GIS data independence principle

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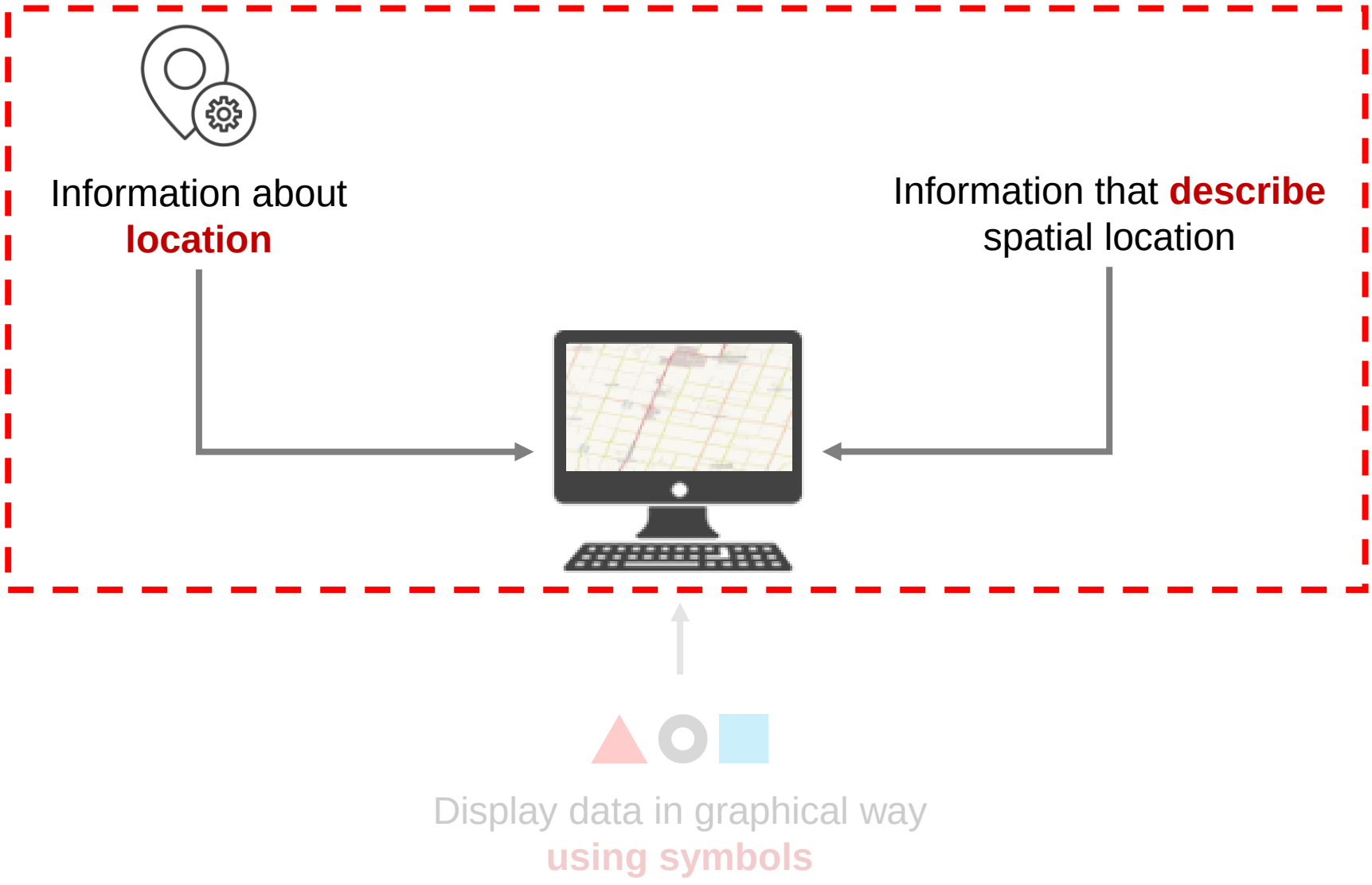
CHINESE ACADEMY OF INSPECTION AND QUARANTINE

Overview

- Geography and attributes
- Data independence principles
- Joins and geography
- AI data structure example
- Single user vs Enterprise
- DataWarehouse and DataMart

