IGN
INSTITUT NATIONAL
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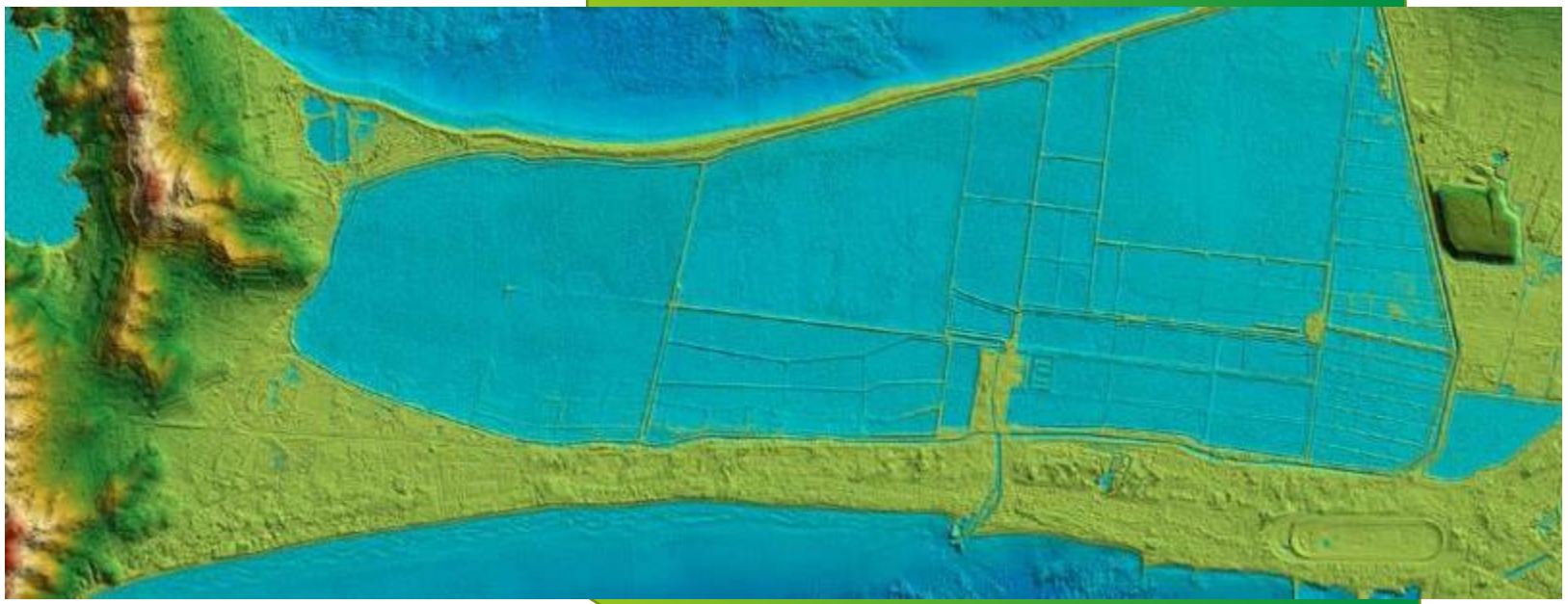
GÉOGRAPHIQUE
ET FORESTIÈRE

THE FRENCH STANDARD ON LARGE SCALE LU-LC AND ITS IMPLEMENTATION AS CORE DATA



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THE FRENCH STANDARD ON LC/LU

