DATA & CONTENT: EFFICIENCY GAINS THROUGH MODEL DRIVEN APPROACH

Debbie Wilson
Senior Information Architect

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OVERVIEW

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HISTORY OF MODELLING AND IMPLEMENTATION IN THE OS

Product Management Team

Logical model

Manually generate implementation schema

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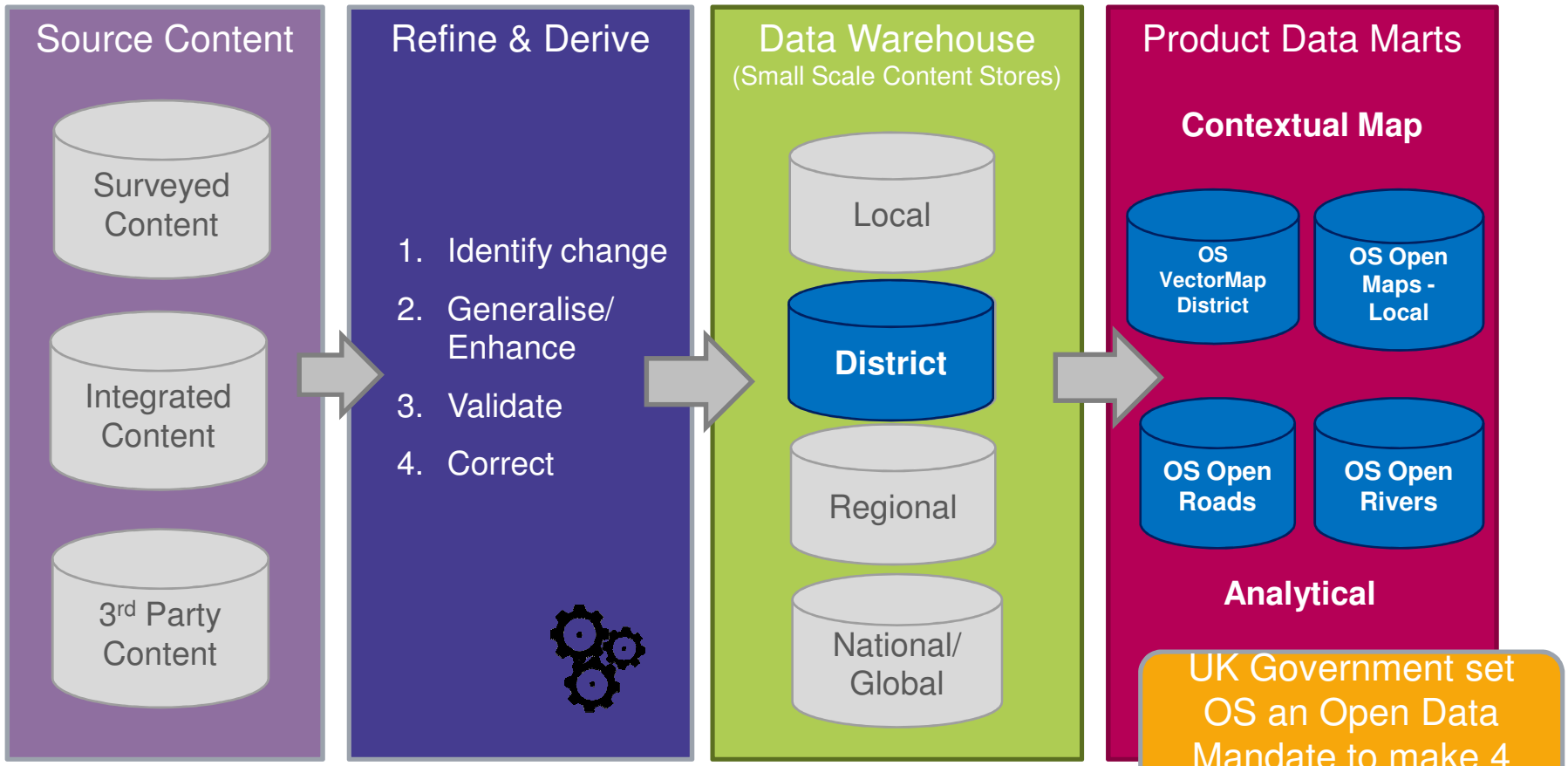
INCONSISTENCIES CREEP IN

EXAMPLE: IMPROVING DATA MODELLING CONSISTENCY: SMALL SCALE CONTENT GENERALISATION (GENIE)



Single data model for all small scale content stores

UK Government set OS an Open Data Mandate to make 4 new products available by March 2015

