

The Validation of a Canonical Data Model

Database Answers



The Validation of a Canonical Data Model

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1. Introduction.....	2
2. Reference Data Architecture	3
3. Canonical Data Model (CDM).....	3
4. Message Template	4
5. Police-related Data Models.....	5
6. Summary	11

1. Introduction

1.1 Purpose

This purpose of this short paper is to present the results of an exercise to validate the design of a generic Canonical Data Model (CDM).

This is achieved by mapping the CDM to three different Data Models for specific Police-related activities, which have been taken from the Law Enforcement Data Models on our Database Answers Web Site :-

- http://www.databaseanswers.org/data_models/top_ten_data_models_law_enforcement.htm

The three we have chosen are :-

- Offenders and Movements (that we originally created in 2009)
 - http://www.databaseanswers.org/data_models/offenders_and_movements/index.htm
- Tracking Evidence (2004)
 - http://www.databaseanswers.org/data_models/tracking_evidence/index.htm
- Traffic Cops and Tickets (2009)
 - http://www.databaseanswers.org/data_models/traffic_cops_and_tickets/index.htm

A standard Message Template is also proposed for transforming data to a common structure to load into a Data Warehouse and for working in an SOA environment.

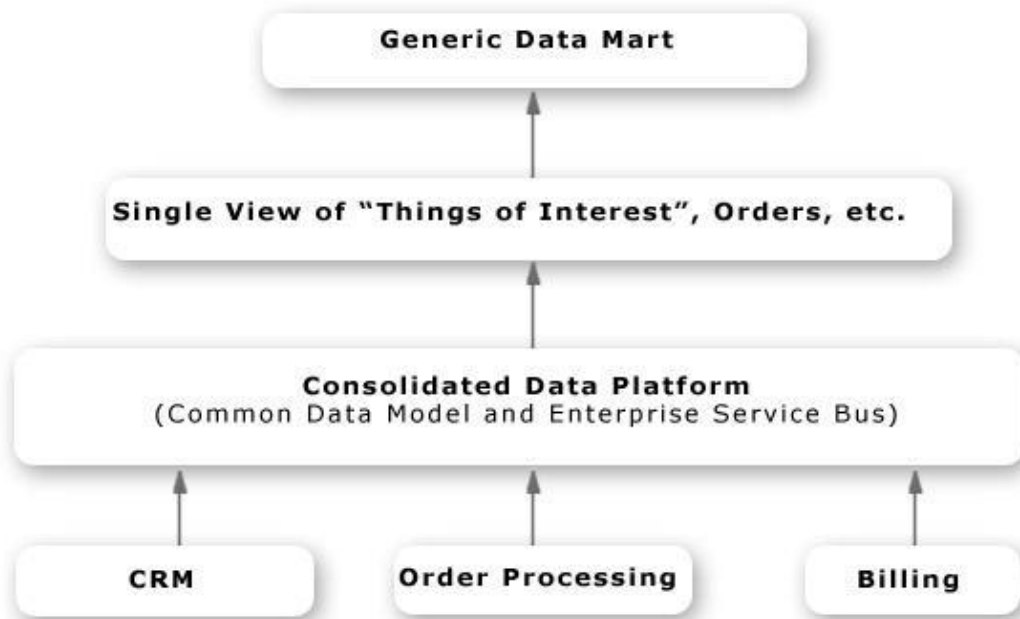
1.2 What is a Canonical Data Model ?

We define it as a Model with everything unnecessary removed so that the number of Entities is minimised.

