

# LifeWatch Data Cloud

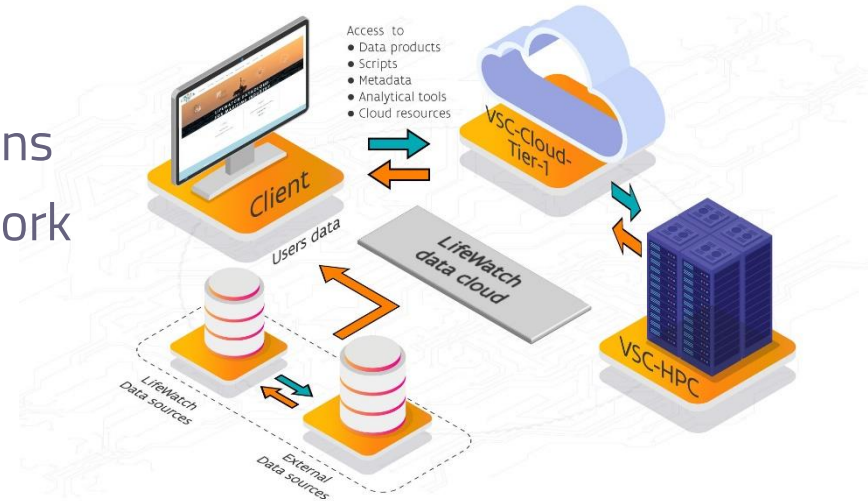


Lennert Schepers   
Coordinator LifeWatch Flanders



# LifeWatch Data Cloud

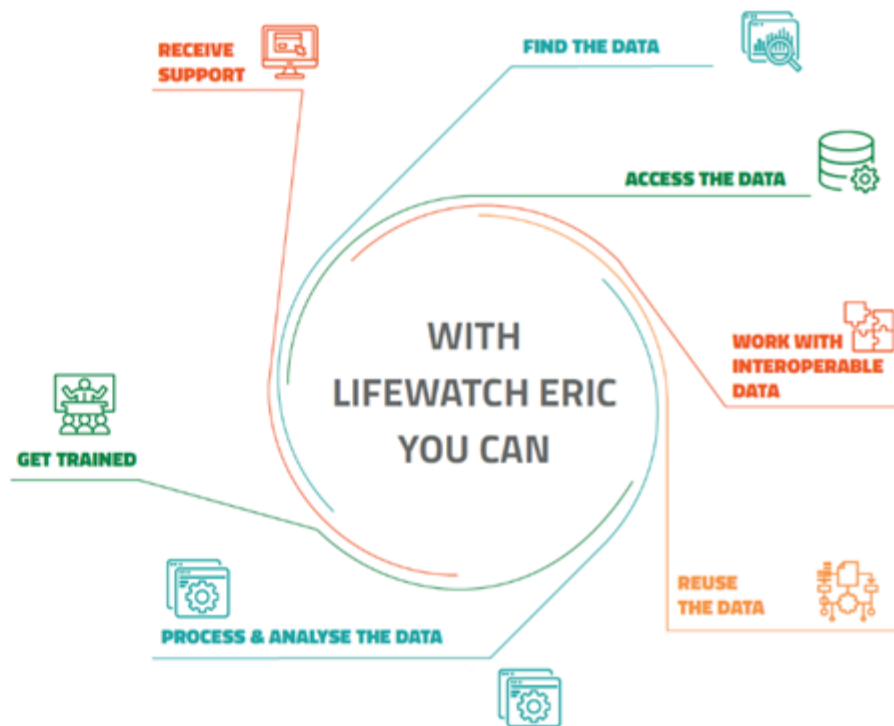
- Introduction LifeWatch
- LifeWatch Data Cloud
- Use Case 1: modeling plankton interactions
- Use Case 2: the European Tracking Network
- Future perspectives



# LifeWatch ERIC

## e-Infrastructure for Biodiversity and Ecosystem Research

A distributed e-Infrastructure to support research and sustainability of biodiversity and ecosystems