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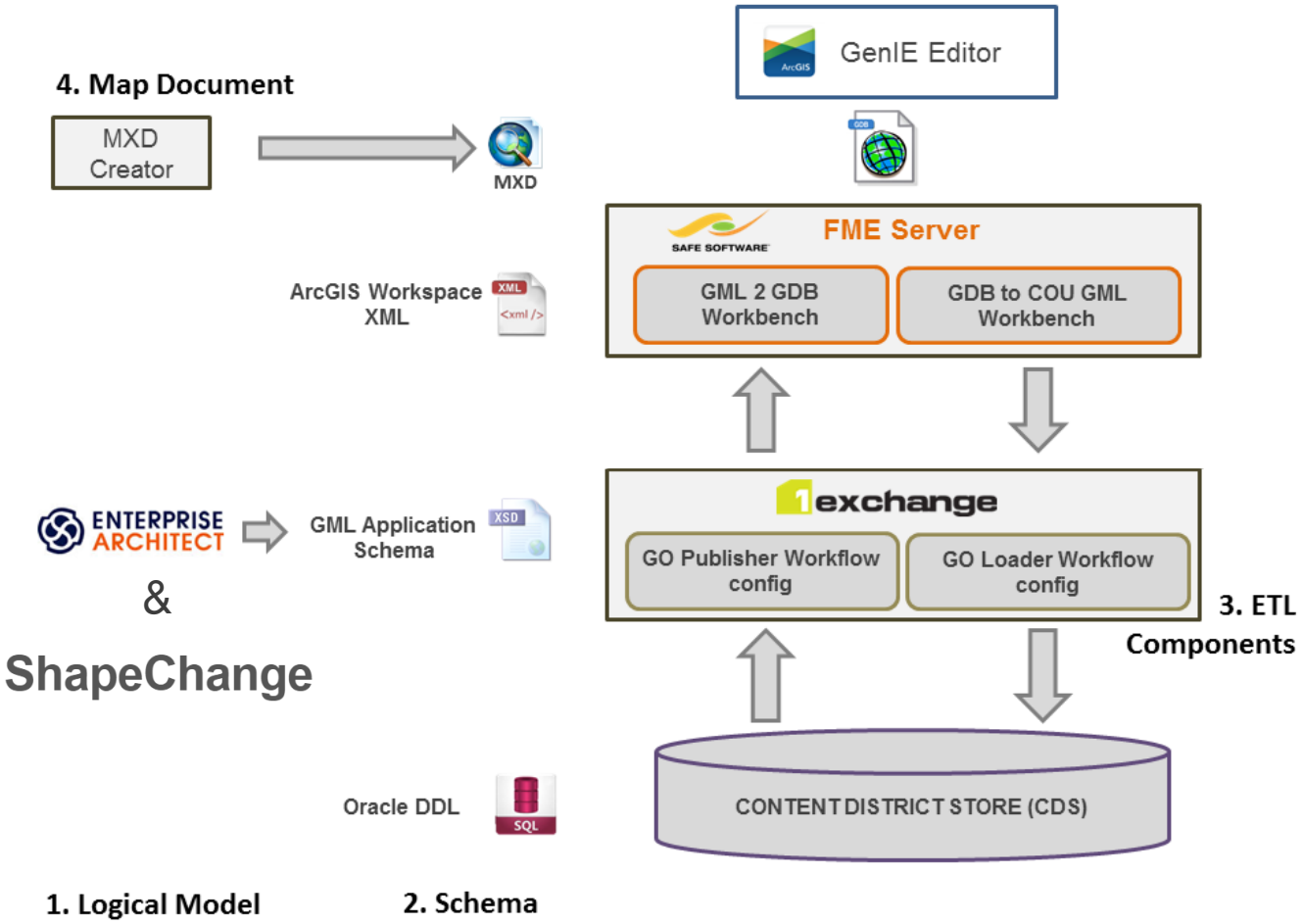
SEMI AUTOMATING SCHEMA DEVELOPMENT: GENIE

