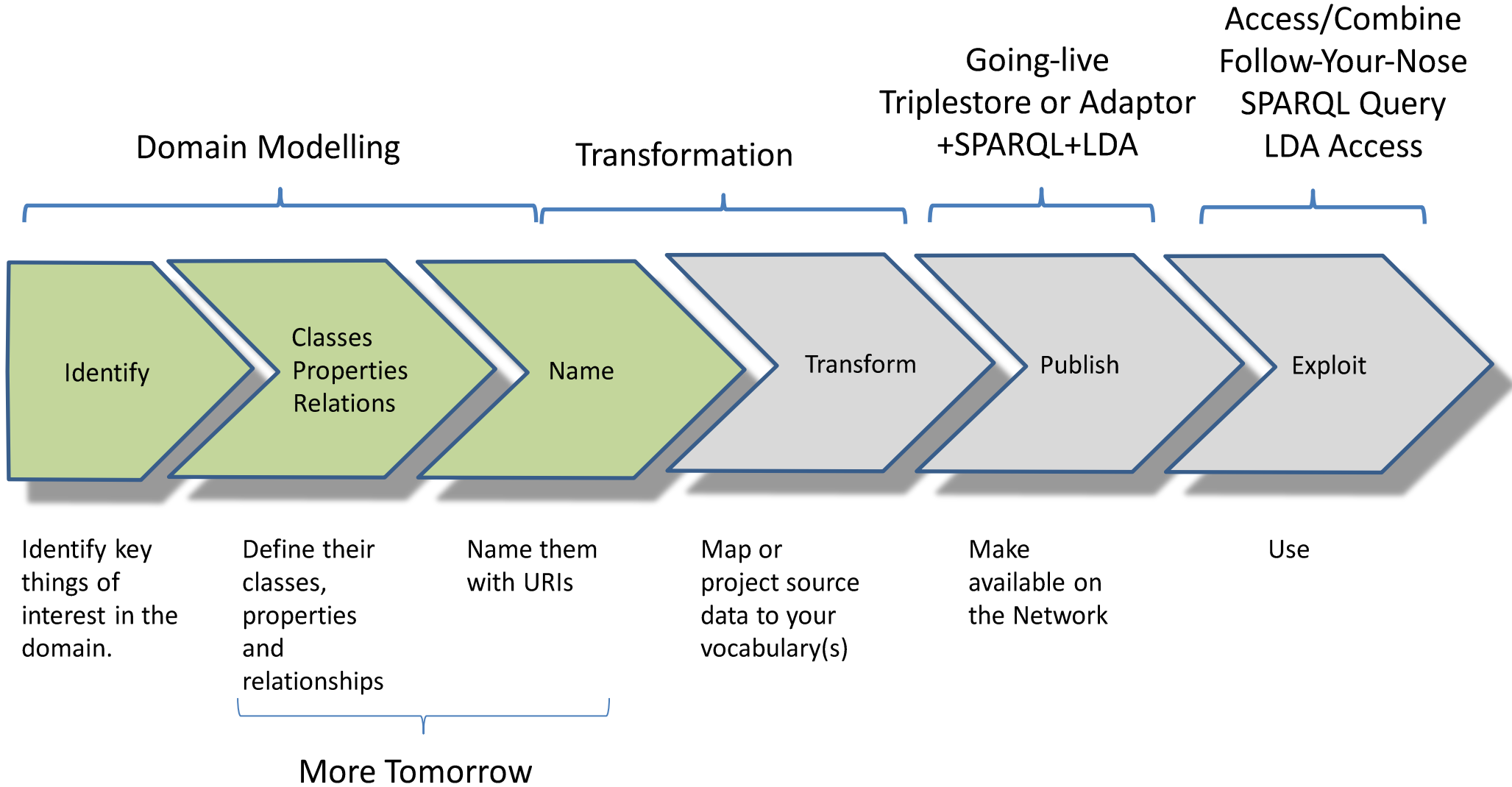


Introduction to Linked Data

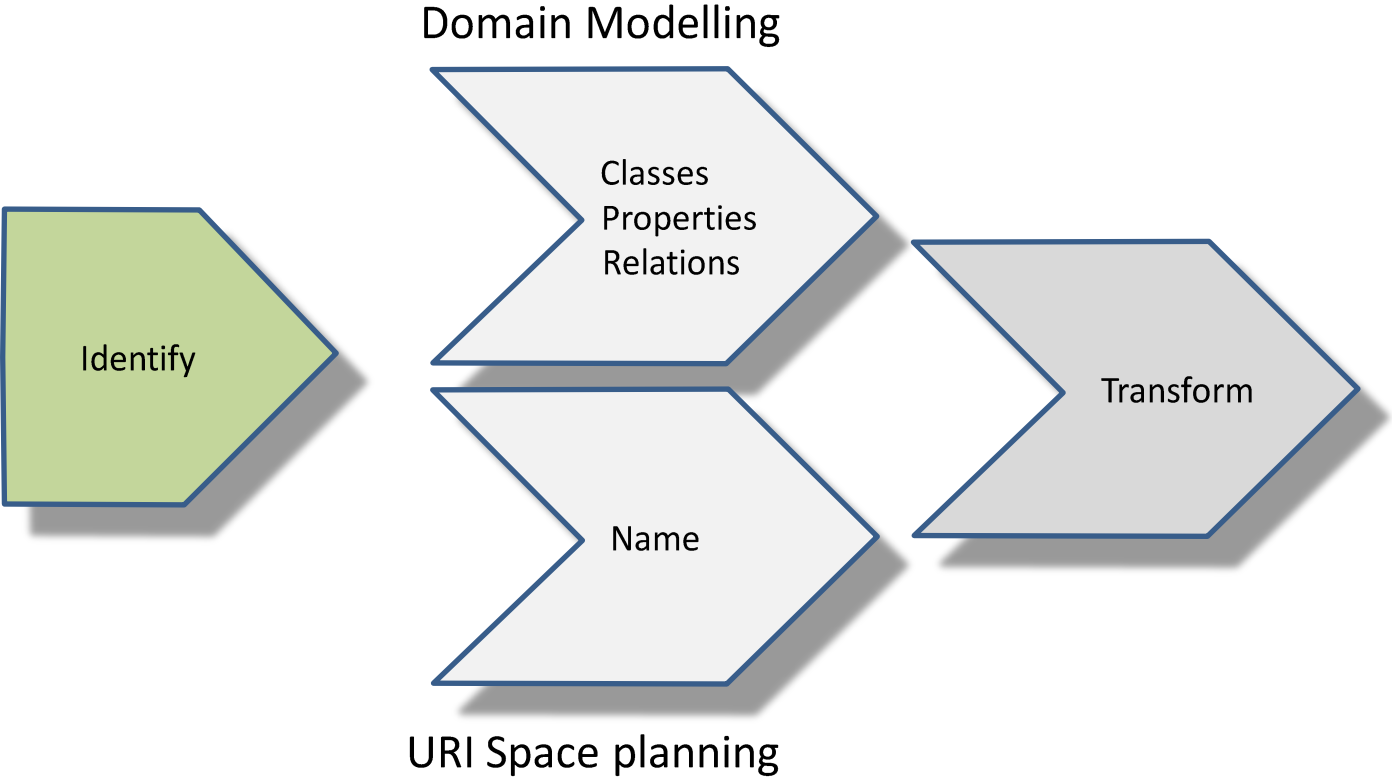
Publishing linked data



Modelling and Publishing Linked Data