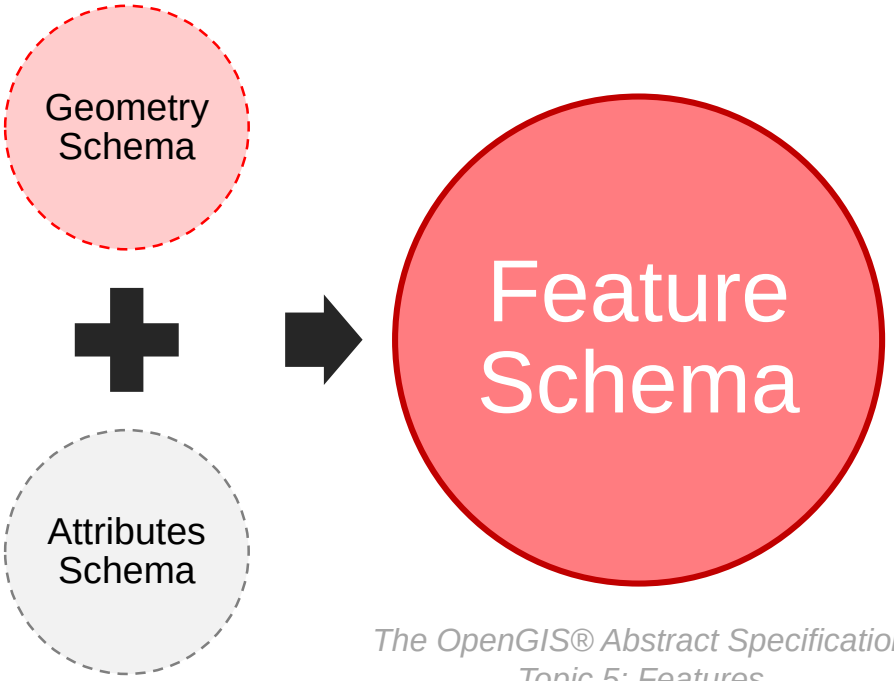
Geography and attributes



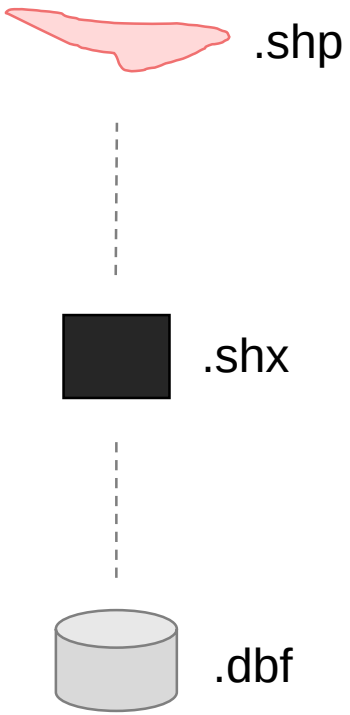
Geometry + attributes = Feature

THEORY

PRACTICE



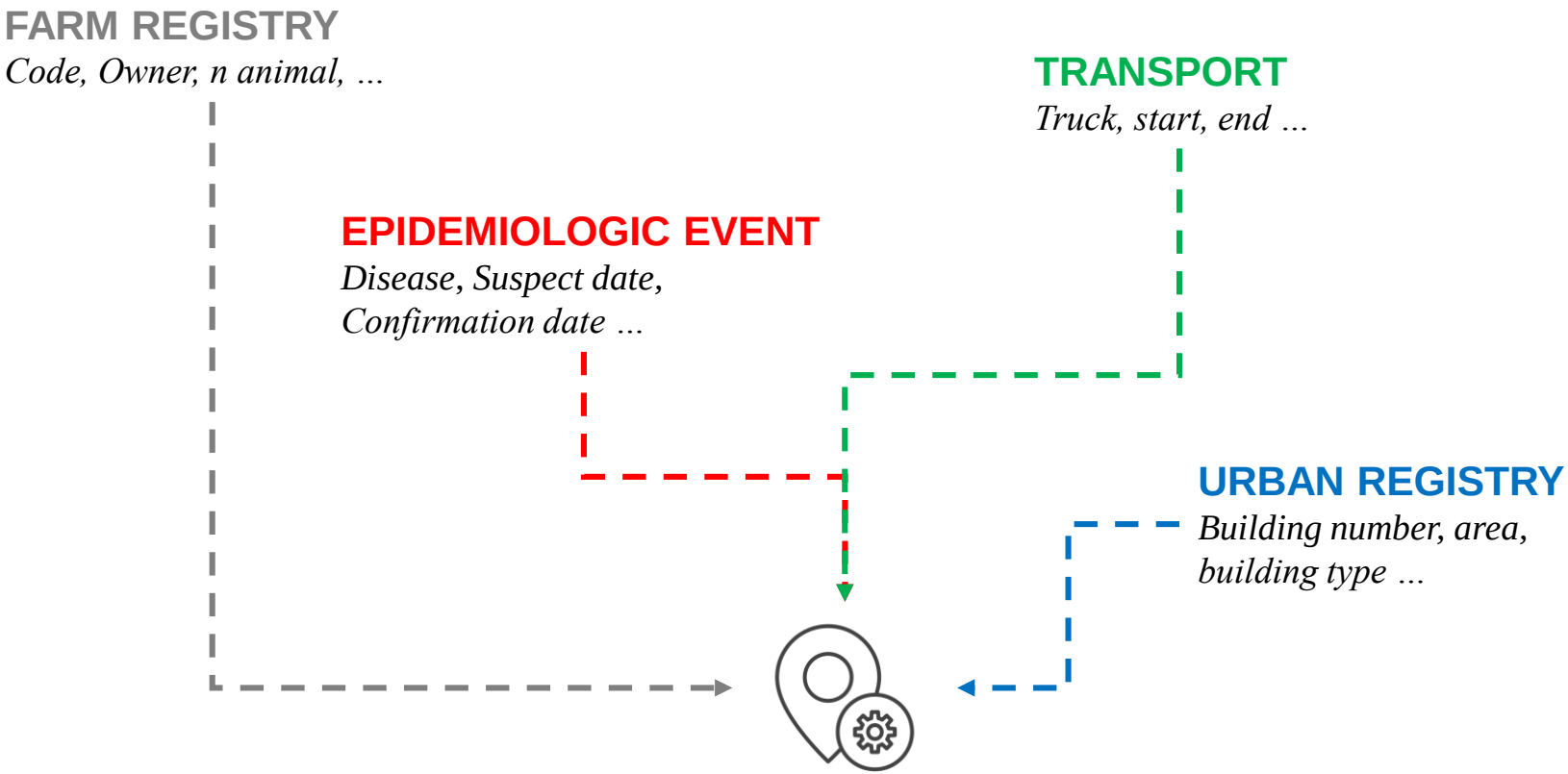
The OpenGIS® Abstract Specification
Topic 5: Features



Feature schema is an OGC standard

This structure it transparent during the software usage

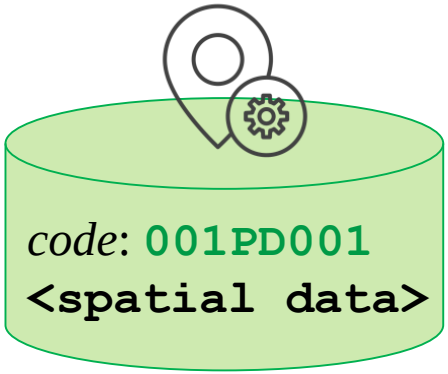
Geography and attributes



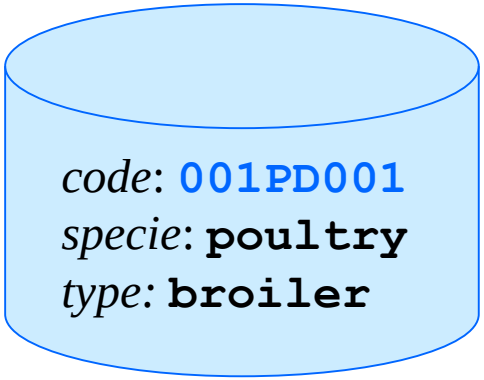
Spatial information is common, connect different things

