

GeoZone – ISO course

Rules of application schema

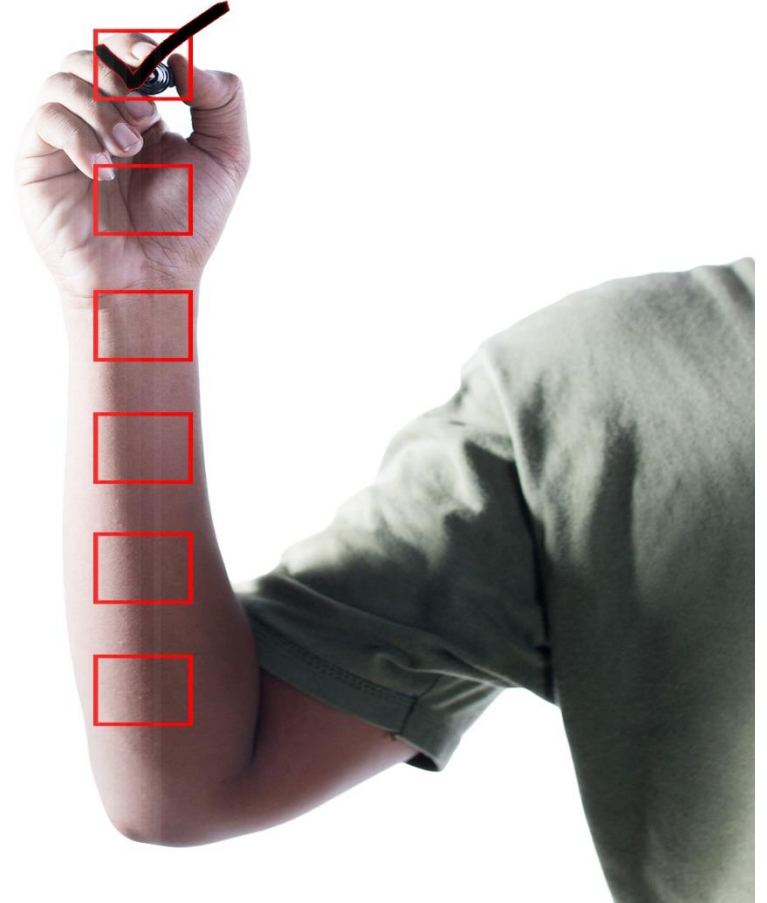
Chapter 3



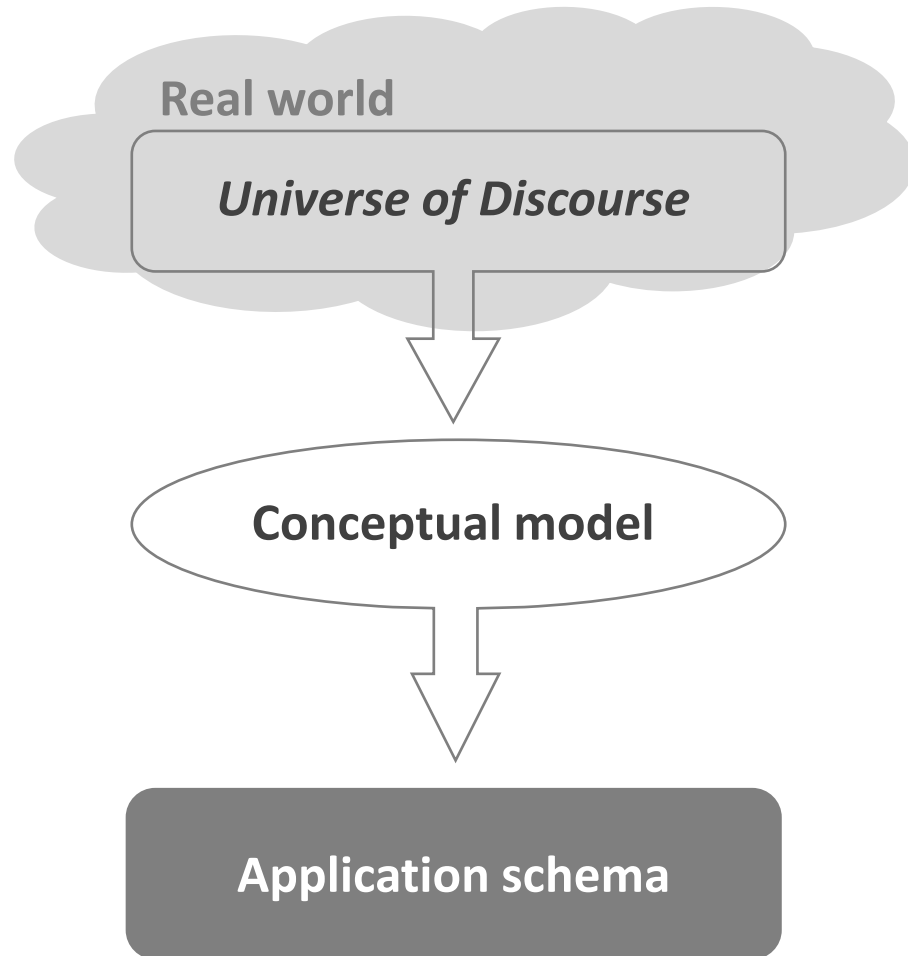
Overview

An **application schema** is a conceptual scheme for data required by one or more applications

- It provides the formal description of data structure and content.
- It facilitates the acquisition, process, analysis, access, presentation and transfer of geographic data.



The process to create an application schema



1. Identifying the spatial entities of interest in the context of a specific application
2. Developing conceptual models of feature types, feature attributes, and feature associations.
3. Implementing the application schema with UML.

How to use an application schema – Data supplier