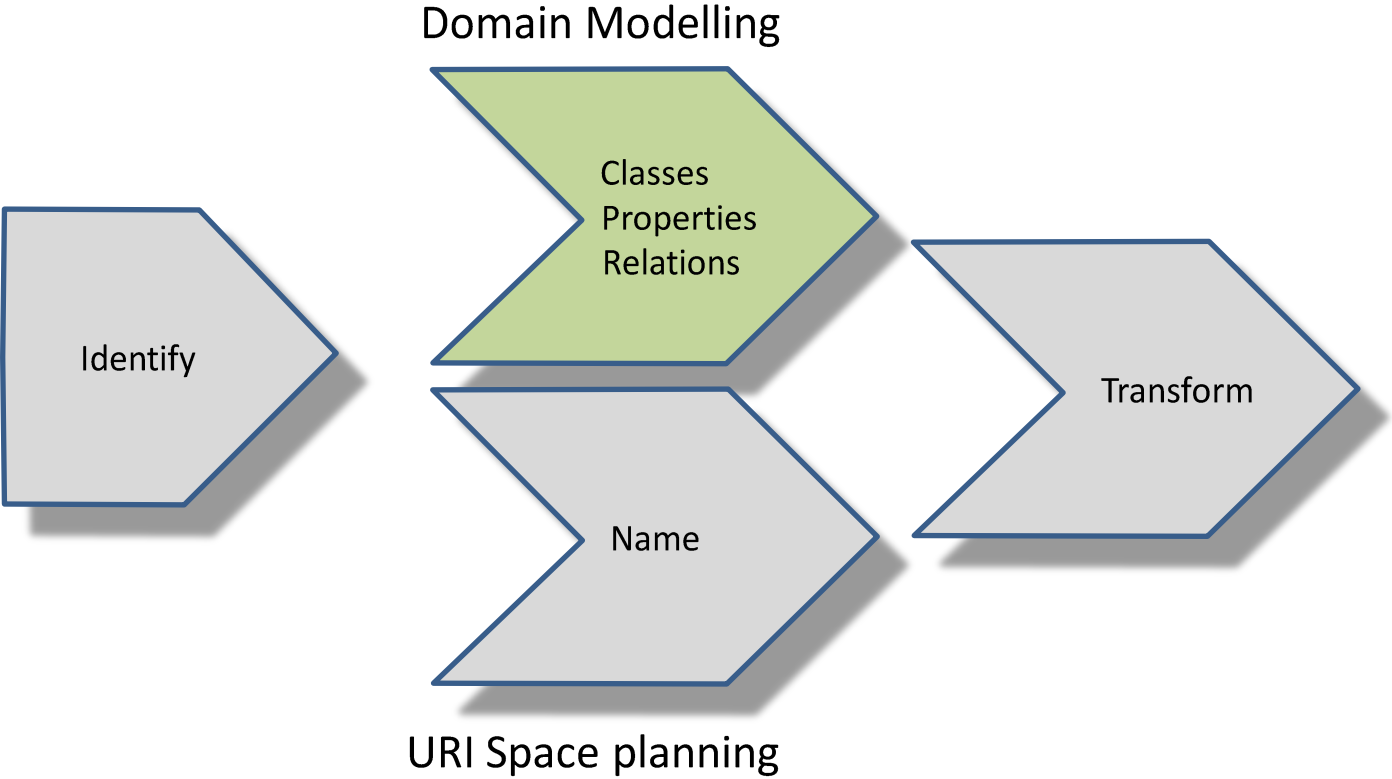
Modelling and Publishing Linked Data



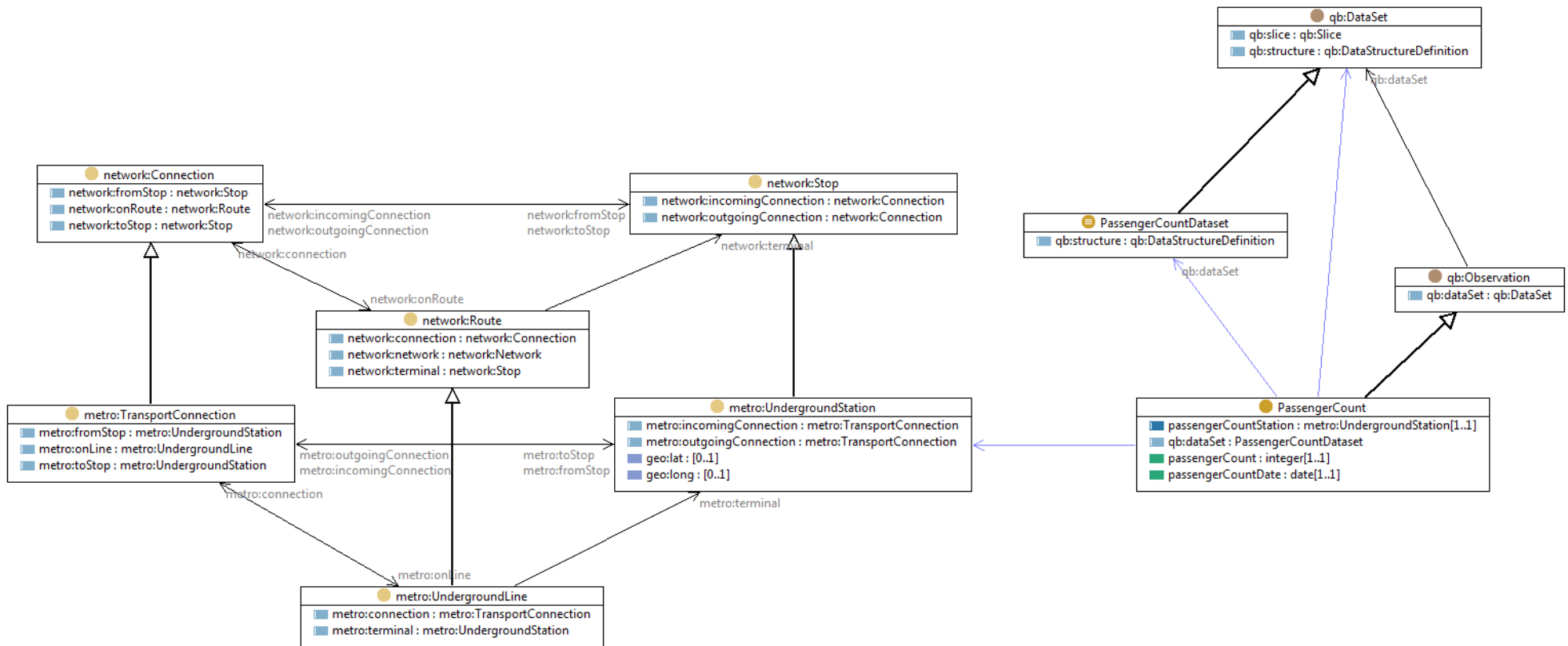
Identify: London Underground

- Identify the 'important' entity types?
 - **Underground Stations**
 - **Underground Lines**
 - **Connections (between adjacent Stations on a Line)**