GIS user focus on the spatial information

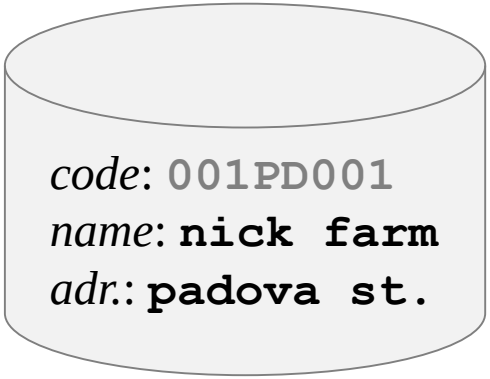
Data independence principle



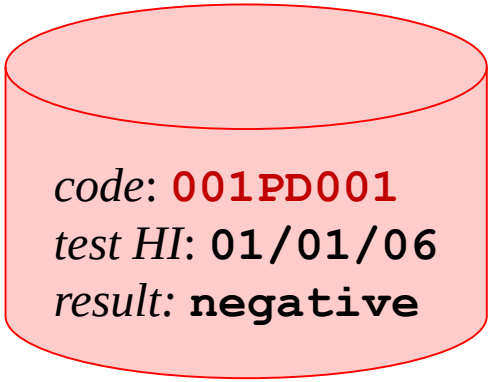
Restocking data



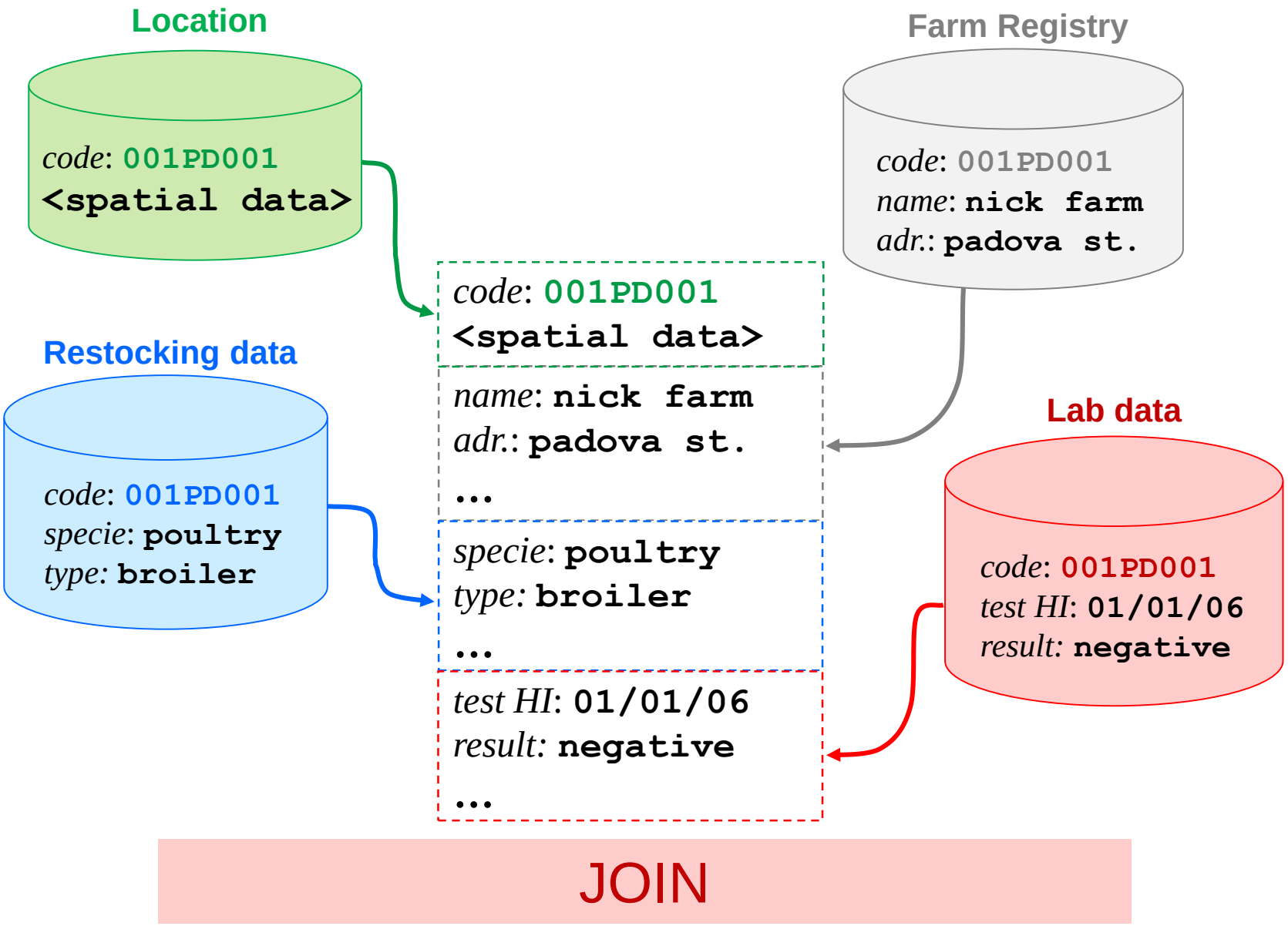
Farm Registry



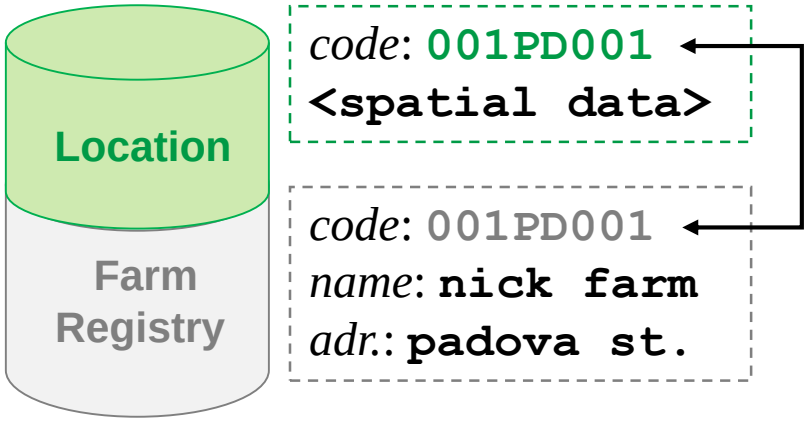
Lab data

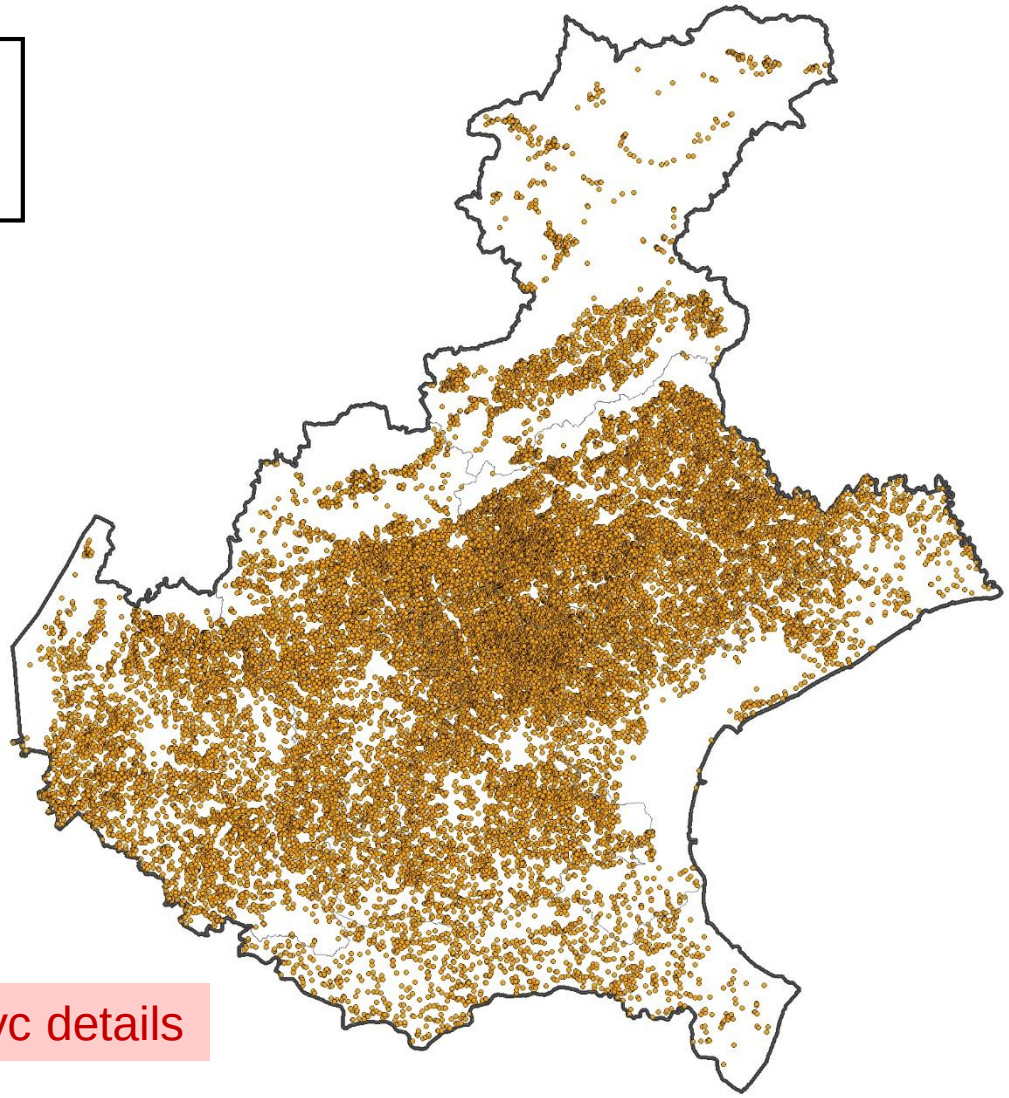


