Efficient Data Flows with QGIS and PostGIS

From the Field to Web and Reports

NTNU

NINA
Norwegian Institute for Nature Research

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UNIVERSITY OF TROMSØ
UiT / THE ARCTIC UNIVERSITY OF NORWAY

Luke

The Research Council of Norway

NOFA - **No**rdic **F**reshwater **A**tlas

- Data infrastructure for freshwater species
  - Collection
  - Analysis
  - Preservation
  - Presentation
  - Publication
- Long term
- Workflow efficiency
- Used in research projects (INVAFISH, …)

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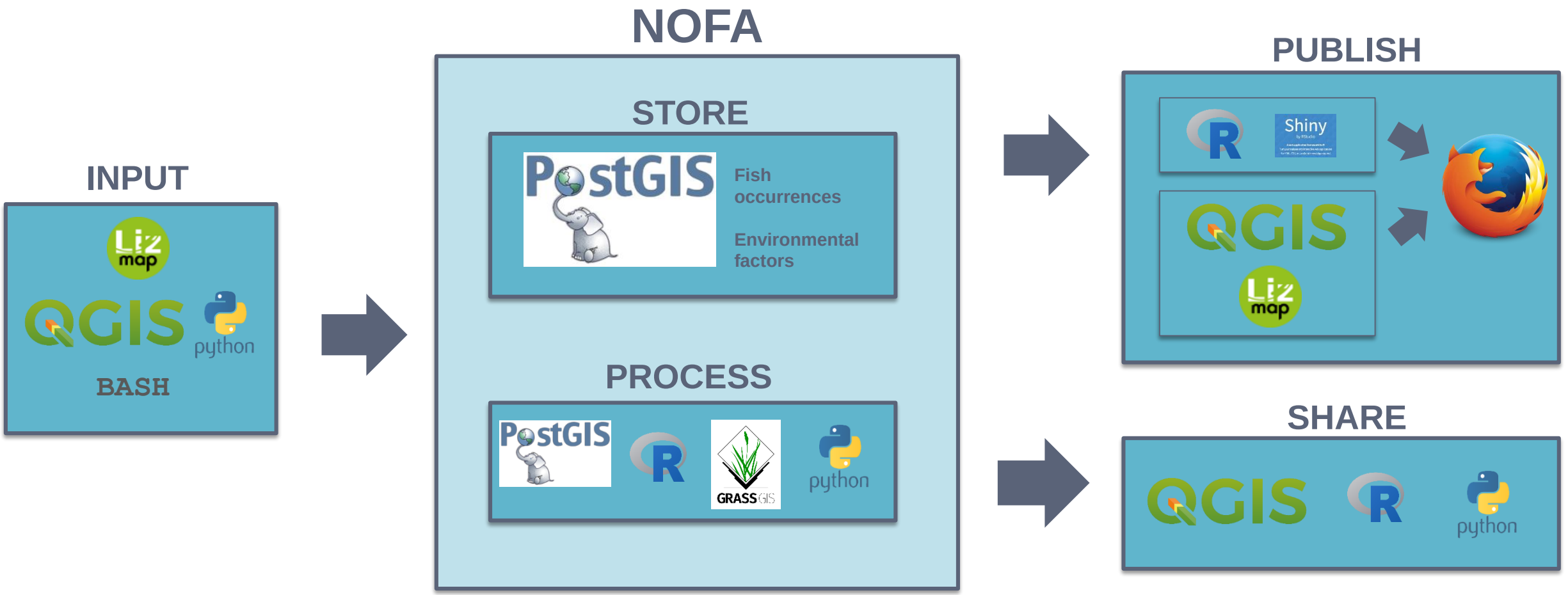
NOFA – technical architecture

