



Danish Ministry of the Environment  
Danish Geodata Agency

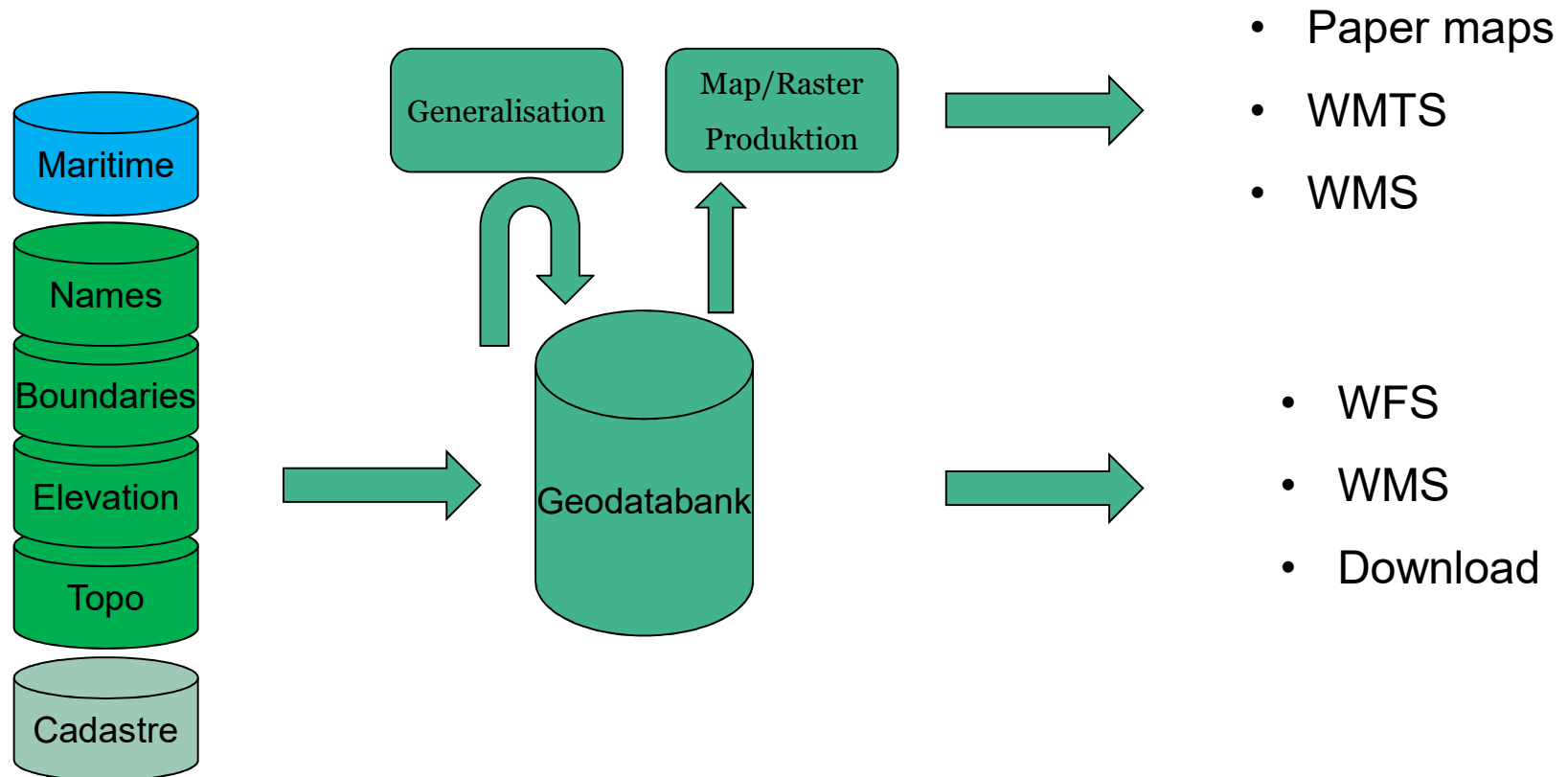
# From data modelling to data distribution in the Danish Basic Data infrastructure

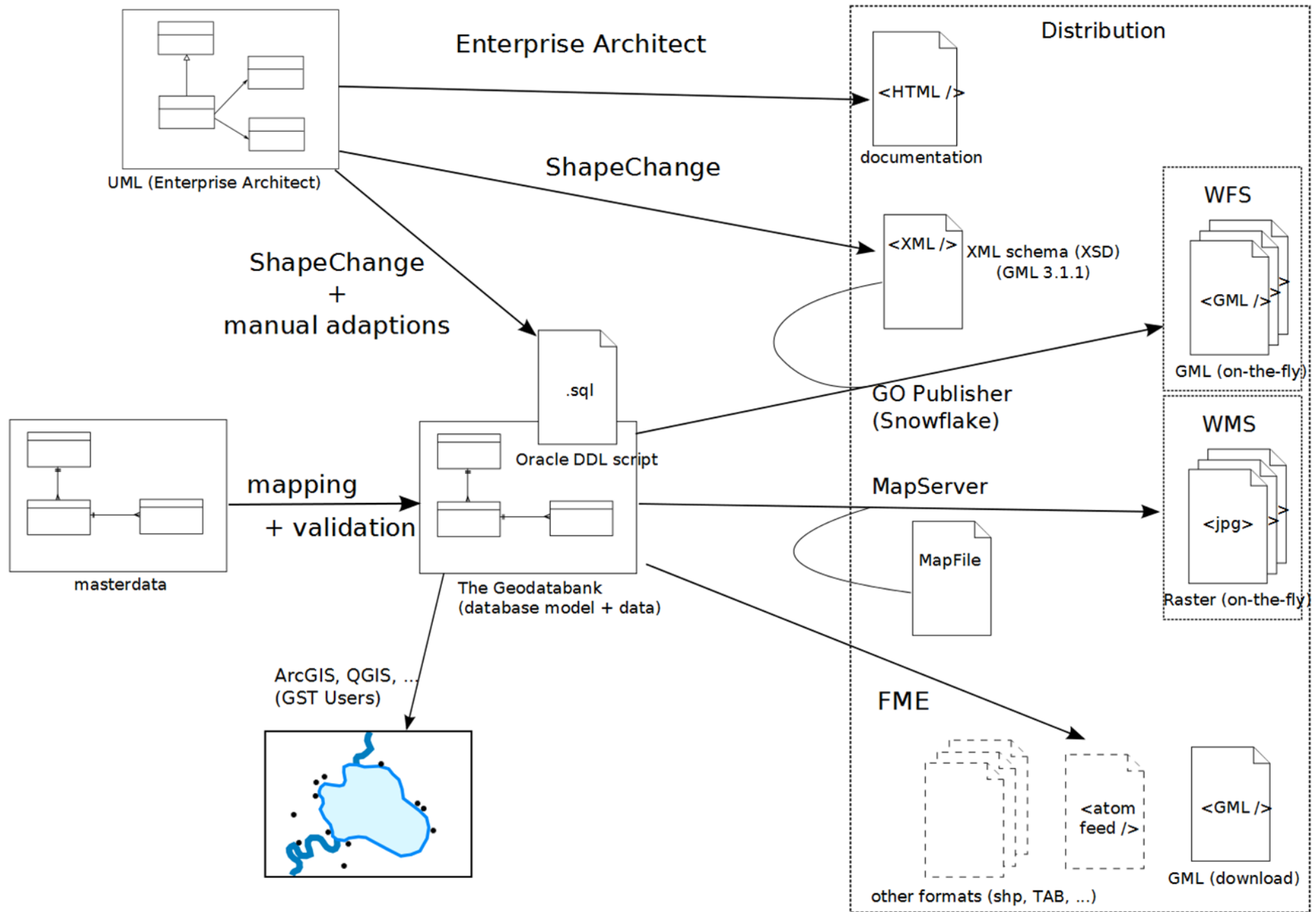
Heidi Vanparys, Niels Kjær, Peter West-Nielsen

A photograph of a dense forest with tall, thin trees. Sunlight filters through the canopy, creating a hazy, dappled light effect. The text "Framework for data modelling" is overlaid in white serif font in the center-left area.