Testing and Continuous Integration



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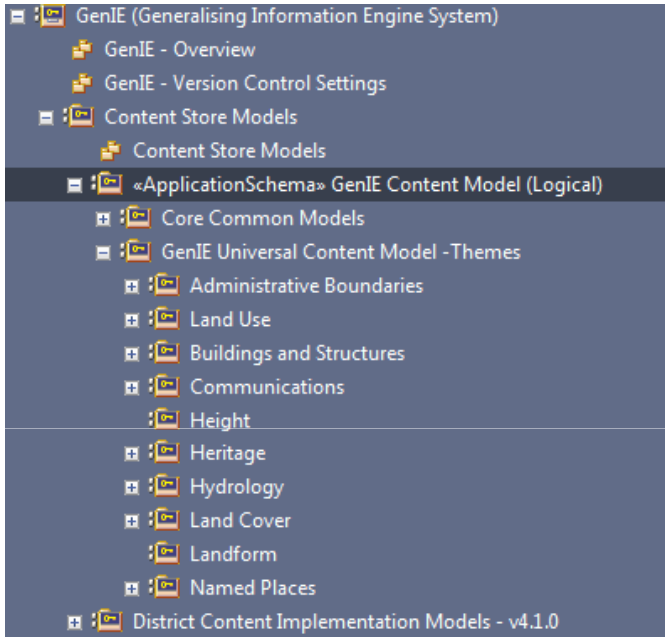
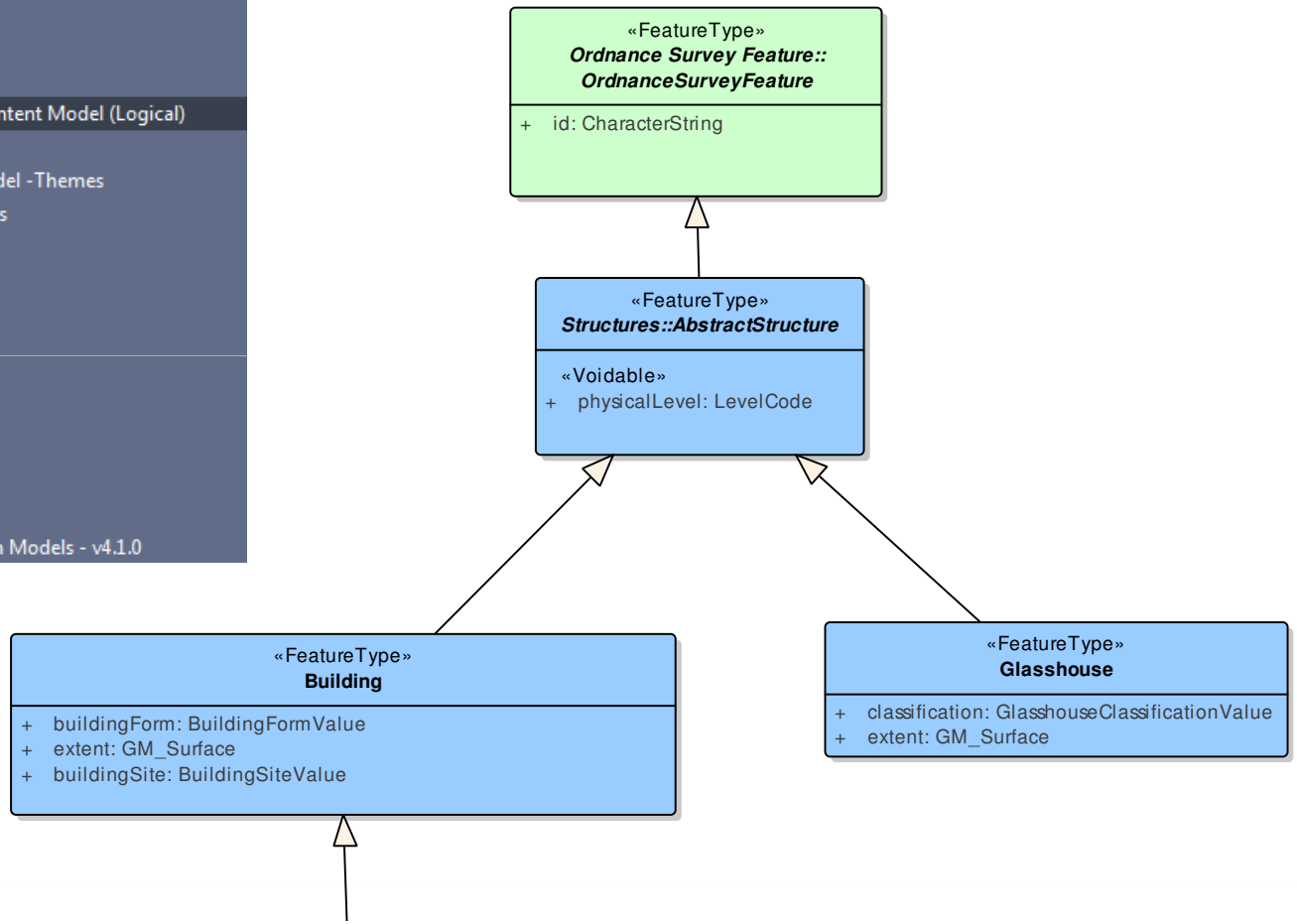
1. ENSURING CONSISTENCY BETWEEN CONTENT STORES USING PROFILING AND FLATTING RULES