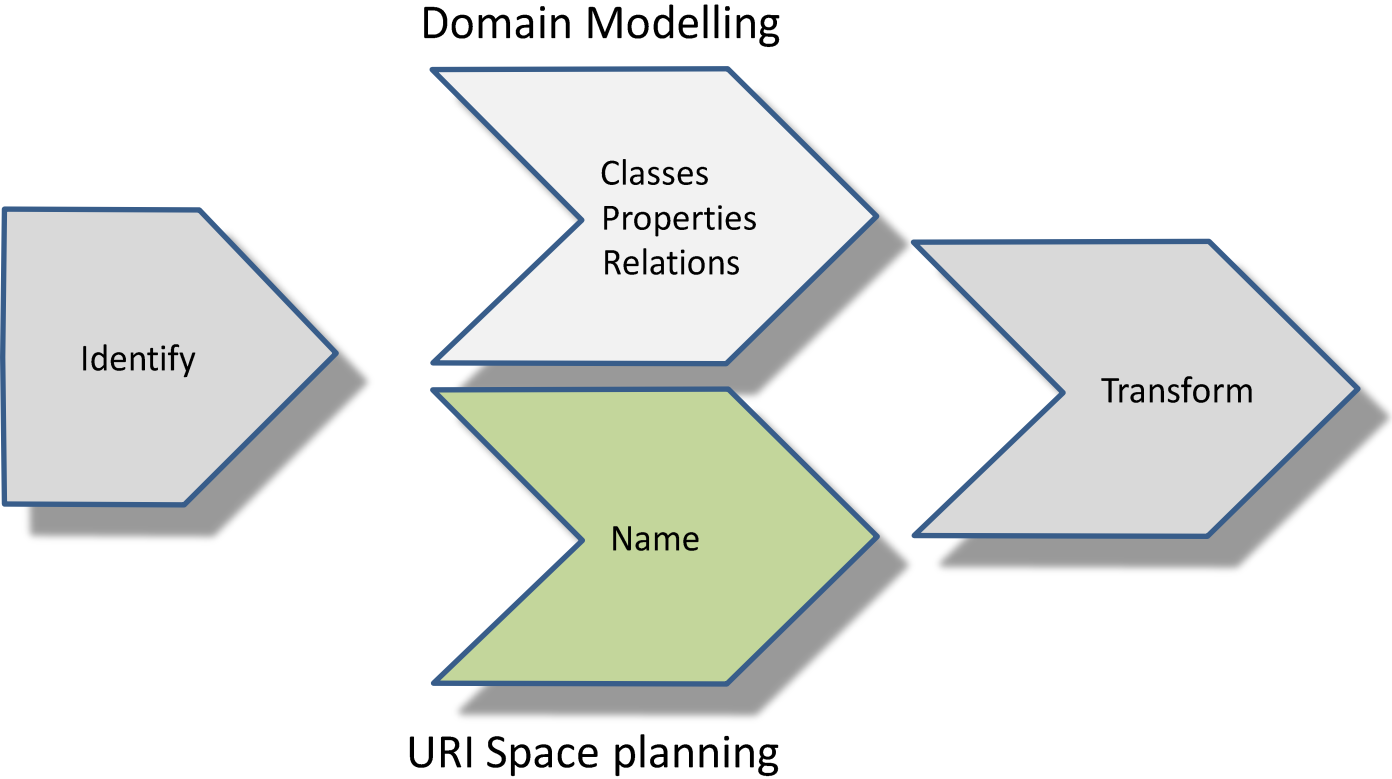
Modelling and Publishing Linked Data



Data Model Overview



Modelling and Publishing Linked Data



Training Data

Collection: <http://training.epimorphics.com/transport>

<http://training.epimorphics.com/transport/def/network/>

Vocabularies

Metro

Transport
Network

<http://training.epimorphics.com/transport/def/metro/>

<http://training.epimorphics.com/transport/london-underground/line/>*

URI Sets
Reference Data

Underground
Stations

Underground
Lines

Transport
Connections

<http://training.epimorphics.com/transport/london-underground/station/>*

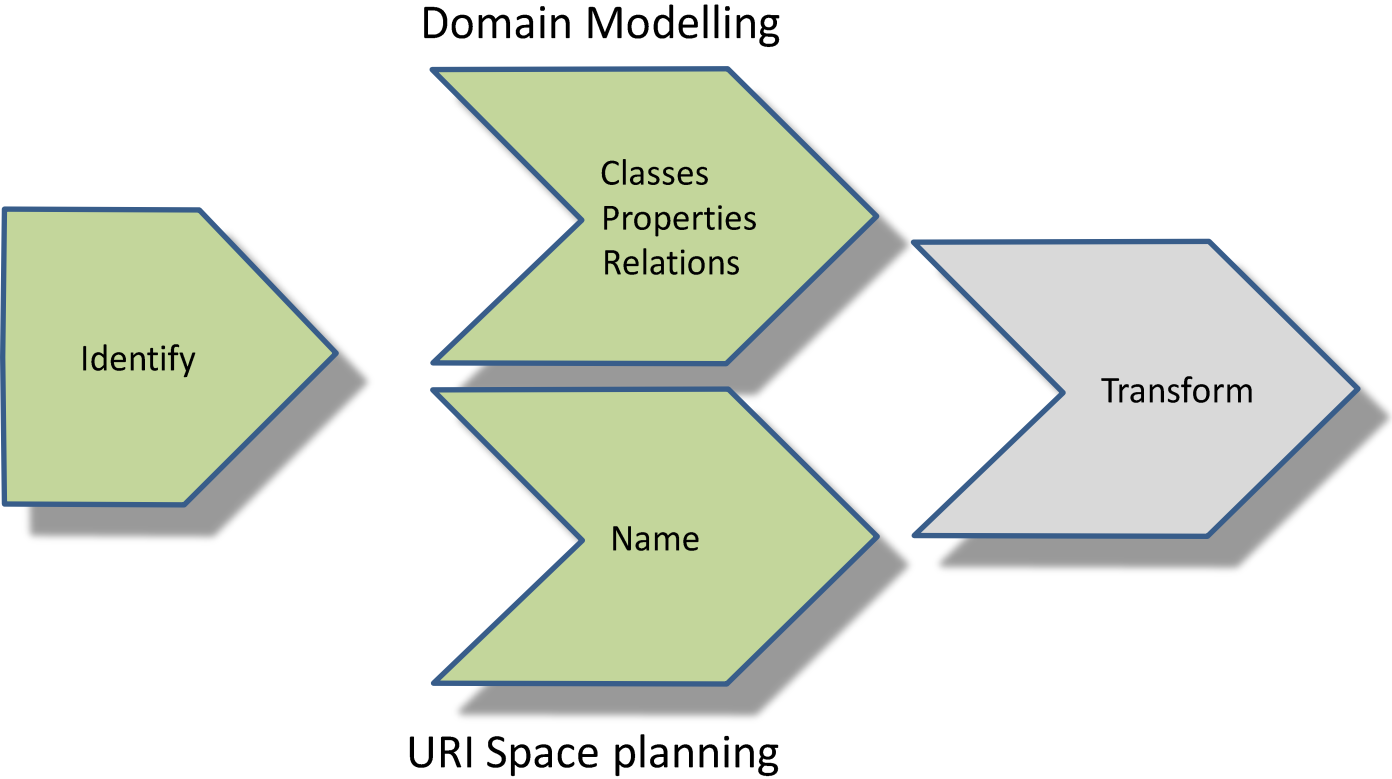
<http://training.epimorphics.com/transport/london-underground/connection/{line}/{from}/{to}>

Observation
Datasets

Passenger
Counts

<http://training.epimorphics.com/transport/london-underground/data/passenger-count/station/{station}/date/{date}>

