Combining the analysis of omics data and bioprocess data in environmental biorefineries

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RÉPUBLIQUE FRANÇAISE
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Laboratoire LBE Biotechnologie de l'Environnement

Mistea
Mathématiques, Informatique et STatistique pour l'Environnement et l'Agronomie

PROSE
PROcédés biOtechnologiques au Service de l'Environnement

EnviBIS, ENVIronmental Biorefinery Information System

An ontology driven information system for environmental biorefinery based on **OpenSilex** opensource software.

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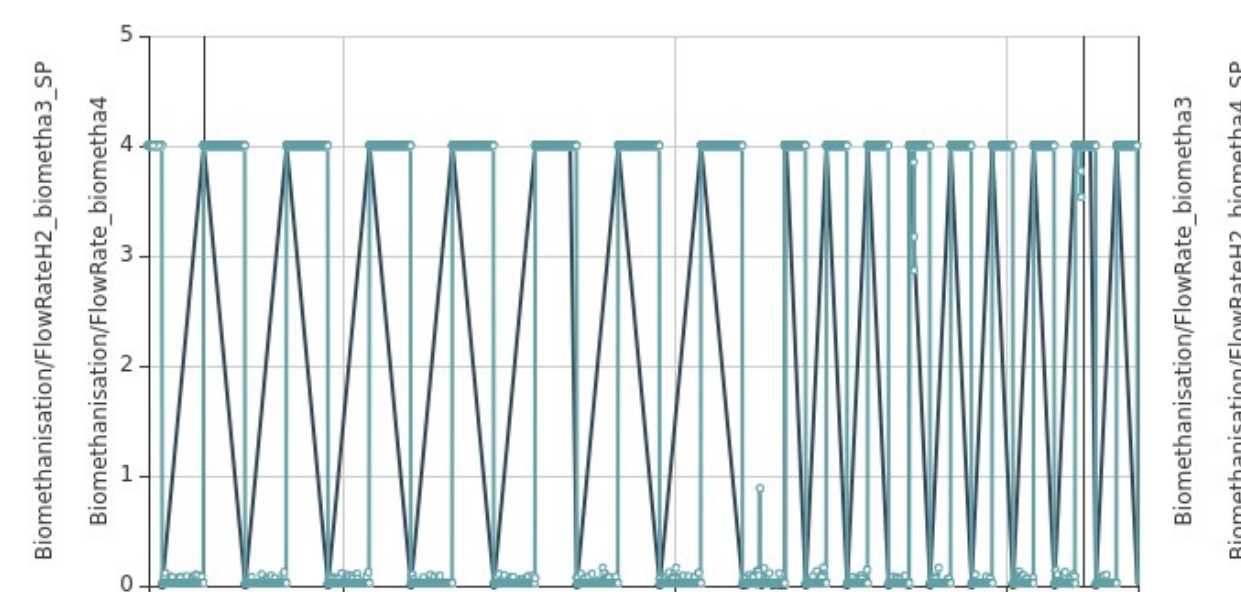## Context and objective

