INSPIRE Planned Land Use as a basis for revising SOSI Planned Land Use

Presentation at INSPIRE extension workshop
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Outline

- Background
- Project goals and achievements
- Norwegian Standard SOSI
- SOSI standardization strategy
- Extension pattern (subtyping, realization, redefine)
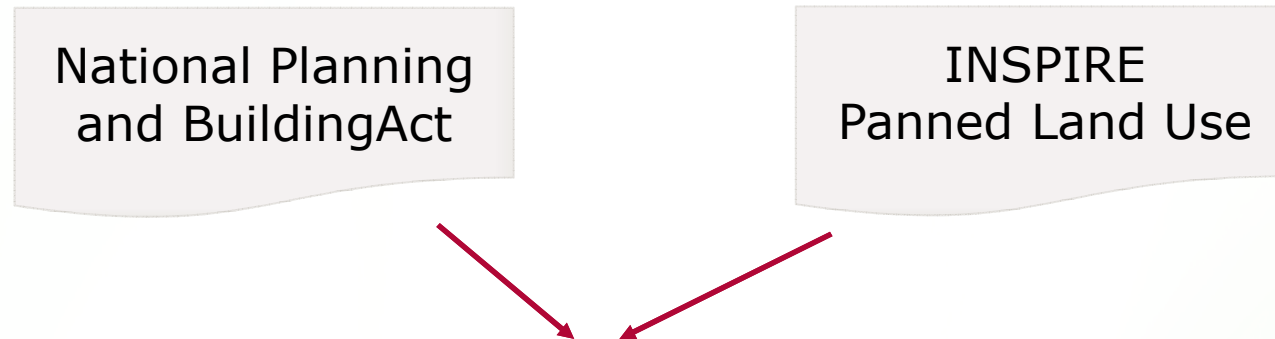- Summary and conclusions

- 3D SOSI / GML
- BIM - IFC
- Regulations given as XML
- Standardisation
- Rule checking
- Digital processes

- Urban planning
  - Development
    - Environment
  - Transformation
    - Democracy
  - Transparency
    - Engagement

Kartverk

Background

National Planning and BuildingAct	INSPIRE Panned Land Use

Update of SOSI Planned Land Use (major revision) according to:

- The Planning and Building Act of 27th of June 2008
- 3D geometry
- Synchronization with the Digital Planning Registers.
- Modelling of planning decisions
- Synchronization with building processes
- Update of UML models according to revised versions of ISO 19103 (2015) Conceptual Schema Language and ISO 19109 (2015)Rules for application schemas.
- **Alignment with INSPIRE Planned Land Use**

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SOSI standards and UML model repository

Standardization since 1990's

- Set of standards for modelling of geographic information, and mapping to realization platforms (GML + SOSI)
- Fully ISO 191xx compliant
- EA SVN model repository
  - ISO standards and European specifications
  - General concepts
  - General feature catalogue (57 themes)
  - Several versions
  - Product specifications according to ISO 19131.
  - Model validation script according to ISO 19103 (2015) and ISO 19109 (2015).
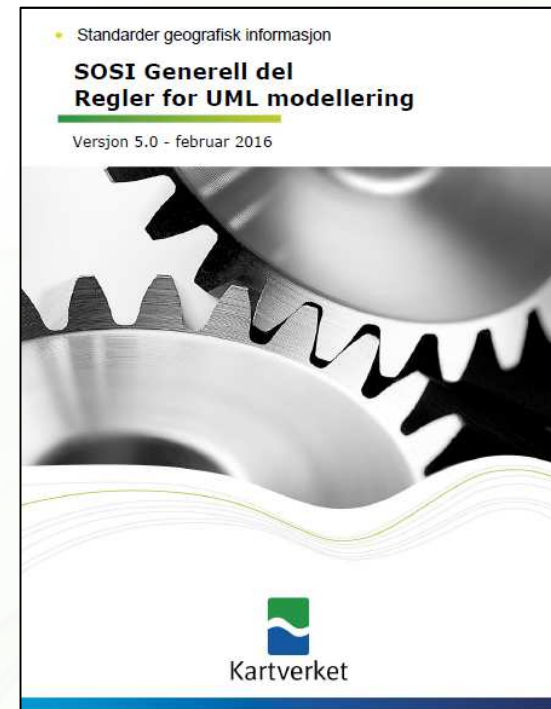- Web view (geonorge.no)

