# INSPIRE Thematic Working

# Cadastral parcels

**PCC meeting**

**12 December 2008**

# TWG for annex I themes

# Role of INSPIRE TWGs

- Contribute to the elaboration of Implementing Rules for data specifications
- TWGs have to define Data Specifications
- Data Specification will be converted in:
  - Binding Implementing Rules
  - Non-binding guidelines

# General principles

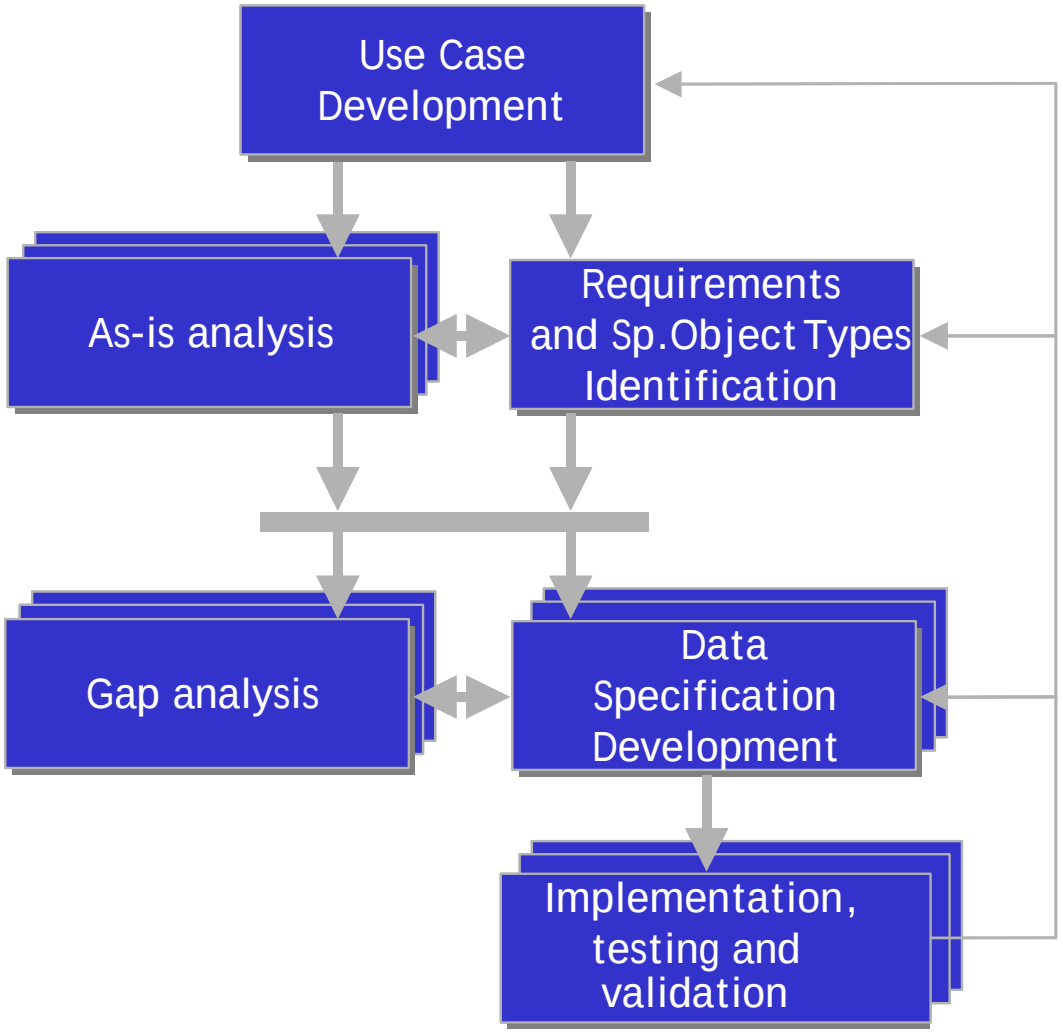
INSPIRE must be based on existing data

Harmonisation in INSPIRE must be done only if there are user requirements:

- pan-european use cases
- cross-border use cases
- linked with environment

Harmonisation has to be feasible and cost-benefits have to be analysed.