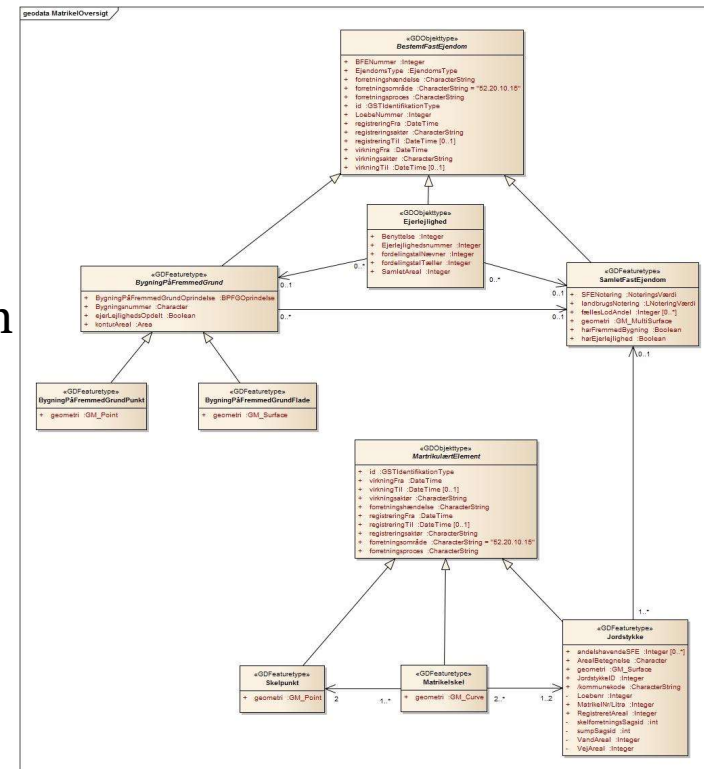
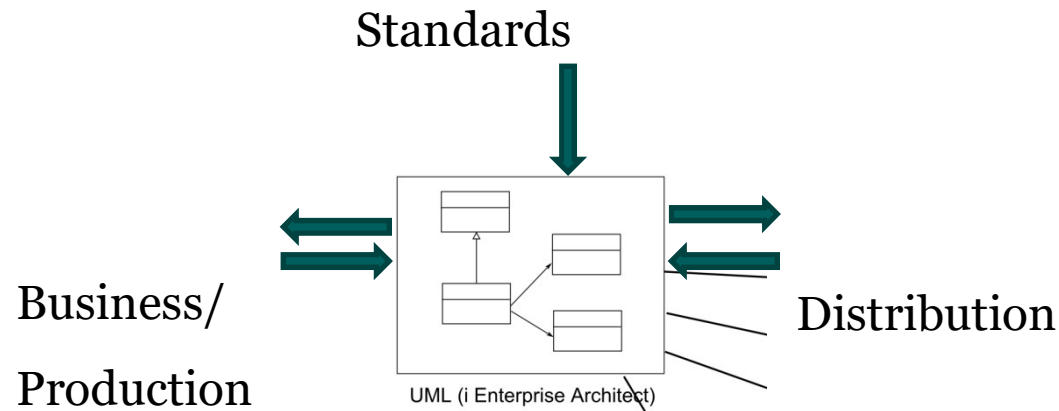
# Framework for data modelling

# Target Architecture - The Geodatabank

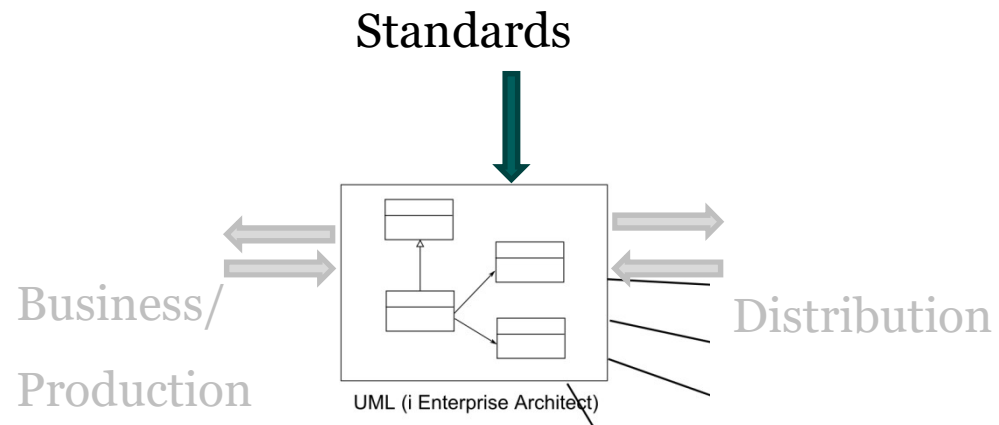




# Modelling considerations



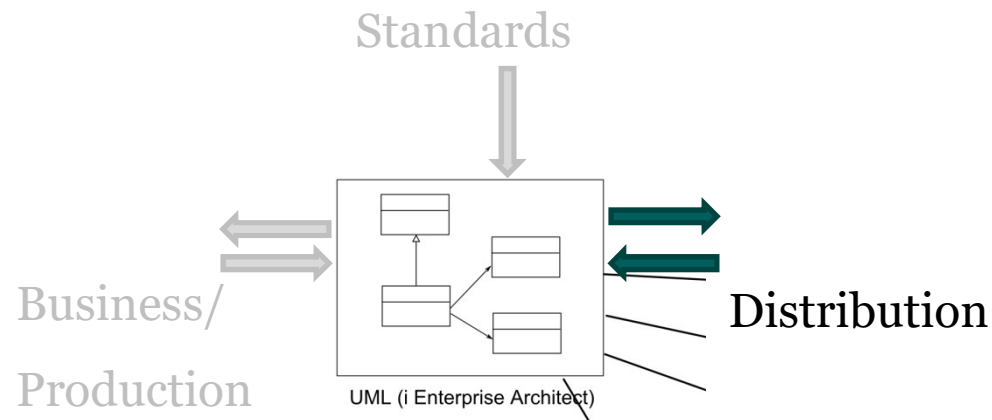
# Standards to follow



- UML
- ISO19... series
- *"Basic Data" model rules*
- INSPIRE
  
- Standards vs practical implementation
- INSPIRE profiles or national models
- Danish or English



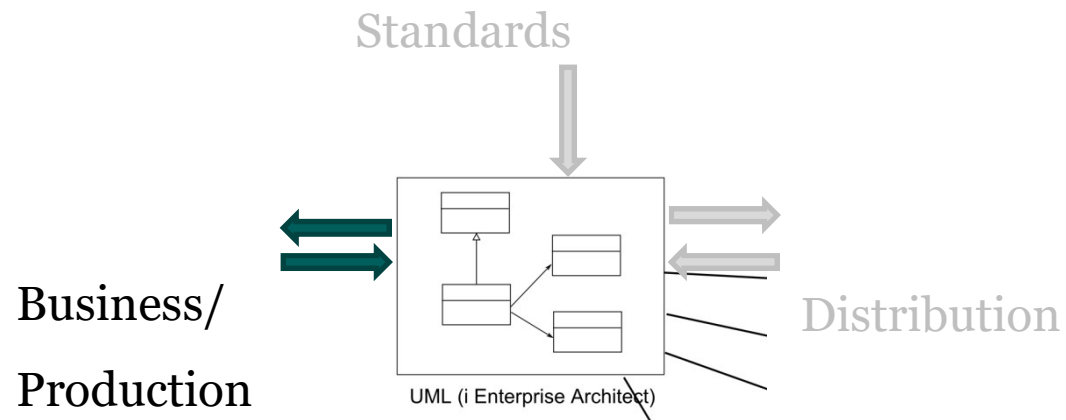
# Distribution



- Who are the expected user, and what systems do they have
- Services or download
- Flat or complex model
- Data with history or only current data
- One service or several services
- Performance considerations