The rules defined by an application schema are used by:

Data supplier and data user

To understand the content of a transferred dataset

Data supplier

To define the transformations between legacy data and target data model

Data user

To define the schema matching to use the accessed data

UML

The language to model the application schemas.



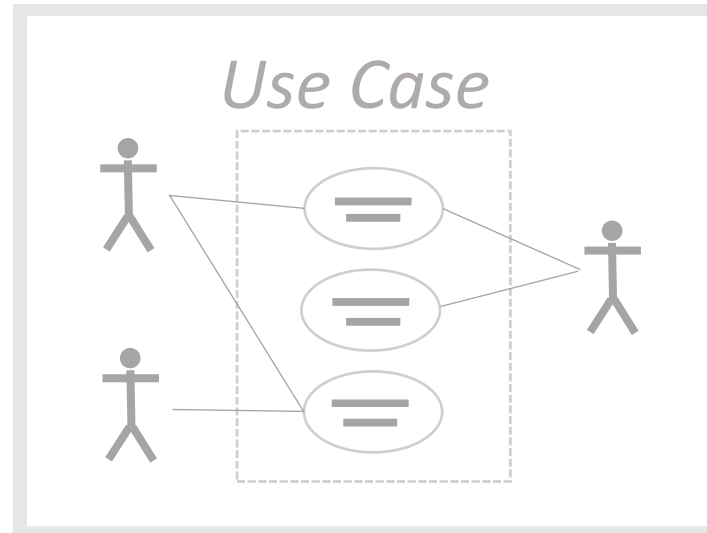
ISO 19103. Geographic information — Conceptual schema language

In the GeoZone we use only the **Use case diagram** and the **Class diagram**

Use Case Diagram

It is a graphical representation that visualises the behaviour of a system from the point of view of the user.

First part of the
requirement analysis



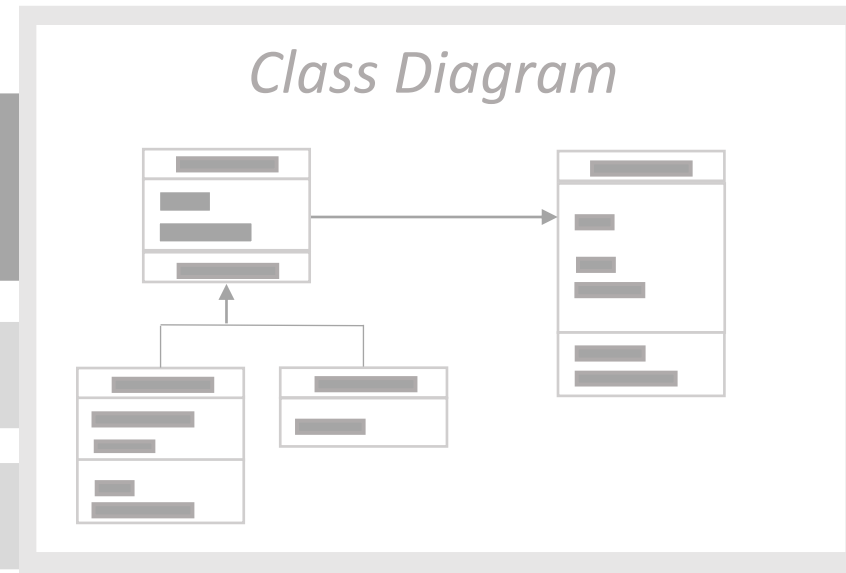
Useful to define the
functionality of the
system