The Validation of a Canonical Data Model

2. Reference Data Architecture

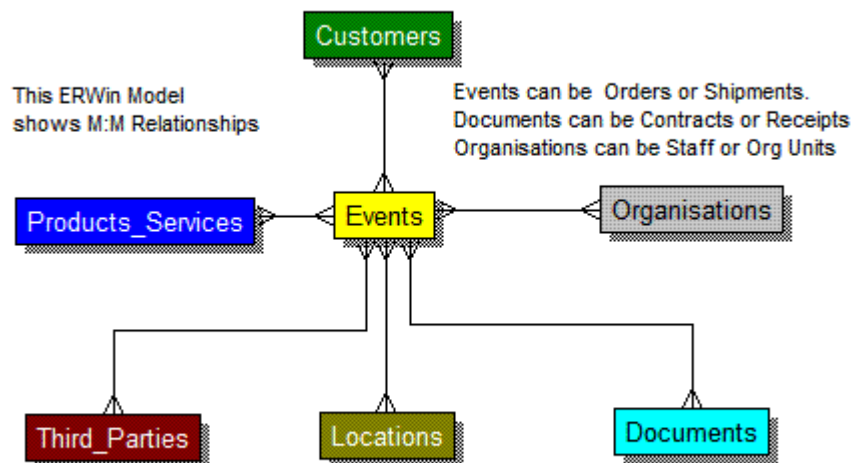
This diagram shows our Consolidated Data Platform with the Common (or Canonical) Data Model.



3. Canonical Data Model (CDM)

3.1 CDM First Version

The first version of our Canonical Data Model was Customer-oriented and looked like this :-



The Validation of a Canonical Data Model

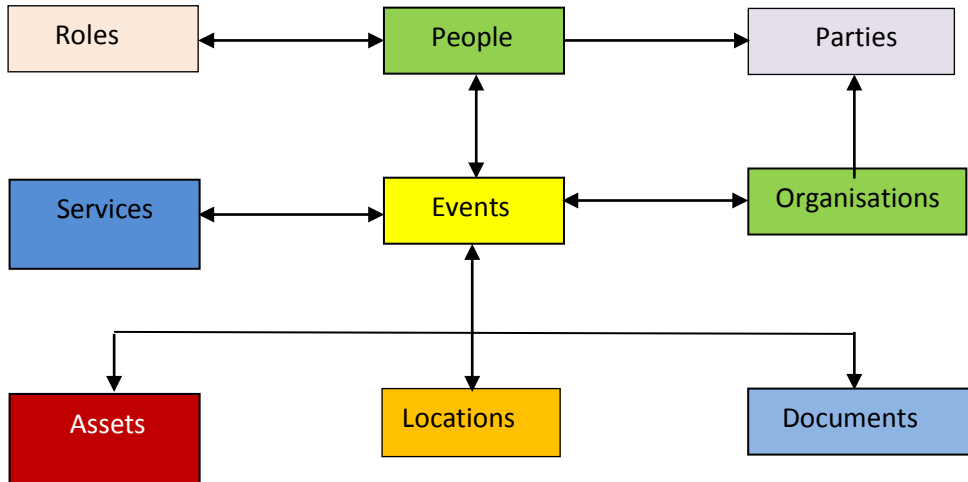
3.2 CDM Second Version

Then we generalised it to accommodate Police activities.

This meant that physical objects became more than simply Products, such as Evidence and Vehicles.

In addition, People and Organisations can play different Roles in different Events.

The result looked like this :-



This became our starting-point for validation against a number of Police-related Data Models that we already have on our Database Answers Web Site.

The result was that we were able to confirm that our generalised CDM provided an excellent framework for mapping to a wide variety of Models.

4. Message Template

We have defined a Generic Message Template that we can use to transform data into a standardised format to load into a Data Warehouse and to provide a consistent structure in an SOA environment.

This shows the Generic Message Template which we apply to specific Events.