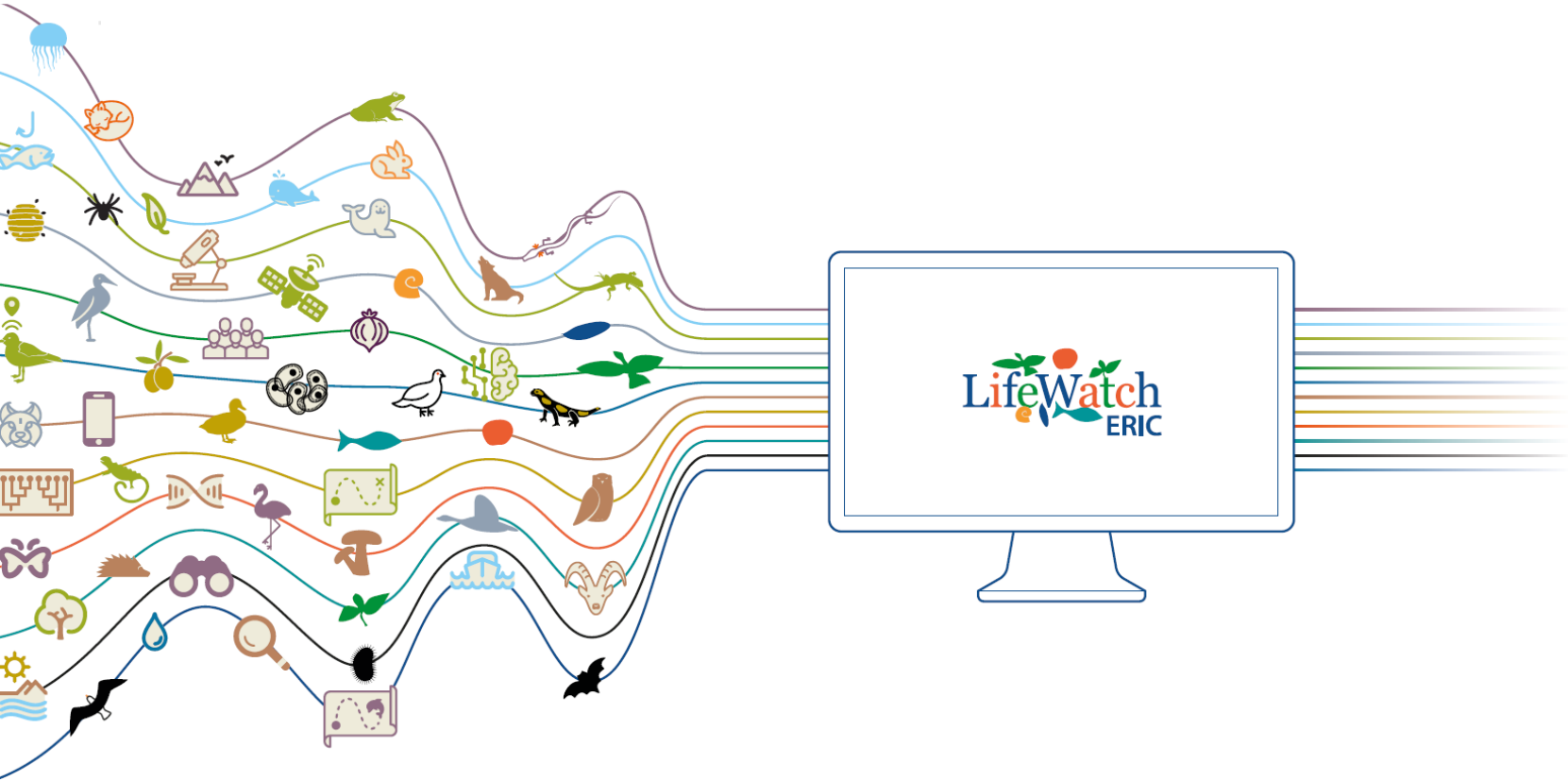


# What is LifeWatch?

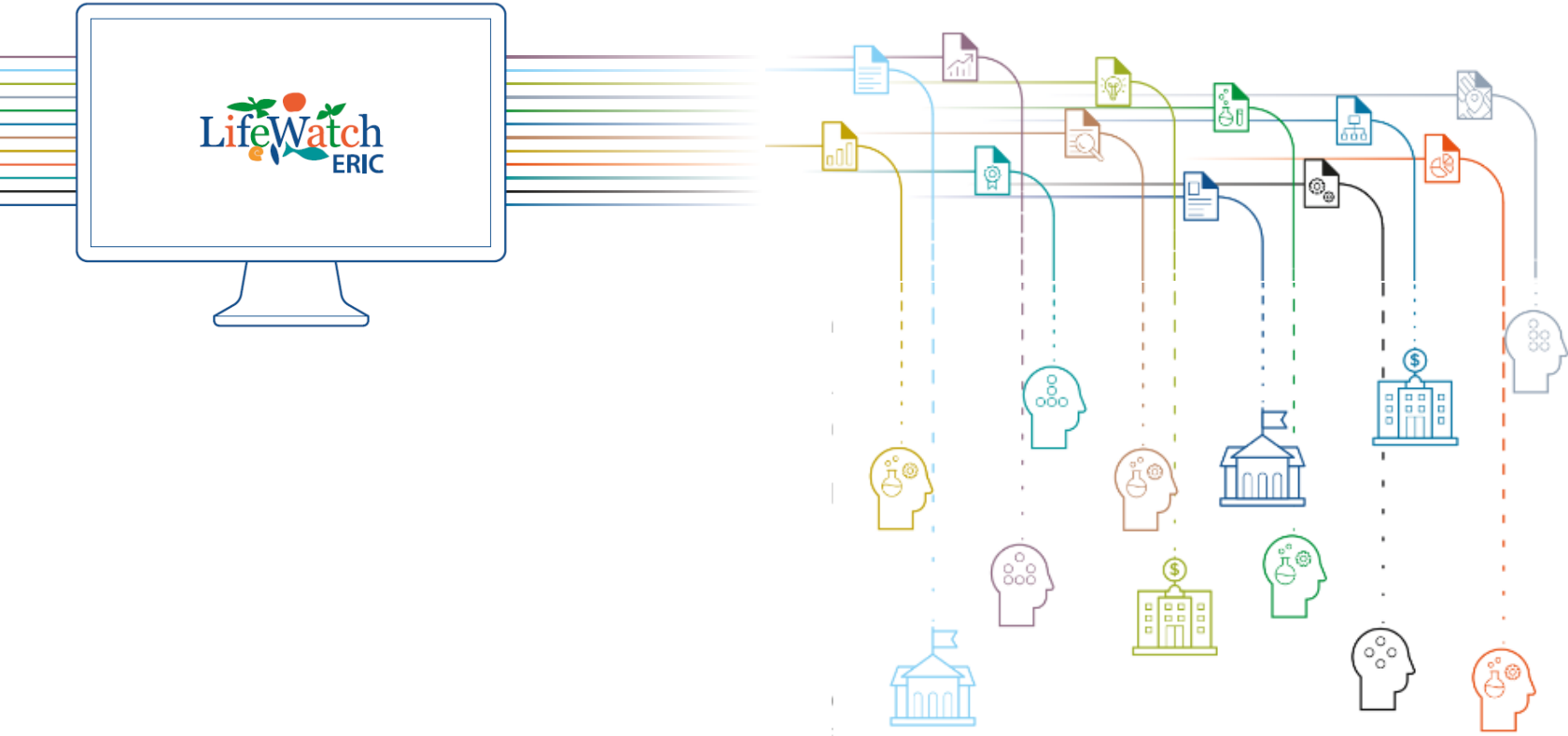


What is biodiversity?