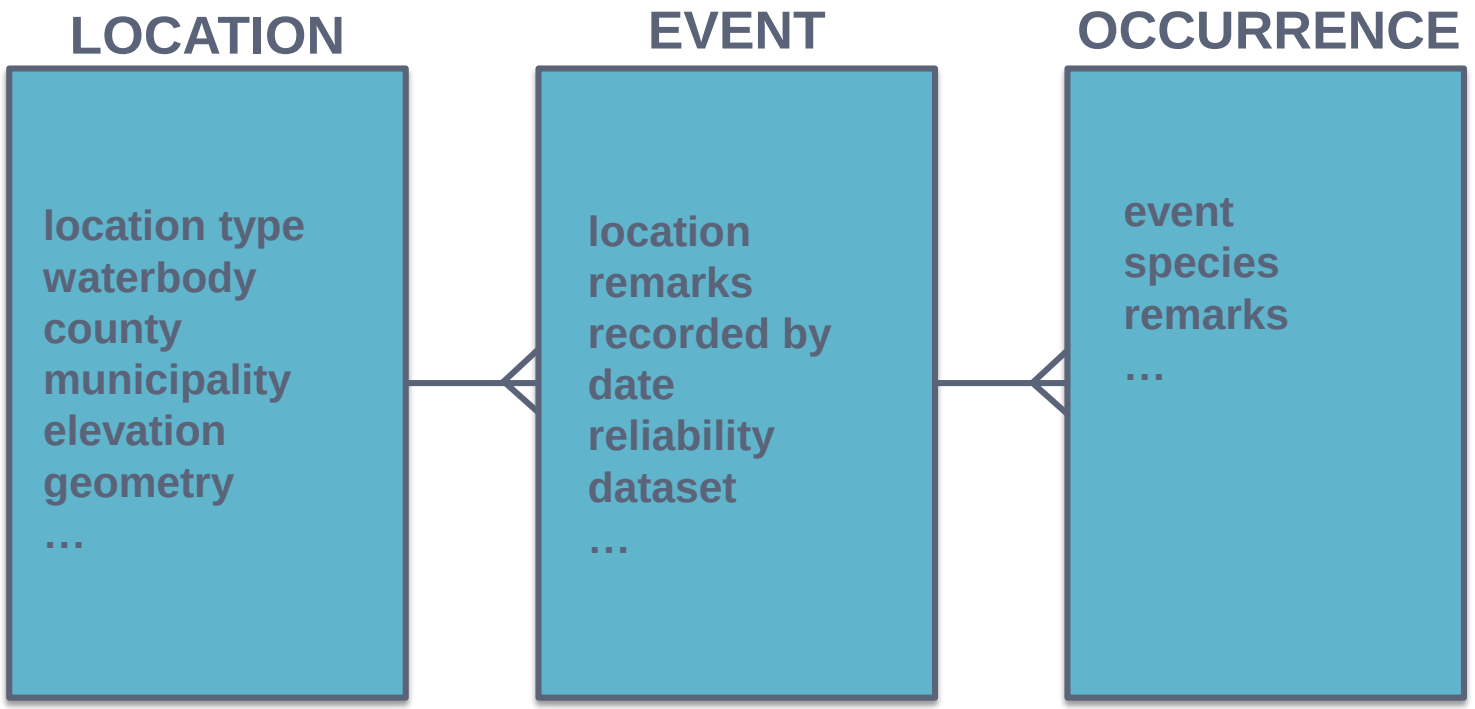


Data Storage

Darwin core

- International standard for species occurrence data
- Data structure
- Defined terms
- Controlled vocabulary
- Metadata