Modelling and Publishing Linked Data

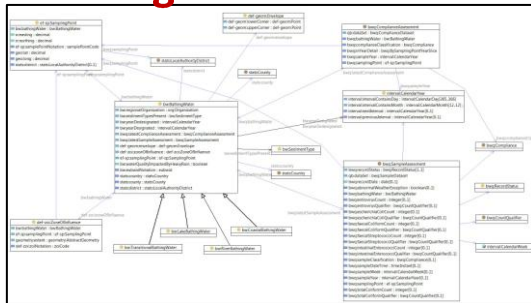


Transformation - the task

Data

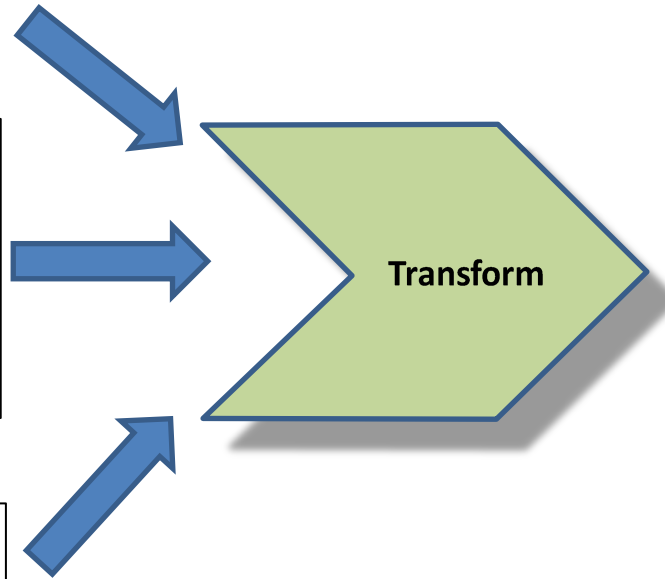
name	longitude	latitude	description_english	status	subsech_type	bathing_water_type	code
4000 400000 001000	-1.5088	55.7549	Salford	010000	00000	Coastal	00000
5000 410000 030000	-1.3070	55.8113	Donkeyrigg Castle	100200	00100	Coastal	00000
2000 411000 010000	-1.5066	55.8202	Wharfedale Beach	100200	00000	Coastal	00000
3000 411000 030000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
4000 411000 040000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
5000 411000 050000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
6000 411000 060000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
7000 411000 070000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
8000 411000 080000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
9000 411000 090000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
10000 411000 100000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
11000 411000 110000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
12000 411000 120000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
13000 411000 130000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
14000 411000 140000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
15000 411000 150000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
16000 411000 160000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
17000 411000 170000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
18000 411000 180000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
19000 411000 190000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
20000 411000 200000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
21000 411000 210000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
22000 411000 220000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
23000 411000 230000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
24000 411000 240000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
25000 411000 250000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
26000 411000 260000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
27000 411000 270000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
28000 411000 280000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
29000 411000 290000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000
30000 411000 300000	-1.5015	55.8188	Sea Hall	100200	00000	Coastal	00000

Target Model



Target URI Patterns

Bathing Waters	http://environment.data.gov.uk/id/bathing-water/{eubwid} http://environment.data.gov.uk/id/bathing-water/{alias}
SamplingPoints	http://location.data.gov.uk/so/ef/SamplingPoint/bwsp.eaew/{pointid}
Annual Compliance Assessments	http://environment.data.gov.uk/data/bathing-water-quality/compliance/point/{pointid}/year/{sampleYear}
In-Season Sample Assessments	http://environment.data.gov.uk/data/bathing-water-quality/in-season/sample/point/{pointid}/date/{date}/time/{time}/recordDate/{recordDate}
Datasets	http://environment.data.gov.uk/data/bathing-water-quality http://environment.data.gov.uk/data/bathing-water-quality/compliance http://environment.data.gov.uk/data/bathing-water-quality/in-season
Vocabularies	http://environment.data.gov.uk/def/bathing-water/{term} http://environment.data.gov.uk/def/bathing-water-quality/{term} http://location.data.gov.uk/def/ef/SamplingPoint/{term}

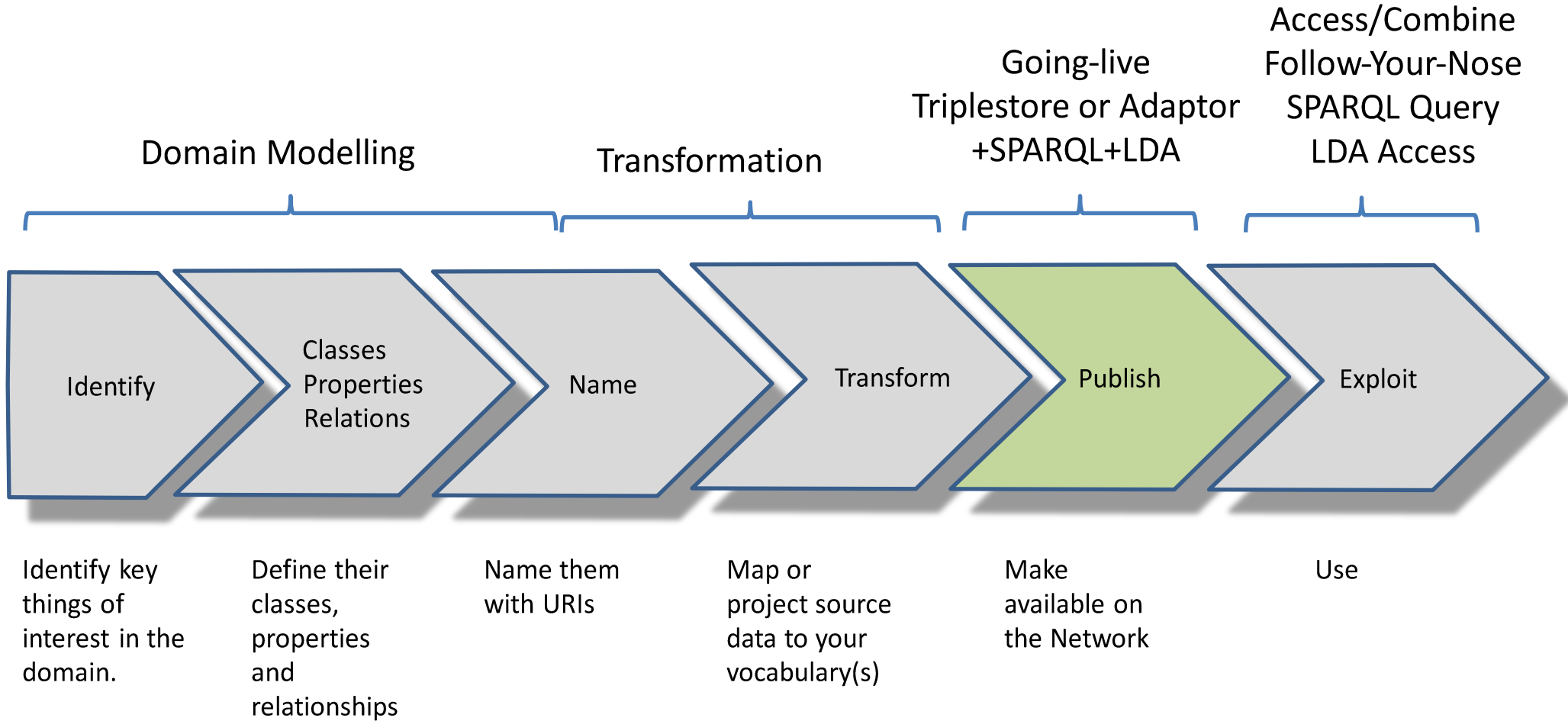


Data expressed in **RDF** using the terms of the **target model** and **target URI patterns**