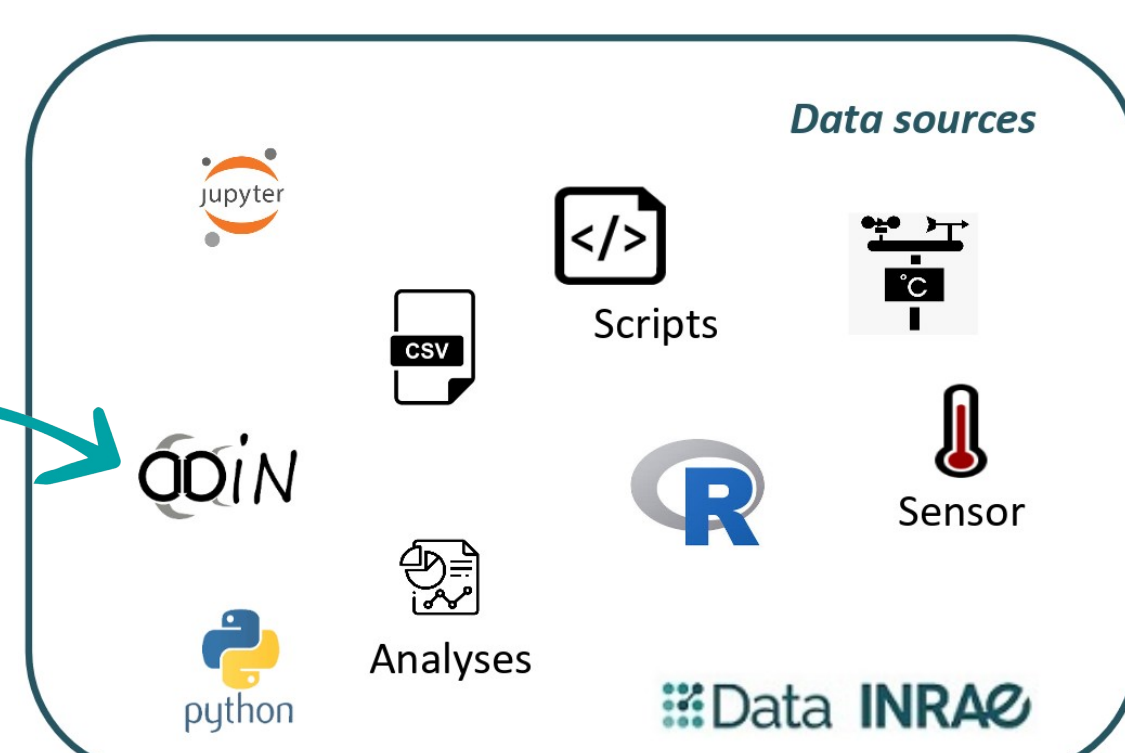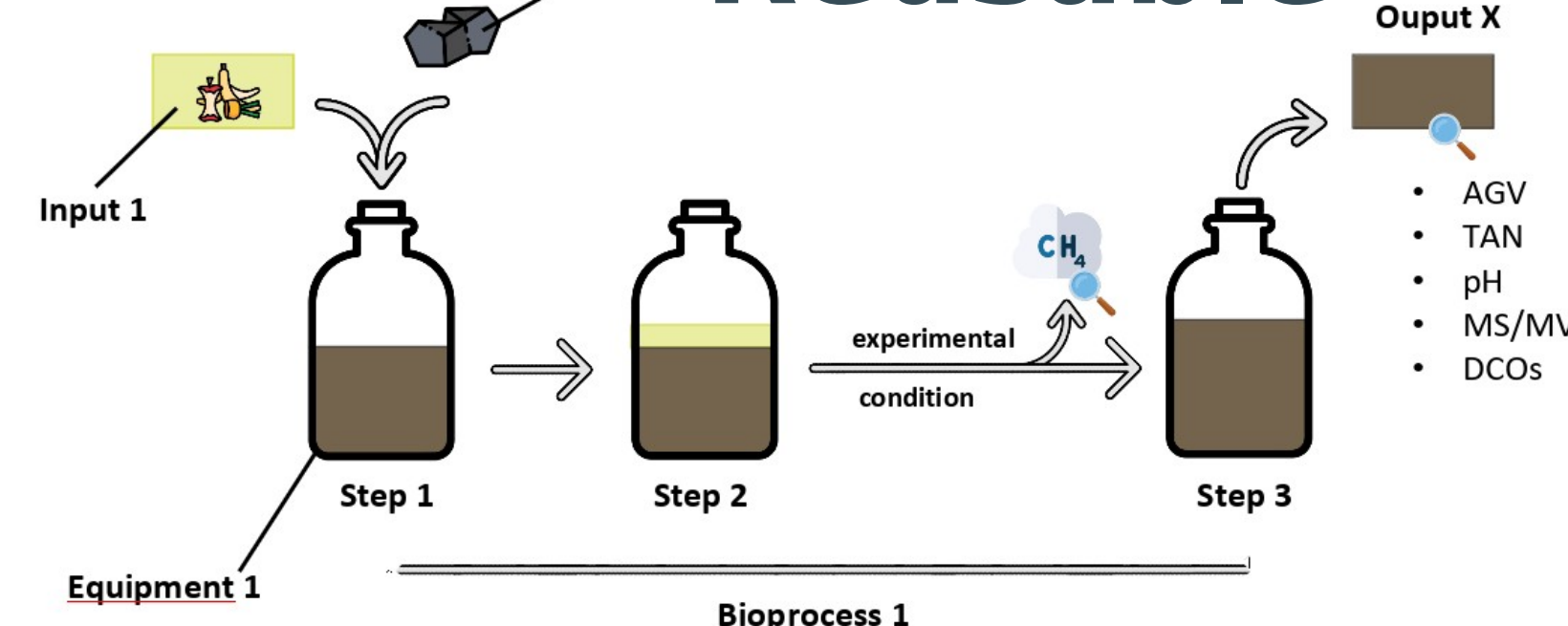| ✓ **Multidisciplinary** unit
 ✓ Increase in experimental and simulated **data**
 ✓ **Complex heterogeneous** data | ✗ **Formalised** data sources
 ✗ Formalised knowledge in **environmental biorefinery**
 ✗ **Interoperability** | ✓ FAIR implementation : **F**indable **A**ccessible **I**nteroperable **R**eusable
 ✓ Data **reuse** |