Kartverket
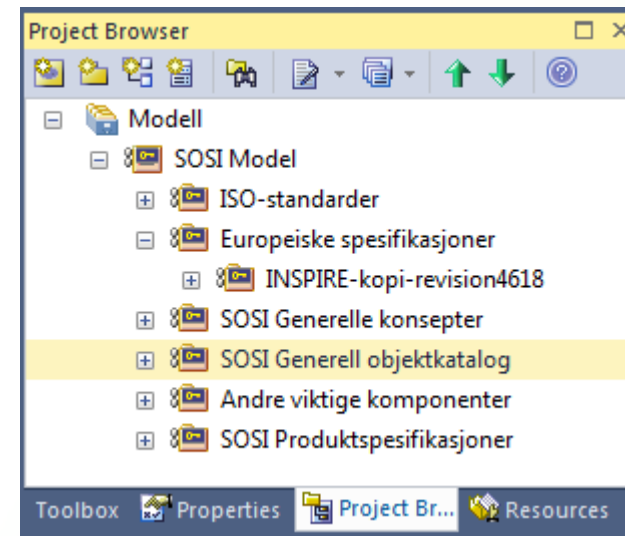
National strategy for further development of SOSI.

SOSI Feature Catalogue shall gradually align with the specifications referenced from our Geodata act (INSPIRE) where appropriate, and at the same time fulfill requirements in national laws, regulations and use cases identified at the national level.

Extension mechanisms are standardized as part of SOSI, and consists of :

- Subtyping
- Realization
- (Redefine)

If there is no relationship to INSPIRE, a note should be added to the introduction of the specification.

Standarder geografisk informasjon

**SOSI Generell del
Regler for UML modellering**

Versjon 5.0 - februar 2016

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Approach 1 – Subtyping – INSPIRE rec profile

Rules for extensions in INSPIRE

Annex F
(informative)
**Example for an extension to an
INSPIRE application schema**

F.2 General rules

Extending an INSPIRE data specification would imply at a minimum that:

- the extension does not change anything in the INSPIRE data
  specification but normatively references it with all its requirements
- the extension does not add a requirement that breaks any requirement
  of the INSPIRE data specification

