



# B-WaterSmart

**B-WaterSmart (EU project)**

**TRAINING**

**REGIONAL DEMAND-SUPPLY MATCHING GIS TOOL**

29.06.2023

## 1. Presentation of the RDSMT (30 min)

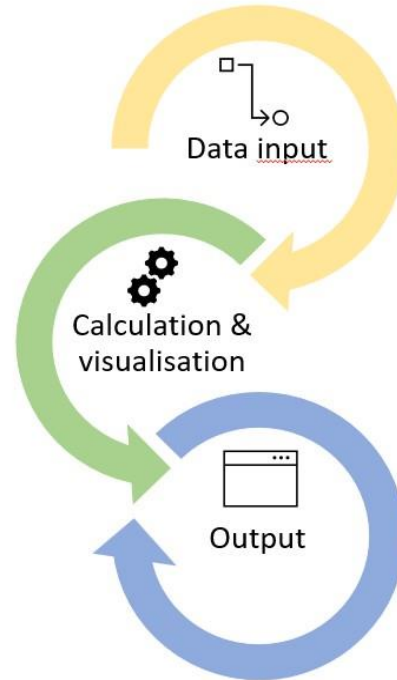
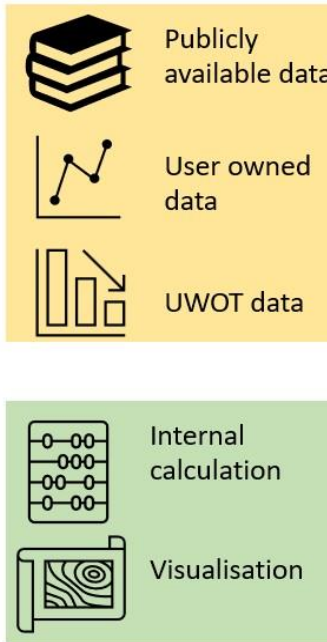
- Presentation of the tool
- Technical requirements
- Data basis
- Structure

## 2. Live Demonstration (Hands-on Presentation) (1,5 hr)

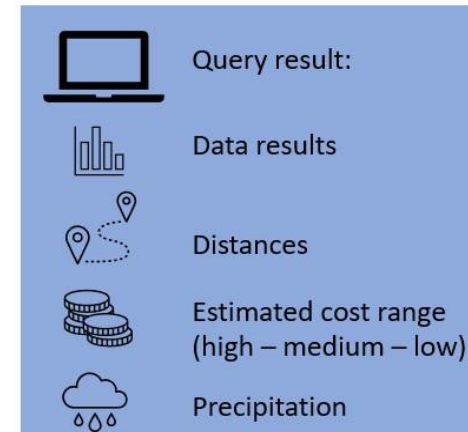
- Data sources and preparation
- Step-by-step demonstration of the functionalities
- Application to an example case

# The RDSM GIS tool

## Point 1



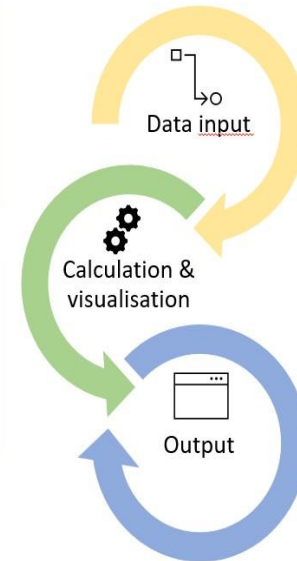
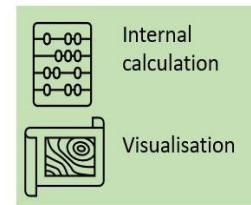
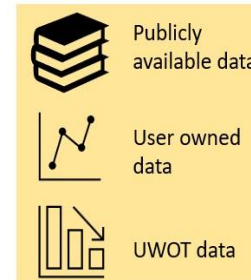
## Regional Supply-Demand Matching GIS Tool (RDSMG)



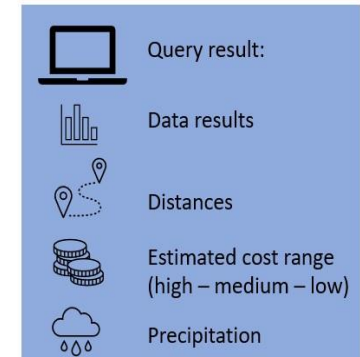
# The RDSM GIS tool

## Idea:

- .....use of publicly (freely) available data from various sources
- ...on an open-source platform (QGIS)
- ...bundling and analysing water-related data in relation to supply/availability, consumption, and transfer



## Regional Supply-Demand Matching GIS Tool (RDSMG)



# Technical requirements

The tool was developed and tested with QGIS version 3.28.5 (Firenze). The use of the following versions is recommended:

## ■ QGIS

- QGIS version: 3.28.5 Firenze
- QGIS code version: 50adba36f2

## ■ Qt

- Qt version: 5.15.3

## ■ Python

- Python version: 3.9.5

## ■ GDAL

- GDAL version: 3.6.3

## ■ GEOS

- GEOS-Version: 3.11.2-CAPI-1.17.2

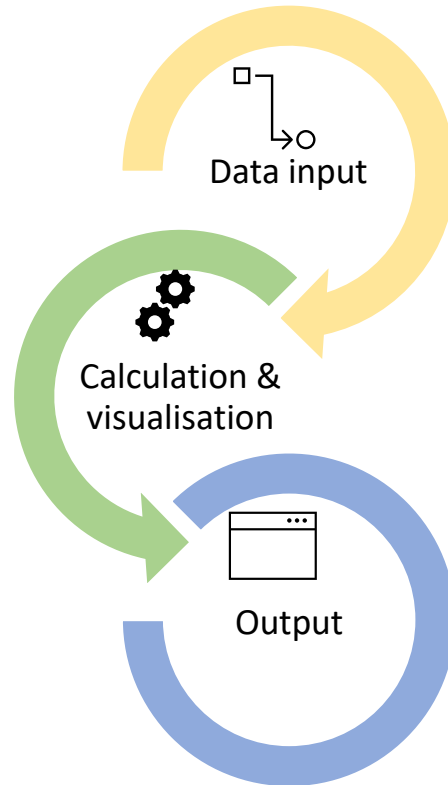
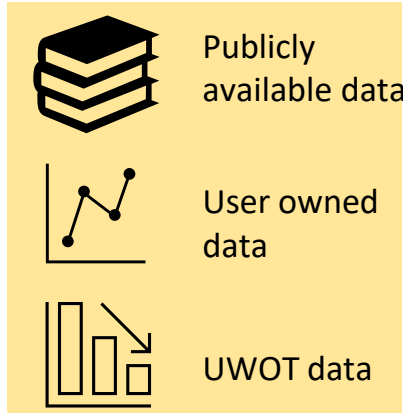
## ■ PROJ

- PROJ version: Rel. 9.2.0, March 1st, 2023

## ■ PDAL

- PDAL version: 2.5.2 (git version: 57c4e7)

# The RDSM GIS tool - data



## ■ What data is used?

- Use of publicly (freely) available data from various sources
  - ▶ **Administrative** information (national borders, federal states, districts,...)
  - ▶ Information on **land use** (land use, nature conservation areas,...)
  - ▶ **Drinking water information** - water consumption and water production (water consumption per capita, total water consumption, extraction volumes,...)
  - ▶ **Resource Information** (groundwater bodies, surface waters, chemical status,...)
    - **Alternative Resources** (precipitation, water reuse (wastewater treatment plants),...)
- Optional: **User-defined data** (customisation)
- **UWOT** Output Data (optional, for linking to other B-WaterSmart tools)

## ■ Where does the publicly accessible data come from?

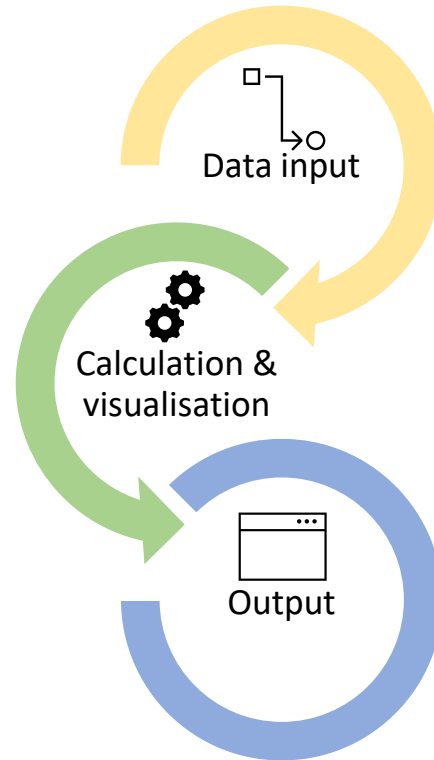
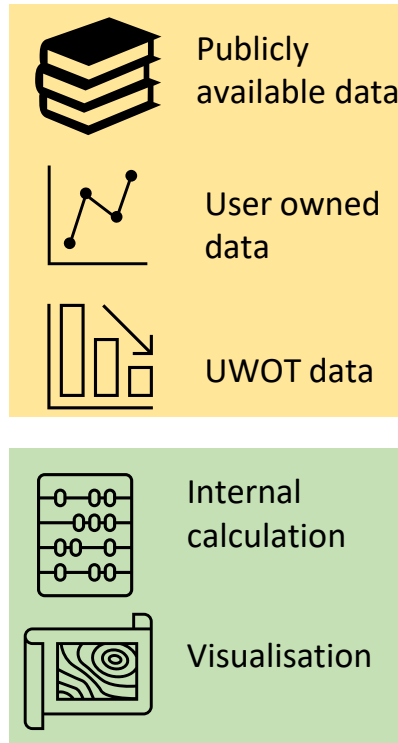
- Federal Statistical Office → GENESIS database
  - ▶ e.g. per capita consumption, total consumption, consumption per sector, amount of water extracted amount of water
- EU
  - ▶ Corine Daten on land use, state borders
- Federal States, here: Lower Saxony
  - ▶ Surface waters, groundwater bodies, ecological/chemical status
- German Weather Service
  - ▶ Raster data on average precipitation totals
- Federal Office for Geology and Natural Resources
  - ▶ Yield of groundwater bodies
- ESRI Germany Open Data Portal
  - ▶ Counties, municipalities