# What is LifeWatch?



# What is LifeWatch?



# What is LifeWatch Belgium?



## Species Information Backbone



Central LifeWatch service that facilitates the standardisation and integration of species data and provides access

## Marine Freshwater Terrestrial Observatory



Integrated observation systems that generate long-term and openly accessible biodiversity data applying innova-

## Thematic remote sensing



An interactive geportal provides thematic pan-European remote sensing data. An object-based ecotope database

## Antarctic Biodiversity Portal



The Antarctic Biodiversity Portal ([biodiversity.aq](http://biodiversity.aq)) works closely with the Scientific Committee on Antarctic Research (SCAR) to provide access to data and tools for un-

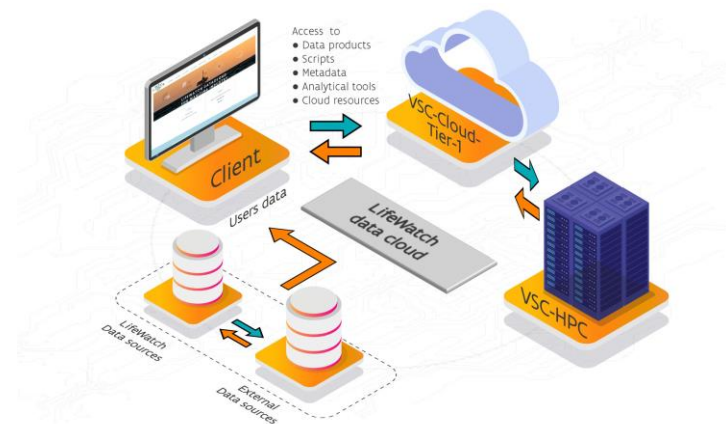
## BopCo



The Barcoding Facility for Organisms and Tissues of Policy Concern (BopCo) provides, upon request, identifications of organisms or derived tissues and products of policy concern.

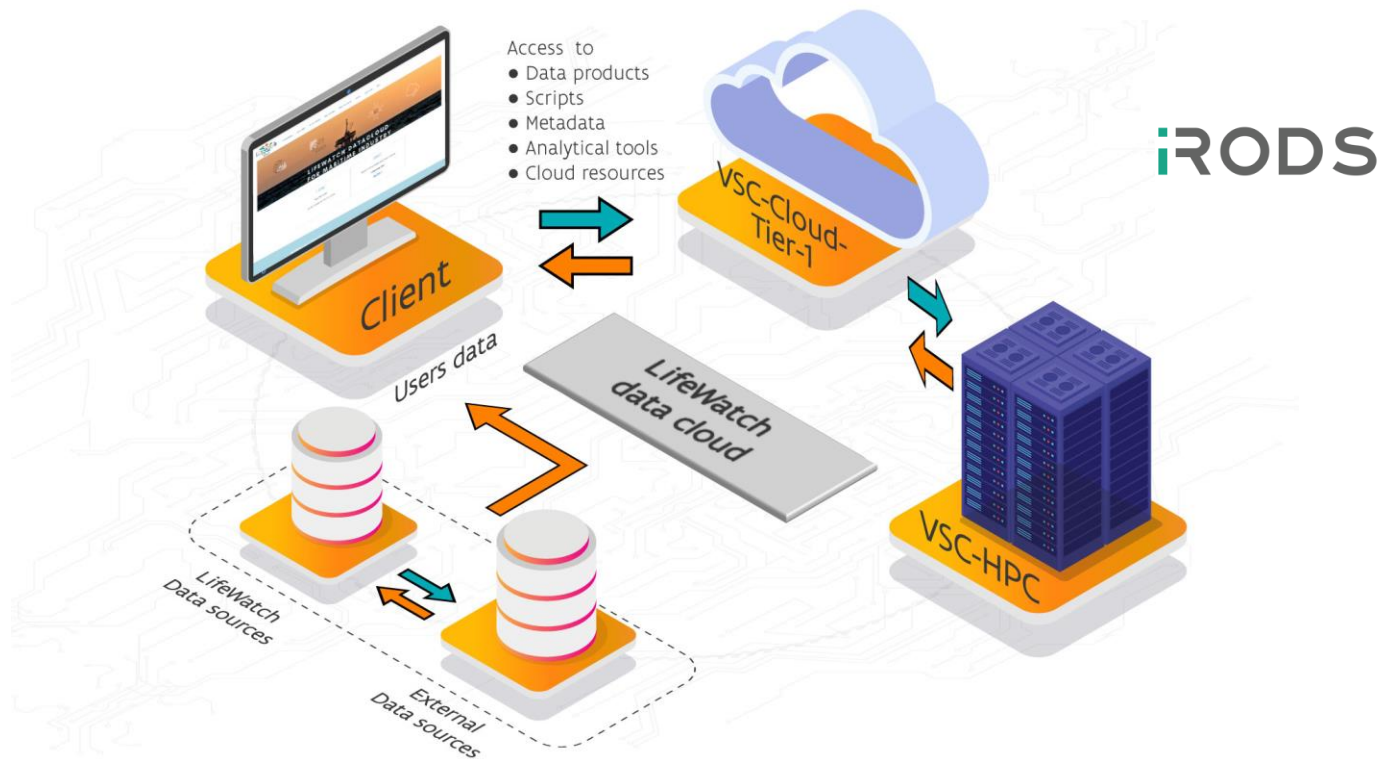
# LifeWatch Data Cloud

- LifeWatch Maritime Industry Advisory Board:
  - request for analysis platform
- Initial scope of Maritime Industry
  - Expanding to freshwater/terrestrial
  - Expanding to research/policy





# LifeWatch Data Cloud

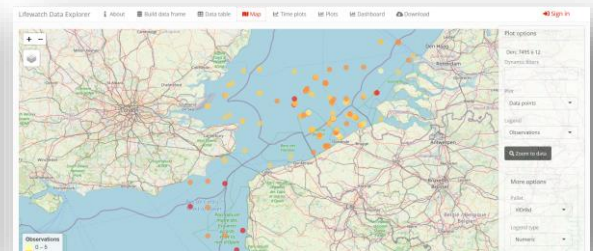
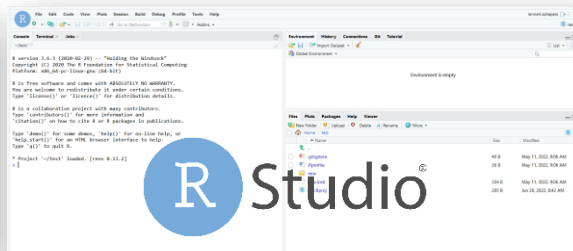