# General Methodology (for all TWGs)



# INSPIRE stakeholders

- Thematic Working Groups: TWG

- Piloting  actors:
  - CT/JRC
  - DT DS (compliance to DT DS documents)
  - EIONET (user requirements)

- Supporting actors
  - SDIC/LMO
  - Projects (e.g. *eContent* + projects)

# Initial roadmap

- Kick-off meeting: 14-15/02/08
- First draft of data product specification: September 2008
- Internal review of first draft (DT DS, CT, EIONET): October 2008
- Second draft of data product specification: November 2008
- Review by SDIC/LMO: January 2009
- Testing, revised DPS: February 2009
- Submission to the INSPIRE Committee: May 2009

# TWGs composition

- Facilitator
  - Chairperson
  - Work based on INSPIRE methodology
- Editor
  - UML modelling, ISO standards
  - Work based on INSPIRE Generic Conceptual Model
- Thematic experts
  - Domain expertise
- JRC contact point

# TWGs Reference Material

- Framework prepared by DT DS:
  - D2.3: description of themes and scope
  - D2.5: Generic Conceptual Model
  - D2.6 : Methodology
  - D2.7: Data exchange, encoding
  - + Template for data specifications
- Reference Material provided by SDIC/LMO
- Results of the user requirement survey launched by JRC in February 2008.


# TWG CADASTRAL PARCELS

# Team members

- Dominique Laurent (IGN France) — Facilitator
- André Bernath (Switzerland) — Editor
- Gyula Ivan (NMA – Hungary)
- Tarja Myllymäki (NLS – Finland)
- Amalia Velasco (Cadastre- Spain)
- Olav Jenssen (NMA - Norway)
- Peter van Oosterom (TUD/Kadaster Netherlands)
- Soren Riff Alexandersen (NMCA – Denmark)
- Wim Devos (JRC)
- Gareth Robson (UK)

Thematic experts

# Team members

# TWG main events

- Kick-off meeting : 14-15/02/08 (Ispra)
- Meeting 14-15/04/08 (Palma)
- Workshop with EuroGeographics and PCC (03/06/08) + TWG CP meeting (04/06/08) in Brussels
- Meeting 08-09/09/08 in Verona
- Meeting 30-31/10/08 in Paris (internal review)

# Use case development

- Selection of relevant use cases
  - user requirement survey (JRC)
  - TWG CP proposals
  - European
  - National (but potentially cross-border in future)

- Interest for INSPIRE:
  - European Directive =>MS have to deal with cadastral parcels in an harmonised way
  - Link with other themes (e.g. land use, utilities)

# Use case development status

- Use a classification based on the one provided by the EuroGeographics – PCC Expert Group survey
  - Land market
    - Out of INSPIRE scope
  - Agriculture
    - Common Agriculture Policy (Land Parcel Identification System)
    - National examples (vineyard cadastre, ragweed monitoring)
  - Environment
    - soil protection (Soil Directive + national example)
    - water abstraction
    - Protected sites
  - Spatial planning
    - mainly national examples

# Use case development status

- Infrastructures, utilities
  - National examples
- Public land management
  - Generic use case + national example
- Public safety
  - Flood management
- Socio-economic analysis, other
  - National examples

# Use case development status

- User requirements described in a check-list supplied by DT DS methodology (data harmonisation components)

- ≈ 20 check-lists collected
  - wide range of applications
  - few countries represented (only 7)
  - some disappointing answers

# As-is analysis

- Main sources
  - Reference Material: survey conducted by WG-CPI in 2005 about cadastral parcels in INSPIRE ⇒ generic information about most countries in Europe
  - TWG CP members or contact points ⇒ more detailed information in 15 countries
  - Questionnaire launched by TWG CP about the specific issue of raster data

# Joint work with LADM (Land Administration Domain Model)

- LADM is proposed as a new ISO standard
  - by FIG (Fédération Internationale des Géomètres)
  - initiative supported by UN Habitat
- A wider scope than INSPIRE (includes rights and owners, surveying package, ..)
- Joint work with LADM Working Group (Reference Material, common members, joint meetings)