# Existing or new production system



- The distribution model can help defining the requirements for a new production system
- Existing production systems gives the bounds for the distribution model



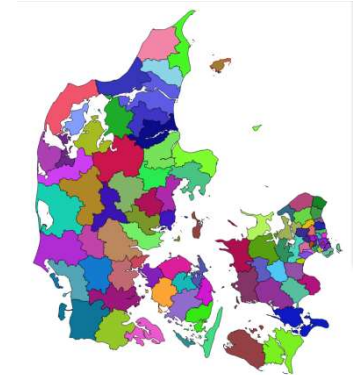
A photograph of a dense forest of tall, thin trees, likely spruce or fir, with sunlight filtering through the canopy, creating a misty or hazy atmosphere. The trees are dark green and brown, and the overall scene is serene and natural.

# Examples

From data modelling to data distribution in the Danish Basic Data infrastructure

# The concept is being applied to the following datasets within the Ministry of the Environment:

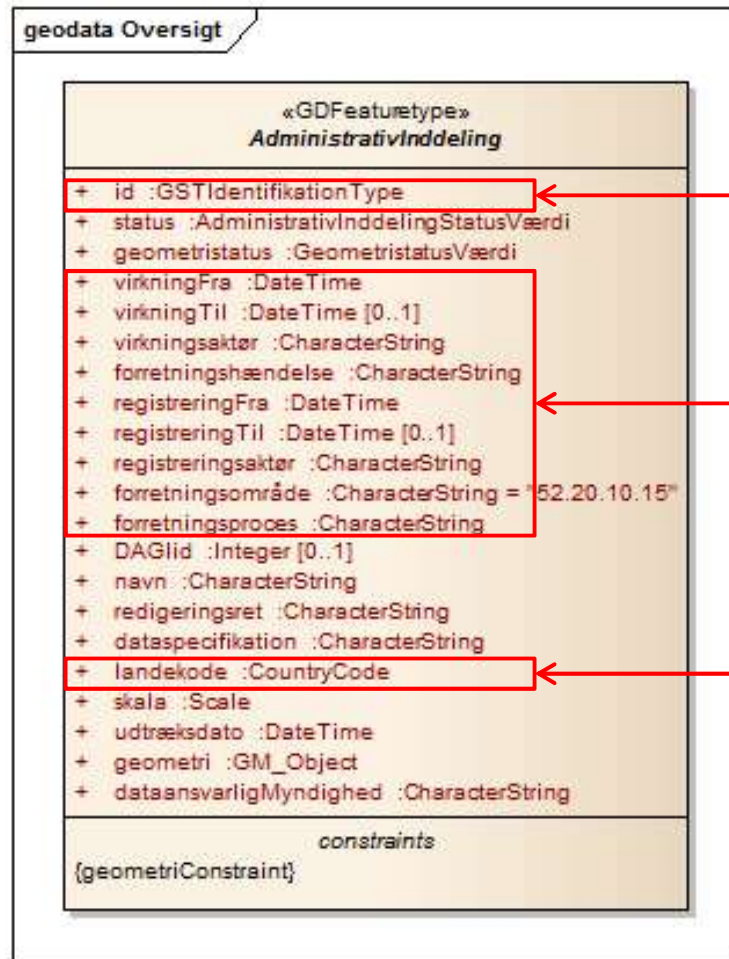
- Topographic (base scale & 1:250k)
- Cadastral parcels
- Administrative units
- Named places
- Marine surveillance
- Waste transport



From data modelling to data distribution in the Danish Basic Data infrastructure

# Formalised model requirements

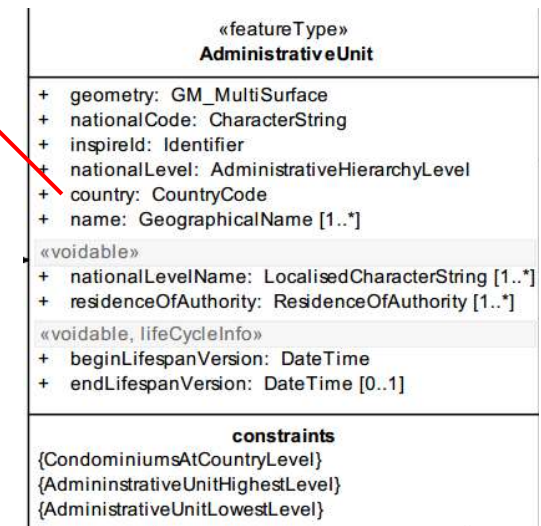
- Basic data programme, ISO, INSPIRE



ID convention

Bi-temporality and business (processes, actors etc.) to support transparency and traceability

INSPIRE



# User driven requirements

## - Topographic data



- Multiple data specifications are mapped to a unified model
- Selected metadata is added to features (i.e. precision)
- Nullable attributes are generally avoided (through data validation and mapping)
- Enumerated values are kept in clear text, following the data specification document



# Enumerations

«Values of enumerated types shall follow the naming conventions for regular attribute names and should be mnemonic, unless an established name for the concept exists.» (ISO/DIS 19103)

«enumeration» <b>FlyvepladsVærdi</b>
flyveplads heliport landingsplads mindreLufthavn størreLufthavn svæveflyveplads

(from GST-  
udstillingsmodeller::  
Udstillingsmodeller::  
Stednavne)

«enumeration» <b>VejklasseVærdi</b>
Anden vej Cykelbane langs vej Cykelsti langs vej Hovedsti Indkørselsvej Lokalvej Lokalvej-Primær Lokalvej-Sekundær Lokalvej-Tertiær Sti, diverse Trafikvej-Fordeling Trafikvej-Gennemfart Ikke tildelt

(from GST-udstillingsmodeller::  
Udstillingsmodeller::  
GeoDanmark::  
Trafik)