Generic	Event Name	Event Date & Time	Asset Details	Document Details	Location Details	Organisation Details	Role Details	Service Details

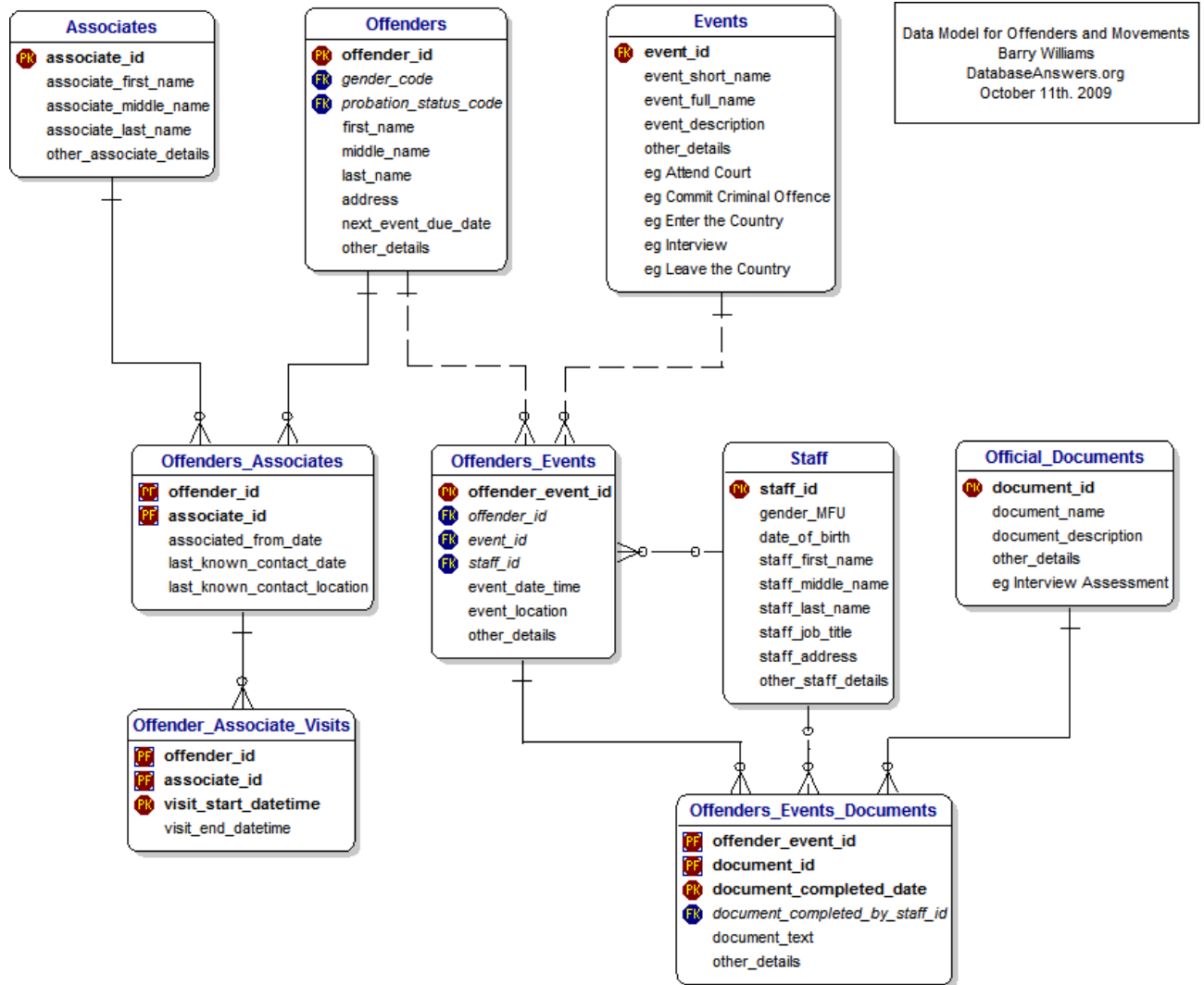
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5. Police-related Data Models