Transformation Approaches

- Use a 'tool'
 - Google Refine
 - Topbraid Composer
 - DCLIB
 - Others... (but less polished)
- Write a program
 - CSV or Spreadsheet processing (Java, Python, Perl, Ruby....)
 - RDB source - RDB access via DB connector
- Database Adapter to present SPARQL Endpoint.
 - D2RQ
 - R2RML (recently standardized at W3C).
 - SPARQL CONSTRUCT queries for transformation.

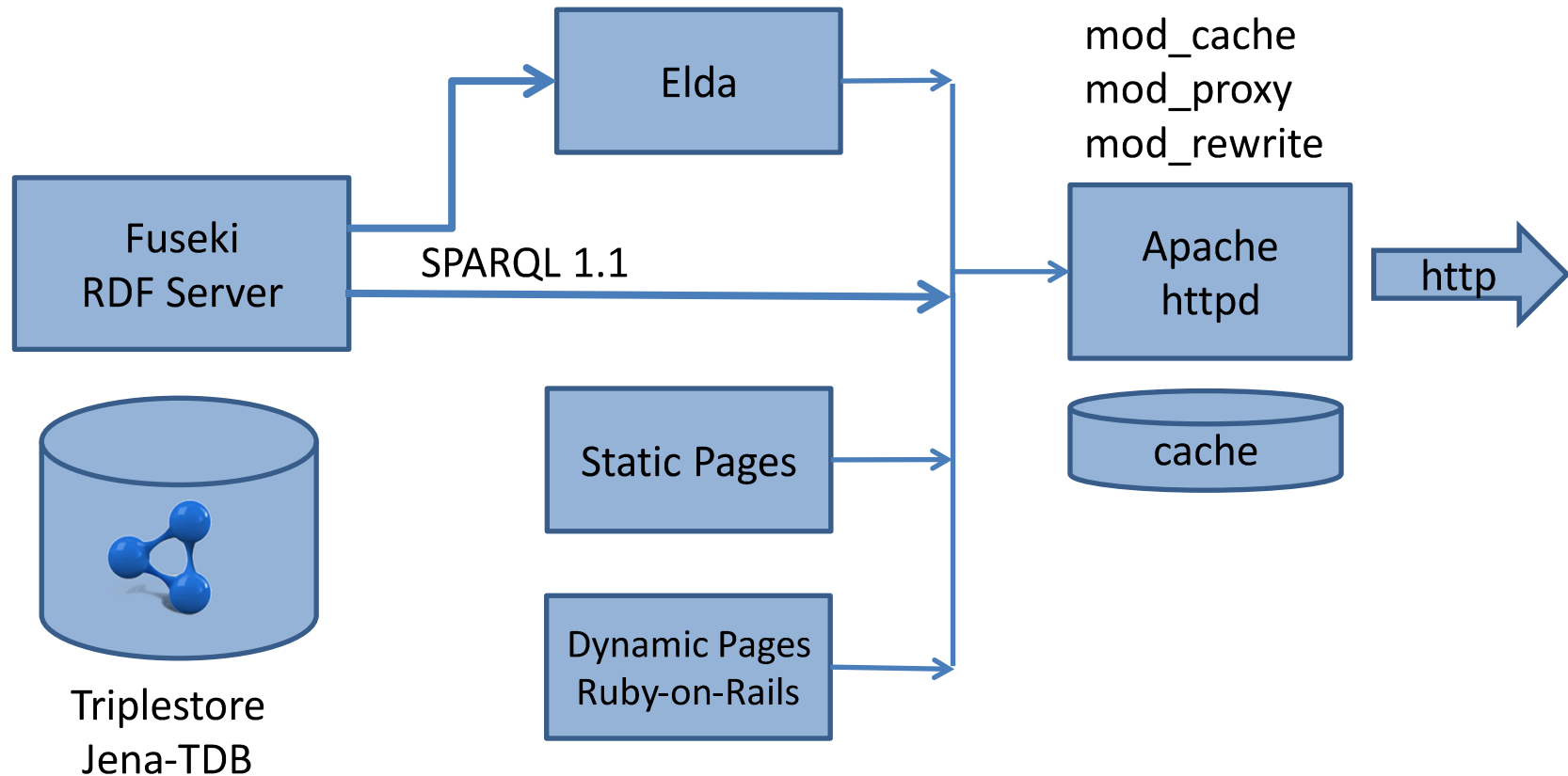
Modelling and Publishing Linked Data



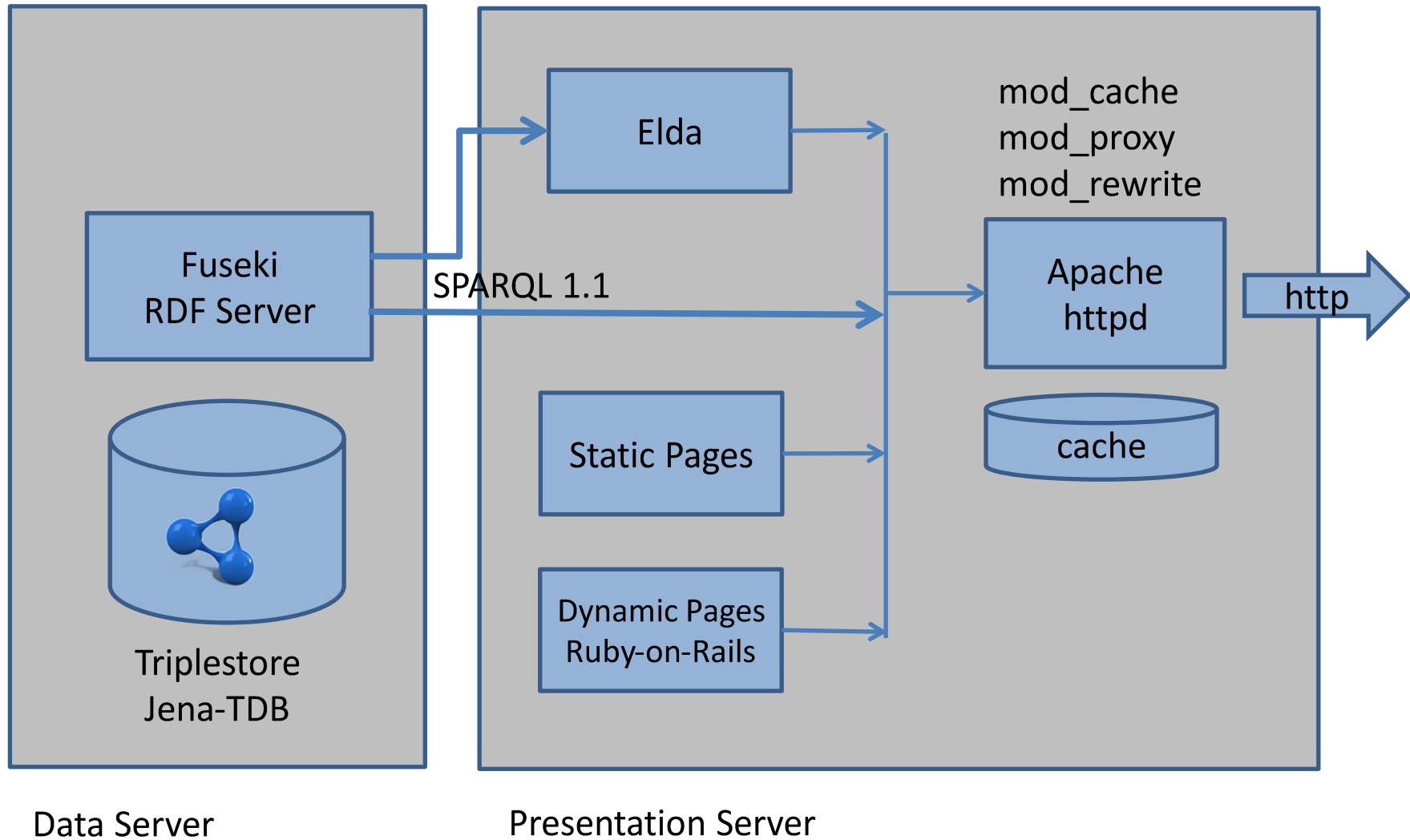
Publishing Approach

- Materialised RDF files
 - Just a web server - application/rdf+xml, text/turtle
 - "Follow-your nose" **but no query**.