# User driven requirements

## - Administrative units



Multiple scales

Multiple geometry representations



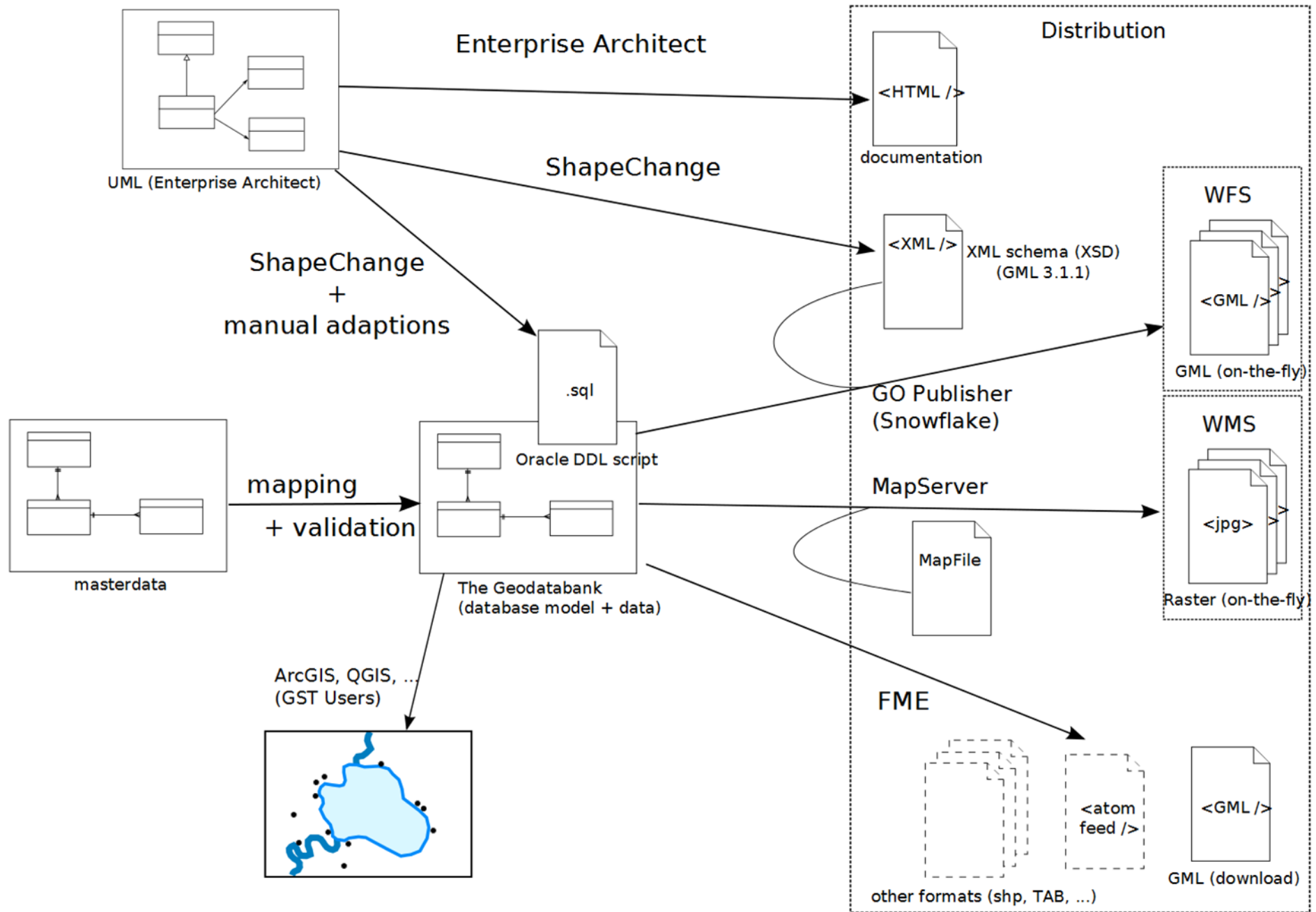
# WFS services for administrative units

Name	Reference	500 000	2 000 000	Multi geometry	Single geometry	Includes historic data	Current data only
DAGI_MGEOM_HIST_GML2	X			X		X	
DAGI_SGEOM_HIST_GML2	X				X	X	
DAGI_SGEOM_GML2	X				X		X
DAGI_500_SGEOM_GML2		X			X		X
DAGI_2000_SGEOM_GML2			X				X
ELF_AU	X	(X)	(X)	X			X
ELF_NUTS	X	(X)	(X)	X			X

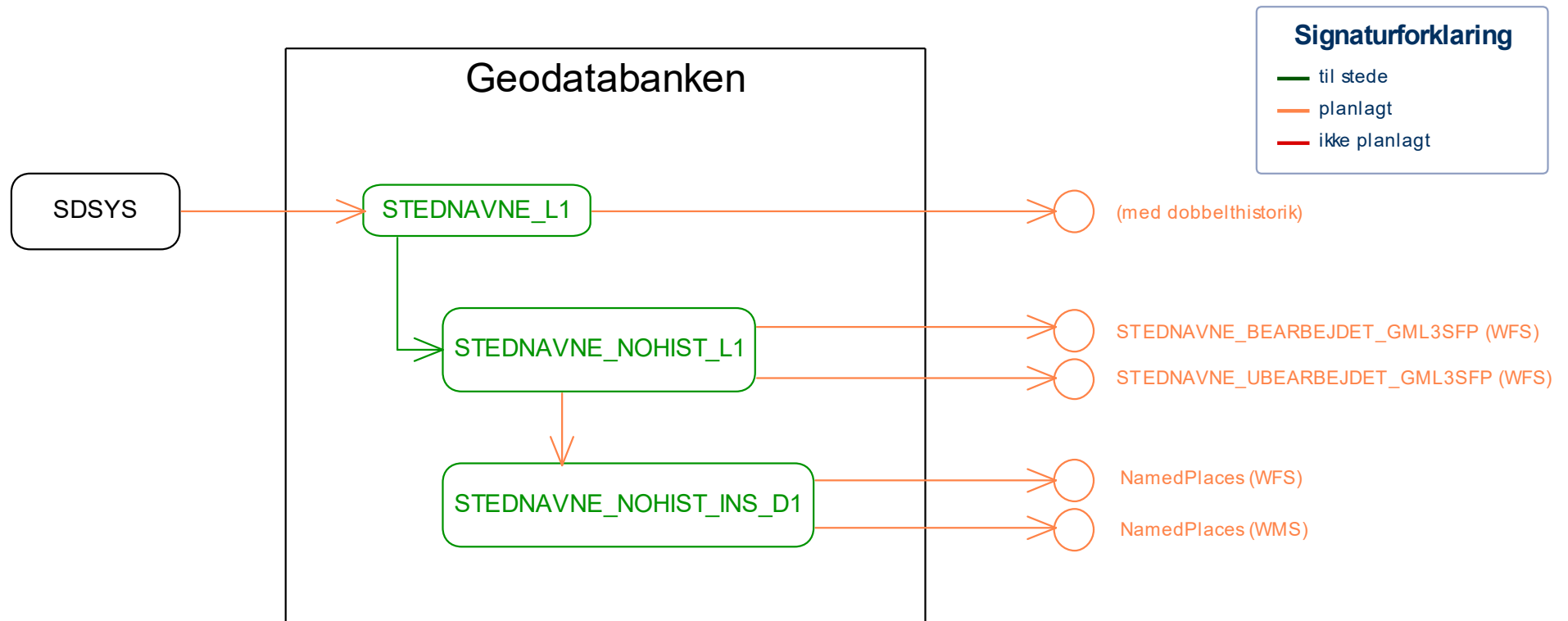


# Distribution of data





# Geodatabankens architecture



# Database views

**SELECT**

```
objectid,  
'dk.gn.' || id_lokalid || '.' || TO_CHAR(virkningfra, 'YYYYMMDD"T"HH24MISS') AS gmlid,  
id_lokalid AS inspireid_localid,  
id_namespace AS inspireid_namespace,  
virkningfra AS validfrom,  
virkningtil AS validto,  
registreringfra AS beginlifespanversion,  
registreringtil AS endlifespanversion,  
geometri AS geometry,  
'dk.gn.' || id_lokalid || '.' || TO_CHAR(virkningfra, 'YYYYMMDD"T"HH24MISS') || '.geom'  
AS geometry_gmlid,  
lufthavntype AS localtype,  
'da-DK' AS localtype_locale,  
'urn:x-inspire:def:codeList:INSPIRE:NamedPlaceType' AS type_codespace,  
'transportNetwork' AS type_value,  
'http://inspire.ec.europa.eu/codelist/NamedPlaceTypeValue/transportNetwork' AS type_href,  
'http://www.locationframework.eu/codelist/EuroGeoNamesLocationTypeValue/14' AS  
egntype_href
```