# LifeWatch Data Cloud - Client

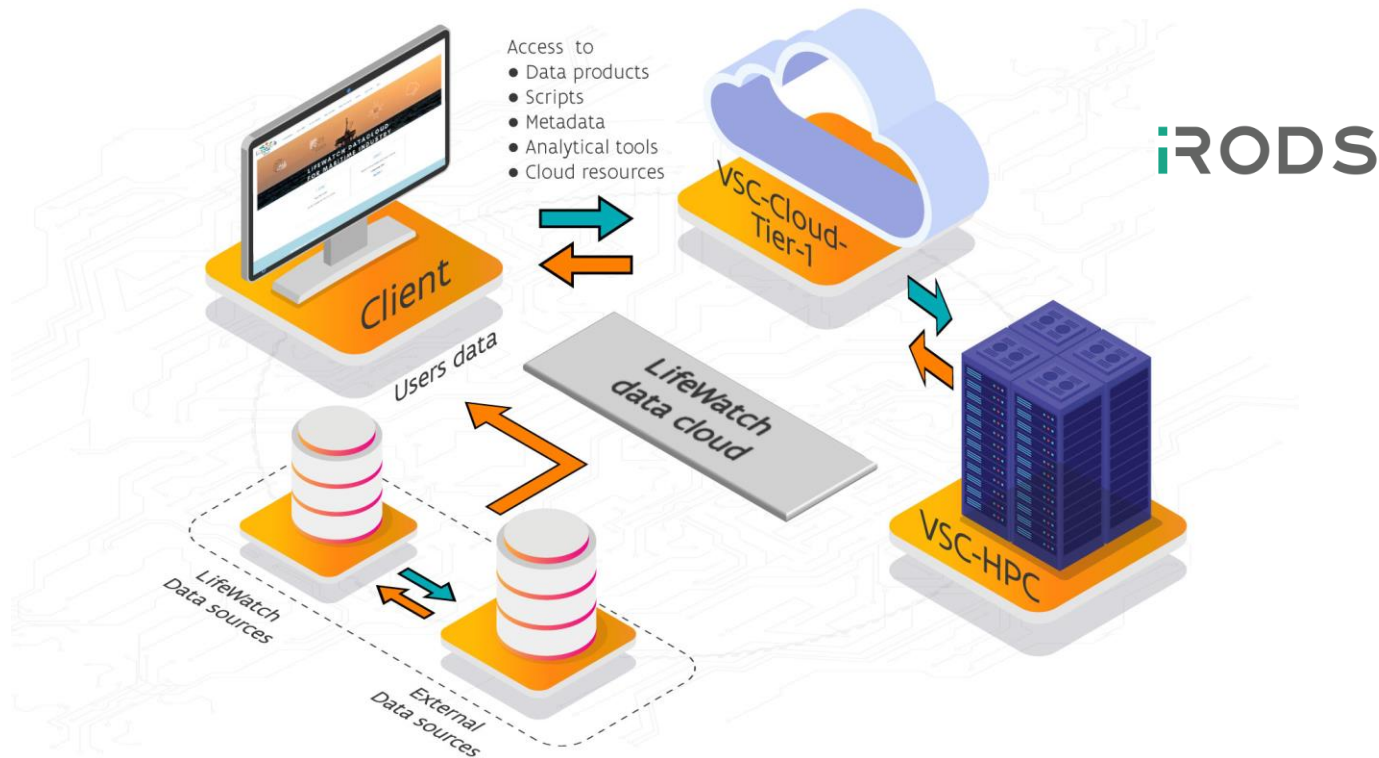


- Website: <https://datacloudmi.lifewatch.be>
- Rstudio server: <https://rstudio.vsc.lifewatch.be/>
  - R package to retrieve the LifeWatch data 
- LifeWatch Data Explorer (Rshiny application)
  - <https://rshiny.vsc.lifewatch.be/>

