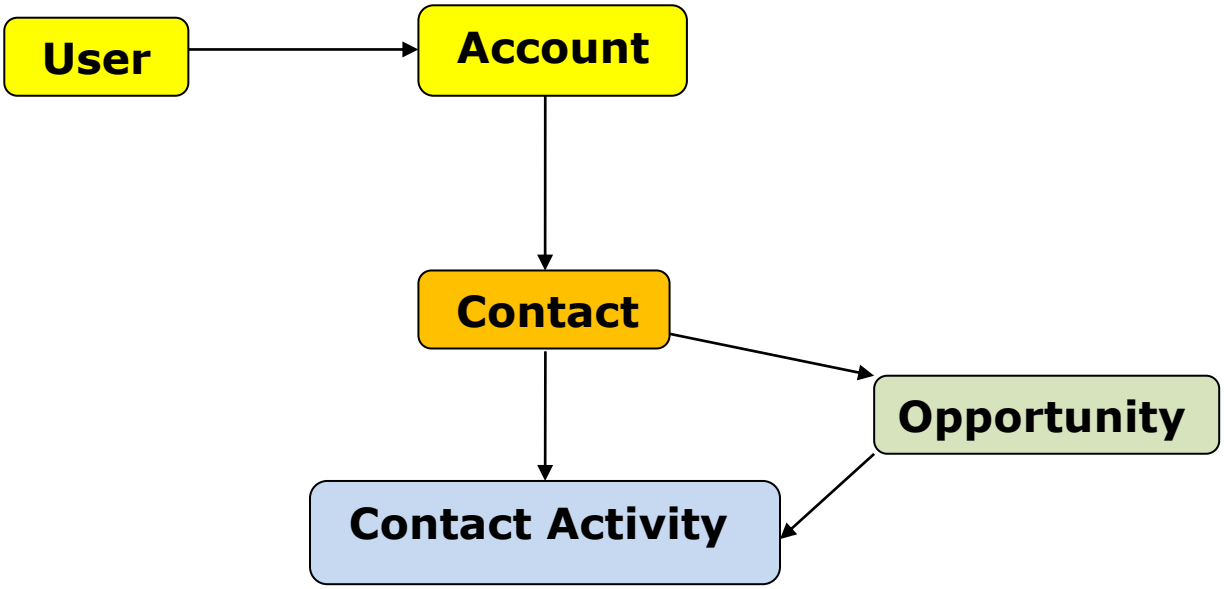
When I look at this Model, my first thought is that it is a good match to the Canonical Data Model Template so I will accept it as it is for the time being.

5.11 Salesforce

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/salesforce_dotcom/index.htm

and looks like this :-

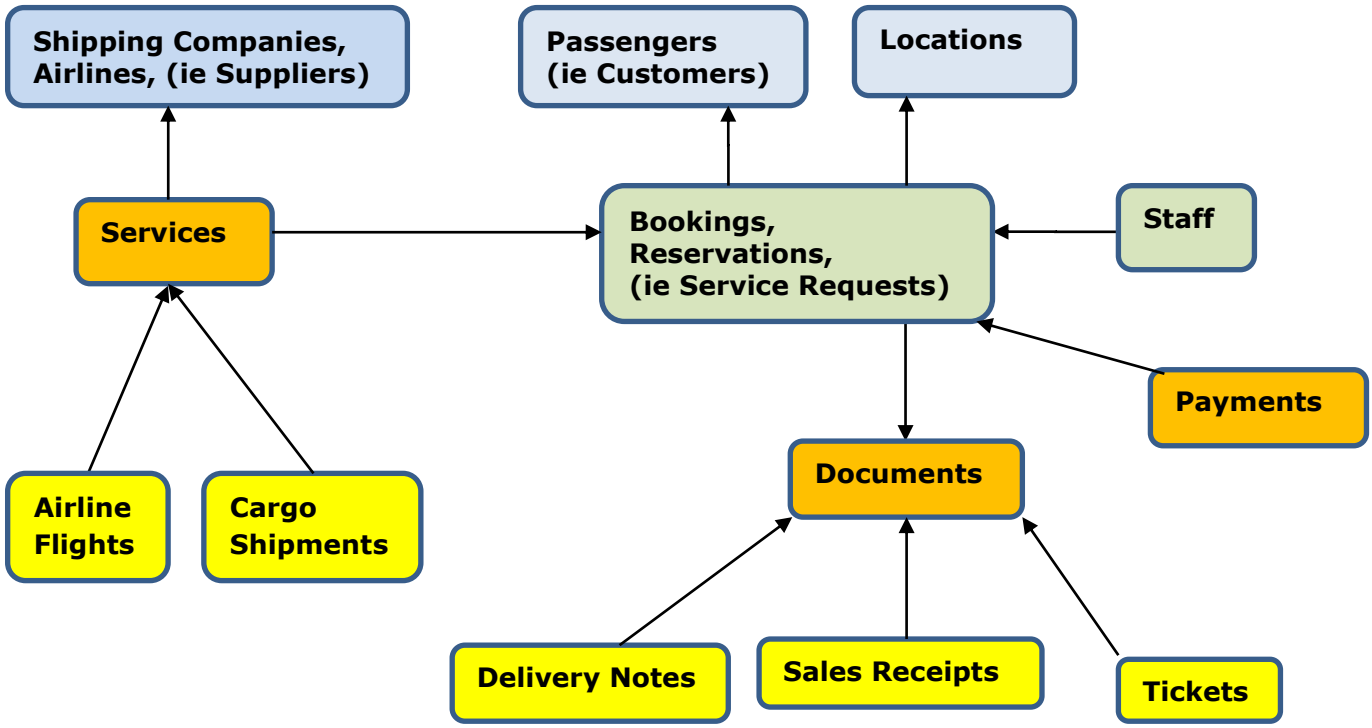


5.12 Travel

The Canonical Data Model is on this page :-

- http://www.databaseanswers.org/data_models/travel_and_transport_top_level/index.htm

and looks like this :-



Step 1. My first review of the Model

When I look at this Model, my first thought is that there is a close match with the Events Template.

6. Implementation Plan

6.1 Step 1 – Identify the Features

This is our Plan for the first Phase of Implementation, based on

- Banking
- Everyday
- Logistics

Here we analyse the Template features.

Template Feature	Banking	Everyday Events	Logistics
Addresses	Customer's Addresses	Customer's Addresses	Customer's Addresses
Customers	Customers	Customers	Customers
Documents	Bank Statements	Sales Receipts, Tickets	Shipping Documents, Receipts
Events	Make Payments, Withdrawals	Buy Meal, Buy Ticket, Take a Trip	Shipments
Locations	Statements	Shop, Train Station	Locations
Payments	Fees, Interest Payments	Retail Purchases	Payments
Products		Retail Products, Restaurant Meals	Cargo Item
Services	Services – Accounts, Loans, Overdrafts.	Retail Services, Restaurant Service	Shipment Services
Staff	Tellers	Shop Assistants, Waiters	
Suppliers	Banks	Retail Chains, Transport Companies	Shippers

6.2 Step 2 – Define the Spreadsheets

The Spreadsheets shown for each Industry will be used for Data Entry and Data Enquiries.

6.2.1 Banking

Here we show the features for each Industry.

Data Entry

Data Enquiry

6.2.2 Everyday Events

Here we show the features for each Industry.

6.2.3 Logistics

Here we show the features for each Industry.

6.3 Load Data then display stored Data

Our checks are Data Entry and Data Enquiries.