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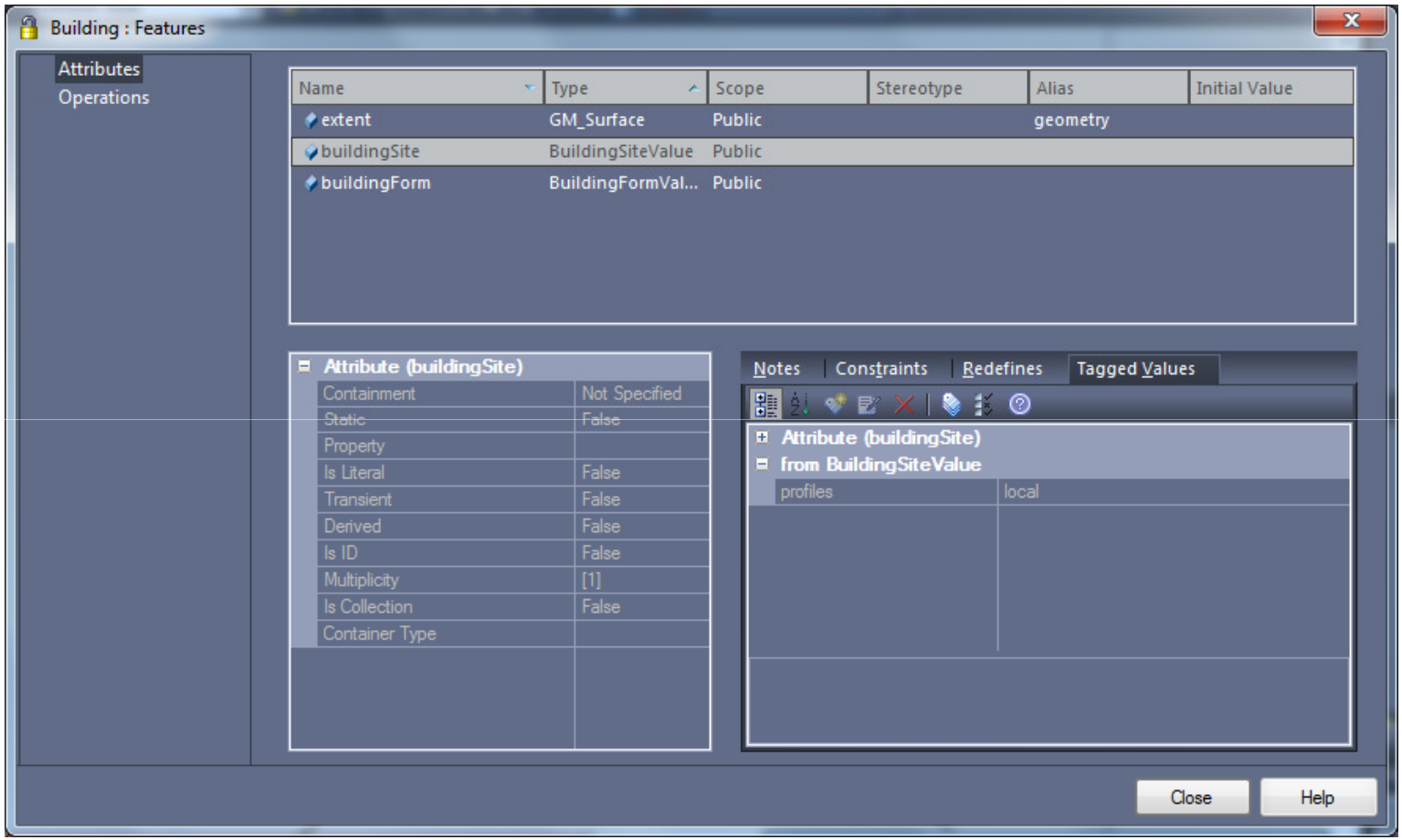