Data independence principle and joins



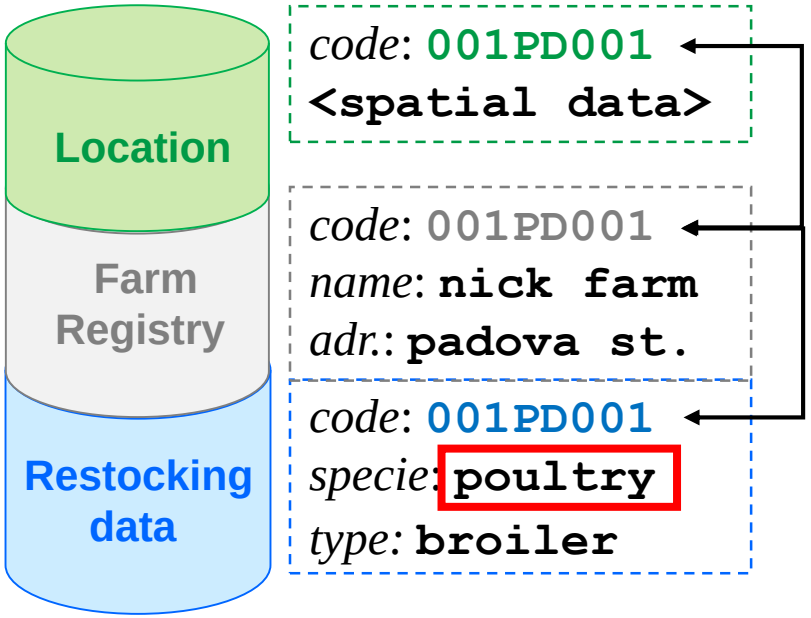
Join and geography

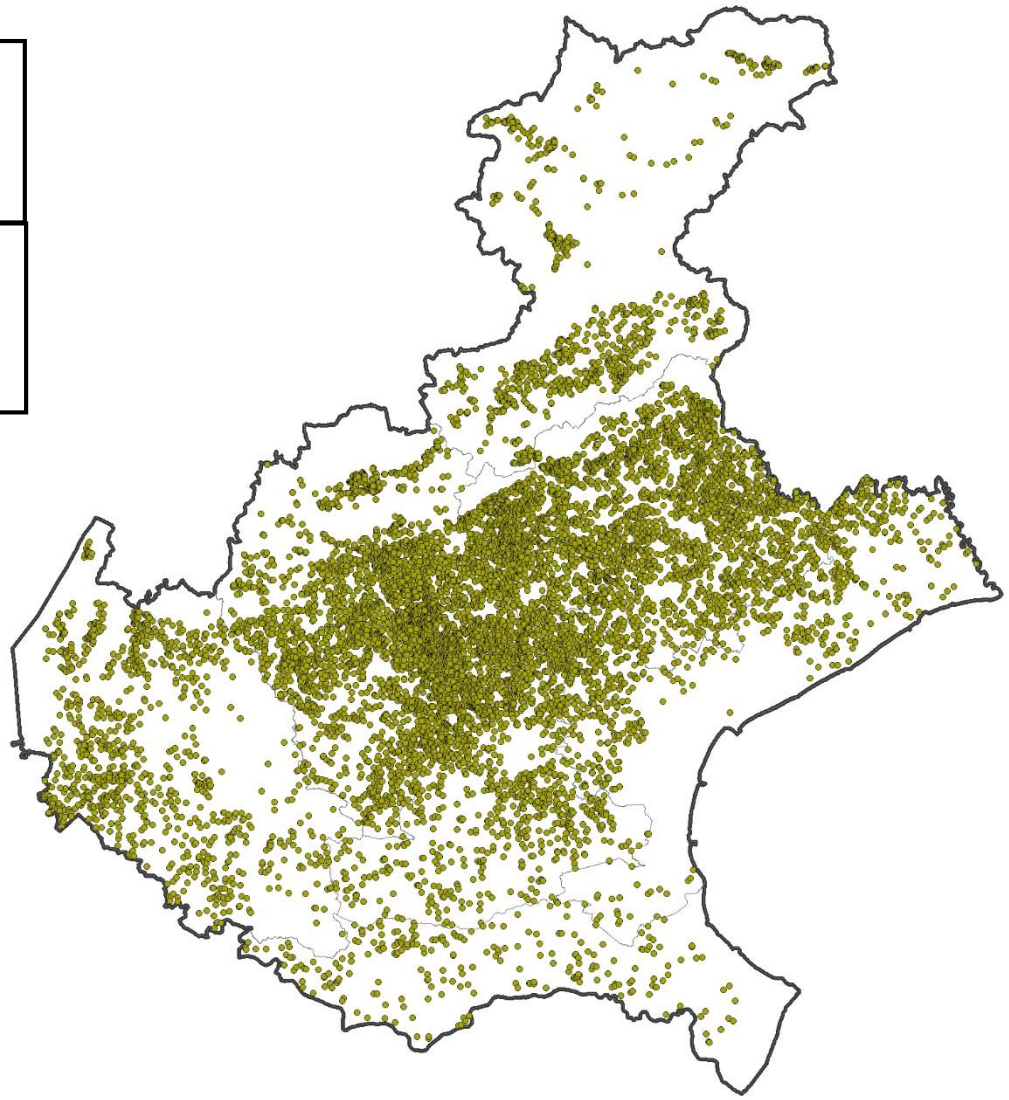




Location of the farm with anagraphyc details

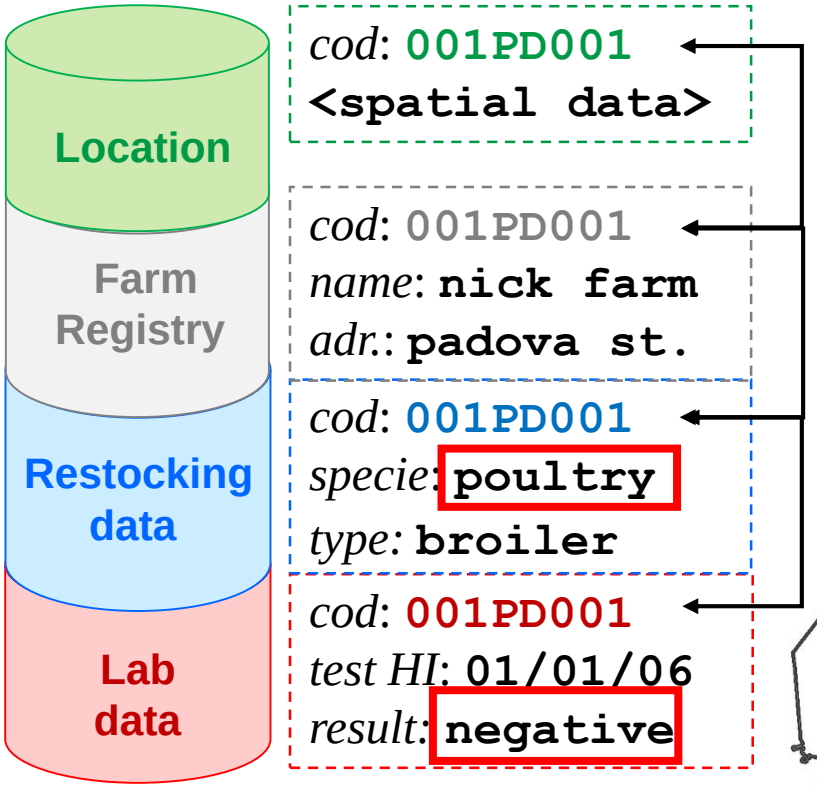
Join and geography

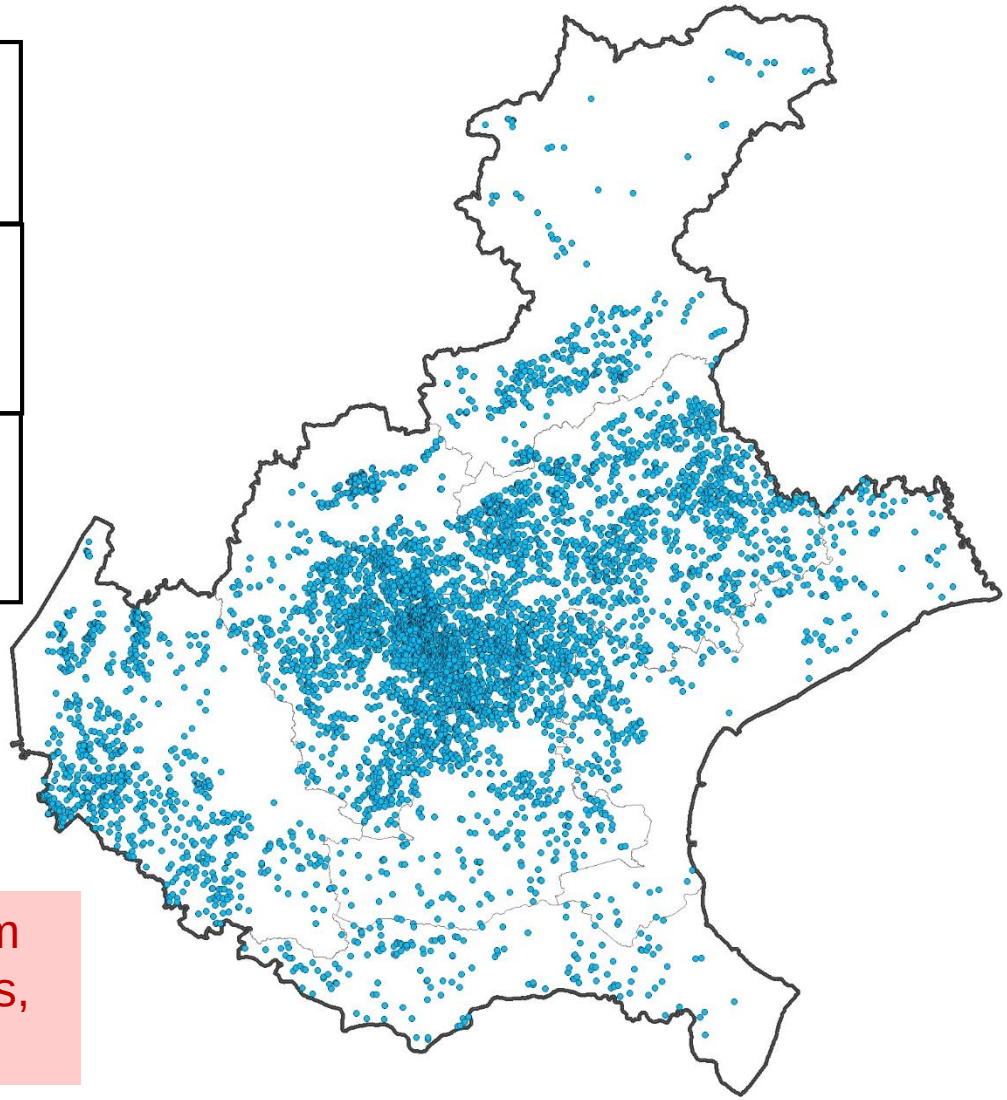




Location of the poultry farm with anagraphyc and animals details