Rstudio Register  
here



# LifeWatch Data Cloud

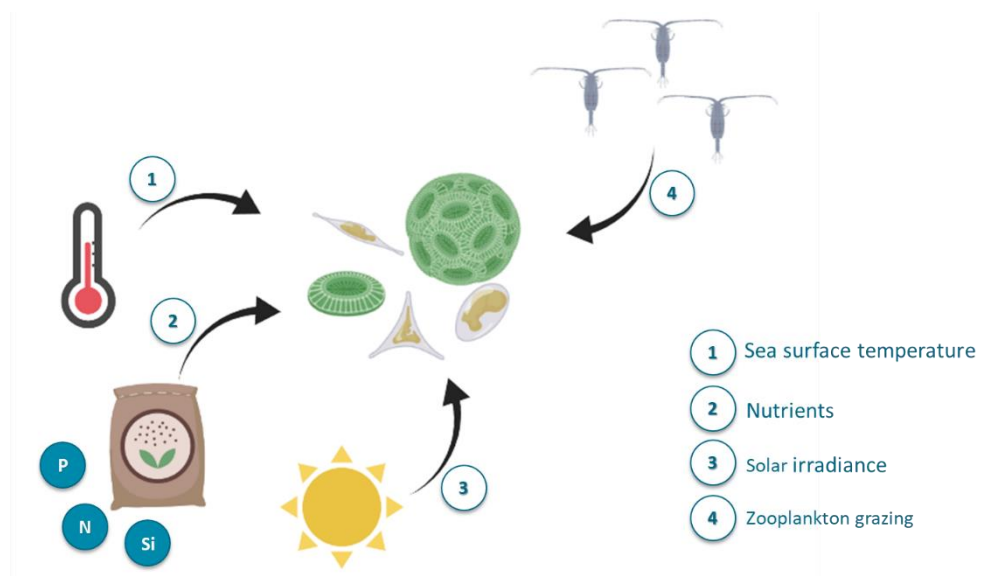


# Use Case 1

Modeling plankton interactions

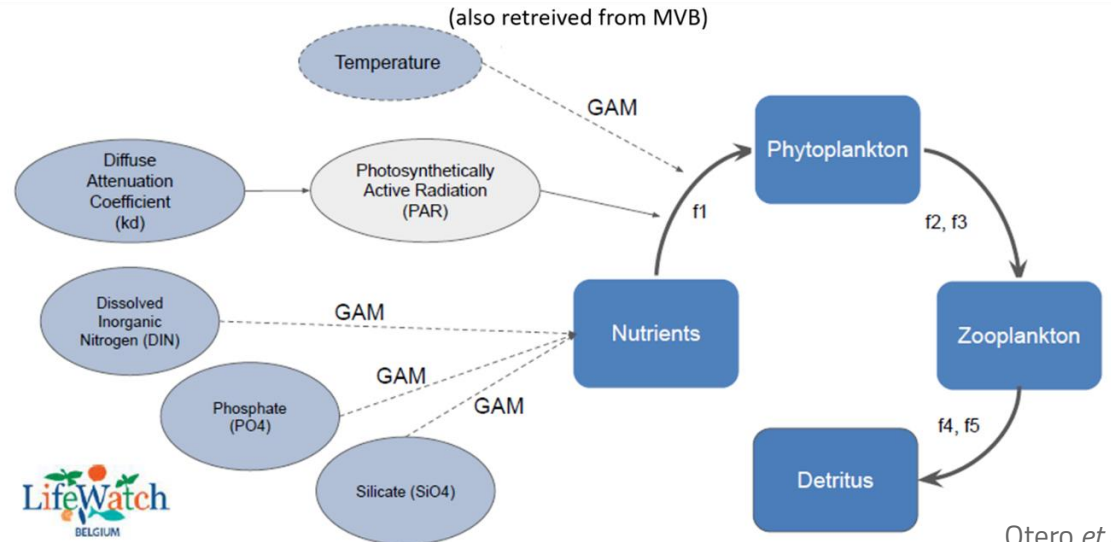
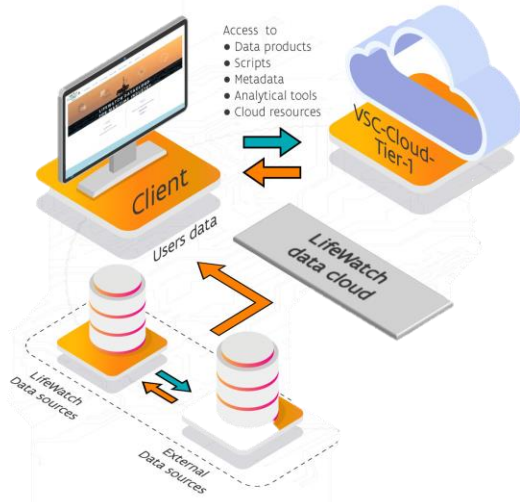
# Use Case 1: modeling plankton interactions

- Plankton forms the base of the marine food web
- Challenges
  - Climate change
  - Blue economy activities
  - Field observations are costly



# Use Case 1: modeling plankton interactions

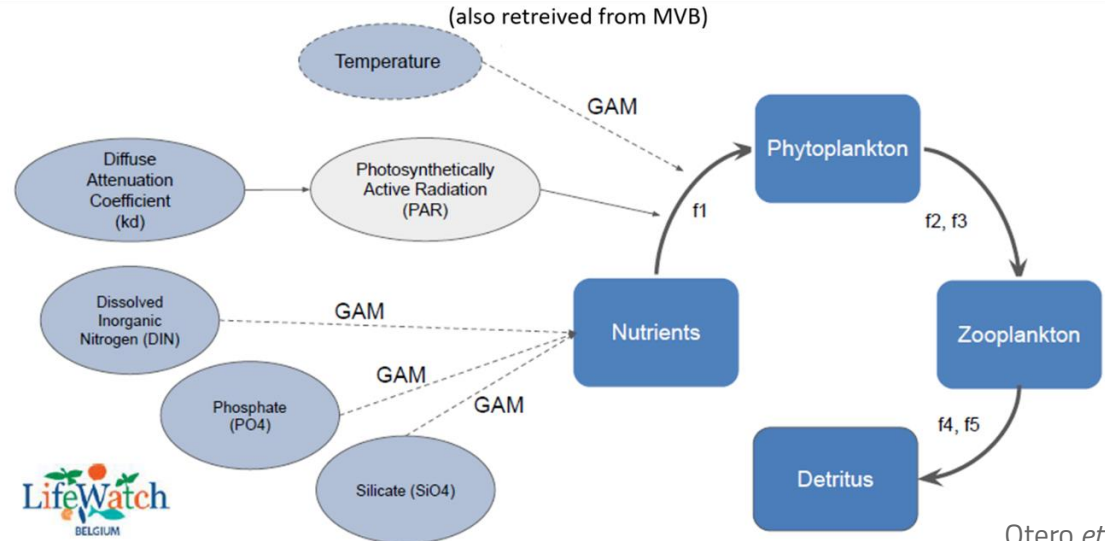
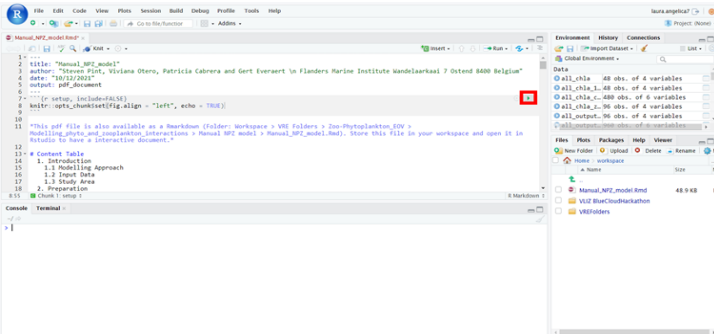
- Mechanistic model to derive phytoplankton drivers