GBIF
Global Biodiversity Information Facility



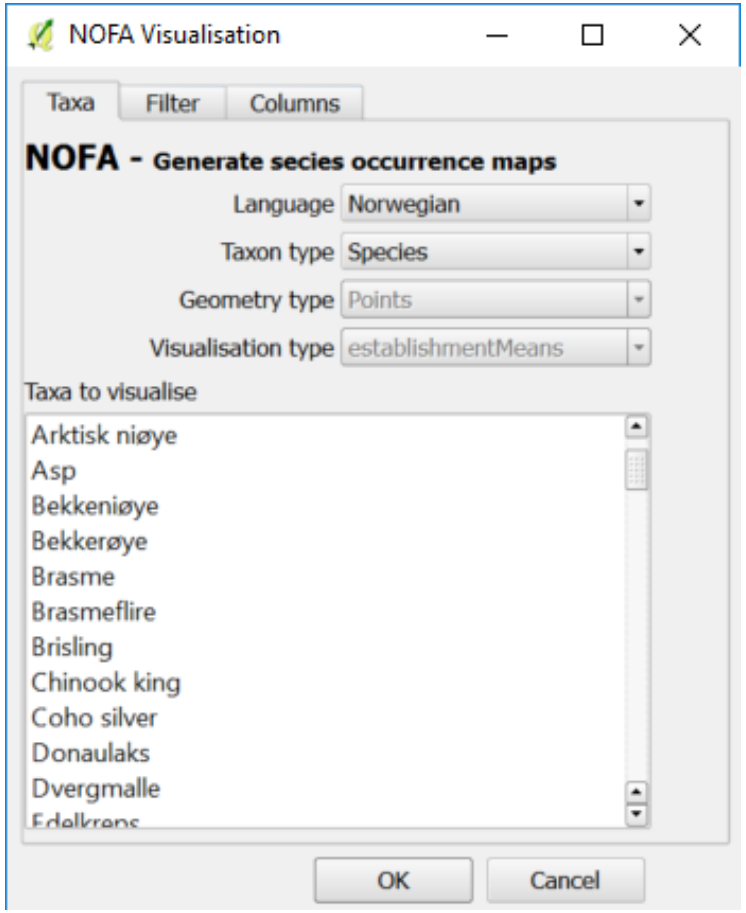
Additional Data

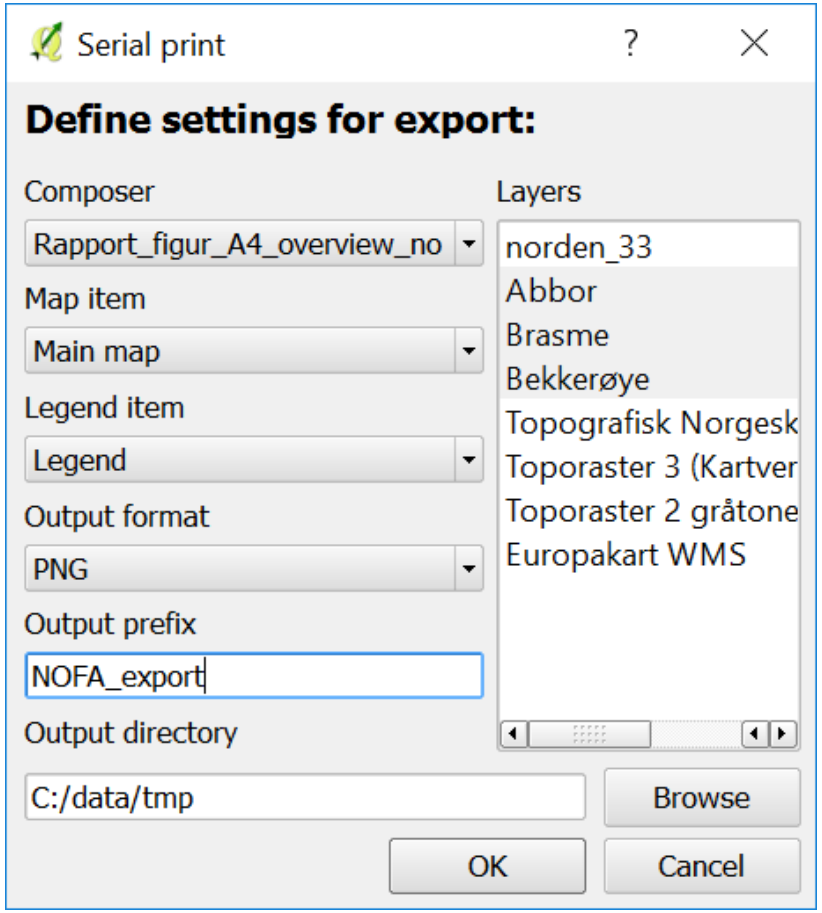
- Lakes
  - ~ 1.5 mio
- Catchments
  - ~ 270 000 largest lakes
- Rivers
- Streets
- Land cover
- Climate
- Terrain model
- Administrative units, …

map data: © OpenStreetMap contributors, SRTM | map style: © OpenTopoMap (CC-BY-SA)