**FROM**

```
stednavne nohist l1.lufthavn
```

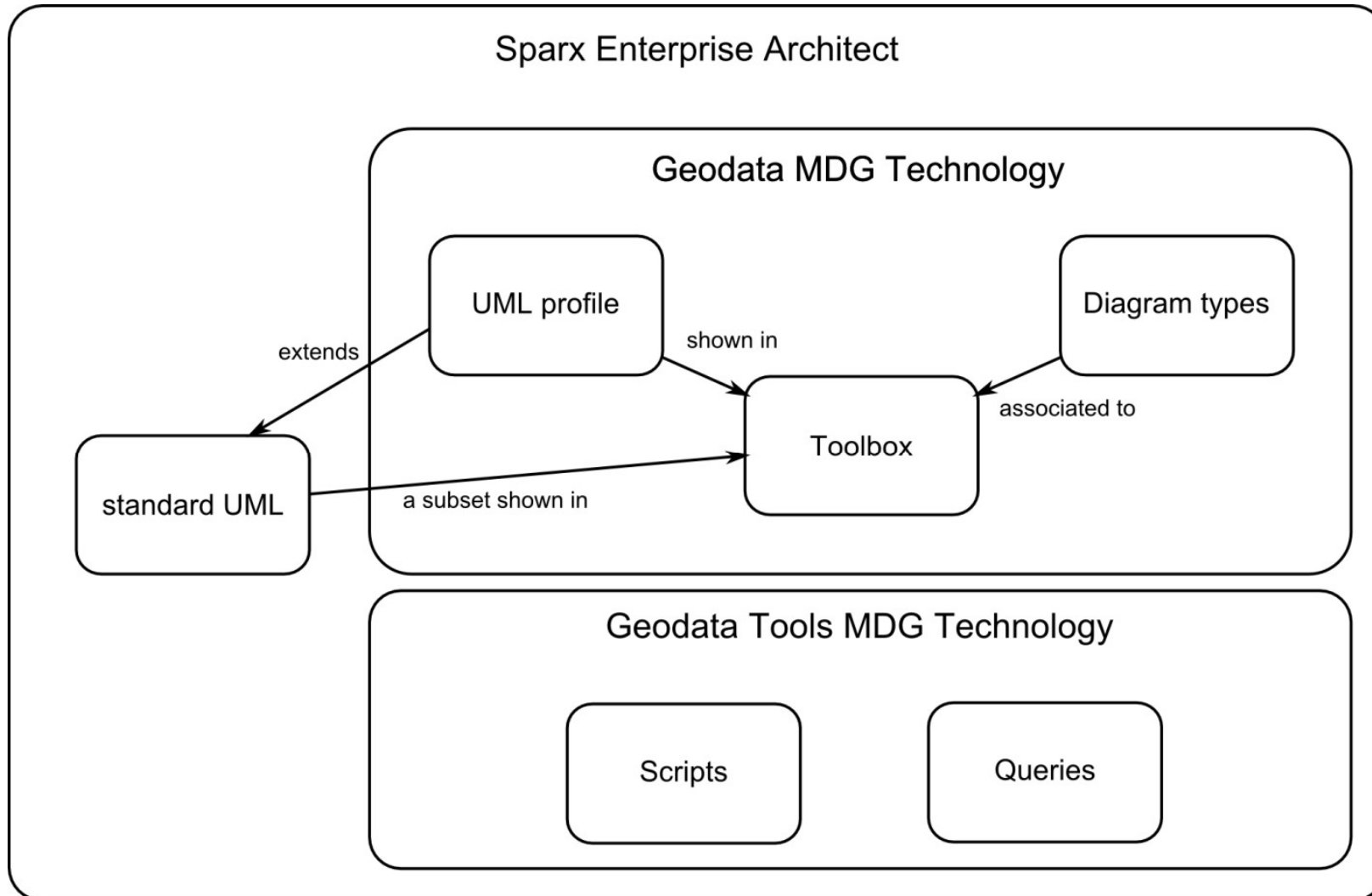
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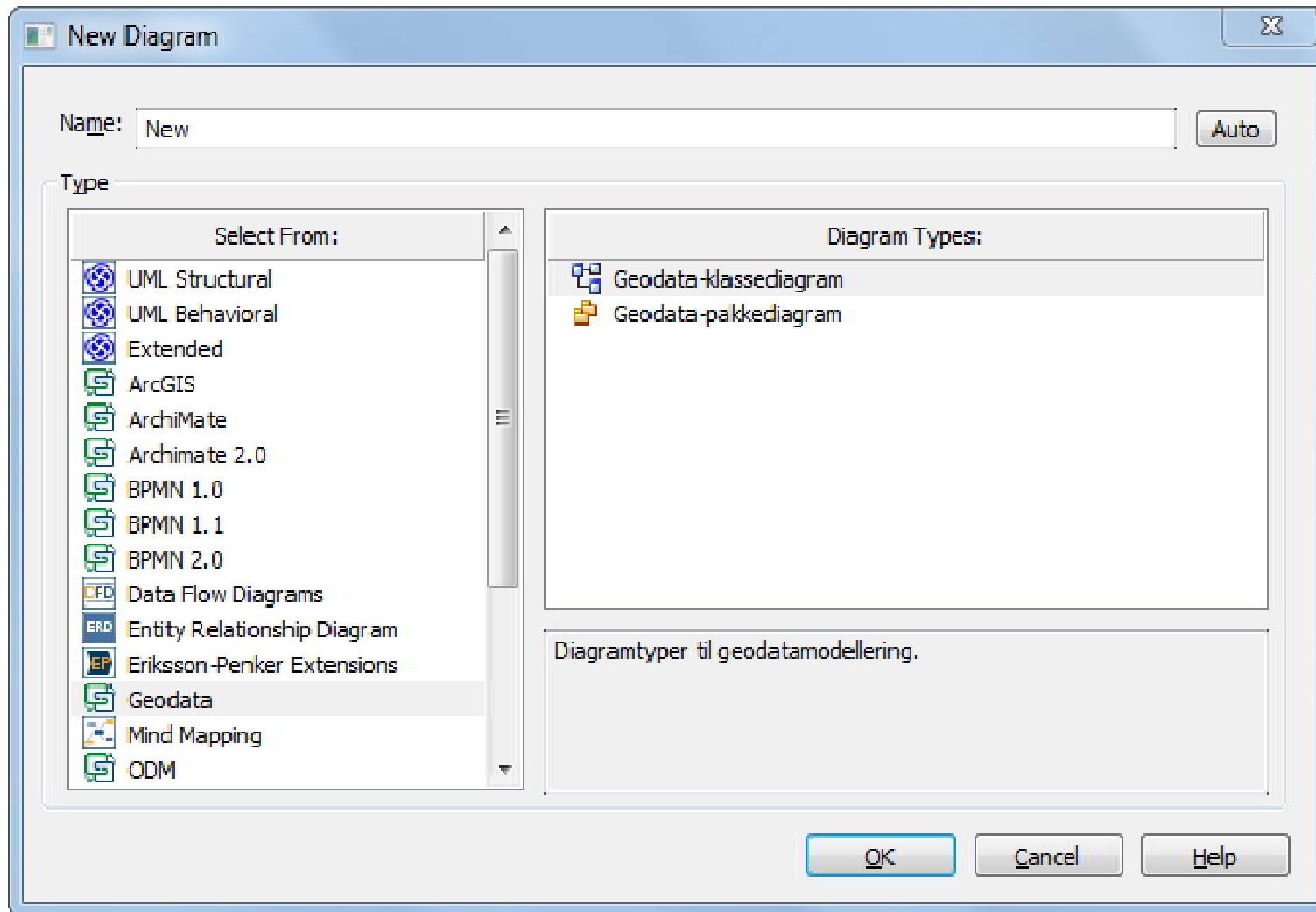
# Data modelling tools