# Use Case 1: modeling plankton interactions

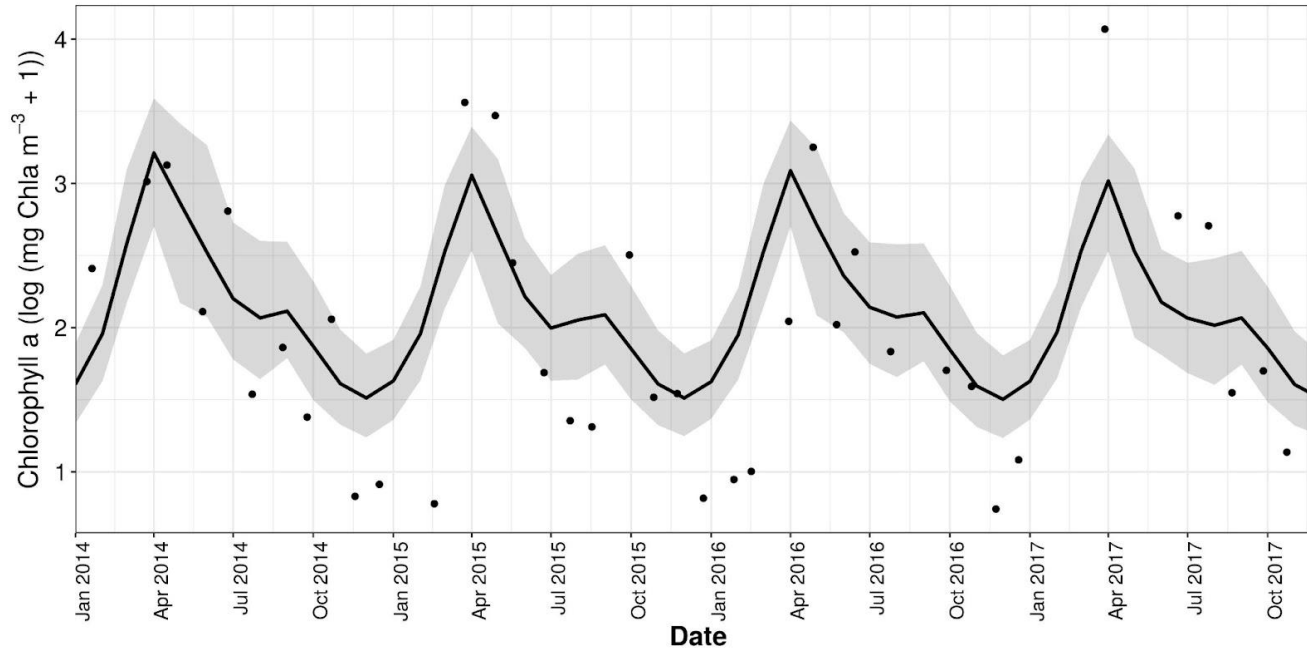
- Mechanistic model to derive phytoplankton drivers