Display Data

QGIS Visualisation and print plugins





Publish Map - Lizmap

R Shiny

shiny.vm.ntnu.no/users/andersfi/invafish/

Freshwater fish introductions

Display intruced populations of freswhater fish. Select species and optionaly filter on dated introductions or extinctions

Select species:

Rainbow trout

Chose what map markers represent

establishmentMean

Filter display on dated introduction/extinction events?

introduction

Delivered by the INVAFISH project. Contact: anders.finstad@ntnu.no

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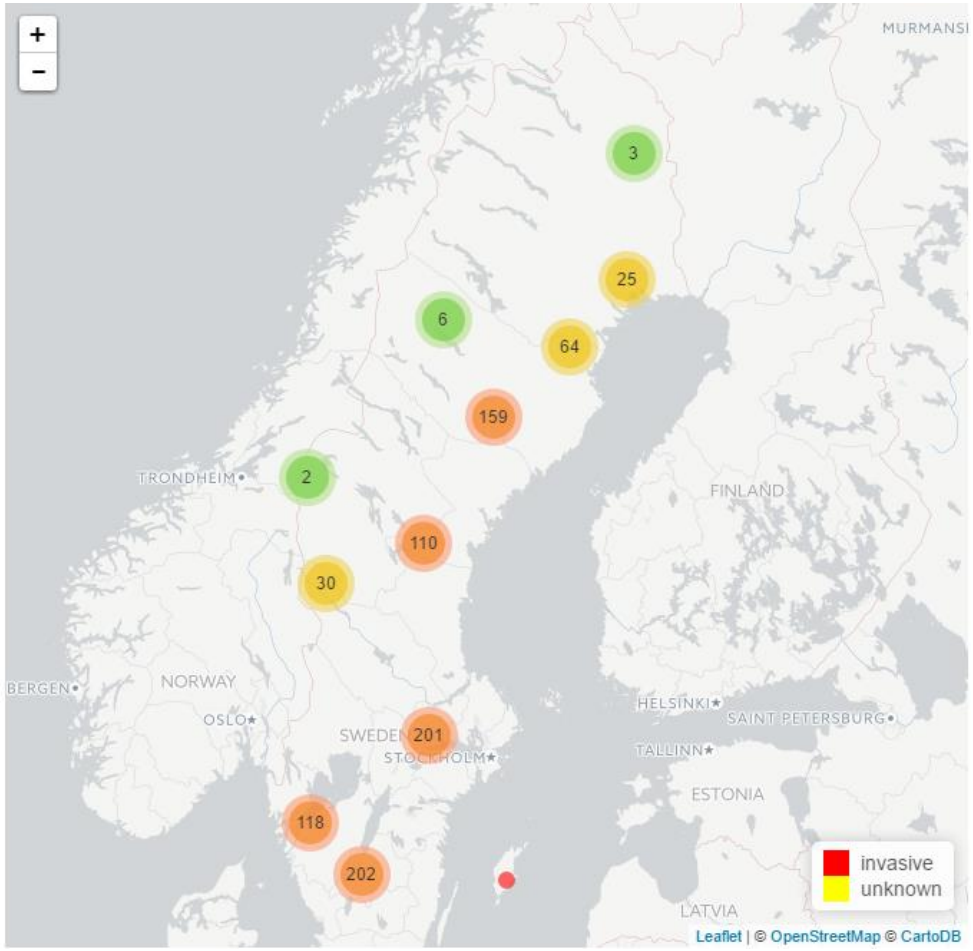

Insert and Edit Data

Field Data Collection

- QField (Android)
- QGIS (Windows Tablet)
- IntraMaps Roam (Windows Tablet)
- Lizmap (web browser)
- OpenDataKit
- GeoShape
- ...