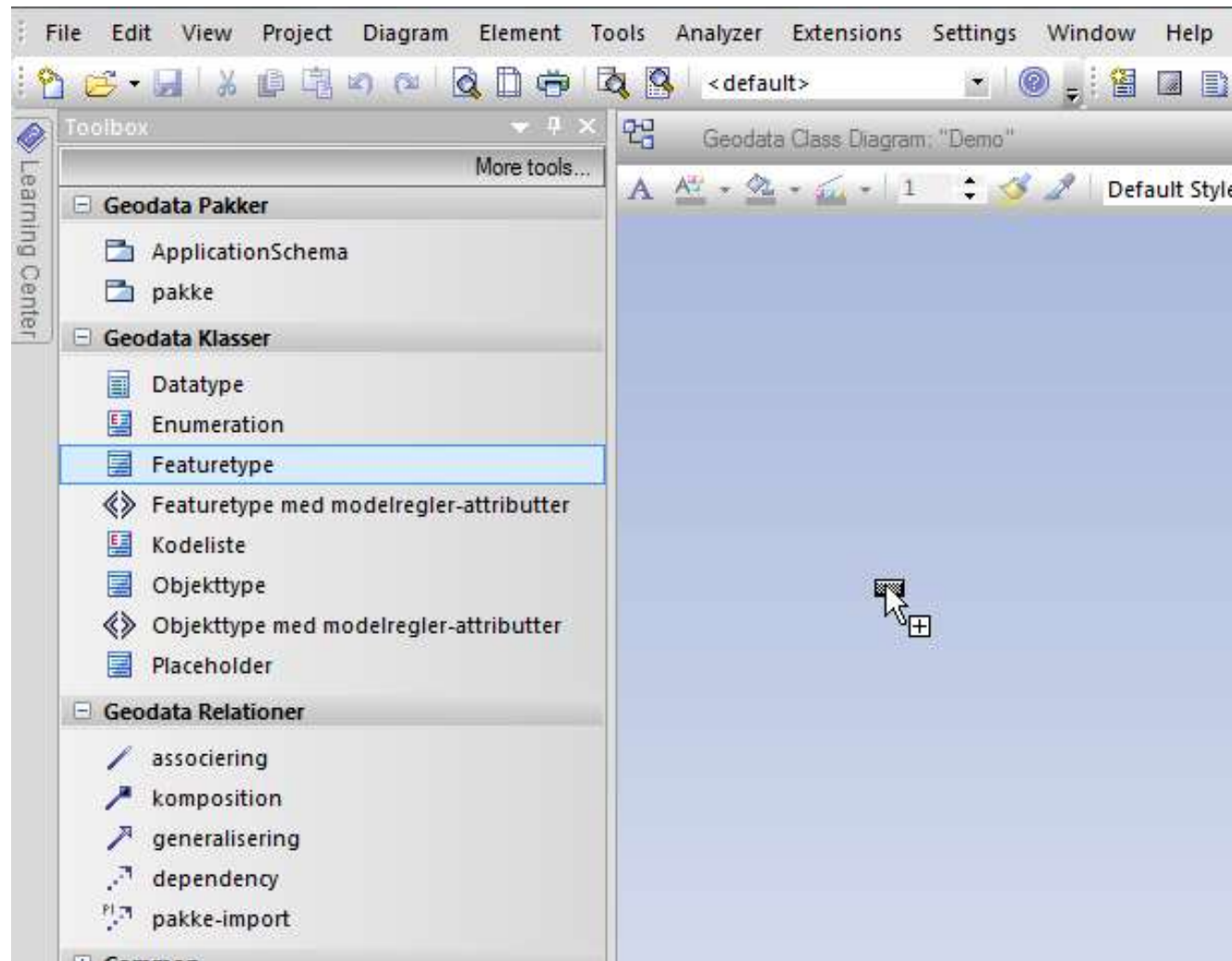
# Data modelling: tools



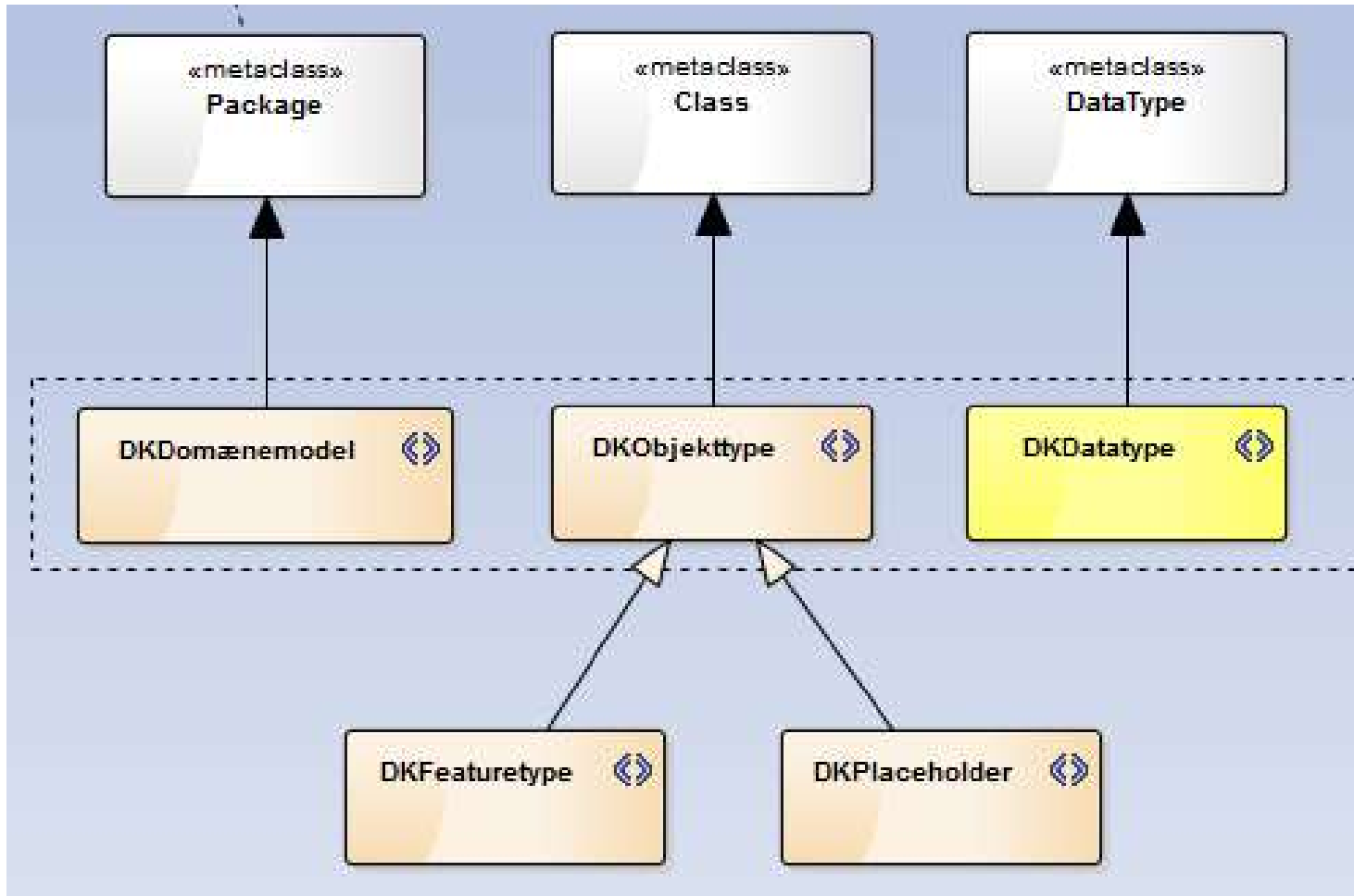
# Diagram Types



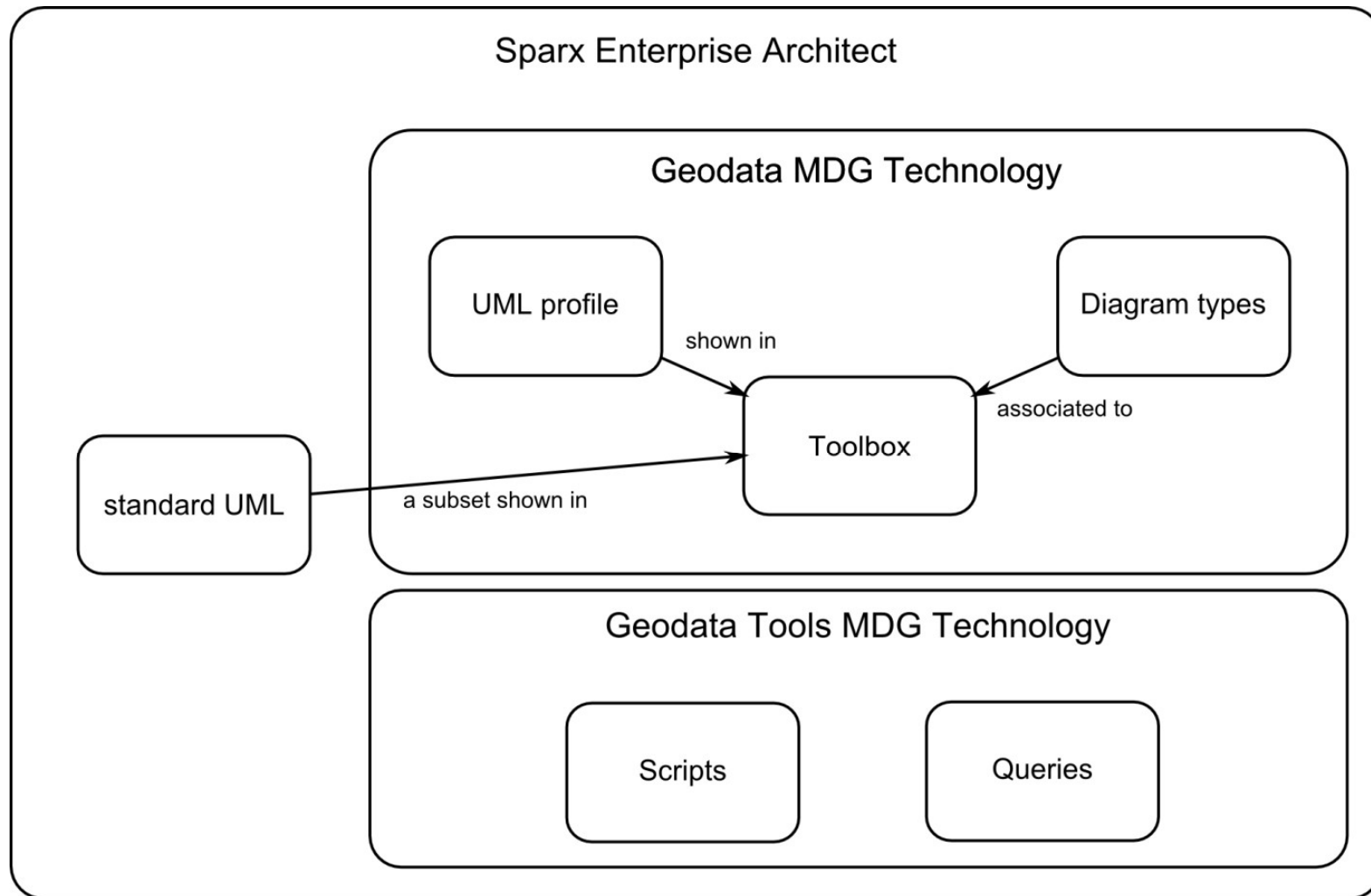
# Toolbox



# UML profile



# Data modelling: tools



# Queries

Find in Project

Search Term:  Search: val\_attribute\_type

Run Options Builder

Resources  
Requirements  
Find Bookmarked Elements  
Recently Modified Elements  
Recently Modified Diagrams  
My Checked Out Packages

My Searches

- definitioner\_enum\_attributter
- val\_association\_tagged\_value\_byreference
- val\_attribute\_name
- val\_attribute\_type**
- val\_attributes\_without\_definition
- val\_class\_name