5.1 Offenders and Movements

This appears on this page of our Web Site :-

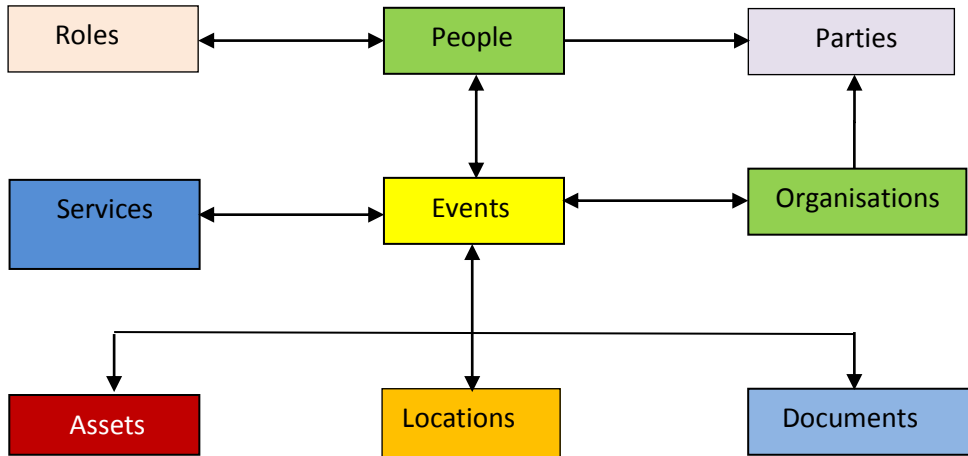
- http://www.databaseanswers.org/data_models/offenders_and_movements/index.htm



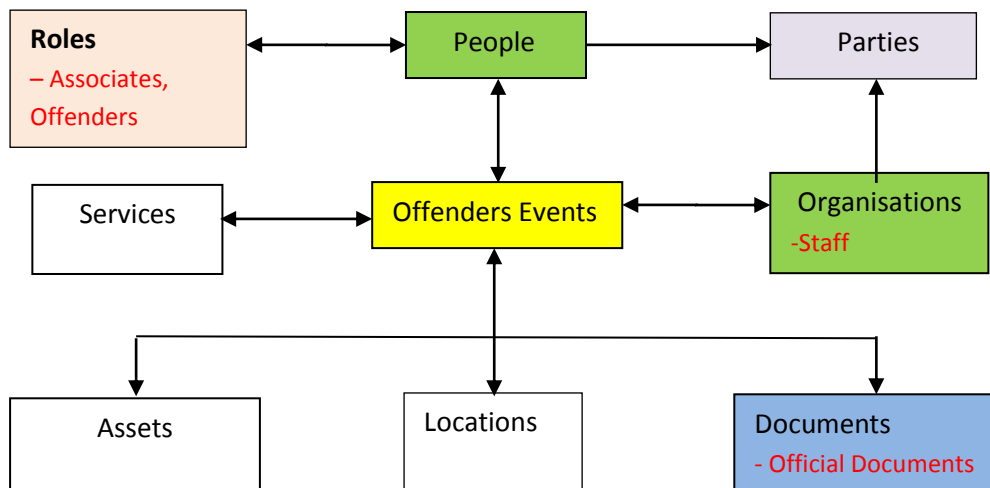
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5.1.1 Mapped to the CDM

This is our generic CDM :-



This shows how it maps to our Offenders and Movements Model, with Entities that do not apply shown in white.



5.1.2 Message Template

This shows how the Generic Message Template applies to Offenders and Movements.

Data that does not apply is shown as N/A for Not Applicable.