UML Class Diagram

It is used to describe the structure and contents of a geographic database

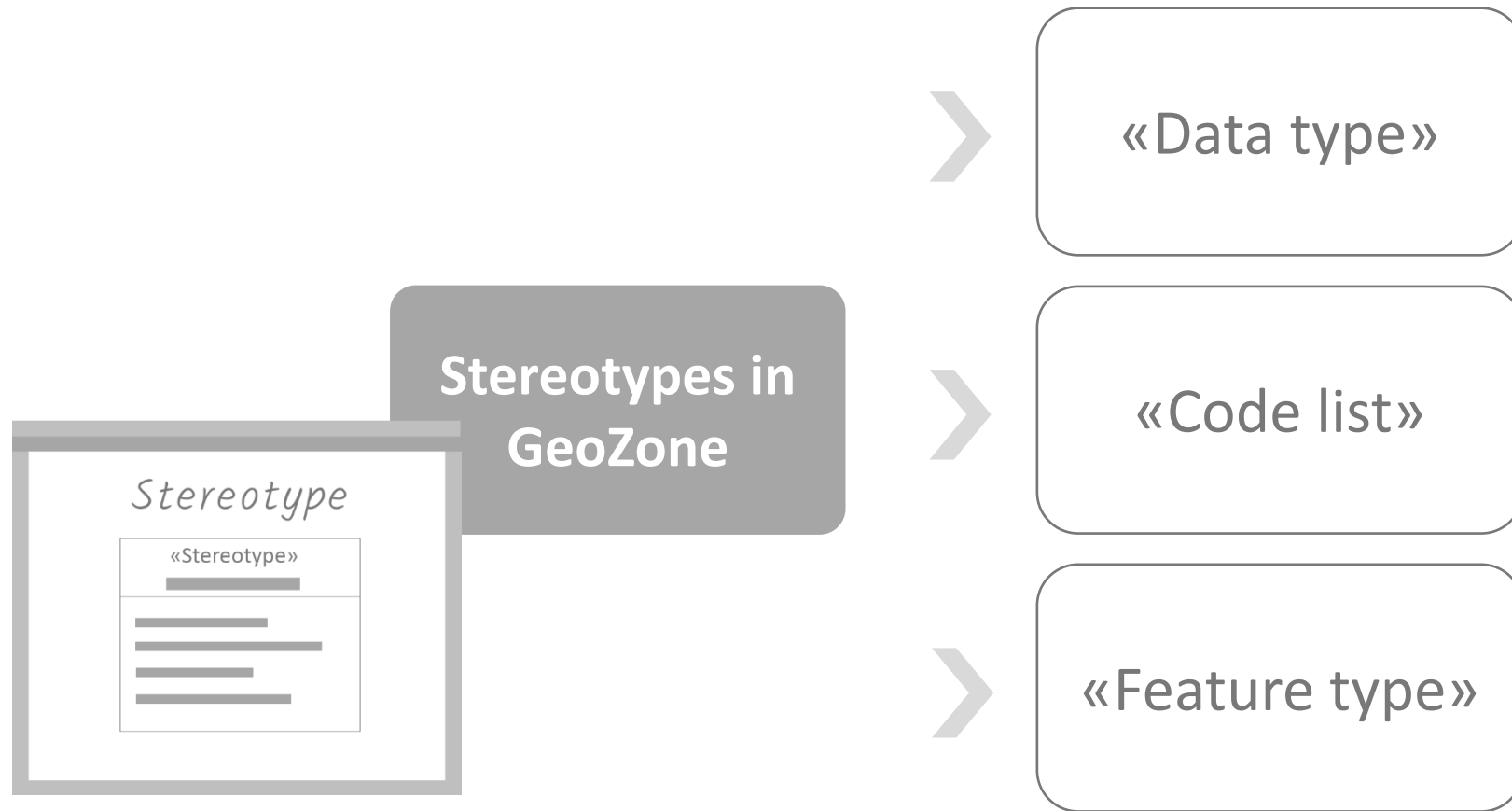
Description of a group of objects with:

- similar properties (attributes)
- common behaviour (operations)
- common relationships to other objects (relation)
- common meaning (“semantics”)



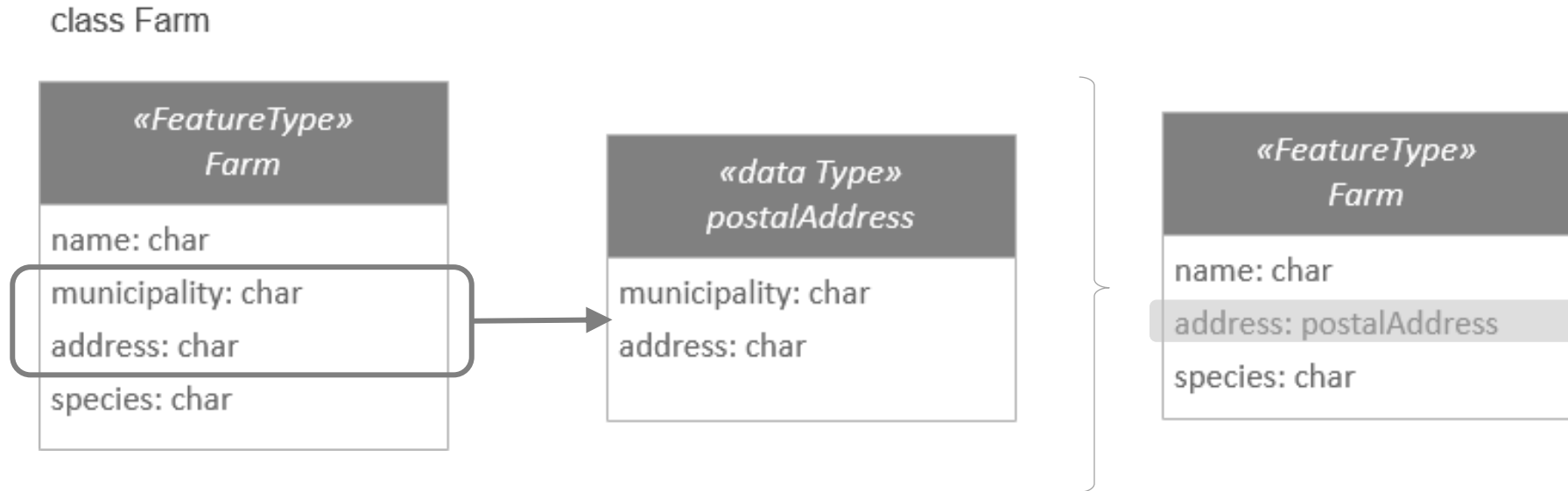
● Stereotypes

They are used to extend UML with new elements to model spatial and temporal characteristics of geographical data