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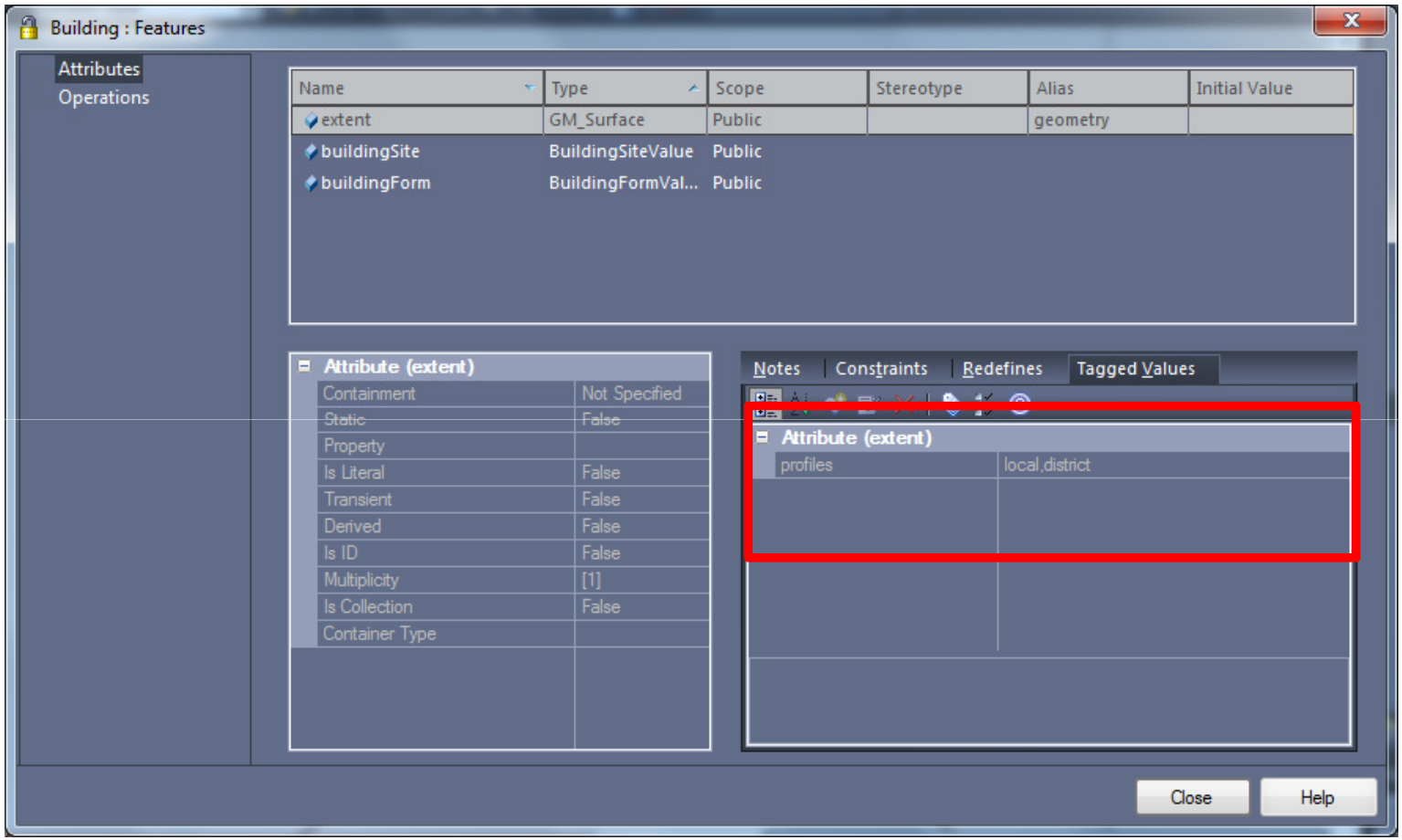

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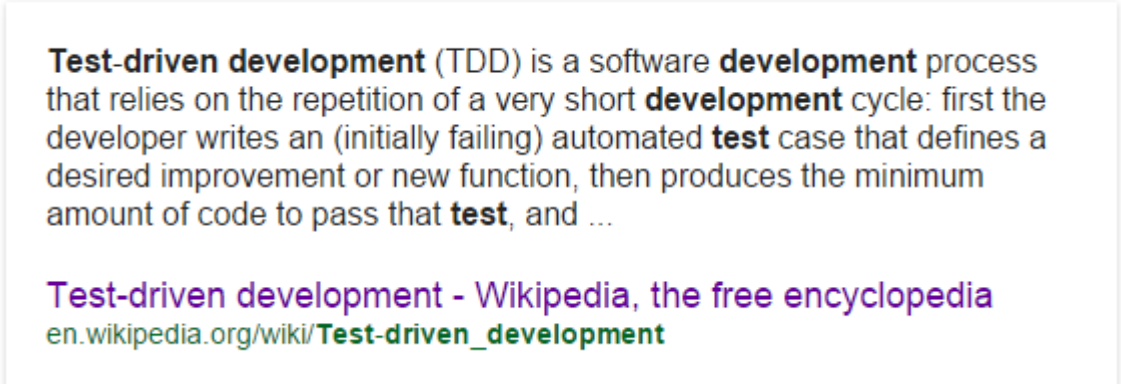
II. TEST SCENARIOS FOR TDD OF IMPLEMENTATION SCHEMA