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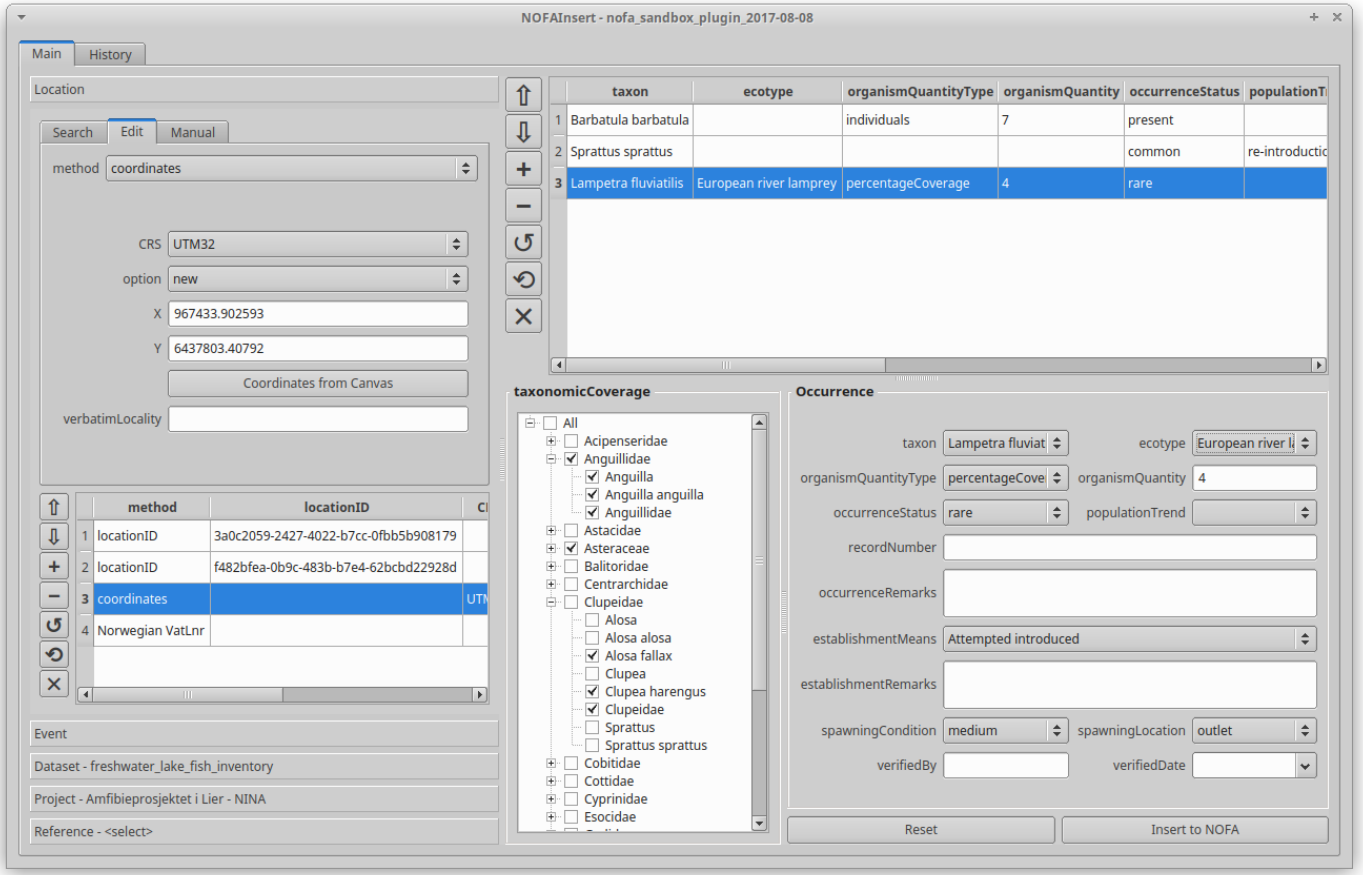