Data type

Data types are used to model a group of elements defining a set of data values



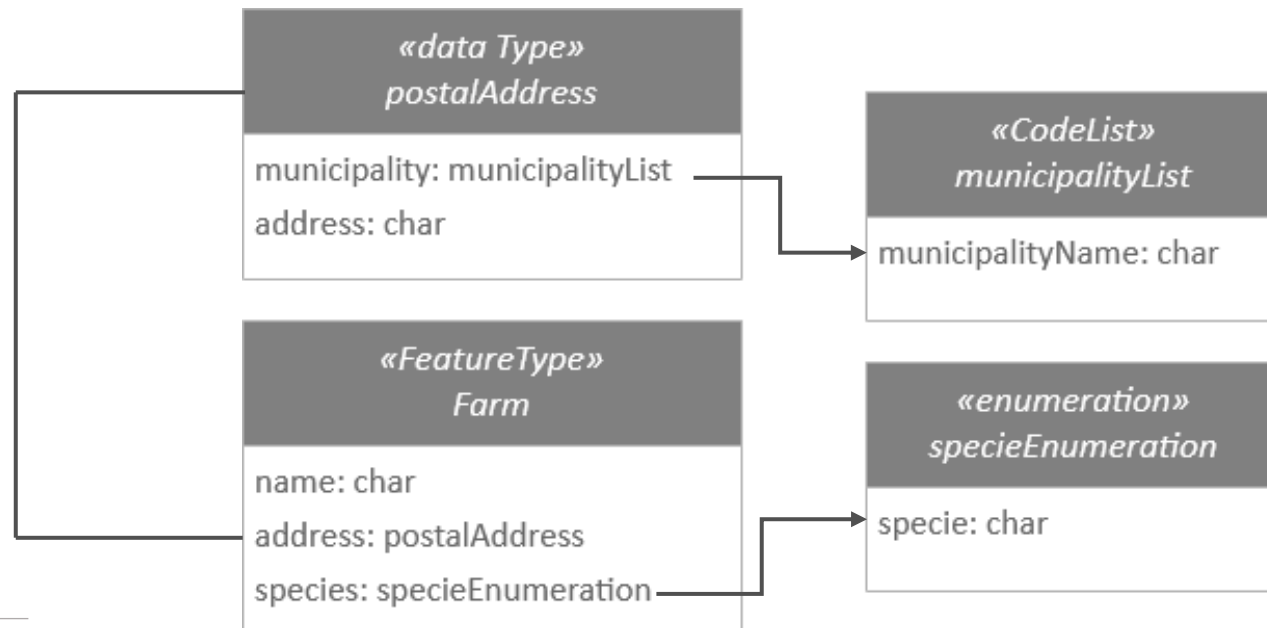
Code list and Enumeration

The Code list:

- defines a list of valid identifiers
- allows extending lists of elements

Enumeration:

- has a fixed number of elements (it is not possible to extend it)



Feature type

- It is the class that describes a **feature**
- A feature is an abstraction of a real-world phenomenon