$\Rightarrow$ INSPIRE model is compatible with and extensible by LADM

# Internal review

- First draft delivered by end of September
- Review by:
  - European Commission (JRC, …)
  - Other TWG
  - Drafting Teams
  - European Environmental Agency
- Comments received
  - 65 for Cadastral Parcels
  - ≈ 90 common to all data specifications
    - Joint meeting between TWG
    - New template for data specifications

⇒ No big issues about Cadastral Parcels

# Terminology
# Cadastral parcels

- Definition (from the Directive): “areas defined by cadastral registers or equivalent”

- Description (from TWG CP):
  - single area
  - area on Earth surface
  - under unique ownership and homogeneous property rights
  - forming a partition of territory

# Application schema (semantic)

- Cadastral parcels
  - Identifier
  - Surface

- Cadastral index sets (e.g. municipalities, sections)
  - Name
  - Identifier (or code)

# Spatial aspects

- Cadastral parcels as closed polygons
- Only 2D parcels
- Topology as optional attribute

# Temporal aspects

- Temporal extent required by IR for metadata (data set level)

- Temporal information may be given also at feature level
  - Optional (not available in all MS)
  - Set of attributes supplied by Generic Conceptual Model
    - beginLifespanVersion
    - endLifespanVersion

# Identifier management

- Two requirements:
  - From users: need of identifier/reference to make links with rights and owners (in national registers)
  - From INSPIRE directive: need of a unique identifier

$\Rightarrow$ Two attributes in the application schema:

  - National Cadastral Reference
  - INSPIRE Identifier

# Quality recommendations

- Positional accuracy
  - 1 m in urban areas
  - 2,5 m in rural areas
- Thematic accuracy (100% for national cadastral reference)
- Completeness (100%)
- Topological consistency (no gaps, no overlaps)
- Update frequency (≤1 year)

# Quality information

- Quality elements will/may have to be reported at data set level (metadata)

- Positional accuracy (and temporal information) may also be reported:
  - at cadastral index set level
  - at parcel boundary level
  - at cadastral parcel level

# Metadata information

- Core elements already included in IR about metadata for discovery
- Quality elements to be reported as metadata
- Use lineage to give more information about initial cadastral data (national specificities)

# Portrayal

- Need for default styles for view services
- Two additional attributes:
  - Reference point
  - Label (generally last part of identifier)
- Discrete style (parcel contour in thin black line, parcel label also in black)