## ■ How is data assigned?

- Via existing georeferencing
- Via the official keys
  - ▶ e.g. municipality key
- Via other keys
  - ▶ Water body number
- Raster data (precipitation)

# The RDSM GIS tool - calculations

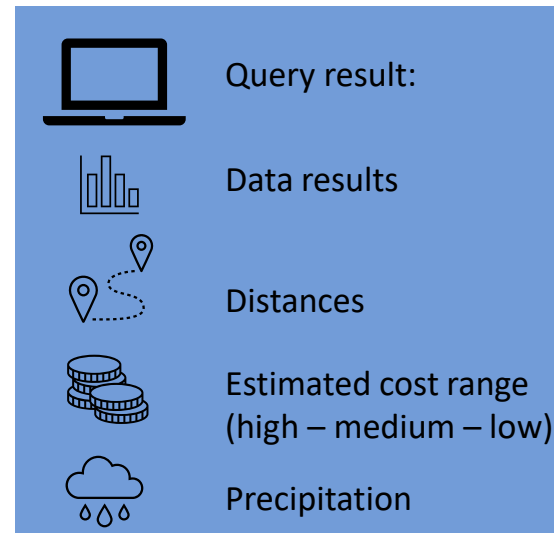
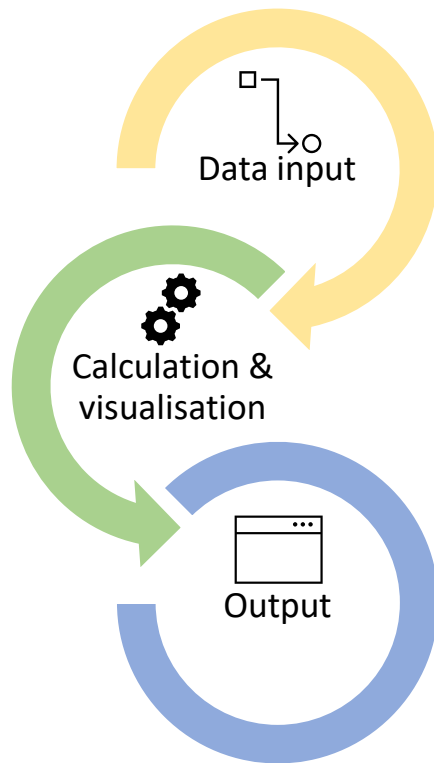
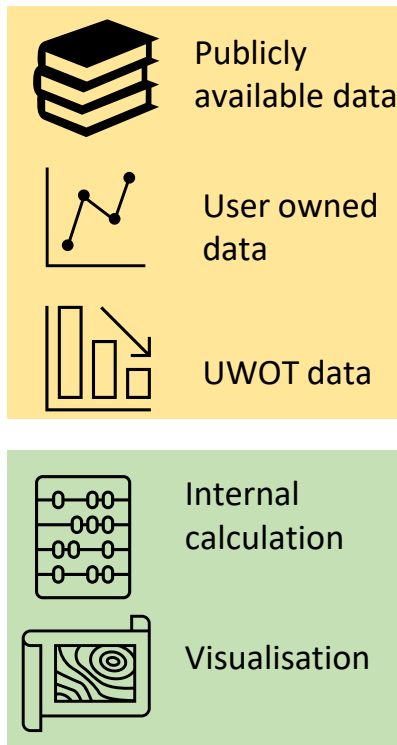


## ■ How is the data processed?

- Harmonisation of the unit (in advance)
- Merging the data from the different sources
- Classification
  - ▶ e.g. high – medium – low, under average – average – over average
- Spatial categorisation, query distances
- Simple mathematical operations

→ **No predictions, extrapolations, forecasts!!**

# The RDSM GIS tool – output display



## ■ Output

- Reference basis: Administrative unit (e.g. administrative district)
- Now: Output in tabular form
- Planned: Text output with categorisation/evaluation