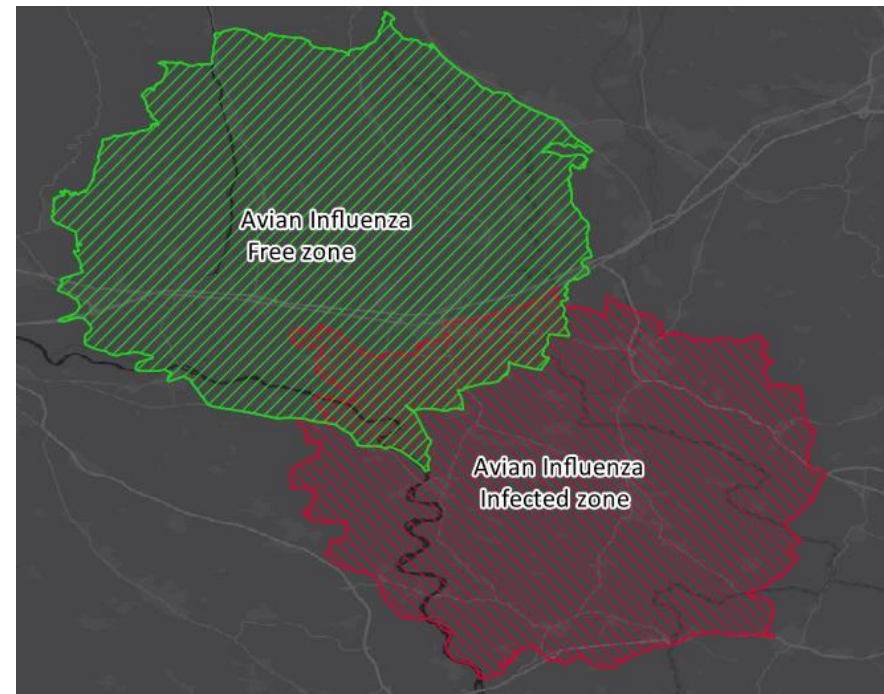
Feature properties and associations

A feature has properties and associations

Property: attribute, quality, or characteristic of a feature

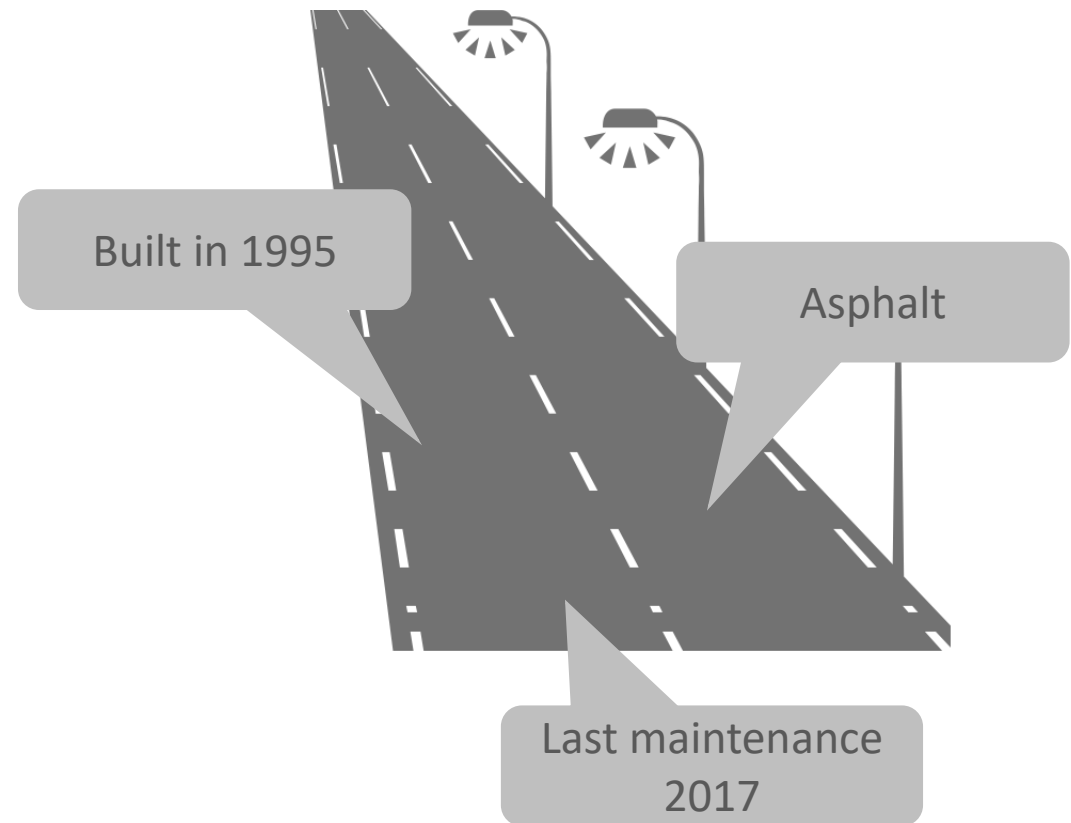
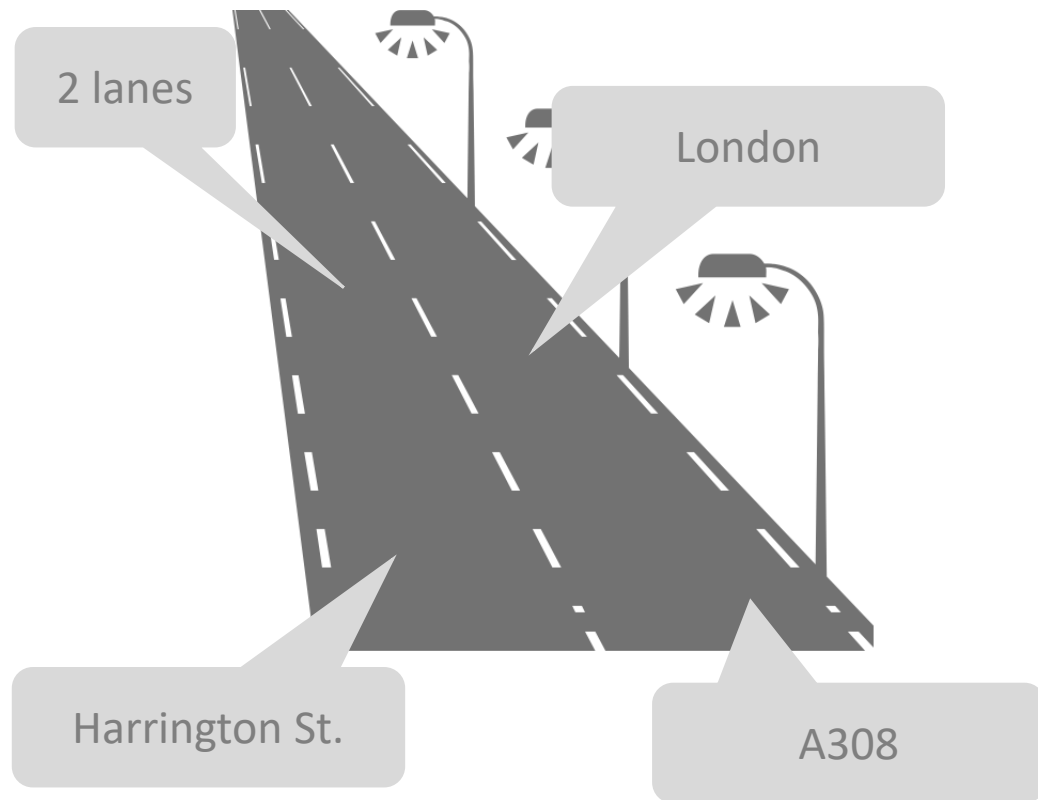