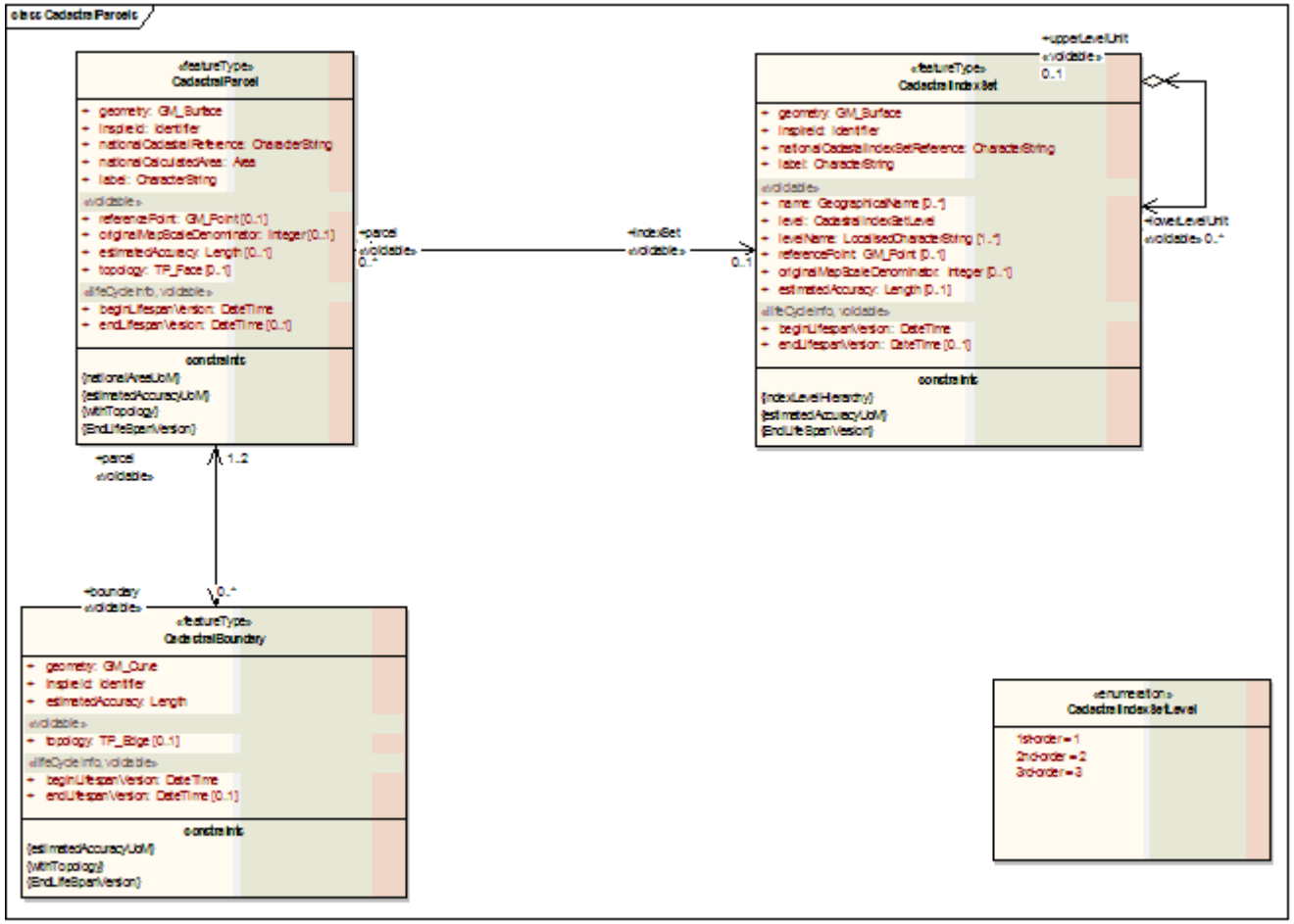
# Delivery

- Current use of:
  - industry formats
    - GIS (shape, MIF/MID)
    - CAD (dxf, dgn)
  - National standards

- DT DS recommends GML
  - current discussion about versions of GML (v 3.1.2 or v 3.1.1)
  - possible additional formats

- Only GML until now for cadastral parcels
  - Issues (if any) will appear during testing and review
  - Guess that GIS providers will widely implement GML (as mandated by INSPIRE)

# Conceptual schema
# Current draft



# Next steps

- From mid-December 2008 to end February 2009
  - Review by SDIC/LMO
    - Guidelines (Data specification itself)
    - Draft Structure and Content Implementing Rule
  - Testing
    - Around 10 countries
    - Some projects (ESDIN, Humboldt)
- Comment Resolution Workshop (March 2009?)
- Third draft of data specification
- Adoption of Implementing Rules (June 2009?)