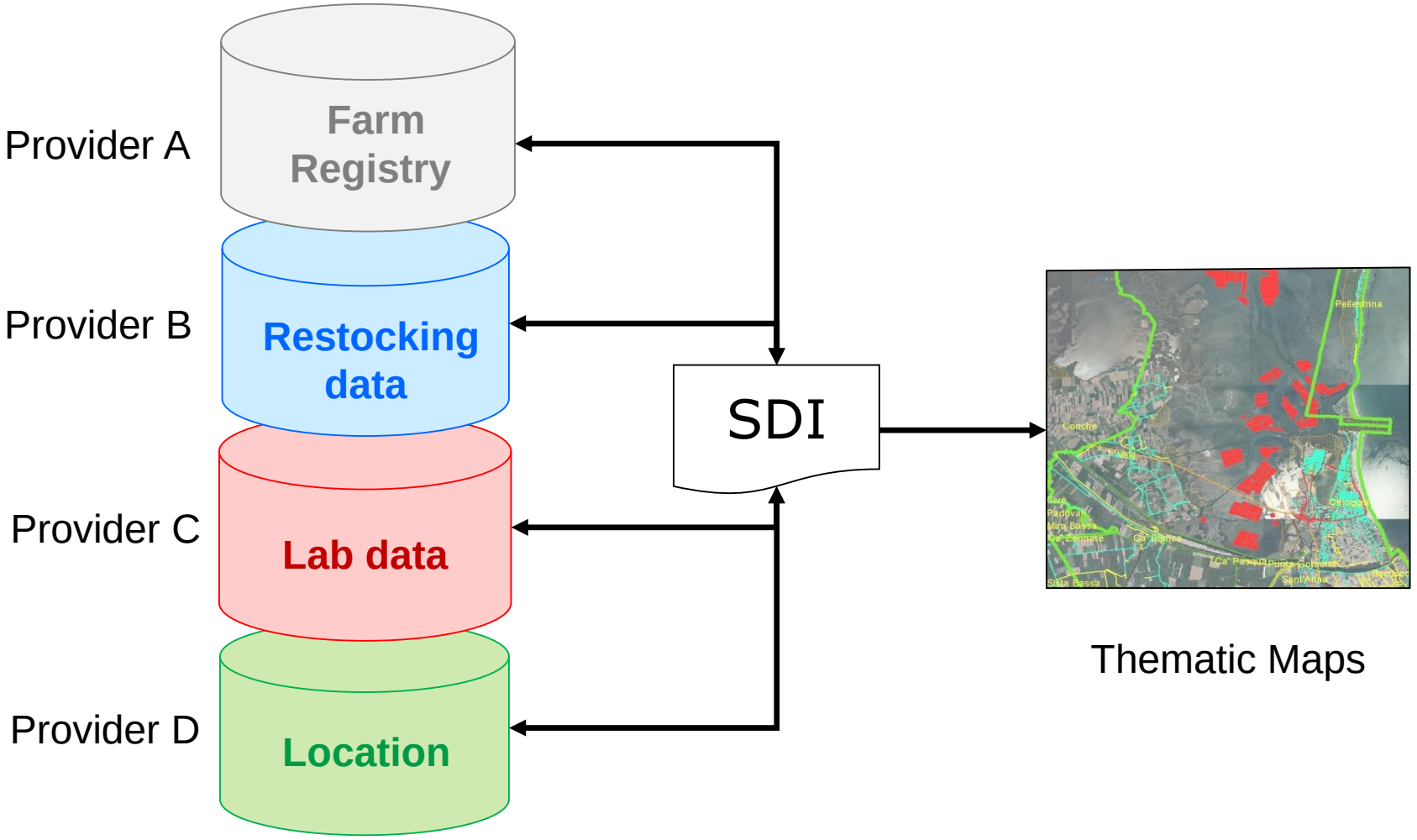
Join and geography





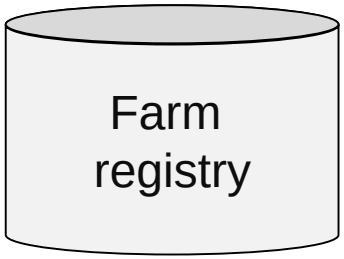
Location of the negative poultry farm with anagraphyc and animals details, that had laboratory exams

Spatial Data Infrastructure



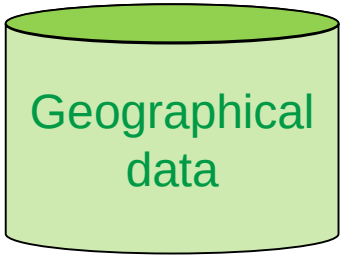
AI data structure example

Basic data (change rarely)



Farm/premises profile information

- (FarmID) Unique farm identification number
- Name and address (included the telephone number) of the owner, occupier and the person in charge of the animals
- The type of farm, principal farm species and the production capacity (surface of the establishment).