TDD of implementation schema requires two inputs:

1. Logical Model describing data structure
2. Encoding Rules for implementation schema
   - Logical → DDL
   - Logical → GML
   - Logical → GDB

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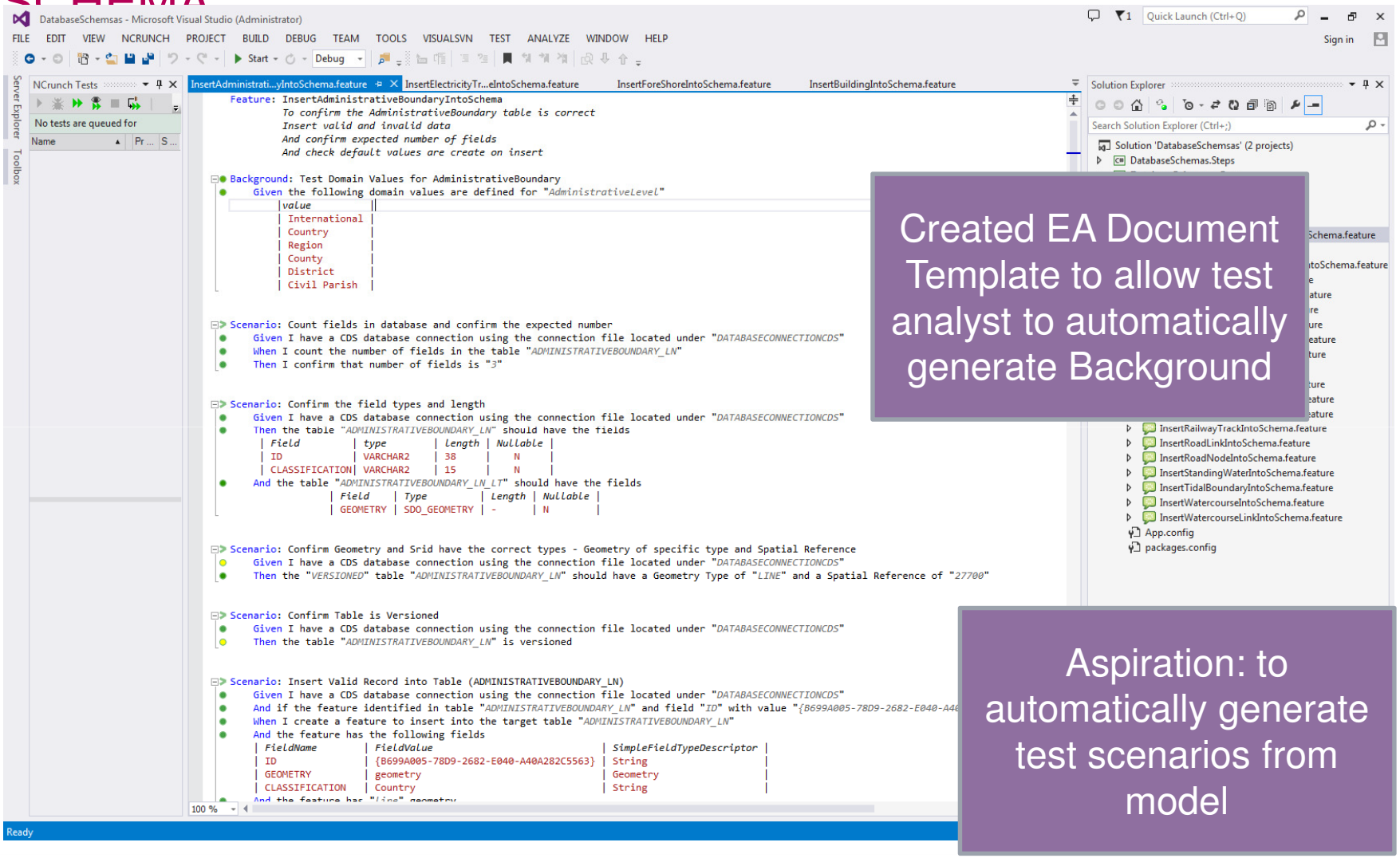