Data

Online data acquisition and bioprocess control. Odin+ software, INRIA.

Data sources
Jupyter, CSV, Scripts, Sensor, ODIN, R, python, Analyses, Data INRAE

Interoperable Reusable

Input 1, Input 2, Ouput X
- AGV
- TAN
- pH
- MS/MV
- DCOs
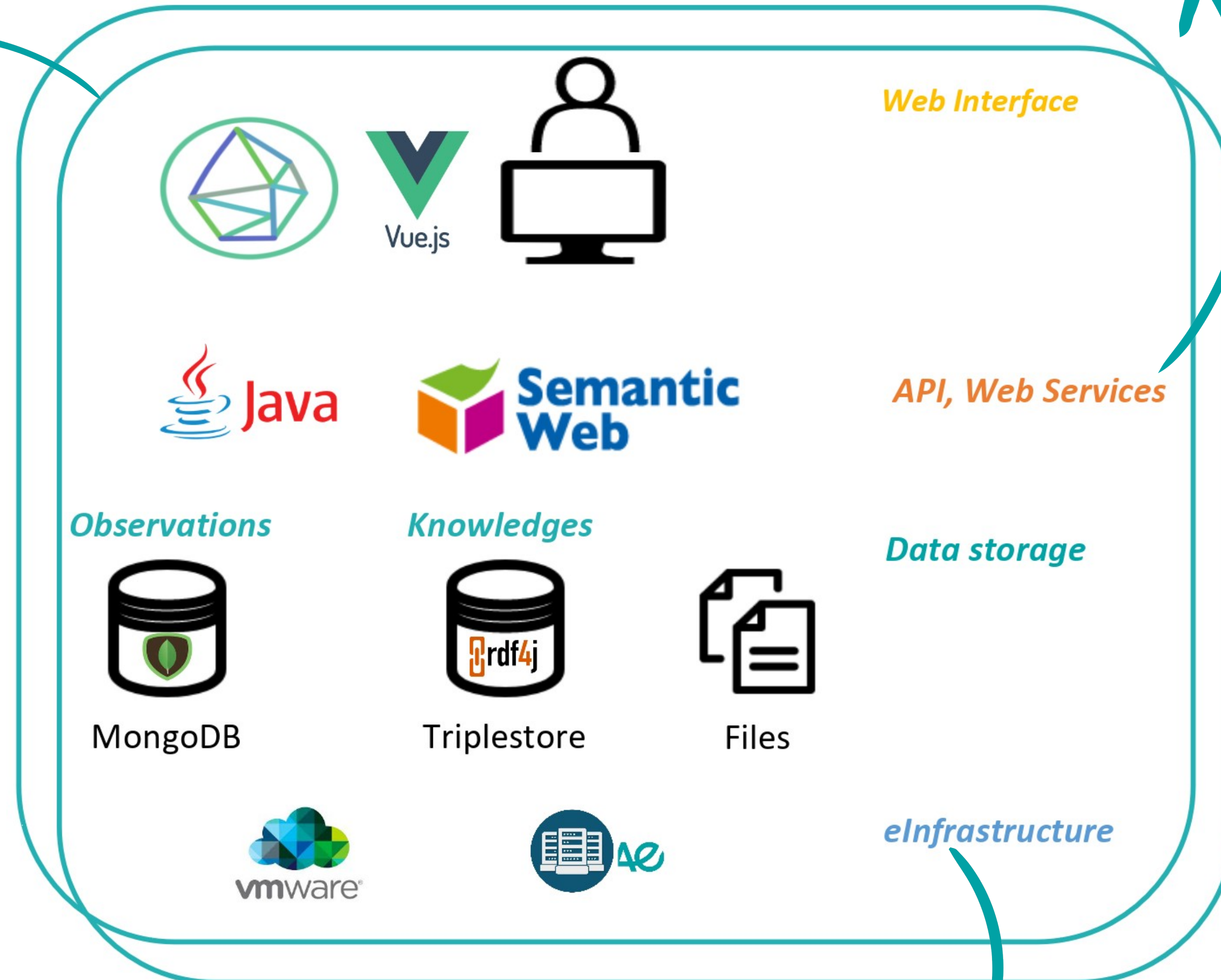Equipment 1, Step 1, Step 2, experimental condition, Step 3, Bioprocess 1