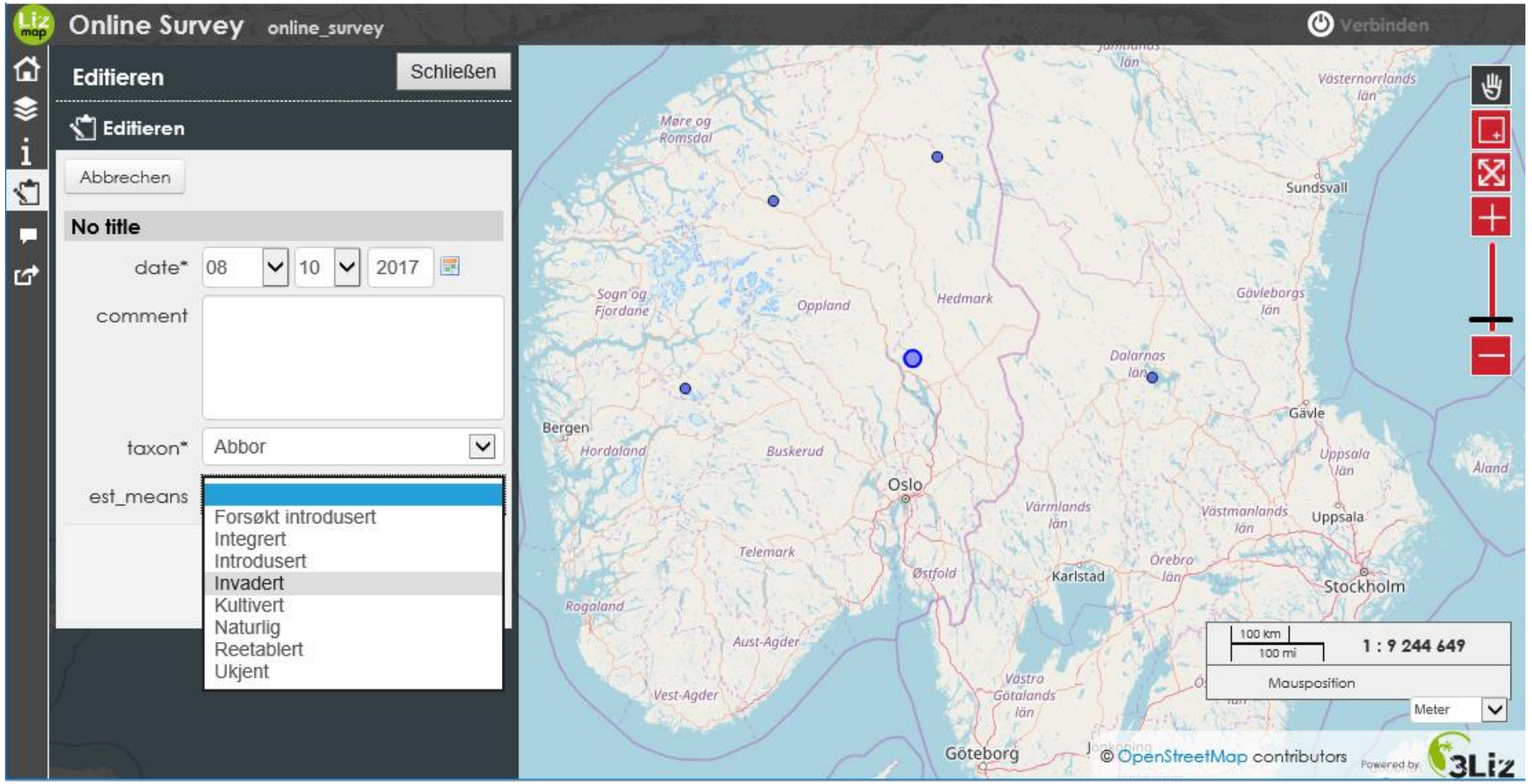
Desktop: QGIS Plugin