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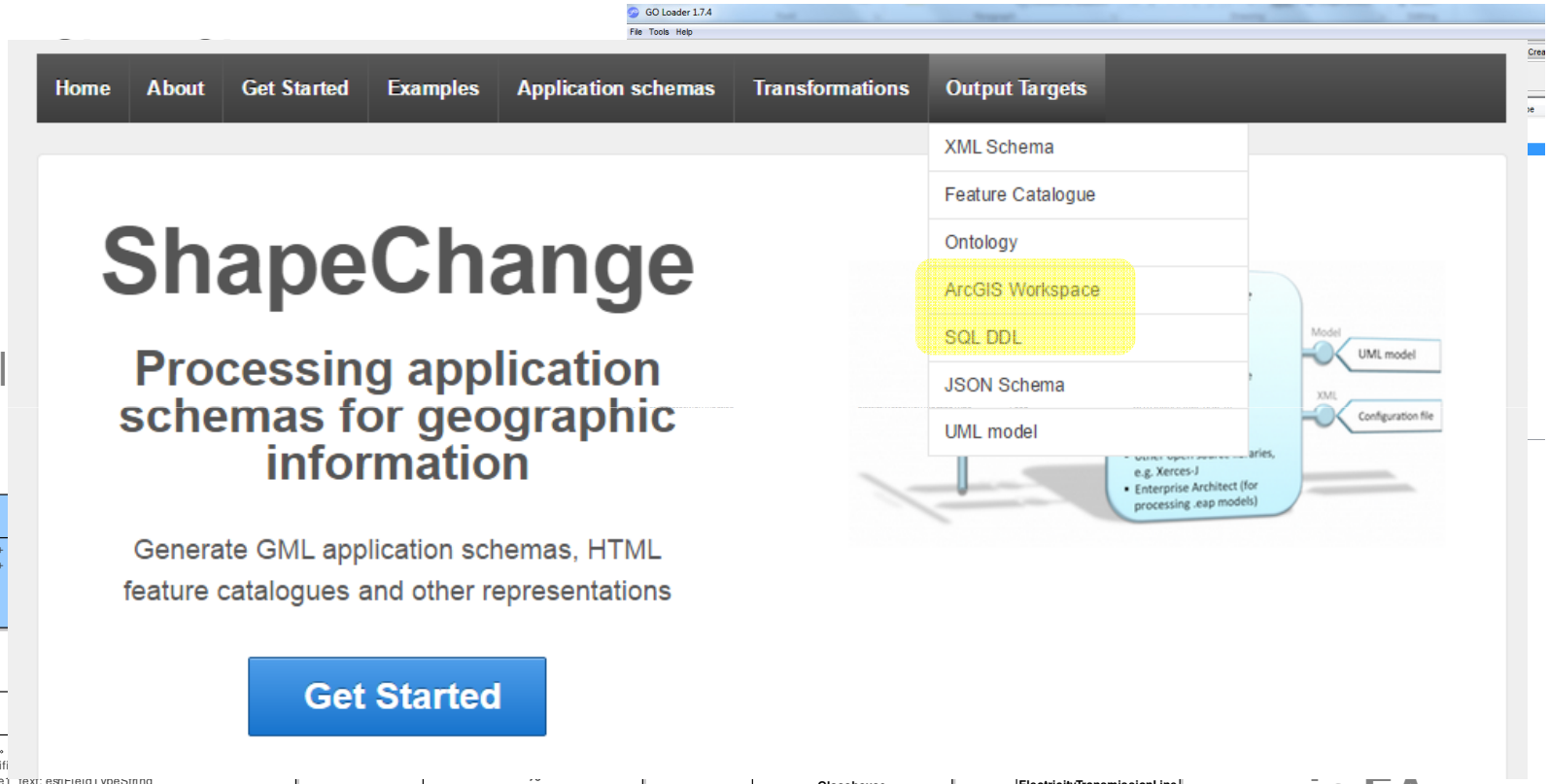
III. SEMI-AUTOMATED GENERATION OF SCHEMA

GO Loader to automatically generate DDL from GML



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OS OPEN DATA PRODUCTS

OS Open Map – Local (Beta)

OS OpenMap backdrop map

Released in Beta, this is the most detailed street-level open data vector mapping product available.