Reuse of Process and Observation Ontology, PO2, concepts, to offer a representation of the itinerary of operations within a bioprocess.

Interoperable

Project metadata transfer module to integrate all omics data in the IS DeepOmics, **D**igital **E**nvironmental **E**ngineering **P**latform for **Omics** data.
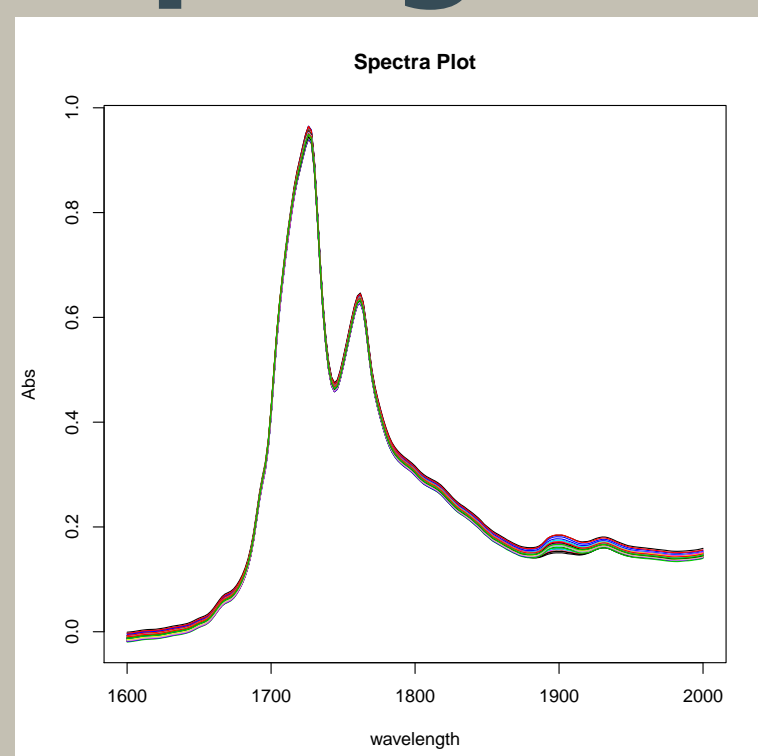
Deep Omics

EnviBIS architecture

Vue.js — **Web Interface**
Java, Semantic Web — **API, Web Services**
Observations, *Knowledges* — **Data storage**
MongoDB, Triplestore (rdf4j), Files
vmware — **eInfrastructure**

Key figures

18 users
3 projects
19 experiments
737 study objects
89 variables
9 ontologies
> 360 000 data

In progress

Spectra Plot

Spectral data management, modeling and visualization.

Findable Accessible
envibis.bio2e.inrae.fr

Perspectives

FermentON project : data query module between differents triplestores databases from several IS.

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