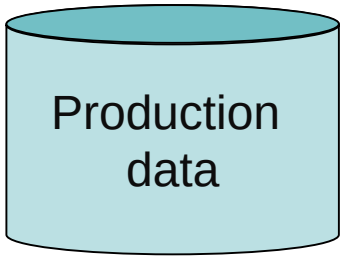


Spatial location

- FarmID
- Farm/premises location
- …

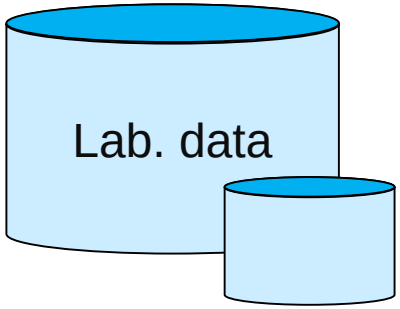
AI data structure example

Production data (change constantly)



Animal production and restocking

- FarmID
- Restocking batch identification number (BatchID)
- Number, sex and age of the birds restocked (and data about the animal ownership)

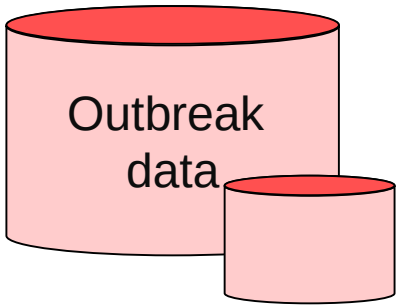


Laboratory

- FarmID / BatchID
- Laboratory criteria for diagnosis
- Test dates and results

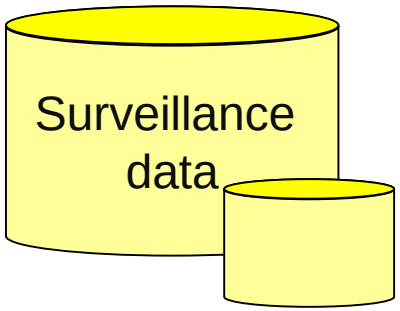
AI data structure example

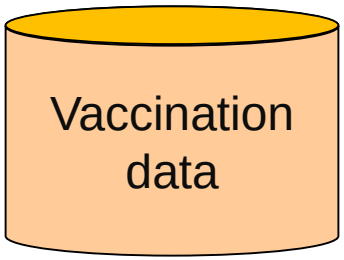
Event data (change during specific events)

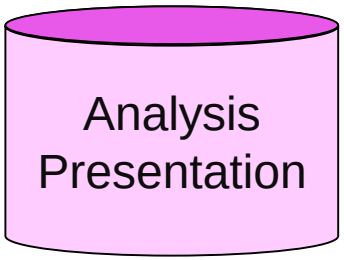


Outbreak and Epidemiological

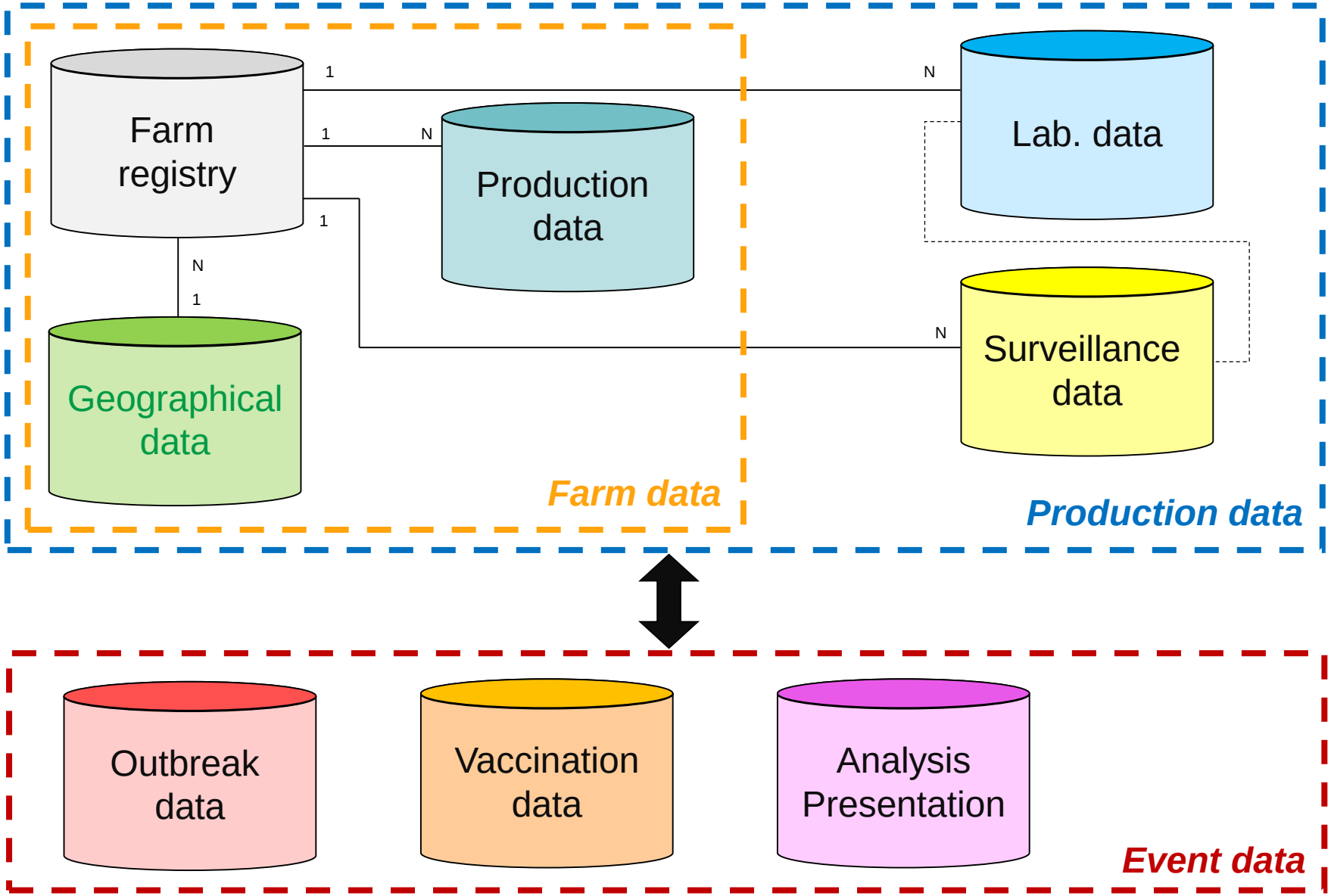
- Epidemiological data
- Investigation data
- Tracing data





