Danish models inspired by INSPIRE
2 sets of modelling principles

INSPIRE modelling principles

vs.

Danish Basic Data modelling principles
Danish Basic Data Programme

The Public Sector’s Basic Data is information on:

- **INDIVIDUALS**
  - Owner Of
  - Employed In
- **REAL PROPERTY**
  - Owner Of
  - Belongs In
- **ADDRESSES, ROADS AND AREAS**
  - Lives At
- **MAPS AND GEOGRAPHY**
  - Shows The Location Of
Danish modelling principles
After 4 years...
Role of modelling experts:

• help domain experts understanding their own data better
• derive storage (DDL) and exchange (GML) formats based on models
• keep INSPIRE data models in mind
... "Language issue"

domain 1 expert

domain 2 expert

IT expert
Fællesoffentlige regler for begrebs- og datamodellering

Version 1.0.0

2017
Concept models & legislation
... GML application schemas

Flexibility in producing GML application schemas.

Managed independently from INSPIRE GML application schemas.
... new standard comes along

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

SITUATION:
THERE ARE 14 COMPETING STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.

YEAH!

SOON:

SITUATION:
THERE ARE 15 COMPETING STANDARDS.
Architecture: overview

Data manager

- Manages vector data

Application

UI for managing vector data.

Production RDBMS

Stores vector data following production data model

End user

Accesses download services

Kortforsyningen

Go Publisher WFS

[Java application server]
Provides direct access download services, transforms vector data from database structure to GML structure

Download Shop

Provides "on-demand" data set download services

FME Server

Transforms vector data from database structure to GML structure

Distribution RDBMS

[Oracle]
Stores vector data following distribution data model, contains views exposing data following INSPIRE data model

Reads from

Retrieves requested data sets using

Transfers vector data to (e.g. via PL/SQL)
Distribution RDBMS

- «device»: Server
- «executionEnvironment»: Oracle

- Database schema w/ all data
  - Danish distribution data model
- Database schema w/ current data
  - Danish distribution data model
- Database schema w/ INSPIRE data
  - INSPIRE data model; can include lookup tables used in the views

Database views

- Database views
  - Database schema w/ all data
  - Database schema w/ current data
  - Database schema w/ INSPIRE data
# Danish Road Directorate

<table>
<thead>
<tr>
<th></th>
<th>INSPIRE extension</th>
<th>Danish model</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td>• European standard</td>
<td>• National standard</td>
</tr>
<tr>
<td></td>
<td>• Based on pan-European needs</td>
<td>• Based on national needs</td>
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<tr>
<td></td>
<td>• Well-described methodology</td>
<td>• Terms that have meaning for the users in the domain are used</td>
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<td></td>
<td>• Possibility of reuse</td>
<td>• Model can immediately be part of the Basic Data Model</td>
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<td>• Possibility of exchanging nationally defined data via a European format</td>
<td>• Possibility to refer to classes from other models in the Basic Data Model</td>
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<tr>
<td><strong>Cons</strong></td>
<td>• High level of complexity</td>
<td>• Not as specific as and less mature than INSPIRE rules</td>
</tr>
<tr>
<td></td>
<td>• INSPIRE skills are needed</td>
<td>• Exchange via INSPIRE format limited to what is defined in the INSPIRE data models.</td>
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<td>• Certain values in code lists are not clear defined semantically</td>
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<td>• Dependency on any future changes in INSPIRE data specs</td>
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<tr>
<td></td>
<td>• INSPIREs code lists must be used</td>
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