R Studio



# Use Case 1: modeling plankton interactions

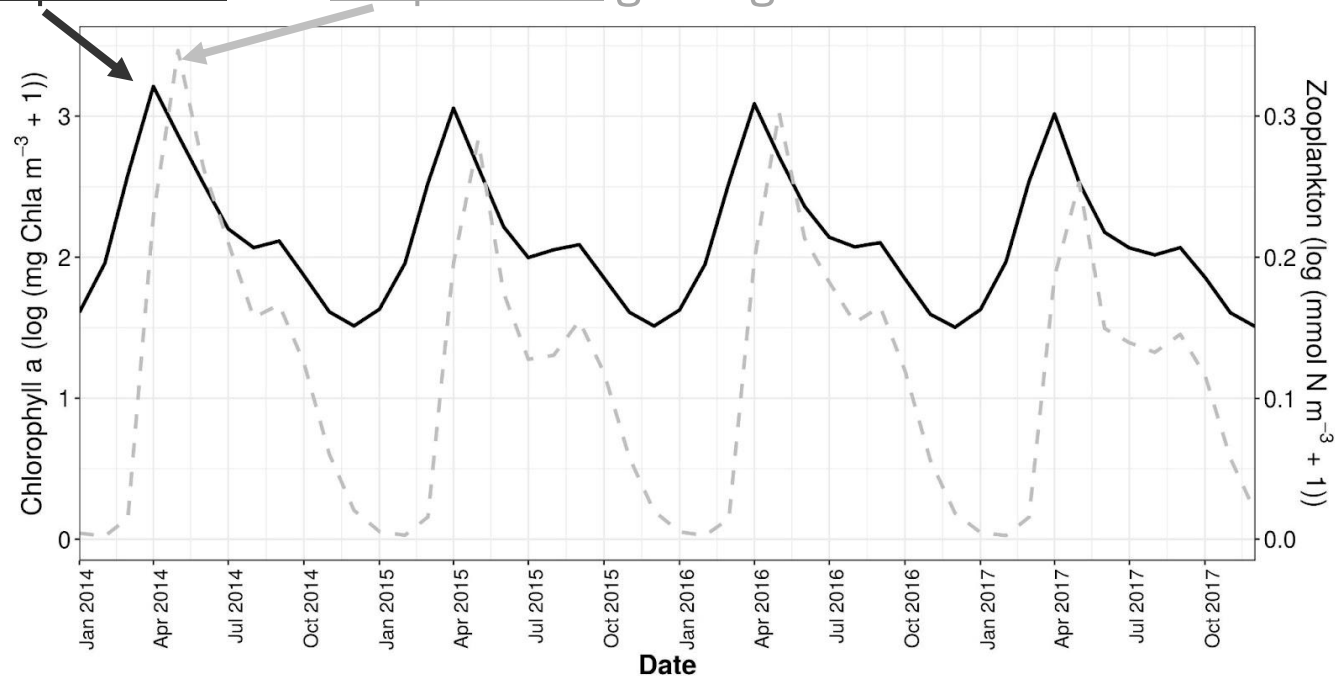
- Seasonal variation of phytoplankton





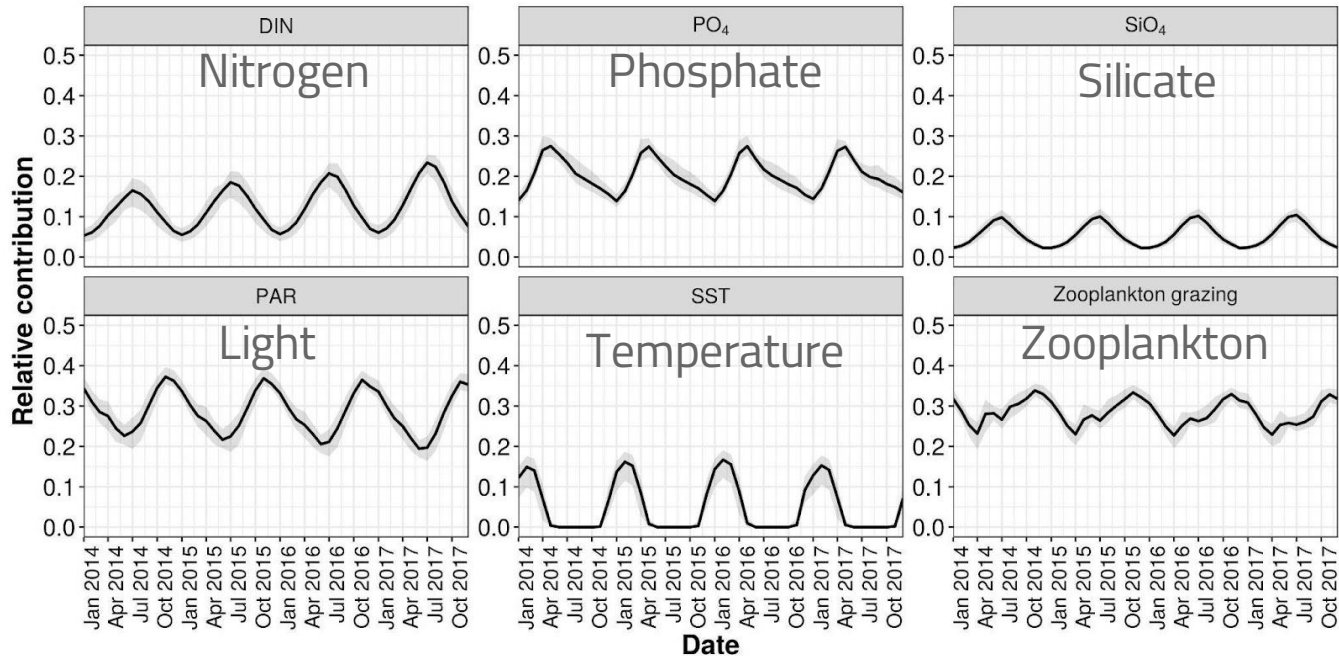
# Use Case 1: modeling plankton interactions

- Phytoplankton and zooplankton grazing



# Use Case 1: modeling plankton interactions

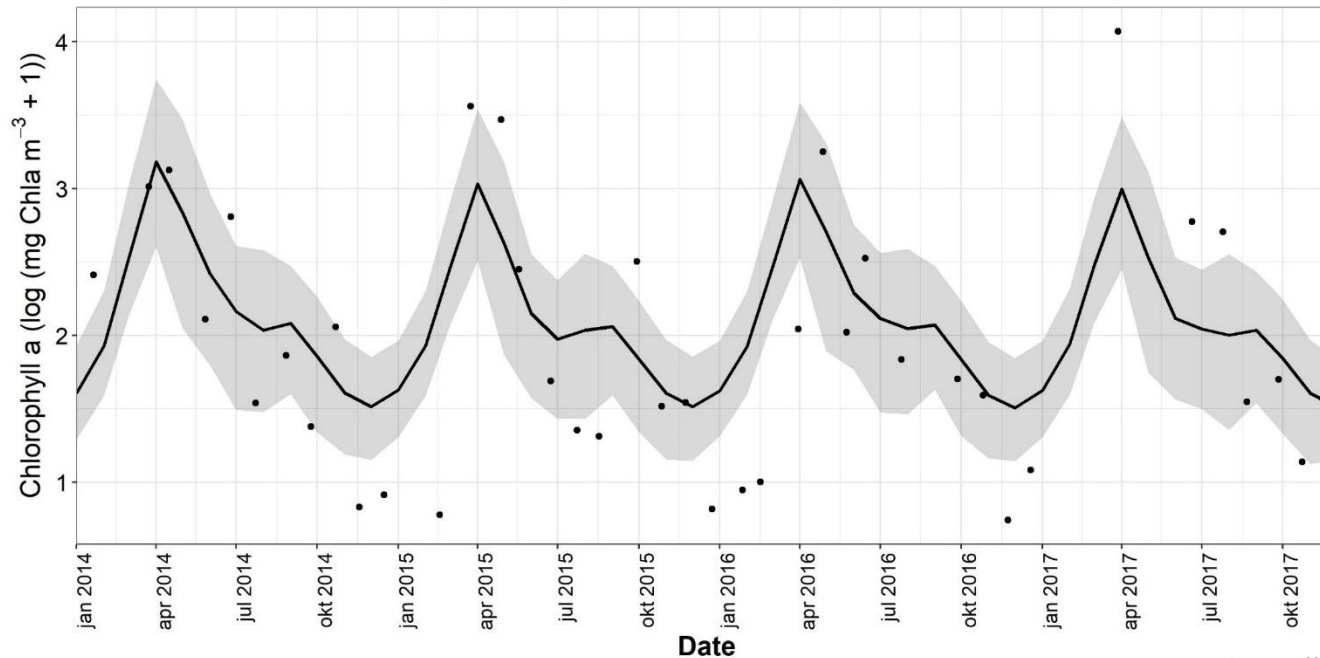
- Relative contribution of drivers over time



# Use Case 1: modeling plankton interactions

- Why using VSC resources?