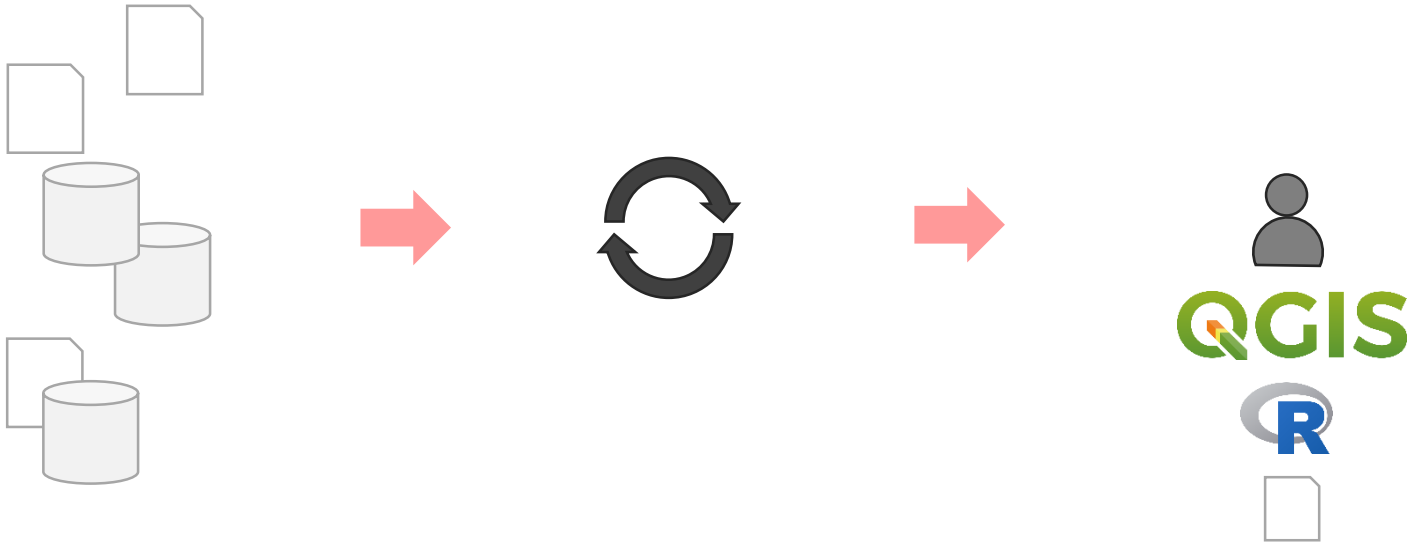


AI data structure example



Single user / small team situation

Data validation is extremely important



Data

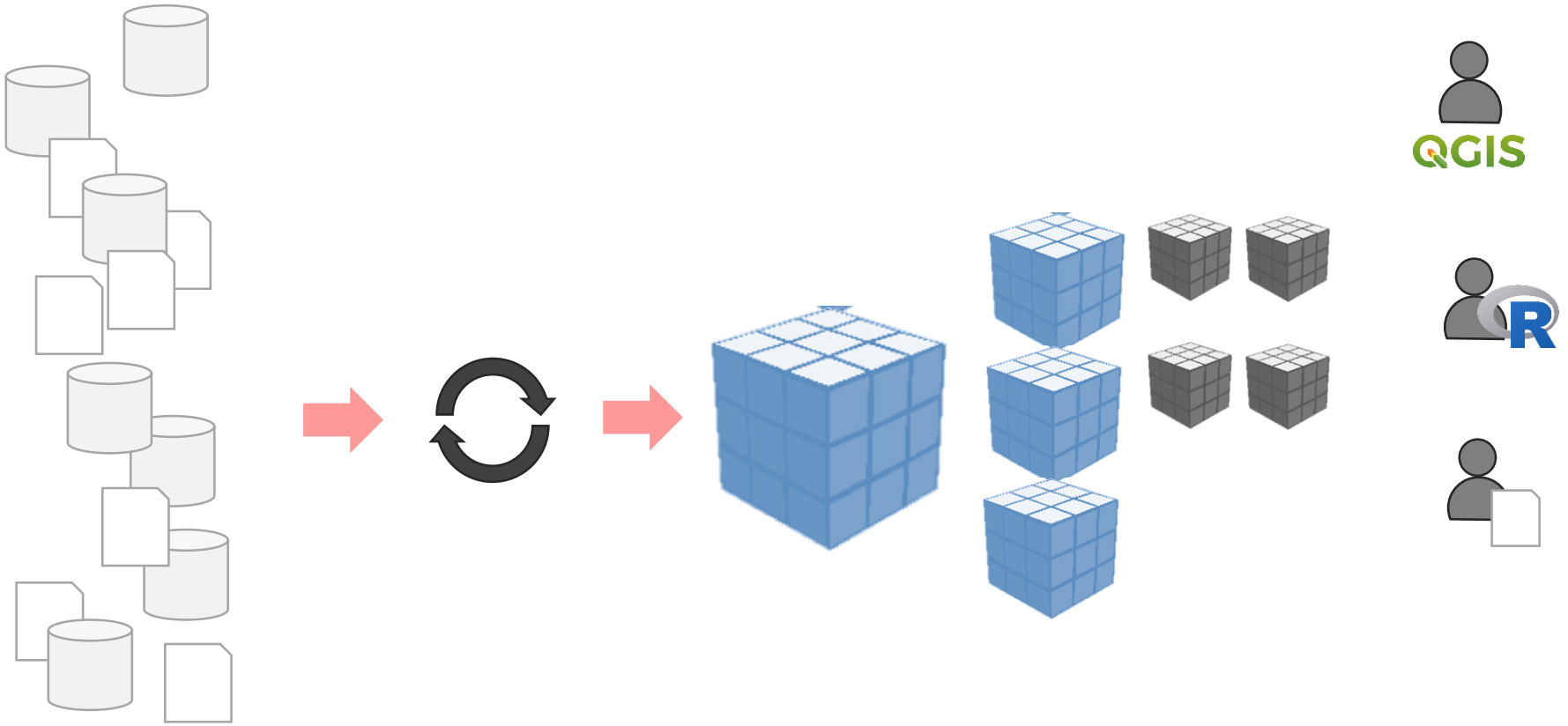
Different datasource
Different format

Data validation

Evaluation
Format
Load

Final users

Enterprise situation



Data
Different datasource
Different format

ETL
Extratc
Transform
Load

DWH
Data warehouse

DM
Datamart

Views

Final users

Data warehouse

A centralized system infrastructure to manage information. The main aim is to integrate data from one or more disparate sources, and it is used for reporting and data analysis.

- **Facts**: variables/measure managed and analyzed by the Business Intelligence system (Farm registry, laboratories exams…)
- **Dimensions**: are the different «filter» that is possible to use to group and analyzed the data (spatial, temporal…)

Datamart

A simple form of a data warehouse that is focused on a single subject (or functional area). Data marts are often built and controlled by a single department within an organization.

- Single-subject focus
- Group data from a few number of sources
- Sources could be internal operational systems, a central data warehouse, or external data

Datamart

Repository of data gathered from operational data and other sources that is designed to serve a particular community of knowledge workers.

- optimized for data retrieval
- makes querying, retrieving and reporting on data easy and efficient

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- Flat table
- De-normalizated
- Redundant

Data mart example