- val\_classes\_without\_definition
- val\_connector\_end\_names
- val\_enumeration\_attributes\_literals
- val\_find\_orphans
- val\_navigable\_connector\_end\_names
- val\_oracle\_transliterated\_names
- val\_properties\_with\_multiplicity\_higher\_than\_1\_without\_maxOccurs\_t

```
SELECT t_package.Name as PackageName, t_attribute.Type, t_attribute.Classifier FROM t_attribute INNER JOIN t_package ON t_attribute.Object_ID = t_package.Package_ID IN (#Branch#) AND t_object.Object_ID = t_attribute.Object_ID AND t_object.Classifier = '0') ORDER BY t_package.Name,
```

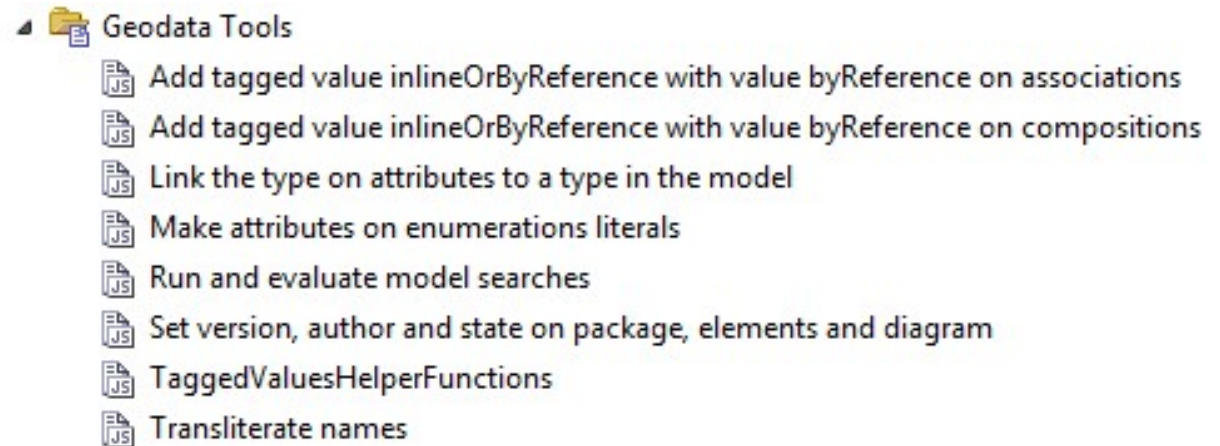
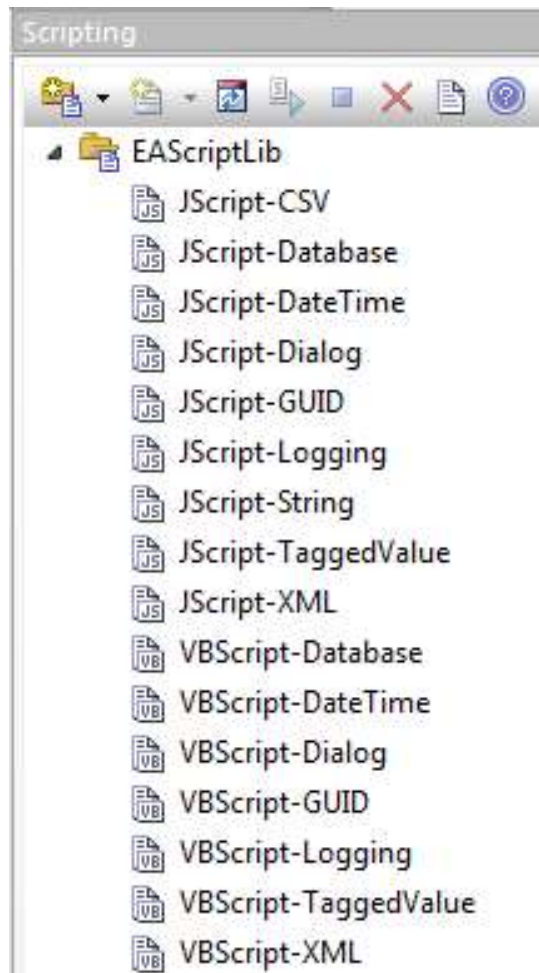
Search Builder SQL