Learn more

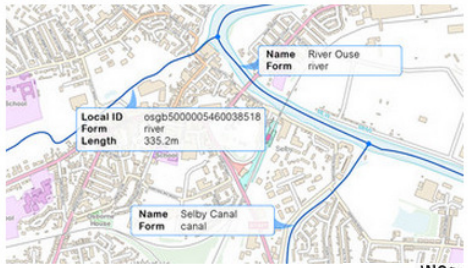
OS Open Names (Beta)

OS Open Names over OS VectorMap Di

Definitive place names, roads nun postcodes in Great Britain.

Learn more

OS Open Rivers (Beta)



OS Open Rivers - attribution

A high-level view of the water networl generalised geometry and network cc

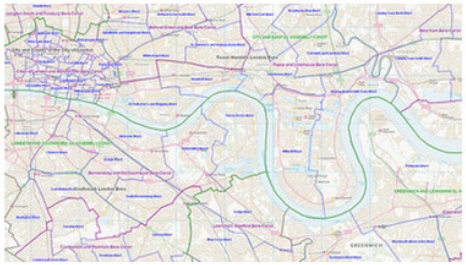
Learn more

OS Open Roads (Beta)

OS Open Roads over OS Open Map – Lo

A high-level view of Britain's road r generalised geometry and networl

Boundary-Line



Boundary-Line over OS VectorMap District

The full hierarchy of British administrative and electoral boundaries, as shown on Election Maps.

OS Street View

OS Street View

A generalised and simplified street level raster map, ideal for city-centre plans.

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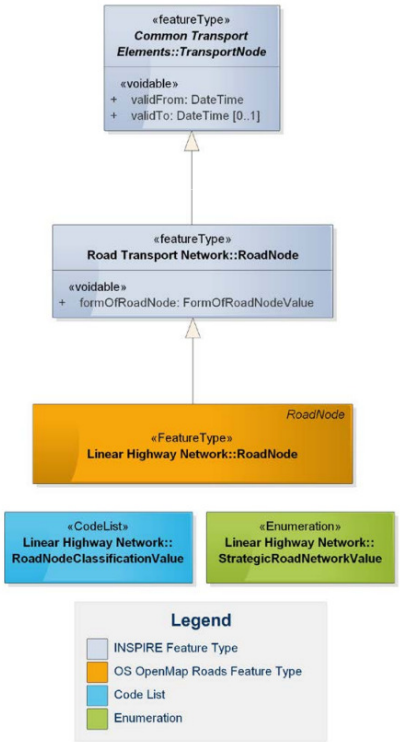
http://www.ordnancesurvey.co.uk/business-and-government/products/opendata-products-grid.html

OS OPEN DATA PRODUCT DEVELOPMENT

- Trained Technical Product Management teams to focus on spending more time on defining the logical model
- Set up documentation templates to automatically generate feature catalogue for technical specification and automatically generate schema (GML)



RoadNode

RoadNode features are added at the start and end of every RoadLink feature. Where roads connect at the same level a single RoadNode feature is captured.

The following table identifies the attribution the RoadNode feature can carry and their descriptions, including the data type and multiplicity.

«FeatureType» RoadNode		
Definition: A point representing either the start/end of a highway or connectivity between two or more RoadLink features.		
Attribute: formOfRoadNode **«voidable»**		
Definition: Description of the function of a road node in the road transport network.		
Type:FormOfRoadNodeValue	**Length**: 20	**Multiplicity**: [1]
Attribute: geometry		
Definition: The location of the node.		
Type: GM_Point	**Multiplicity**: [1]	

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BENEFITS OF MODEL DRIVEN APPROACH

Implementation schema can by automatically derived from the logical model using consistent encoding rules (i.e. flattening rules)

- Removes need for expensive resources to perform basic schema development– use their skill for tuning, software development etc.
- Removes manual interpretation of logical model – resulting in inconsistencies
- Significantly reduces development time

Automation results in:

- Consistency
- Repeatability
- Re-usable toolset

Was able to train non-modelling staff to use the tools to develop schema and related resources (technical specification, tests)

Automated Test framework essential for ensuring that implementation schema reflected logical model

BENEFITS OF MODEL DRIVEN APPROACH

Product Development – Open Data Mandate to develop 3 new products by March 2015!

- Two small product development teams responsible for creating beta products re-using GenIE architecture
- No requirement to use scare IS resources – as product development consultants able to re-use tools to automatically generate schemas from logical models

Quote: Lucy Diamond (Product Development Consultant)

Wow – its only taken me a couple of hours to create the product schema (GML) and database schema (DDL).

We thought this would take several days!!

…..Damn - I've now got to concentrate on the generalisation and data quality rules as thought this would be much harder

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Debbie Wilson
Debbie.wilson@os.uk

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