Presentation on the Industry Data Model for Local Government

Database Answers

Presentation on an Industry Model for Local Government

Barry Williams
Presentation on the Industry Data Model for Local Government

1. Target Data Architecture – Overview.................................................................3
2. Target Data Architecture - Details .....................................................................4
3. Phase 1 – Load Electoral Register (TBC)..............................................................4
4. Phase 2 – Add Council Tax (TBC)......................................................................5
5. Phase 3 – Add Data Marts..................................................................................7
6. Customer-Services Data Model.........................................................................8
7. Business Drivers..................................................................................................10
8. Stakeholder Involvement ....................................................................................10
9. Phases in Delivery................................................................................................11
10. Table Details........................................................................................................12
11. Web Links..........................................................................................................18
12. Suppliers.............................................................................................................19
1. Target Data Architecture – Overview
This is an extension of the simpler Architecture in Barry’s CV. He has designed this Architecture based on his many years experience as a Solutions Architect in data integration projects.
It shows the six major layers in an End-to-End Architecture for Data Migration from Data Sources, through a Data Integration Layer and into an Enterprise Data Warehouse.

Data Marts for specific requirements are then prepared with functionality and a User Access Layer provides tailored Reports and Data Sets for users on a Publish and Subscribe approach.

```
Data Sources

Data Integration Layer

Enterprise Data Warehouse

Data Marts

Business Intelligence (BI)

User Access Layer
```
2. Target Data Architecture - Details

Now we would introduce three Data Marts for specific categories of data:

- Customers (for total counts, also by Ethnic Origin)
- Customer Services – for example, the most popular, most expensive Services
  - eg Environment, where Customers are not involved.

Data Sources

- **Internal Sources**
  - Electoral Register, Council Tax, CRM, Housing Benefits, Parking, SAP, Social Services, etc.

- **External Sources**
  - DataGM, etc.

**Format**
- CSV, XLS, etc.

**Data Integration Layer**

- **Customer Master Index**
  - Includes Children and Families (Matching Rules and Iteration)
- **Services Master Catalogue** (LGSL)

**Enterprise Data Warehouse**

- Customers, Services, Environment (SVOT, Totals, Percentages, KPIs)

**Users**

**Subscriptions**

**Publications**

Data Sets, Rpts
3. Phase 1 – Load Electoral Register (TBC)

3.1 Loading Data from the Electoral Register

In Phase 1, we are getting started, using only Customer data from the Electoral Register.
We plan to load data from the Electoral Register directly into a Customers Table and an Address Table.
We would introduce Web Services for CRUD (‘Create, Read, Update and Delete’) operations on the data in the Customer Data Mart.

In fact, we should say ‘CRUA’ because we would expect to Archive data, rather than Delete it.
We need to provide for Address matching because more than one member of the same Family can be on the Electoral Register.

They can have different names (like Barry and his Malaysian wife)

3.2 Tables in the Customer Data Mart
4. Phase 2 – Add Council Tax (TBC)

4.1 Adding Data from second System
At this point, we would add data from a second System. We would choose a System from the ‘Top 20’ – such as Council Tax, Housing Benefits, Parking, Social Services and so on. We would choose depending on criteria such as Data Quality for Customer Names and Addresses.

4.2 Tables in the Customer Data Mart

[Diagram showing the data flow from Data Sources, through Customer Integration Layer, Customer Data Mart, Match Addresses, and Customer Master Index to the final Customers and Addresses]

- Data Integration Layer
  - Customer Master Index
    - (add Customer Matching Rules)

- Data Sources
  - (add more Systems, eg Council Tax, SAP)

- Customer Data Mart

- Match Addresses
  - Gazetteer or PAF File

- Customer Master Index
  - (Matching Customers, ‘Deduping’)
5. Phase 3 – Add Data Marts

5.1 Introduction
Here we can see that we have three Data Marts to provide data for the BI Layer.

- **Customers Data Mart**
- **Customer Services Mart**
- **Services Data Mart**

**Enterprise Data Warehouse**
Customer Hub | Services / Environment | Totals, Percentages, KPIs

**Data Integration Layer**
- **Customer Master Index**
  Includes Children and Families
  (Matching Rules and Iteration)
- **Services Master Catalogue** (LGSL)

**Data Sources**
- Electoral Register, Council Tax
- Housing Benefits, Parking,
  Social Services, etc.
5.2 Tables in the Customer Data Marts
At this point, we add LGSL as Services Reference Data and switch to the PAF File (the Royal Mail Postcode Address File) for Address Reference Data.
6. Customer-Services Data Model

6.1 Introduction
This version shows Entity names only and is from this page on Barry’s Database Answers Web Site :-

- http://www.databaseanswers.org/data_models/local_govt_uk_residents/data_model_entity_names.htm

6.2 Detailed Attributes
This Generalised Data Model establishes a common way of thinking of information which is consolidated across different Services.
We can use it to load data for any Council Service into the Data Warehouse in a consistent format so that it can be manipulated in a common way.
7. Business Drivers
Typical Business Drivers could include –
1) Confirm the population for Central Government funding.
2) Trace missing children
3) Identify Families
4) Predict Youth Offenders
5) Check Fraud – eg trading in Blue Badges (Disabled Parking)

8. Stakeholder Involvement
Typical Stakeholder Involvement will include :-
1. Agree the Approach and Objectives
   For example, “To obtain a Single View of the Truth”

2. Agree Top-to-Bottom Solutions Architecture

3. Define initial thin slice – from BI Layer with KPIs, down to Data Sources, Data Quality, etc..
   KPIs – Total number of Residents, by Ethnic Origin and change on a monthly basis.