 - Can 'harvest' to triple store and query - 3rd party/shared resource.
- Linked Data fronted SPARQL Endpoint
 - Apache mod_rewrite -> SPARQL describe
 - **Follow-your nose only** - SPARQL - native SPARQL format results
 - 'Pubby' <http://www4.wiwiss.fu-berlin.de/pubby/>
 - **Follow your nose only**. HTML and Semantic Web formats
 - eg. http://dbpedia.org/resource/Marlon_Brando
 - Linked Data API
 - Follow your nose,
 - URI based query,
 - Developer friendly and other formats
- Database Adaptors
 - SPARQL Endpoints
 - plus mod_rewrite, pubby or Ida.

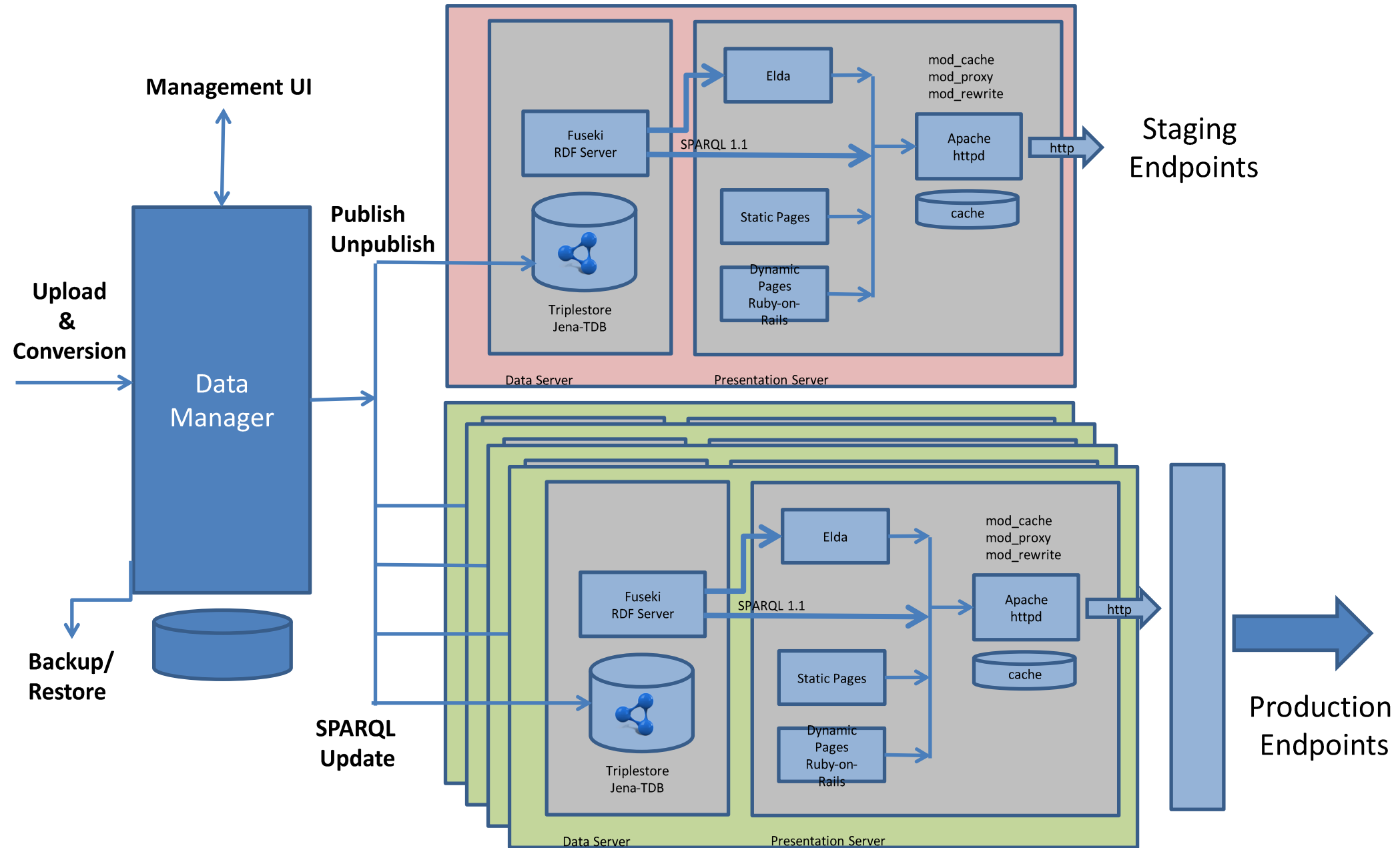
Publishing Platform (Frontend)