Context and objectives

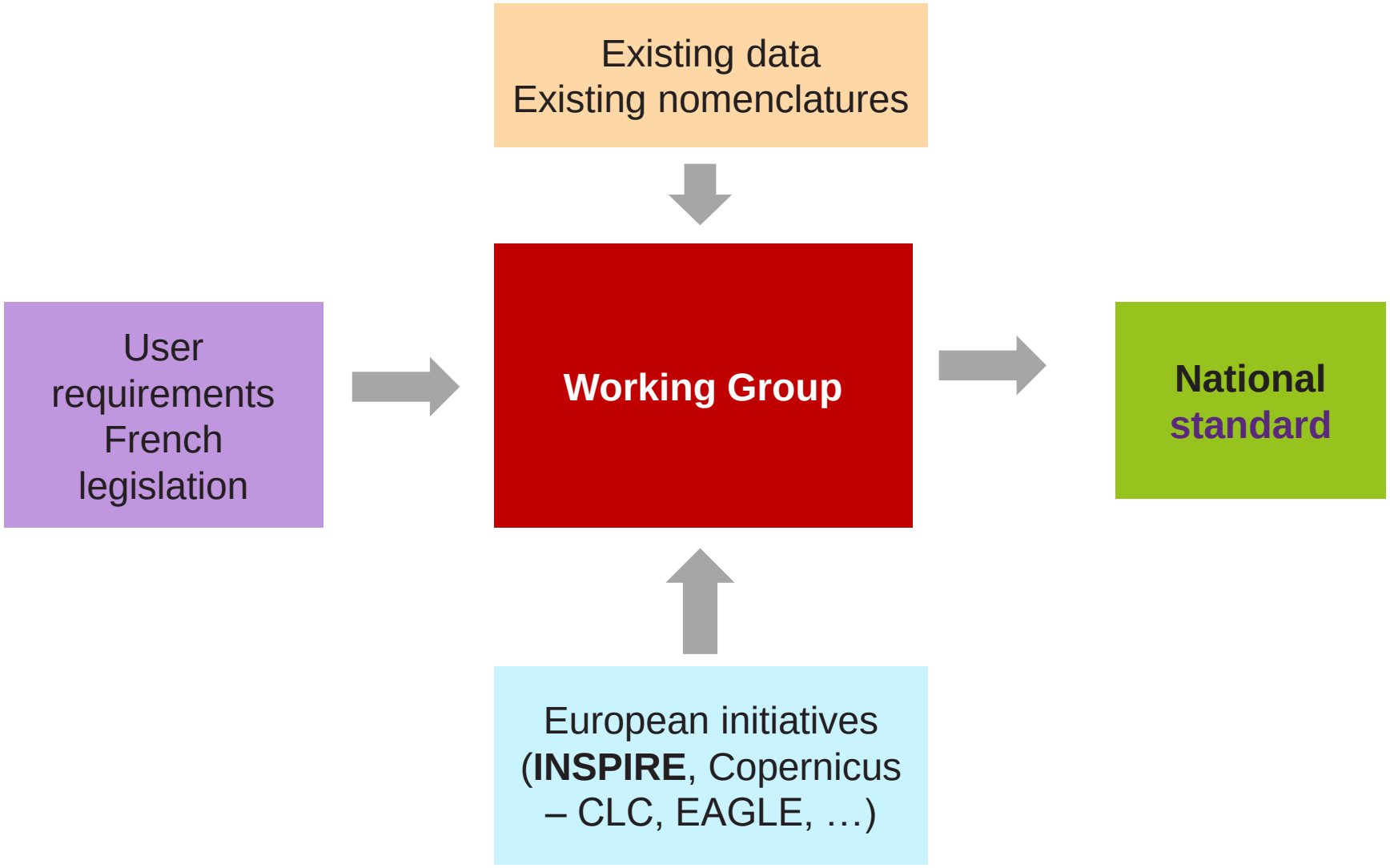
Context

- **Working Group launched in 2010**
- **By Ministry of Sustainable Development**

Objectives

- **Get a common national nomenclature (achieved in 2014)**
- **For regional and local needs**
- **For spatial planning, environment, water, agriculture, biodiversity**
- **Free reuse**

Methodology



Methodology

National legislation

- **Focus on land take use case**
  - consumption of agricultural or natural land by urbanization
- **Several laws => economic use of land for urbanization**
- **Lack of priorities between required indicators and lack of shared definition of these indicators**

Working Group members

- **Ministry of Sustainable Development and Agriculture**
- **IGN**
- **Regional and local authorities**
- **Private sector (consultancies and product suppliers)**

Principles

A 4 dimension nomenclature

- **Land Cover**
- **Land Use**
- **Morphology => density**
- **Characteristics => temporal aspects**

Up to 5 levels hierarchy (generally 3 or 4)

Large scale data

- **Compatible with large scale referential data (10K or better)**
- **small size MMU**

•2 500 m2 in rural areas

•500 m2 in urban areas and even 200m2 for built areas

Principles

The LC nomenclature

Without vegetation

CS 1.2.3 Névés et glaciers
CS 1.2.2 Surfaces d'eau
CS 1.2.1 Sol nus
CS 1.1.2 Zones perméables
CS 1.1.1 Zones imperméables

CS 1.2 surfaces naturelle
CS 1.1 surfaces anthropisées

With vegetation

CS 2.2.2 Autres formations non ligneuses
CS 2.2.1 Formations herbacées
CS 2.1.3 Autres formations ligneuses
CS 2.1.2 Formations arbustives et sous arbrisseaux
CS 2.1.1 Formations arborées