Association: relationship that links one feature with another feature



Information Community

Features are modelled very differently in different countries, application domains, and so on.



Information Community

It is a group of people who share a common understanding of information and processes for their specific domain.

The goal of GeoZone



A shared agreement on how to define the geographic feature that represents a *zone*.



Feature with geometry

..the real-world is occupied by discrete and identifiable objects characterised by a geometry, a position, and a set of attributes..





Feature with geometry

Point

It is a 0D geometric object and represents a single location in coordinate space.



Line

It is a 1D geometric object usually stored as a sequence of Points map.



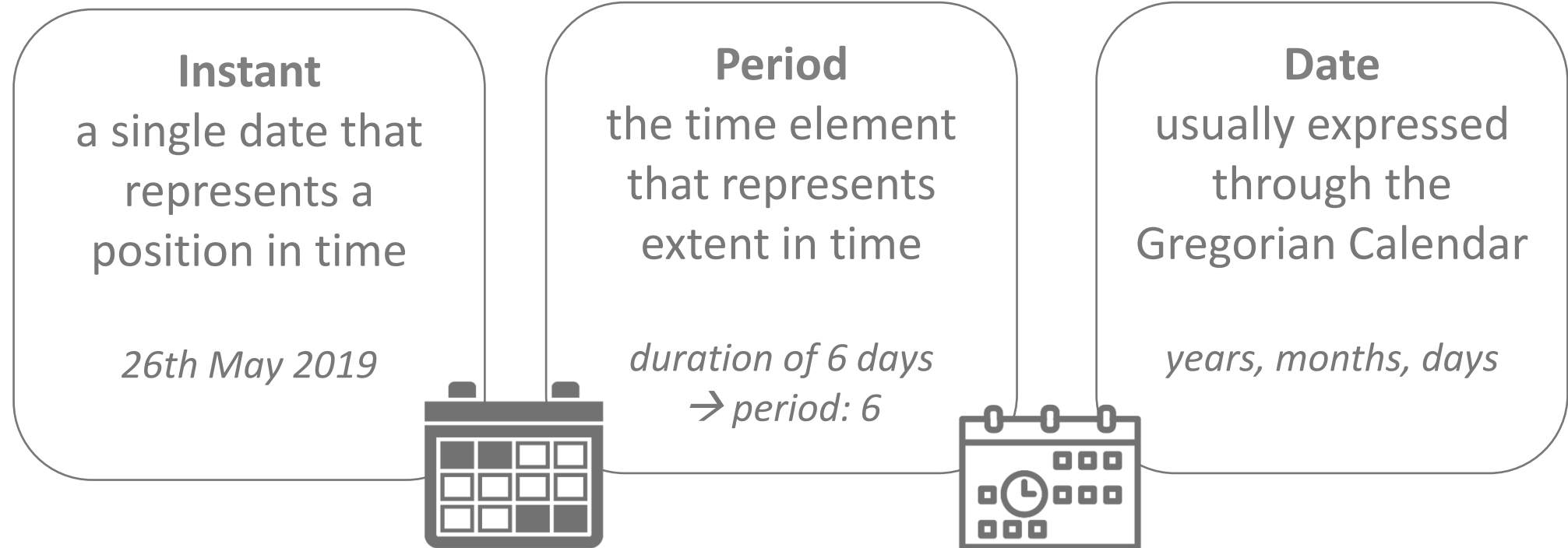
Polygon

It is a 2D geometric object. A simple polygon is a closed line without boundary crosses.



Temporal aspect

The temporal aspect of geospatial information is memorized as the attribute of a feature. The standard indicates that time can be represented in two temporal dimensions, namely instant and period.



Link images & icons

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