5000 model runs



# Use Case 2

The European Tracking Network

# EUROPEAN TRACKING NETWORK

TRACKING AQUATIC ANIMALS  
AT A PAN-EUROPEAN SCALE

An introduction to telemetry and tagging methods

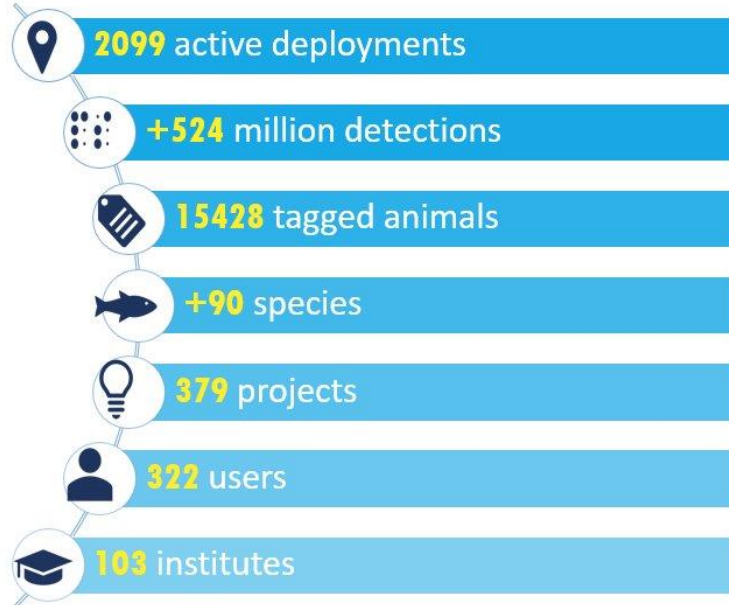
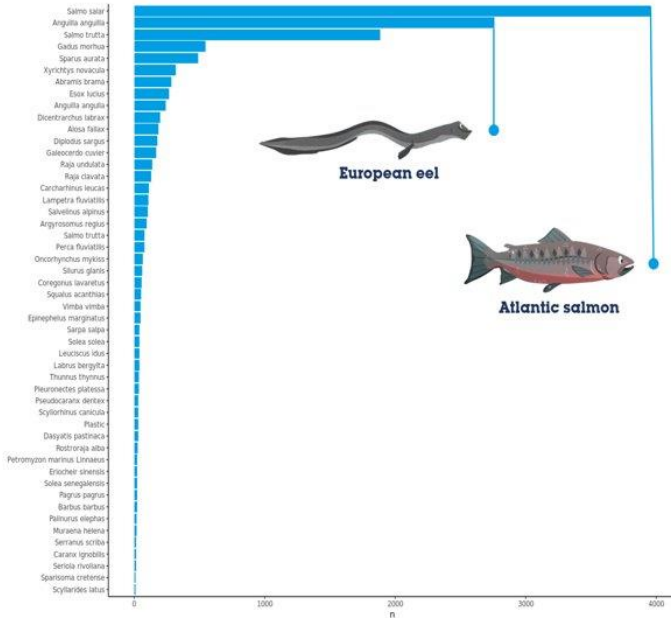


# Use Case 2: the European Tracking Network

What is ETN?

Why use it?

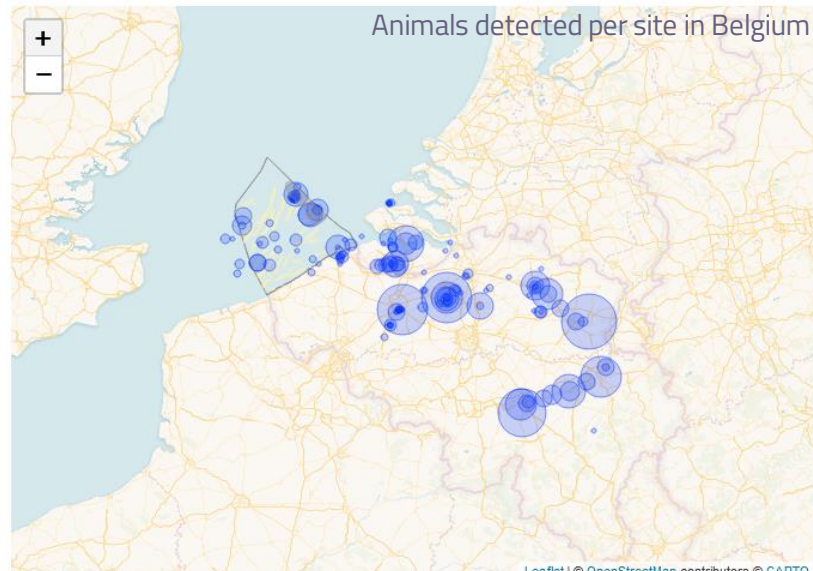
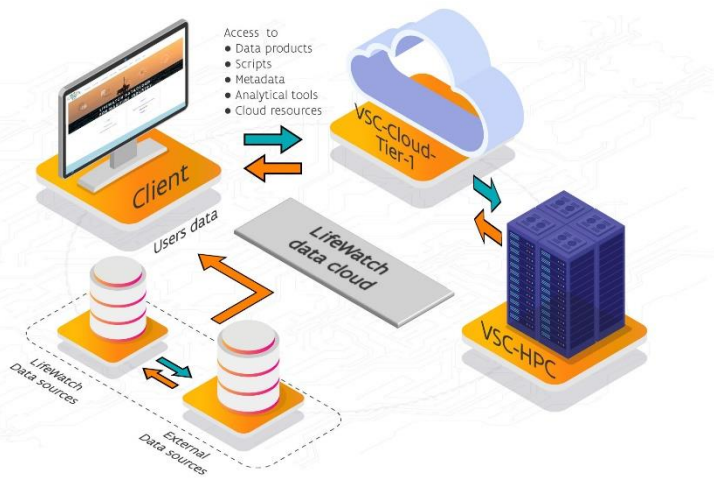
## Some statistics





# Use Case 2: the European Tracking Network

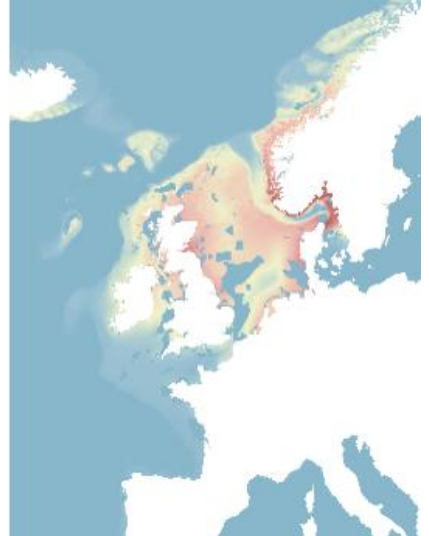
- LifeWatch ETN portal and database hosted at VLIZ
  - Copy of database stored at VSC and linked to data cloud
  - RStudio and ETN database used by ETN scientific community (>350 users)



# Future Perspectives

- Project collaboration:
  - SUMES: SUstainable Marine Ecosystem Services
    - Vlaio/Blue Cluster project – UA / UGent / VLIZ
  - Mariculture heat maps
    - Possible future topic
- Digital Twin(s) (of the Oceans)
- Expand users to freshwater / terrestrial

Help you to use the LifeWatch Data Cloud?



Suitability map (red = most suited) of *Laminaria digitata* (Oarweed/vingerwier) based on environmental variables, depth and marine spatial planning



# Thank you

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fwo



VLAAMS  
SUPERCOMPUTER  
CENTRUM



Vlaanderen  
is supercomputing