CS 2.2 Végétation non ligneuse
CS 2.1 Végétation ligneuse

Whole partition of territory

Principles

The LU nomenclature

- Widely based on INSPIRE HILUCS
- With some refinement (more details)

Whole partition of territory

US1. Production primaire

US1.1 Agriculture

US1.1.1 production pour commercialisation

US1.1.1.1 pâturage

US1.1.1.2 élevage

US1.1.1.3 culture (dont pépinière simple)

US1.1.3 Autoconsommation

Principles

The morphology nomenclature

additional information mainly about density of elements, strongly related to LC

MP 1 Milieux urbanisés et aménagés
- MP 1.1 Densité
  - MP1.1.1 Tissu compact (100% – 80%)
  - MP1.1.2 Tissu dense (80% – 50%)
  - MP1.1.3 Tissu lâche (50% – 30%)
  - MP1.1.4 Tissu diffus (30% – 10%)
  - MP1.1.5 Bâtiment isolé

Example 1: About density of urban areas

Example 2: About nature of water areas

MP 2.2 Eau
- MP2.2.1 Voies d'eau naturelles
- MP2.2.2 Canaux
- MP2.2.3 Plan d'eau, lac, étang, marres
- MP2.2.4 Bassin
- MP2.2.5 Estuaire et baie
- MP2.2.6 Grands estuaires
- MP2.2.7 Mer

Principles

The characteristic nomenclature

additional information mainly about temporal or specific status

CR 2 Milieux naturels et forestiers

CR 2.5.1 Détruit par la tempête
CR 2.5.2 Détruit par incendie
CR 2.5.3 Dépérissement
CR 2.5.4 Jeune plantation
CR 2.5.5 Coupe rase
CR 2.5.6 Inondation

Example 1 : About life-cycle of forests

Example 1 : About rotation of culture

CR 3 Milieux agricoles

CR 3.1.1 Culture pluriannuelle
CR 3.1.2 Culture annuelle
CR 3.1.3 Périmètre irrigué en permanence
CR 3.1.4 Jachère

Principles

Dependencies between the 4 dimensions

The standard documents the matrix of possible combinations

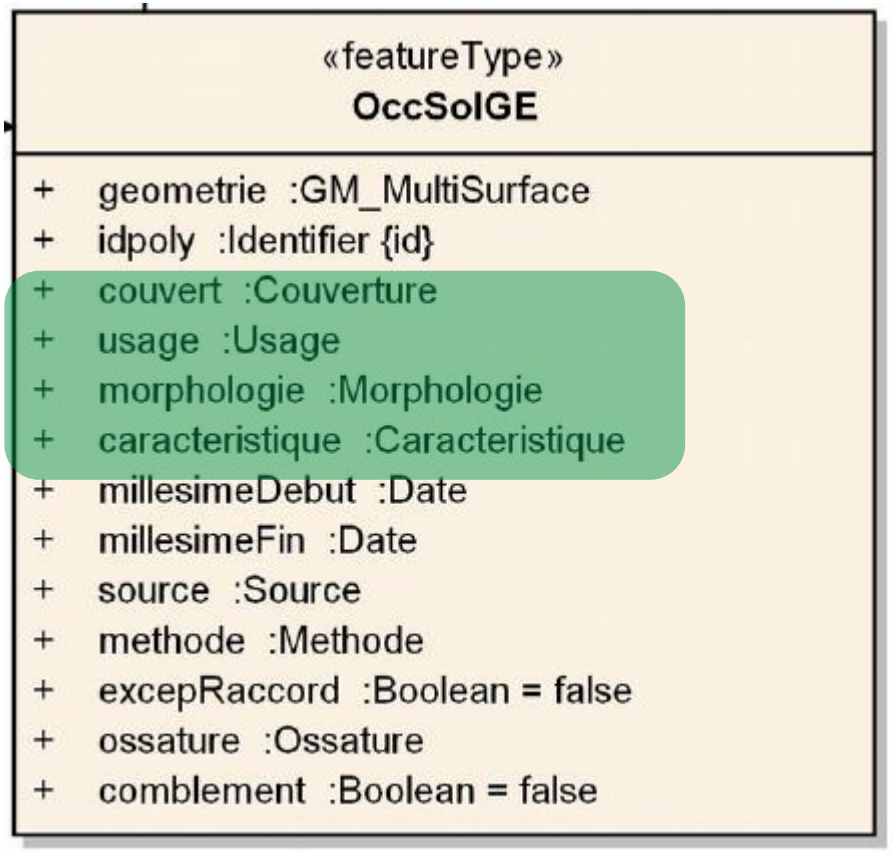
- E.g. for each LC class, the list of potential associated
  - LU classes
  - Morphology classes
  - Characteristics classes

Principles

The same polygon carries

- (dominant) LC
- (dominant) LU
- possibly morphology and characteristics information.