# Glossary

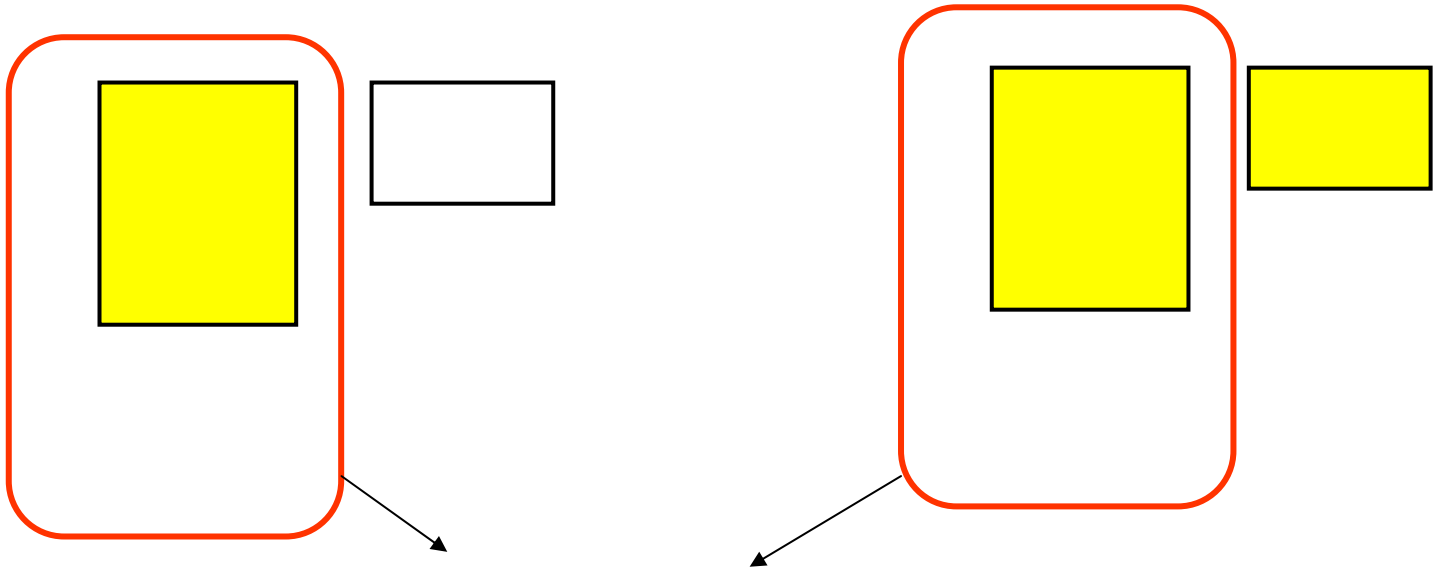
- CAD : Computer Assisted Drawing
- CRS: Coordinate Reference System
- CT : Consolidation Team
- DS : Data Specification
- DT DS : Drafting Team Data Specification
- EIONET : European Environment Information and Observation Network
- FIG : Fédération Internationale des Géomètres
- GML: Geographic Markup Language
- GIS: Geographic Information System
- IR: Implementing Rules
- ISO : International Standardisation Organisation
- JRC: Joint Research Center

# Glossary

- LADM : Land Administration Domain Model
- LMO: Legally Mandated Organisation
- MS: Member State
- NLS: National Land Survey
- NMA: National Mapping Agency
- NMCA: National Mapping and Cadastre Agency
- PCC: Permanent Committee on Cadastre
- SDIC: Spatial Data Interest Community
- TUD: Technical University Delft
- TWG : Thematic Working Group
- TWG CP: Thematic Working Group Cadastral Parcels
- UML: Unified Modelling Language
- WG-CPI : Working Group on Cadastral Parcel in Inspire

# Single area

- Better for spatial queries



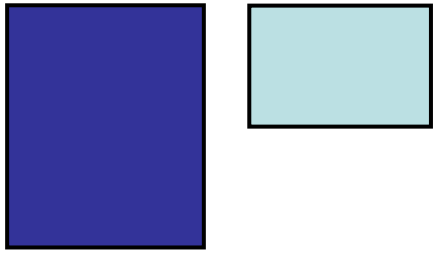
Area of interest (e.g. flooded/regulated/protected area)

Parcel as single area

Parcel as multi-surface

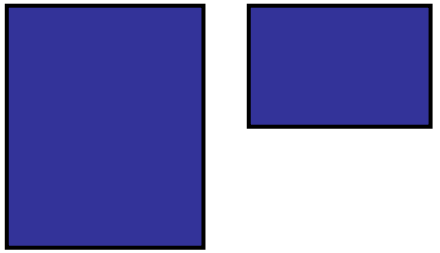
# Single area

- Better
  - to attach user-defined attributes
  - for portrayal



Parcel as single area

Each parcel (polygon) may have different values for an attribute



Parcel as multi-surface

The two polygons composing the parcel must have same value for an attribute

# Area on Earth surface

- 3D cadastral objects are excluded from cadastral parcels theme
  - Buildings, parts of buildings, parkings, …
  - Pipelines, mining, ..
- Requirements may come from Annex III themes (buildings, utilities)
- LADM may supply harmonisation solution in future for these objects

# Under unique ownership …

- Rights and owners are out of the scope of theme Cadastral Parcels
- But some use cases require to find the owner
  - Soil Directive
  - State Land Management
- The owner will be found in national cadastral registers (not in INSPIRE)