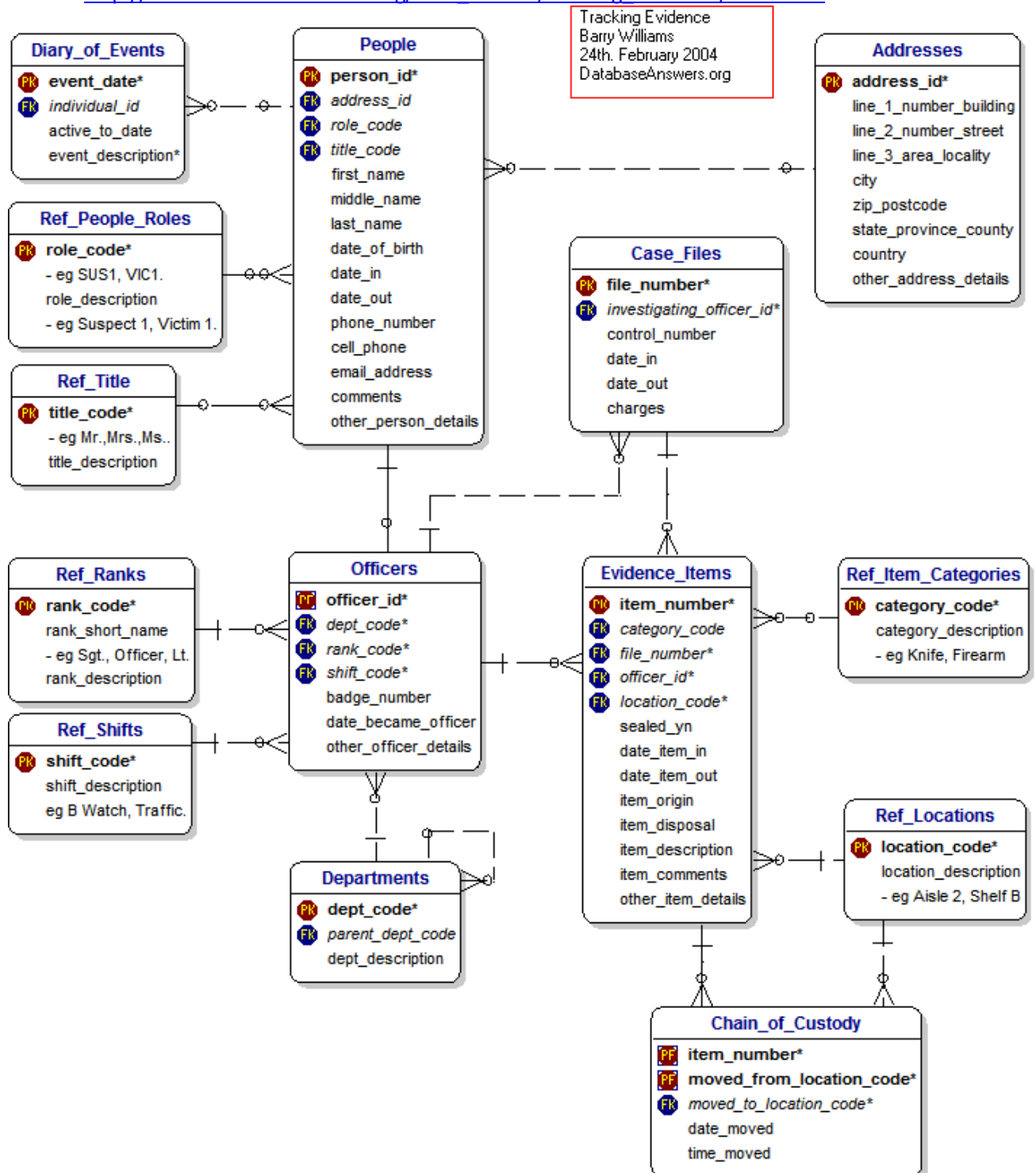
Generic	Event Name	Event Date & Time	Assets Details	Documents Details	Locations Details	Organisations Details	Roles Details	Services Details
Specific	Offenders and Movements	Event Date & Time	N/A	Official Documents	N/A	Staff	N/A	N/A