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Approach 1 – Subtyping – INSPIRE rec profile
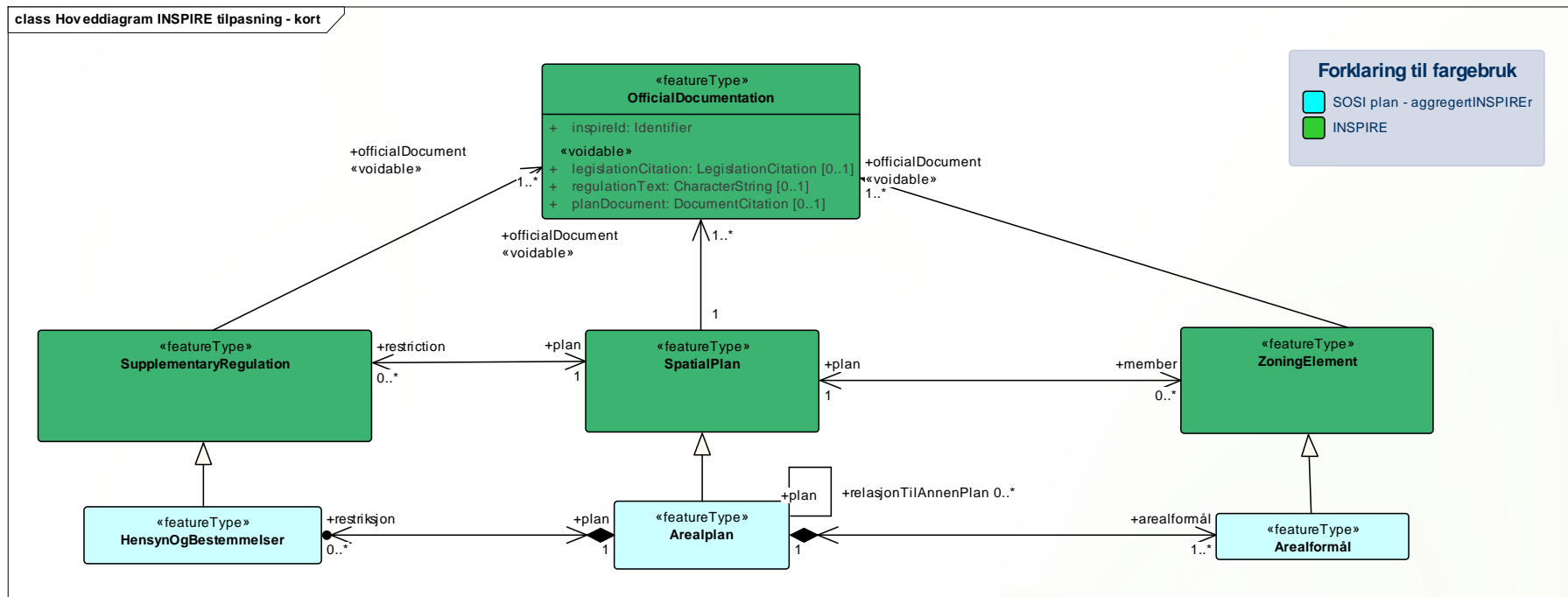
Composition contra association !
Some attributes will never be imlemented. Not necessary to document voidable for national data specifications.
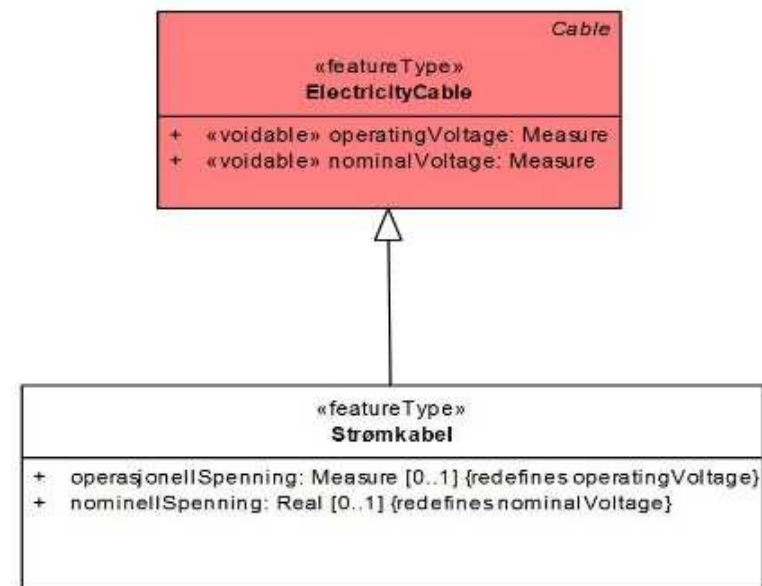
Conclusion – not practical for PlannedLandUse.
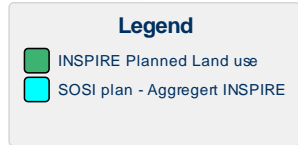
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Approach 2 – Subtyping with redefine

Introduced in UML 2.4

- Valuable mechanism (in theory)
- Implemented in EA for attributes
- Not implemented in EA for associations
- No tool support (ShapeChange???)
- Handle with care (May turn mandatory to optional).

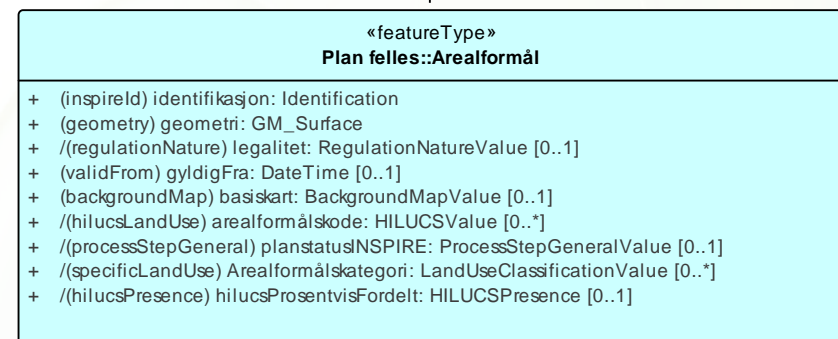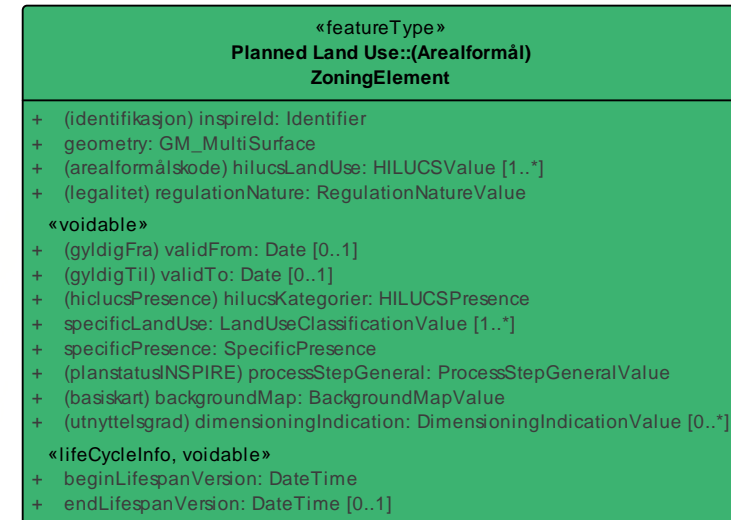**Conclusion:** **To many technical issues to resolve**