- Motivation
  - QGIS – PostGIS layers
  - Scripts
- Standard installation
- Map canvas interaction
- Not released yet



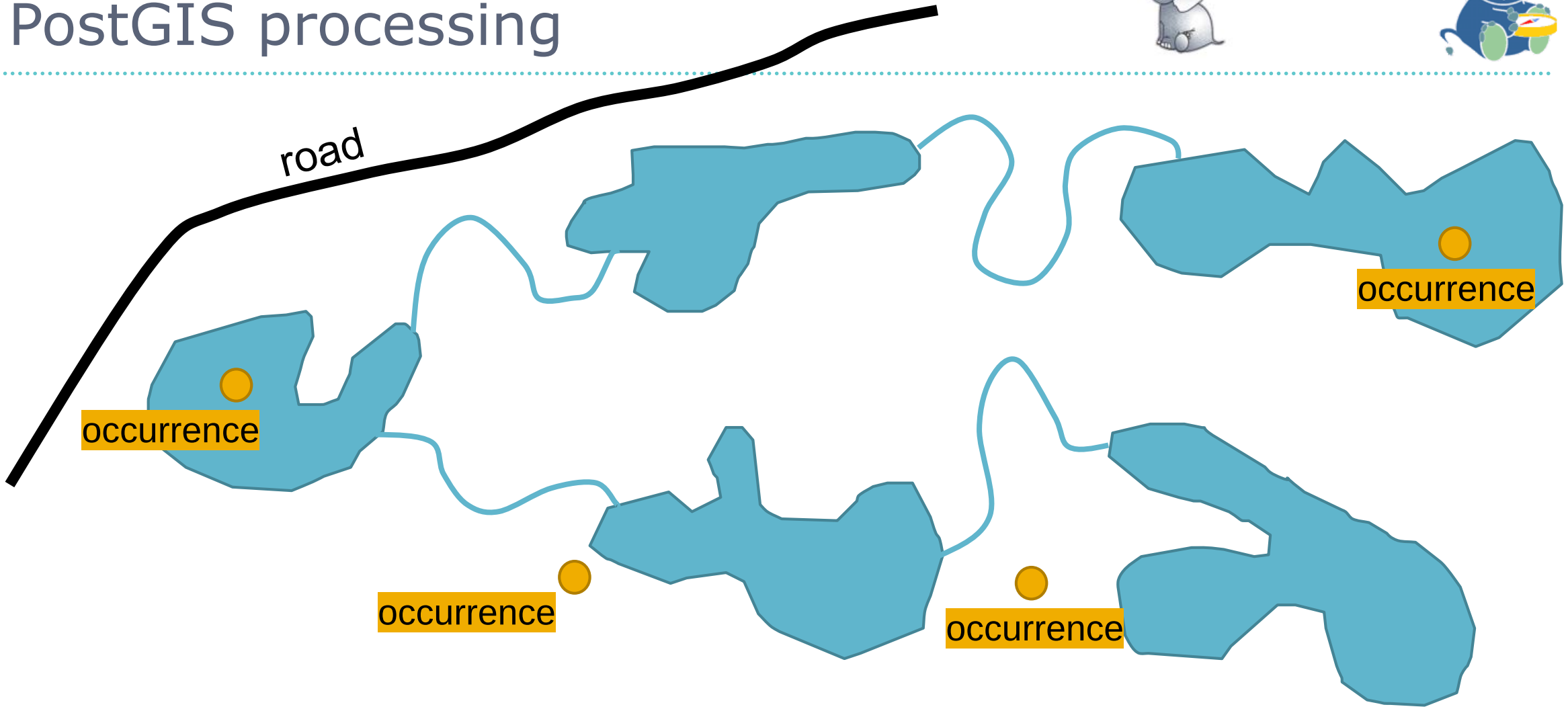
Web: Lizmap

tinyurl.com/Insertfish



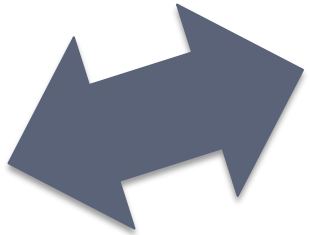
Analyze Data

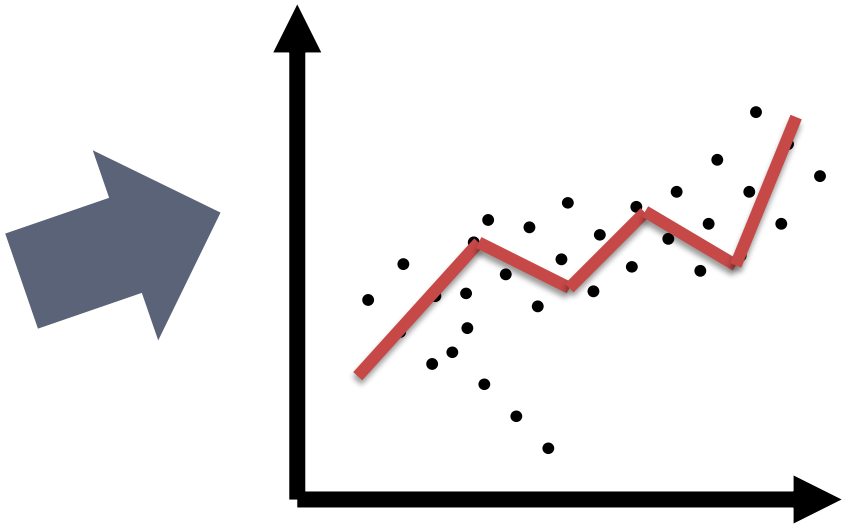
PostGIS processing



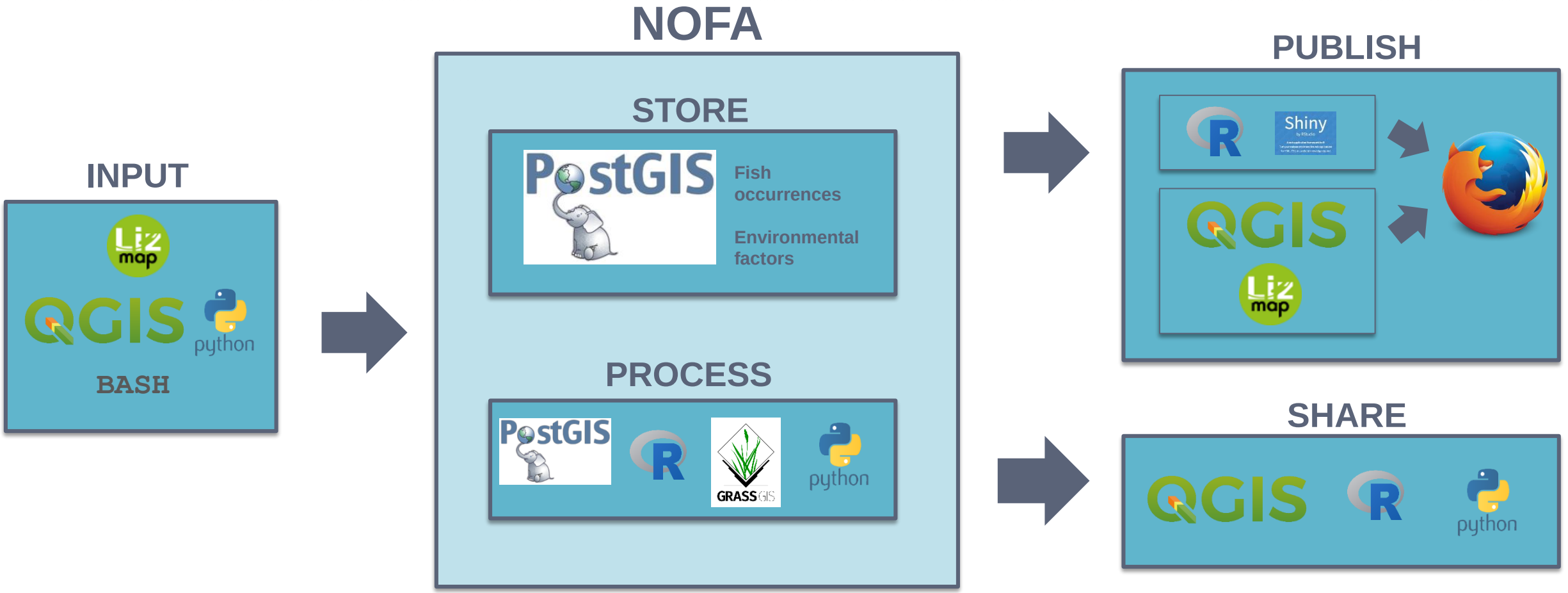
R – Programming Language

- Predefined functions
  - Process on the Server
- Download Data “views”
  - By species
  - By event
  - …





Summary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QGIS
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STORE
PostGIS
Fish occurrences
Environmental factors
PROCESS
PostGIS
R
GRASS GIS
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PUBLISH
R
Shiny
QGIS
Liz map
SHARE
QGIS
R
python