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5.2 Tracking Evidence

This appears on this page of our Web Site :-

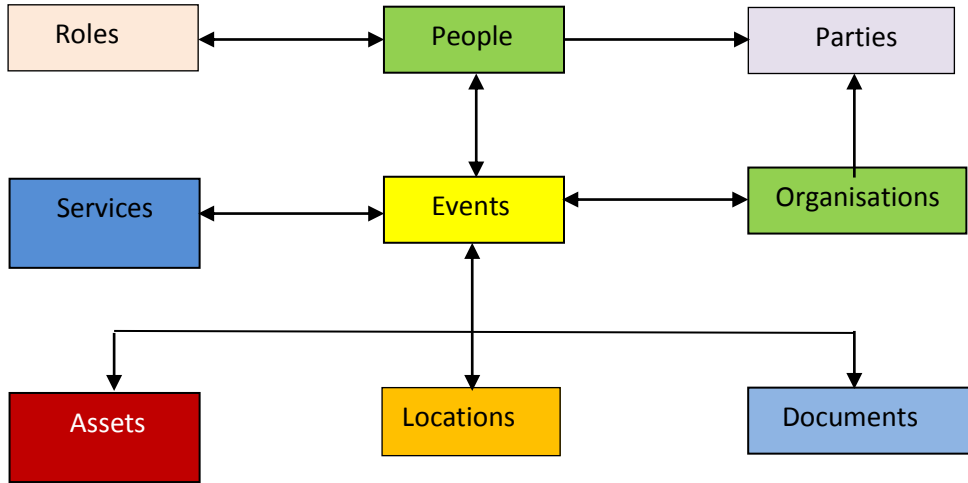
- http://www.databaseanswers.org/data_models/tracking_evidence/index.htm



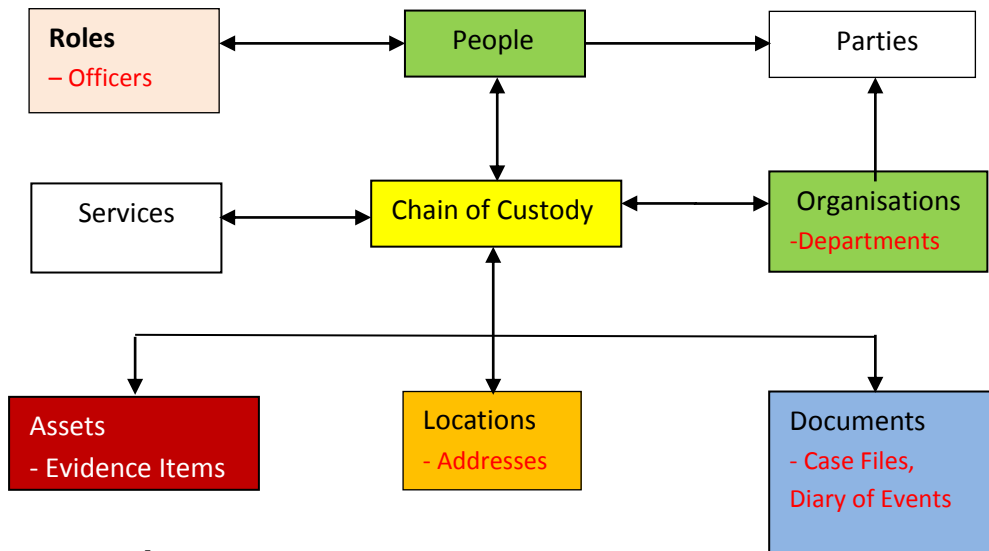
5.2.1 Mapped to the CDM

This is our generic CDM :-

The Validation of a Canonical Data Model



This shows how it maps to our Tracking Evidence Model, with Entities that do not apply shown in white.



5.2.2 Message Template

This shows how the Generic Message Template applies to Tracking Evidence.

Data that does not apply is shown as N/A for Not Applicable.

