

Land Cover – Executive Summary

This data specification for the theme *Land Cover* in the framework of Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 (INSPIRE) is separated into two core models and an extended model. The two core models are conceptually similar, but for technical reasons separated into one core model for vector data and one (somewhat simplified) core model for raster data. The two core models are proposed as part of the INSPIRE implementing rules. CORINE Land Cover as well as most regional and national land cover data sets, can be represented using one of the core models. Land cover data involving multiple classifications or land cover parameters other than traditional classifications (such as soil sealing) can be represented using the extended model. Since the two core models are subsets of the extended model, data providers implementing the extended model are also implicitly INSPIRE compliant.

The data specification development was based on the analysis of submitted reference material, use cases submitted by the European Environmental Agency as well as use cases developed by the TWG itself. The latter, found in an Annex to this data specification, were

1. Land cover information used in monitoring linked to EU agricultural policy (IACS)
2. Land cover information used in carbon monitoring (LULUCF)
3. Land cover information in land and ecosystem accounting based on CORINE Land Cover (LEAC)

The core models described in this data specification are appropriate for handling data required by these use cases, as well as for the use cases provided by EEA. The Data Specification particularly ensured that the two core models are compatible with the pan-European CORINE Land Cover data because CORINE Land Cover is the pan-European land cover mapping and monitoring program. Other data sources considered during the development of the data specification were the Eurostat LUCAS survey, the Urban Atlas, the GMES High Resolution Layers and a number of national and sub-national land cover classification and measurement systems known to the members of the TWG.

The common, conceptual core model for land cover data has the following structure: A land cover data set consists of a collection of land cover units. These units may be points, polygons or raster cells (resulting in two core models, one for vector data and one for raster data). The land cover data set is also linked to a code list (e.g. the CORINE Land Cover code list). The code list is a nomenclature of land cover classes where each class is represented by a code and a name. At each land cover unit, the land cover has been observed on one or more observation dates. The multiplicity of observation dates is introduced in order to be able to describe land cover change. For each observation date attached to a land cover unit, the observation is represented by one or more codes from the code list (representing land cover classes). Several codes are allowed in order to allow the use of mosaics. It is also possible to add a percentage showing the relative presence of each class within the land cover unit.

The raster version of the core model is simply a subset where the observation date and covered percentage are removed and only one land cover code is allowed for each land cover unit (raster cell).

Land cover is conceptually a *partition* of the surface of the earth. The appropriate geometrical model of a partition is a *coverage*. Experience has, however, shown that many European data providers are unable to handle coverages. The data specification does therefore, for purely pragmatic reasons, model land cover using simple feature polygons and point collections in addition to raster. Polygons, points and raster data correspond to the common methods of observation used in both pan-European and national land cover mapping and monitoring, as found in e.g. the EEA CORINE Land Cover program, the Eurostat LUCAS survey and the GMES HRL products.

The data specification does not prescribe or recommend any particular land cover nomenclature for use in INSPIRE. There is a multitude of different ways to describe land cover. This is partly due to the wide range of aspects of the environment embraced by land cover, but also due to the many different uses of land cover data. There is only one "real world" but many different descriptions of this world depending on the aims, methodology and terminology of the observer.

The approach taken by this data specification is instead to allow many different land cover nomenclatures to coexist in the context of INSPIRE. The owners of the various code lists are,

however, encouraged to document their code lists by using ISO 19144-2 Standard - Land Cover Meta Language (LCML) and/or by using a feature catalogue and provide access to the feature catalogue through a web link in order to provide a basis for interoperability. This kind of documentation can constitute a basis for harmonization through semantic translation between nomenclatures, and thus induce future harmonization of data sets, provided that the data also are comparable in terms of scale and detail.

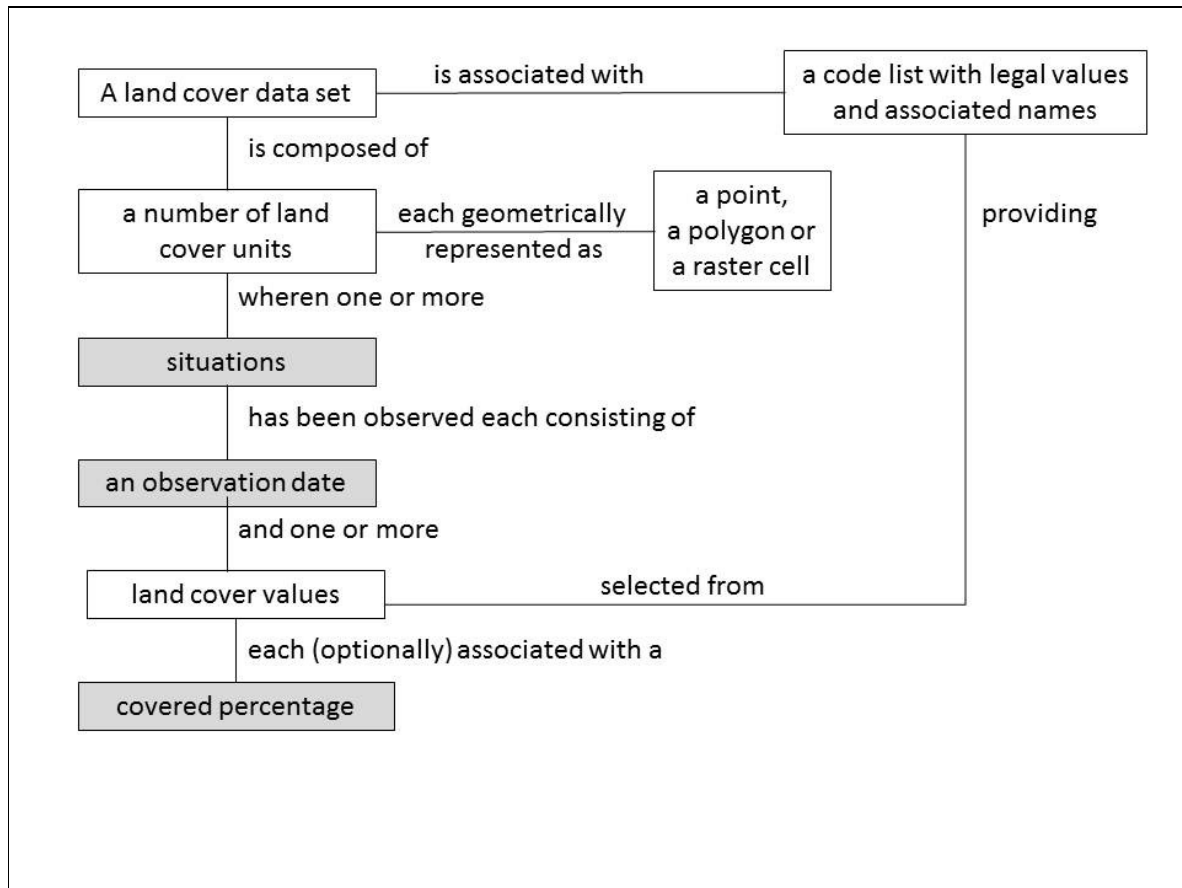


Figure 1 : Land cover conceptual core model (informal representation).

Grey boxes represent voidable items and are not used in the raster version of the model