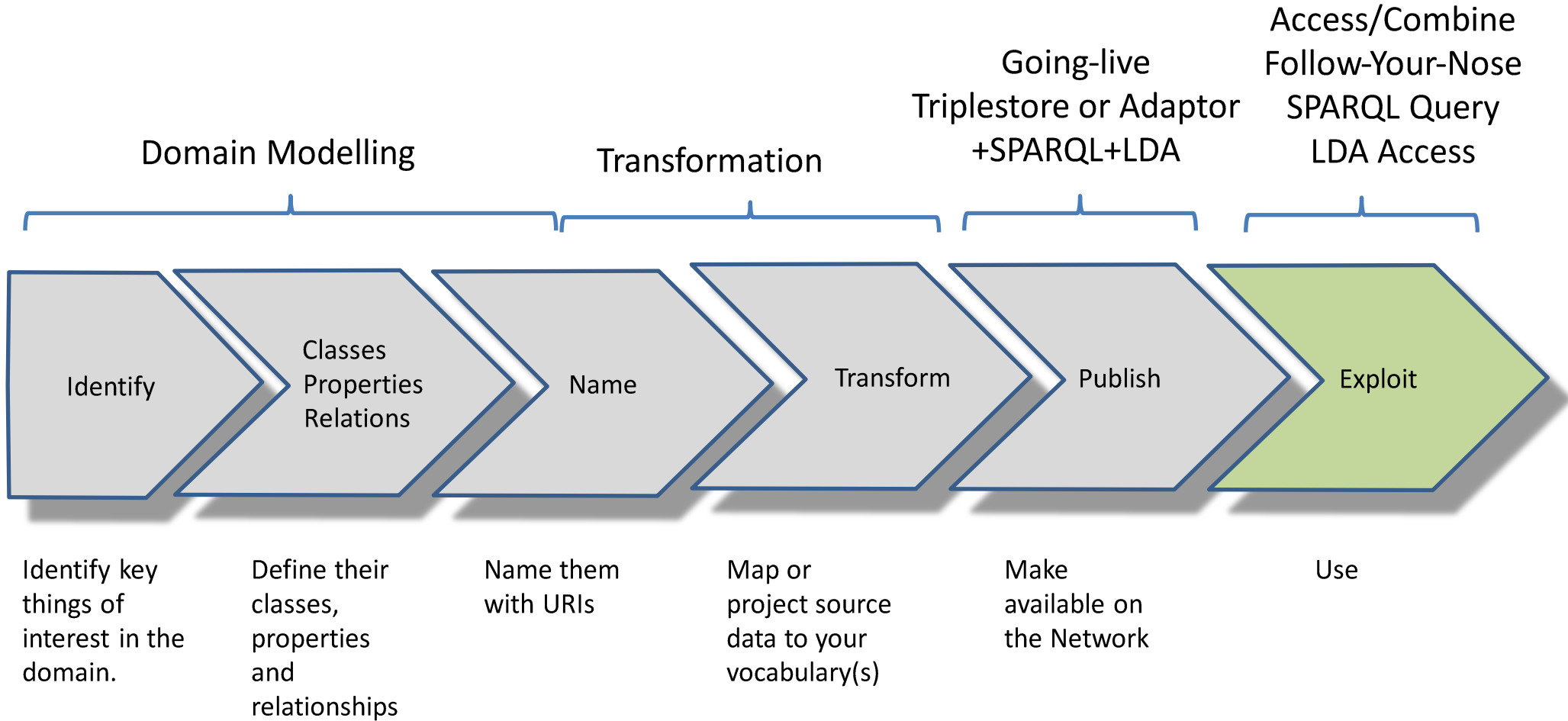
Publishing Platform (Frontend)



Publishing Platform



Modelling and Publishing Linked Data





www.epimorphics.com



Summary of URI Patterns

- Underground Stations

<http://training.epimorphics.com/transport/london-underground/station/{stop}>

- Underground Lines

<http://training.epimorphics.com/transport/london-underground/line/{line}>

- Transport Connections

<http://training.epimorphics.com/transport/london-underground/connection/{line}/{from}/{to}>

- Passenger Counts

<http://training.epimorphics.com/transport/london-underground/data/passenger-count/station/{station}/date/{date}>

- Vocabulary

<http://training.epimorphics.com/transport/def{/vocab}/{/term}>