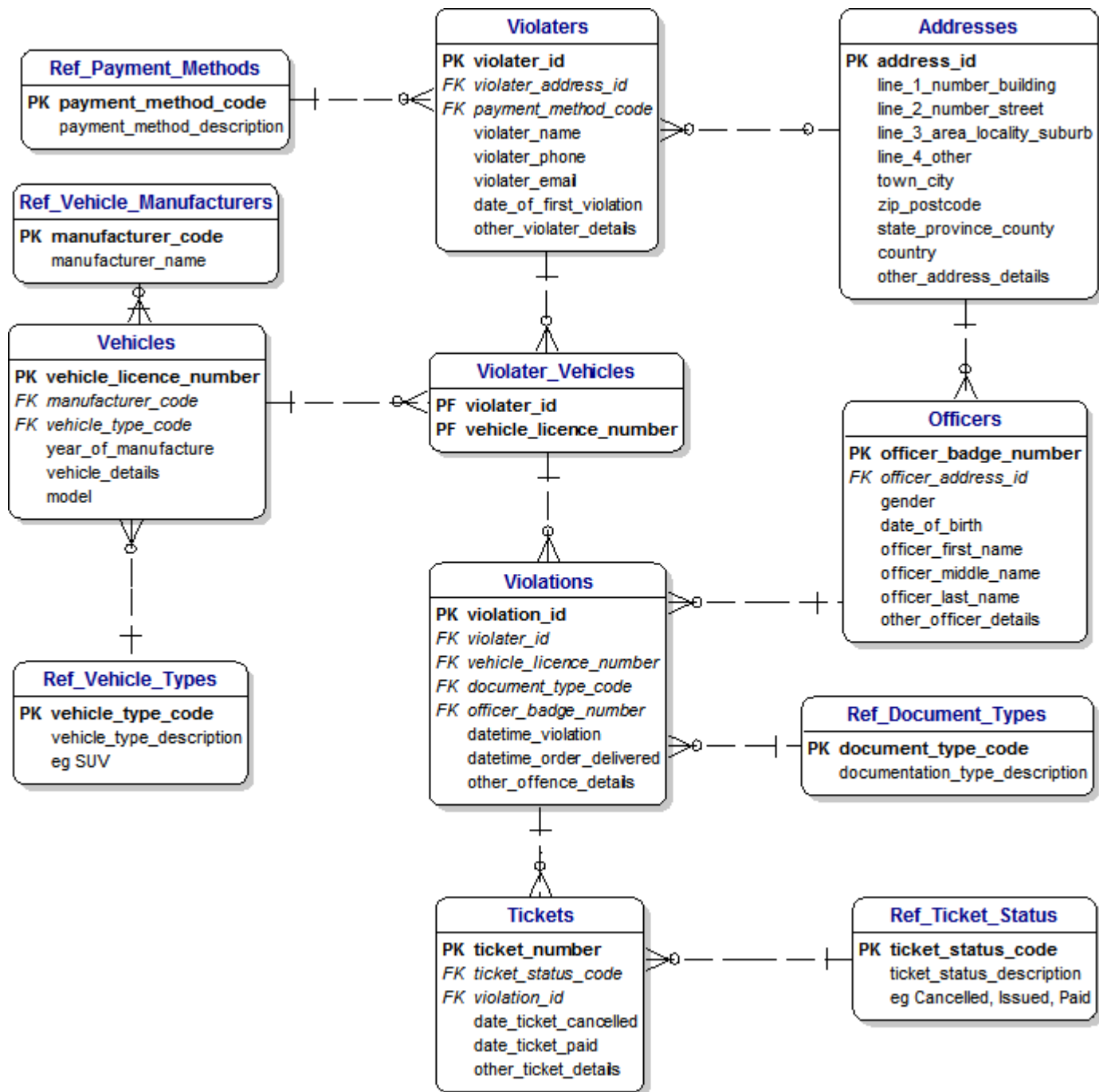
Generic	Event Name	Event Date & Time	Assets Details	Documents Details	Locations Details	Organisations Details	Roles Details	Services Details
Specific	Chain of Custody	Event Date & Time	Evidence Items	Case Files, Diary of Events	Addresses	Departments	Officers	N/A