The partition of territory is done according the LC dimension



Principles

Use of a skeleton of main roads and railways

«featureType»
OccSolGE

+ geometrie :GM_MultiSurface
+ idpoly :Identifier {id}
+ couvert :Couverture
+ usage :Usage
+ morphologie :Morphologie
+ caracteristique :Caracteristique
+ millesimeDebut :Date
+ millesimeFin :Date
+ source :Source
+ methode :Methode
+ excepRaccord :Boolean = false
+ ossature :Ossature
+ comblement :Boolean = false

2

THE LARGE SCALE LC-LU DATA (OCS GE)

Implementation as core data

Context and objectives

Context

- **Within 2013-16 agreement between French State and IGN**

Objectives

- **Get a core product based on the national standard**
- **Homogeneous on whole territory**
- **Feasible production**

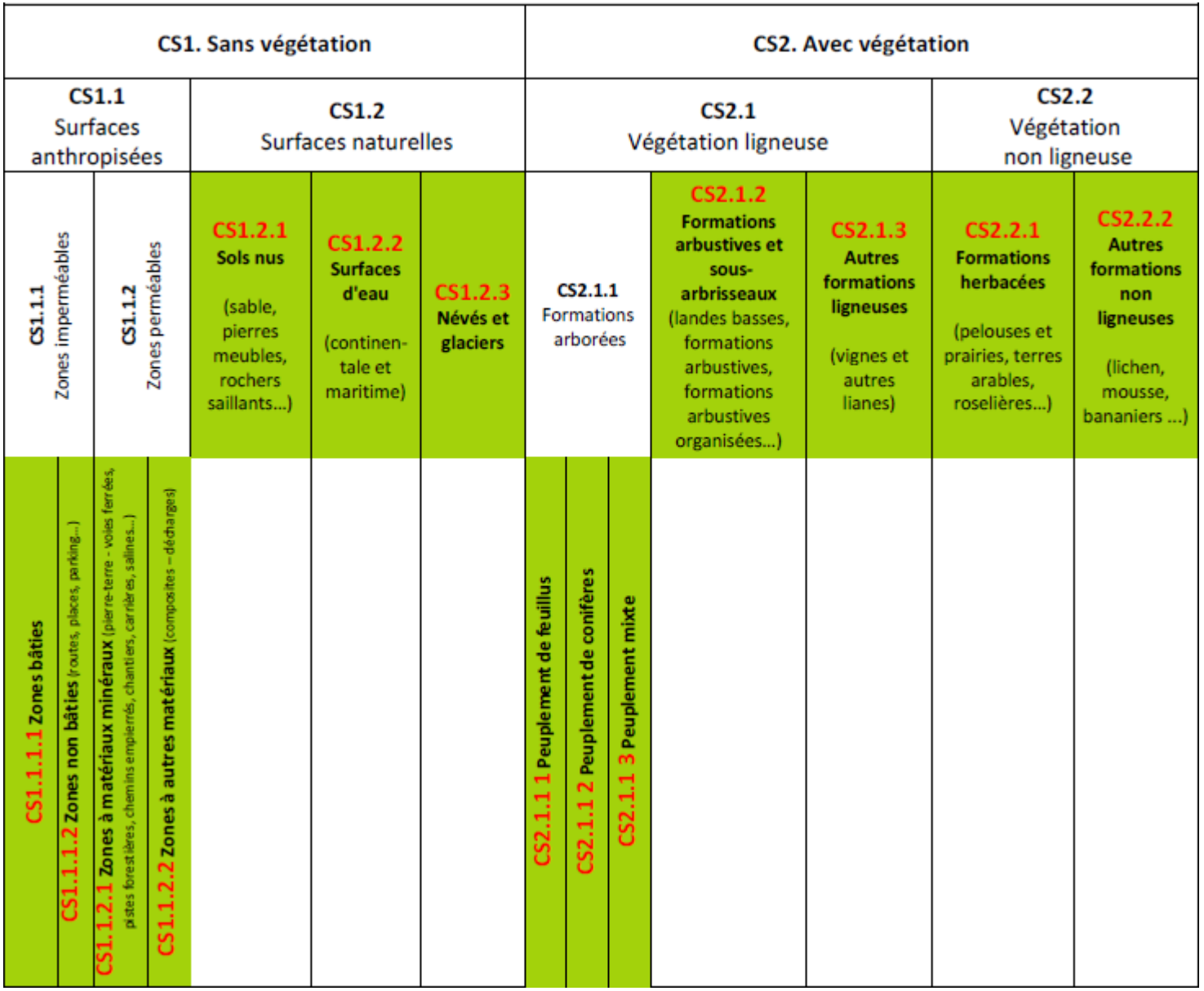
Principles

Specifications based on national standard

- **Only 2 dimensions: LC + LU**
  - **LC: 14 classes**
  - **LU : 17 classes**

simplification

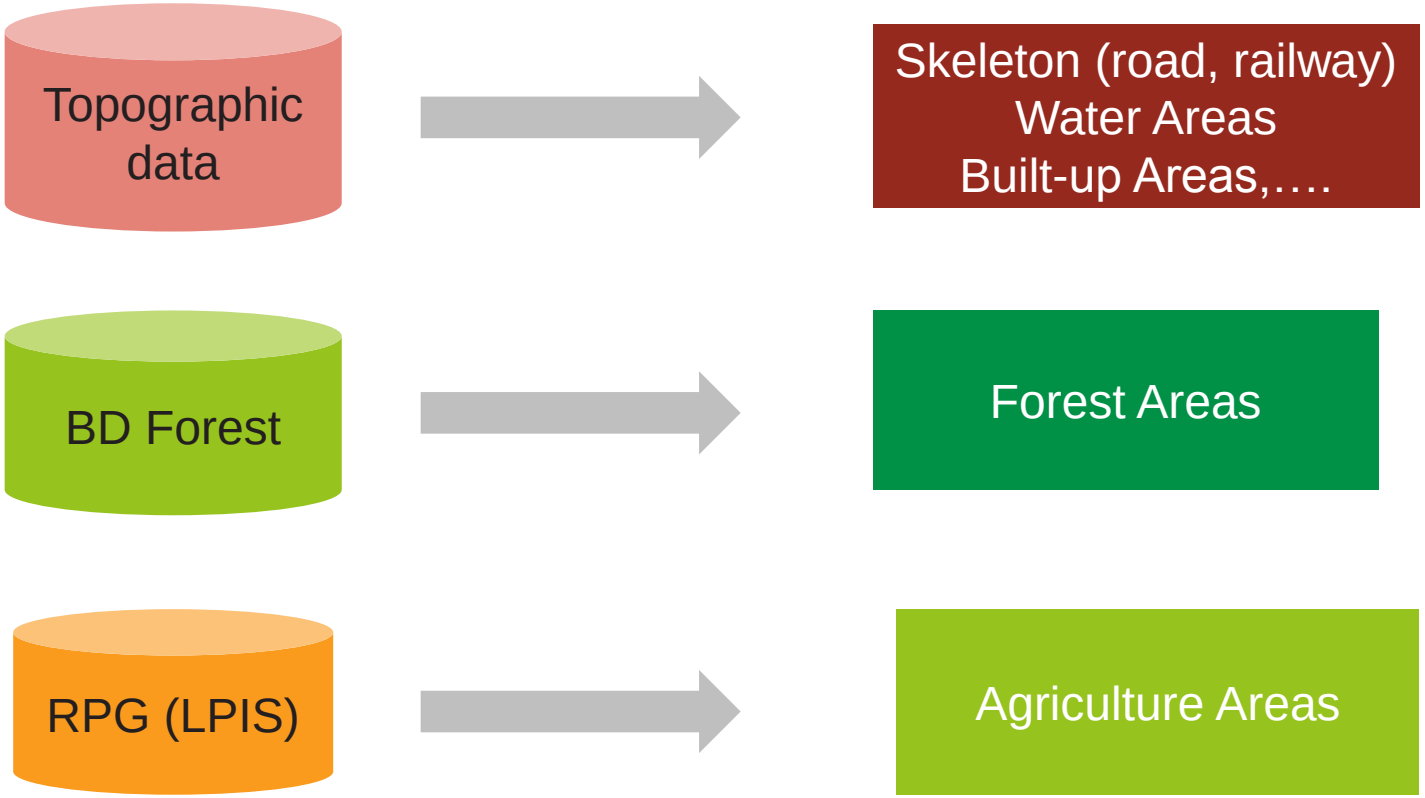
- **Less detailed nomenclature (≈one level less)**
- **Respecting the MMU**
- **Respecting the “skeleton” principle**
- **Adding metadata attributes : date, source**