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Approach 3 – Realization (<<realize>>)

Approach 3 – Realization - example

- All mandatory attributes implemented
- Optional attributes considered and implemented if relevant.
- Voidable implemented if they can be derived or made avaiable in other ways.

INSPIRE attbitues that can be dervied from existing semantics is stated derived in the model.
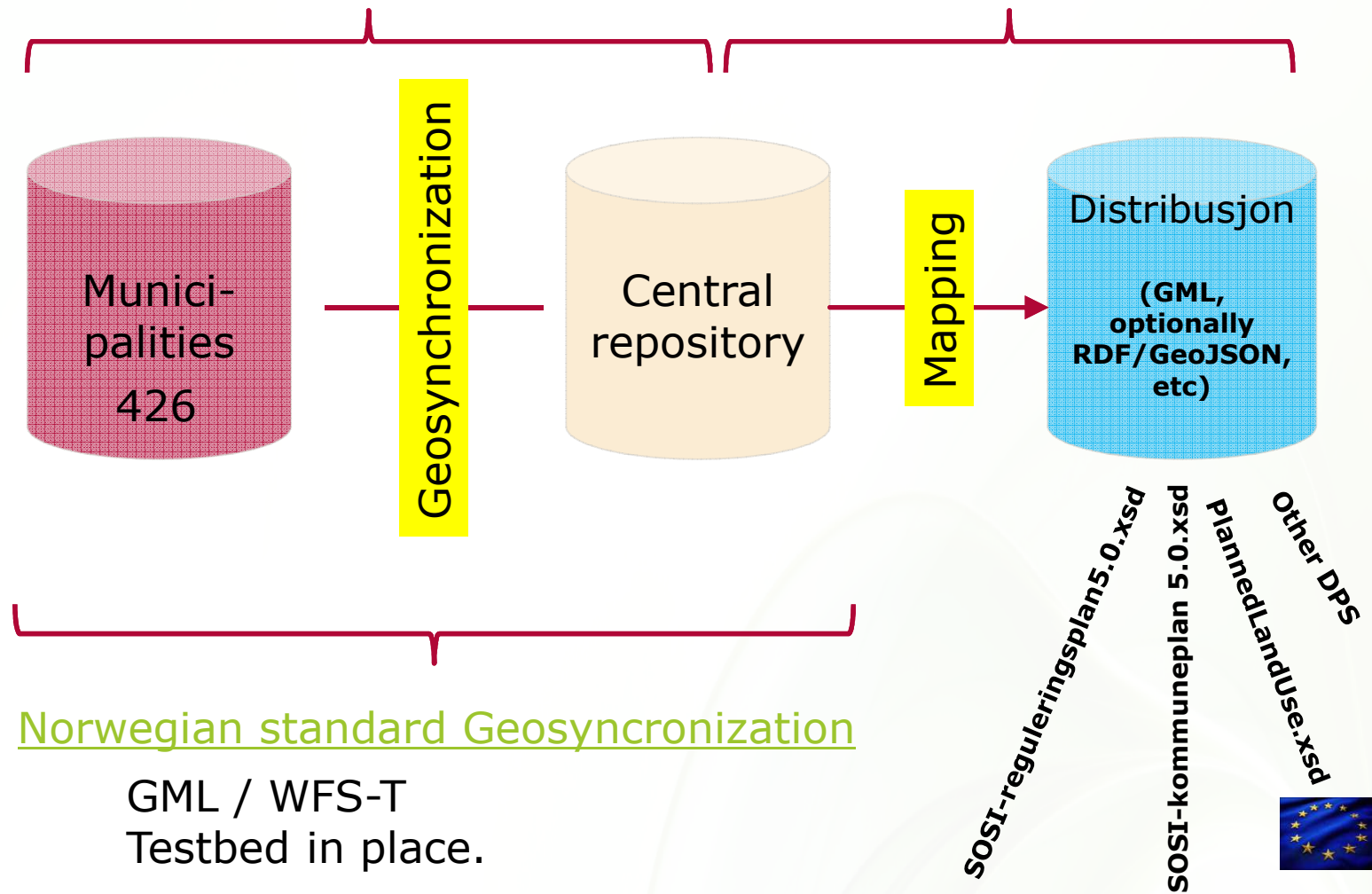
The following attributes are not implemented:
- beginLifespanVersion
- EndLiefspanVersion
- DimensioningIndication