5.3 Traffic Cops and Tickets

This appears on this page of our Web Site :-

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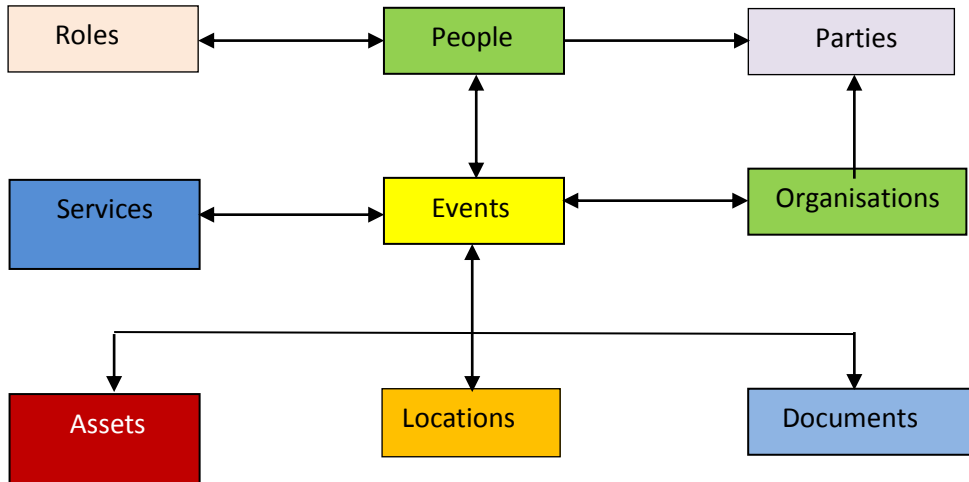
- http://www.databaseanswers.org/data_models/traffic_cops_and_tickets/index.htm



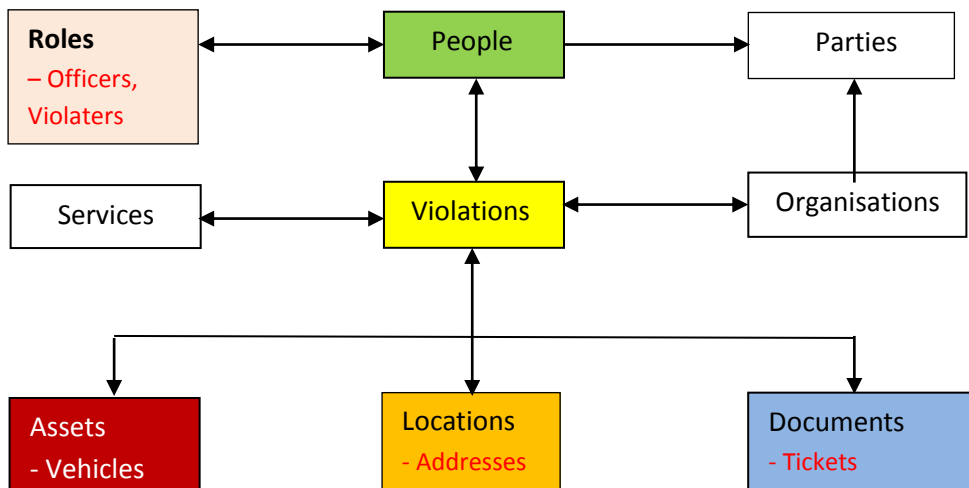
The Validation of a Canonical Data Model

5.3.1 Mapped to the CDM

This is our generic CDM :-



This shows how it maps to our Traffic Cops Model, with Entities that do not apply shown in white.



5.3.2 Message Template

This shows how the Generic Message Template applies to Traffic Cops and Tickets. Data that does not apply is shown as N/A for Not Applicable.

Generic	Event Name	Event Date & Time	Assets Details	Documents Details	Locations Details	Organisations Details	Roles Details	Services Details
Specific	Traffic Cops	Event Date & Time	Vehicles	Tickets	Addresses	N/A	Officers, Violaters	N/A

The Validation of a Canonical Data Model

6. Summary

Using Police-related Data Models, we have been able to validate the design of our Generic CDM and also demonstrate that the CDM can be used as a standard mechanism for transforming data so that it can be loaded into a Data Warehouse in a consistent manner.