4. Obtain Commitment
   From senior management (already achieved ?), middle management.
   Identify the Data Stewards for major Systems – Council Tax, Housing Benefits, Social Services, Parking and so on.

5. Establish Priorities
   For example, build a Customer Master Index.

6. Review Technology Base
   Identify features in a Phased MDM Platform

7. Interview Suppliers
   Draw up a short Statement of Requirements and circulate to potential Suppliers.
### 9. Phases in Delivery
These Phases have been drafted for discussion.

<table>
<thead>
<tr>
<th>Phase 1 ('Quick and Dirty')</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start-Up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BI / KPIs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Counts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Customer Count</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count by Age Group, Gender, Street, Ward</td>
<td>Count by Ethnic Origin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify Families</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>User Access</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publish and Subscribe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Mart</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Families, Deceased</td>
<td>Create Customers Mart</td>
<td>Create Customers Services Mart</td>
<td></td>
</tr>
<tr>
<td><strong>3NF Data Warehouse</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers, Addresses</td>
<td>More Customers, CMI</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Integration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise DQ (Names, Addresses)</td>
<td>Addresses in Gazetteer or PAF File</td>
<td>Security – Sensitive Data</td>
<td></td>
</tr>
<tr>
<td><strong>Data Source (TBC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electoral Register</td>
<td>+ Council Tax</td>
<td>+ Housing Benefits + SAP (???)</td>
<td>+ Social Services + External Data + Parking</td>
</tr>
<tr>
<td><strong>Organisation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Stewards</td>
<td>Data Stewards, Governance, PDA</td>
<td>Classify Data, Role-based User Access</td>
<td></td>
</tr>
<tr>
<td><strong>Suppliers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirm Requirements (CMI, DQ, MDM)</td>
<td>Talk to Suppliers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MCC will retain ‘Thought Leadership’ and talk to Suppliers from a position of superiority.

The Plan :-
1) Agree Target Architecture
   This defines the long-term goal and provides a direction
2) Get started simply and increment in a controlled manner

Terminology could include CMI (Customer Master Index), Customer or MDM Hub or Data Marts.
10. Table Details

10.1 Direct Load from Electoral Register to the Customer Hub

Phase 2 would add an early version of the Customer Master Index. This Phase creates a separate Address_Master table. Otherwise, the work involved is trivial and we would not make serious progress. People who are on the Register with different names can live at the same address.

10.2 Typical Electoral Register

An early step would be to validate the Addresses against a standard Address File, such as the PAF File and replace the Address in the Register with a reference to a standard Address File.
10.3 Direct Load from Electoral Register to the Customer Hub

1) Load data directly into the Customer Hub Table
2) Load Address data and look for matches (e.g., families)
10.4 Customer Master Index
This Model shows an early version of the Customer Master Index ('CMI').
Multiple sources of customer-related data bare integrated in a single Customer Master Index.
It is on this page :-
- [http://www.databaseanswers.org/data_models/master_data_mgt/master_data_mgt_customers.htm](http://www.databaseanswers.org/data_models/master_data_mgt/master_data_mgt_customers.htm)
10.5 Early Customer Master Index (CMI)

This Model shows multiple sources of customer-related data being integrated in a single Customer

- [http://www.databaseanswers.org/data_models/local_govt_top_level/getting_started_phase_1_hub.htm](http://www.databaseanswers.org/data_models/local_govt_top_level/getting_started_phase_1_hub.htm)
10.6 Another Early CMI

Phase 4: Add an early version of the Customer Master Index

This Model shows multiple sources of customer-related data being integrated in a single Customer

- [http://www.databaseanswers.org/data_models/local_govt_top_level/getting_started_phase_2_hub.htm](http://www.databaseanswers.org/data_models/local_govt_top_level/getting_started_phase_2_hub.htm)
10.7 BI Dashboard
This was a BI Dashboard produced by Barry as part of a ‘Clean and Green’ Environmental Monitoring initiative in Ealing
This shows 23 Wards with Red, Amber or Green marking Wards that need management attention.
11. Web Links

LGSL Entry - Electoral Register (364) -

The Open Data Institute :-

• http://theodi.org/
12. Suppliers

12.1 Major Players (alphabetical)

12.1.1 IBM
IBM InfoSphere Master Data Management Hub –
“InfoSphere Master Data Management supports flexible management of master, reference and transaction data” -

IBM Initiate Inspector

12.1.3 Microsoft
Microsoft Master Data Services -
“SQL Server Master Data Services provides a central data hub that ensures the integrity of information and consistency of data is constant across different applications” -

What, Why and How of MDM -

MDM Hub Architecture from Microsoft

12.1.4 Oracle
Master Data Management

Customer Hub

12.1.5 SAP
Master Data Governance :

Master Data Management

SAP for Local Government :
12.2 Niche Players (alphabetic)

12.2.1 Bloomberg Polar Lake
Polar Lake Reference Data Management -

12.2.2 Loqate Address Validation
Everything Location –
Webinar: February 26th, 4pm GMT, 8am PST, 11am EST, 5pm CST
Cloud-based self-service address cleansing :-
• http://www.loqate.com/

12.2.3 Kalido (Open Source)
Kalido MDM -
• http://www.kalido.com/master-data-management.htm

12.2.4 Object River
Object River uses Web Services to integrate with Salesforce.com -
• http://www.objectriver.net/

Object River MDM Architecture –
• http://www.objectriver.net/partners.htm

12.2.5 QAS Address Validation
QAS is a well-established supplier of specialist software for Address Validation and a Single Customer View and a ‘People Tracer’ for the Public Sector (used by Surrey Police) –
• http://www.qas.co.uk/

QAS also offer the Name exploit the PAF File and Gazeteer :-
• http://www.qas.co.uk/products/capture-name-and-address-data/gateway.htm