«featureType»
Planned Land Use::(Arealformål)
ZoningElement

+ (identifikasjon) inspireId: Identifier
+ geometry: GM_MultiSurface
+ (arealformålskode) hilucsLandUse: HILUCSValue [1..*]
+ (legalitet) regulationNature: RegulationNatureValue

«voidable»
+ (gyldigFra) validFrom: Date [0..1]
+ (gyldigTil) validTo: Date [0..1]
+ (hiclucsPresence) hilucsKategorier: HILUCSPresence
+ specificLandUse: LandUseClassificationValue [1..*]
+ specificPresence: SpecificPresence
+ (planstatusINSPIRE) processStepGeneral: ProcessStepGeneralValue
+ (basiskart) backgroundMap: BackgroundMapValue
+ (utnyttelsesgrad) dimensioningIndication: DimensioningIndicationValue [0..*]

«lifeCycleInfo, voidable»
+ beginLifespanVersion: DateTime
+ endLifespanVersion: DateTime [0..1]

«featureType»
Plan felles::Arealformål

+ (inspireId) identifikasjon: Identification
+ (geometry) geometri: GM_Surface
+ /(regulationNature) legalitet: RegulationNatureValue [0..1]
+ (validFrom) gyldigFra: DateTime [0..1]
+ (backgroundMap) basiskart: BackgroundMapValue [0..1]
+ /(hilucsLandUse) arealformålskode: HILUCSValue [0..*]
+ /(processStepGeneral) planstatusINSPIRE: ProcessStepGeneralValue [0..1]
+ /(specificLandUse) Arealformålskategori: LandUseClassificationValue [0..*]
+ /(hilucsPresence) hilucsProsentvisFordelt: HILUCSPresence [0..1]

Conclusion: Pattern applied for SOSI Land Use.

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Possible architecture

Geosynchronization without INSPIRE

Geosynchronization and transformasjon til INSPIRE

Munici-palities 426

Geosynchronization

Central repository

Mapping

Distribusjon

(GML, optionally RDF/GeoJSON, etc)

Norwegian standard Geosyncronization

GML / WFS-T
Testbed in place.

SOSI-reguleringsplan5.0.xsd

SOSI-kommuneplan 5.0.xsd

PlannedLandUse.xsd

Other DPS

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Model validation (ISO 19103/ISO 19109) ++

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Summary and conclusions

- Our SOSI model for Planned Land Use including the model for the planning register fits quite well with the INSPIRE Planned Land Use, but a generalized level for INSPIRE is required and is an extra burden.
- Our existing model (and the Planning and Building Act) has stronger semantics than INSPIRE (for example: Compositions rather than aggregations). No interest to weaken the semantics in the model to fulfil INSPIRE extensions informative rules.
- At the current stage, we are using the realization relationship, [Intends to including a matching table (from ESDIN/ELF project) to document the mapping between INSPIRE and the SOSI/Planning Register]
- UML 2.4 has a different extension pattern <redefine> that would fit well, but there is a lack of tool support.
- We will continue to examine the result from the JRS/Geonovum Extension pattern project, including the results from the INSPIRE extension workshop in Paris.
- INSPIRE informative extension rules are too strict.

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