The LC classes selected for core data

Production process

Phase 1 : automatic derivation from existing data



Production process

Automatic preprocess result

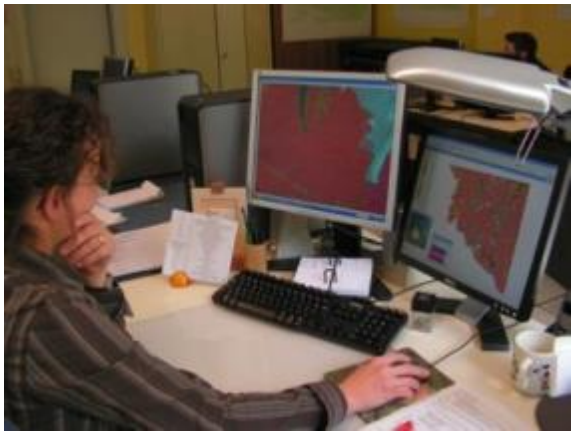
To be completed by the reference image

The image provides the time-stamp of LC-LU data

Production process

Phase 2 : photo-interpretation

BD ORTHO (image)



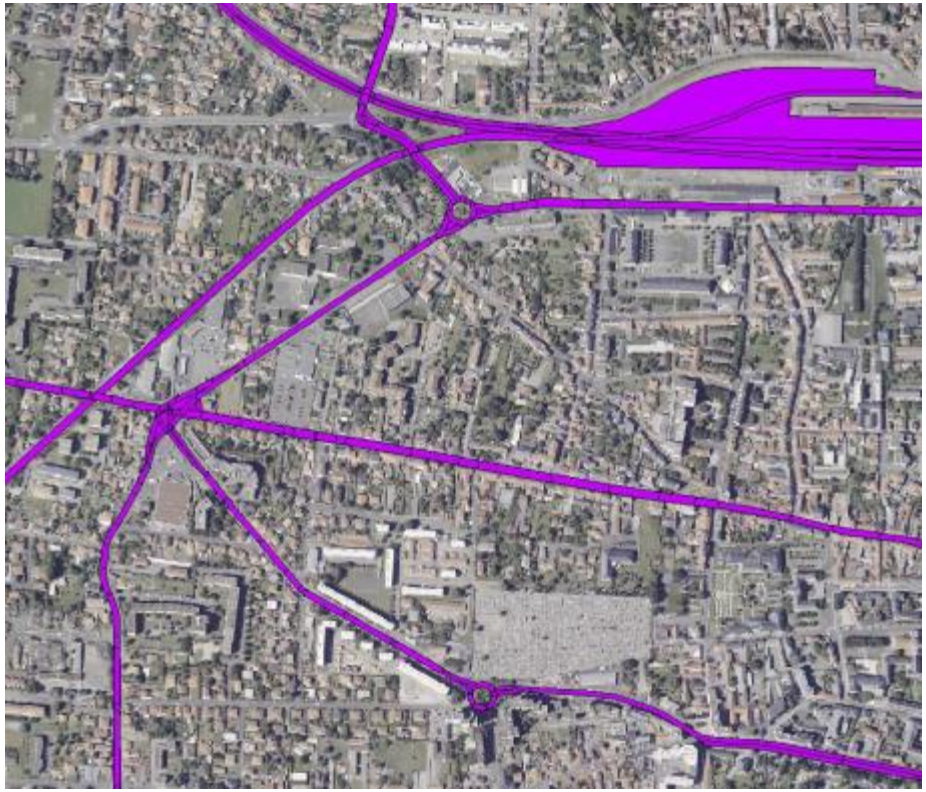
RGB + infra-red

50 cm resolution

Completing and checking the automatic preprocessing

Production process

The skeleton is used to divide the territory into production units => no edge-matching issues



Product characteristics

Specifications

- **Compatible with national standard**
- **Compatible with INSPIRE**

Production method

- **compatible with other reference large scale data components reference:**
  - **BD ORTHO**
  - **BD TOPO**
- **time-stamped ensured**

Thanks for your attention