Drag a column header here to group by that column:

PackageName	ClassName
-------------	-----------



# Scripts



# Documentation



## INSIDE



Querying EA's Database

By Thomas Kilian



## Scripting Enterprise Architect



By Thomas Kilian



# Challenges



# Context

## Principles of the Data Distribution department for the Digital Map Supply:

- Flat structure
- No special Danish characters
- GML 3.1.1 SFP

KORTFORSYNINGEN

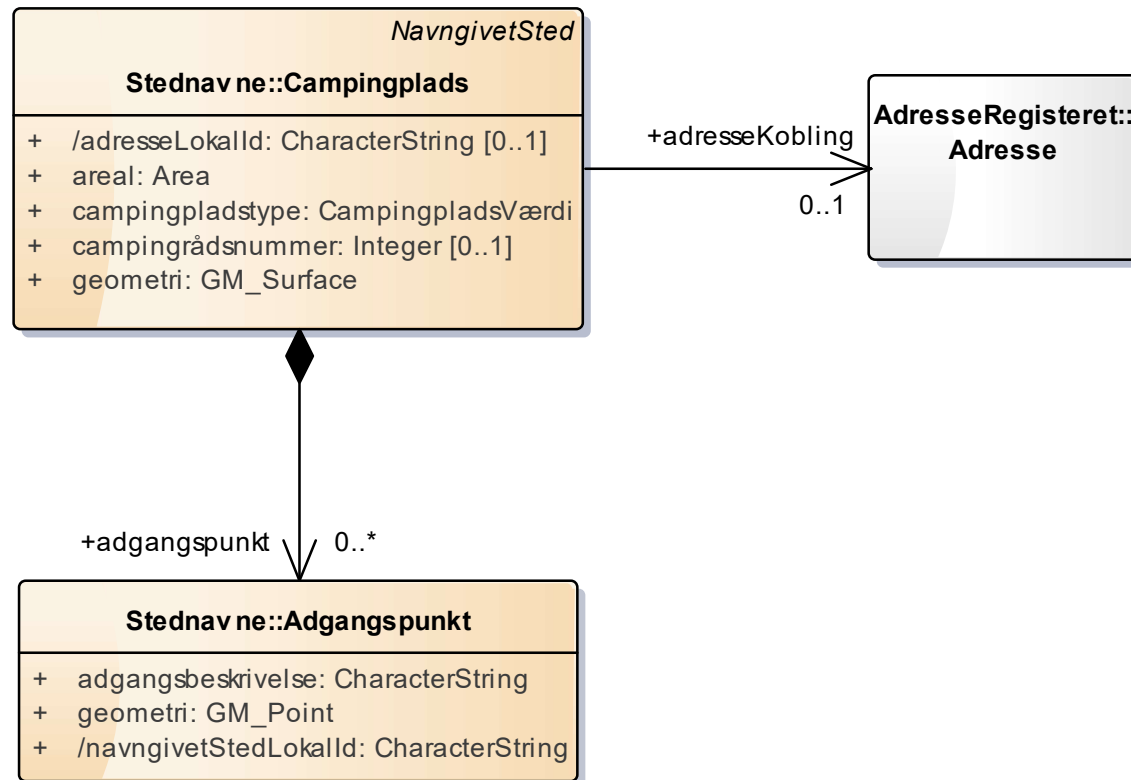


### Vælg GIS program:

- ArcMap
- AutoCad Map
- Gaia
- Geomedia
- MapInfo
- QGIS
- U-Dig



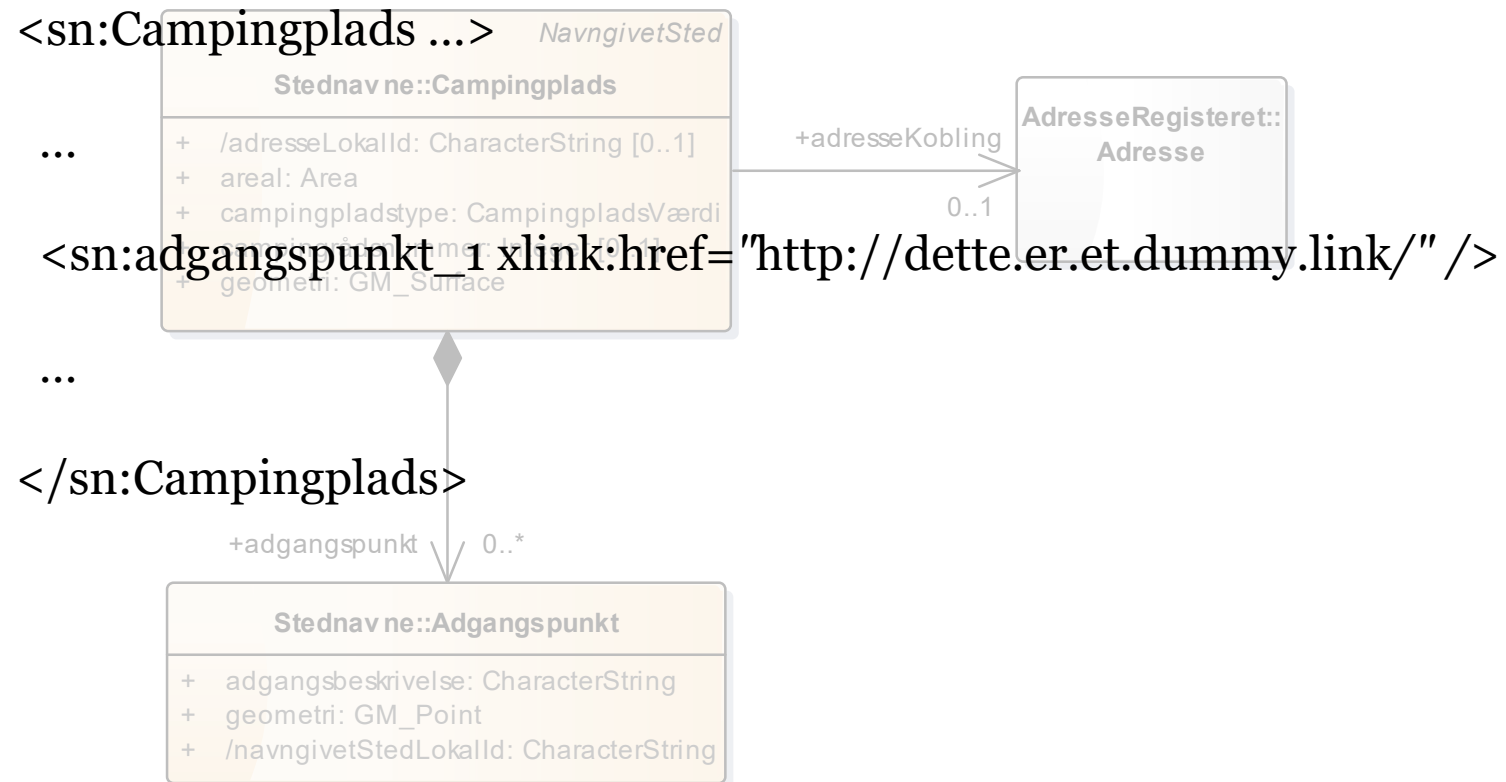
# References



# References



# References



# Code lists

- No infrastructure
- Who has the responsibility for creating and maintaining the infrastructure?
- History of code lists
- How can users use the URL's they get?



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GeoDanmark::  
Trafik)





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