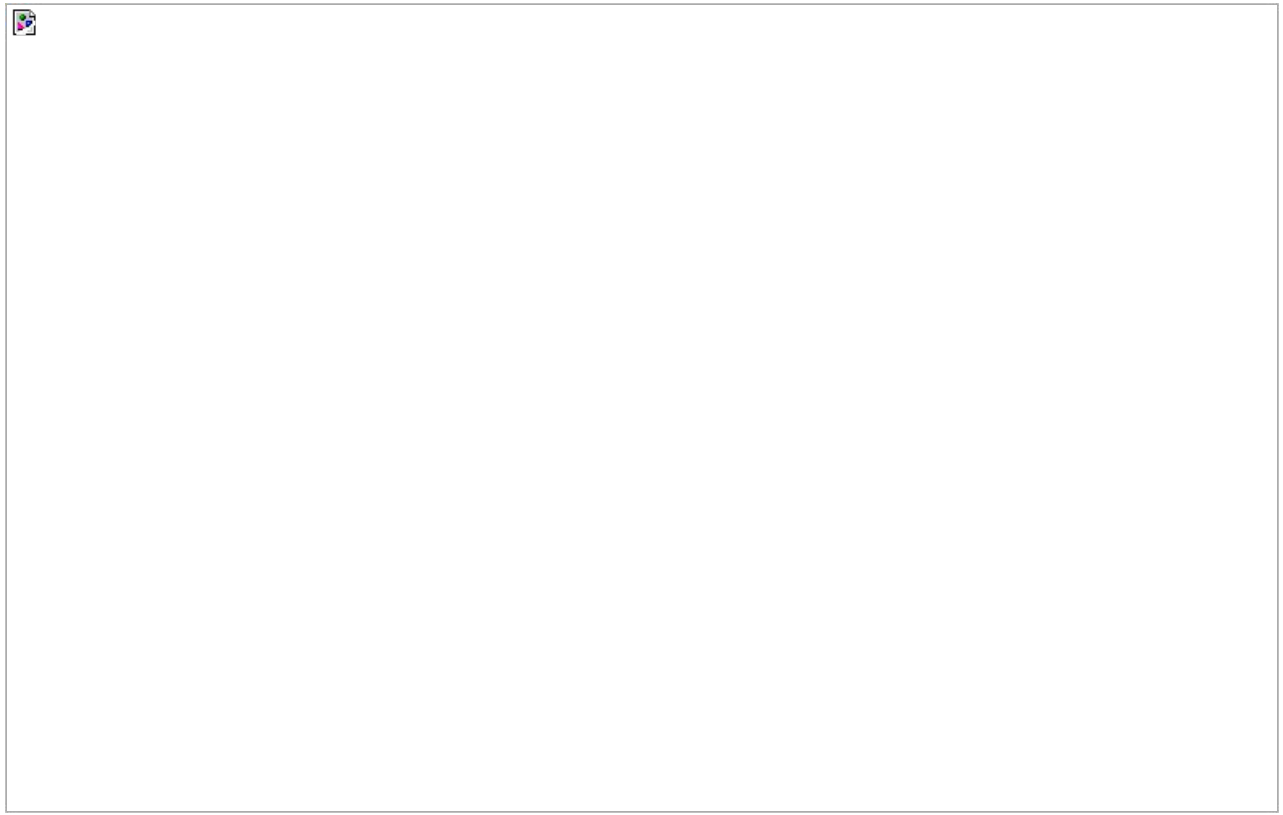
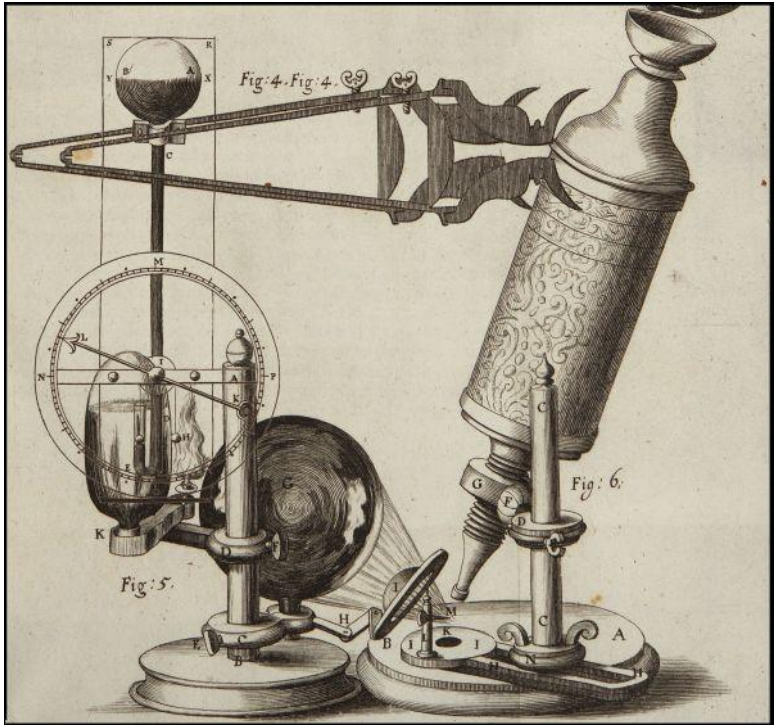
Standard Description of Big Data Neuroimaging Experiments

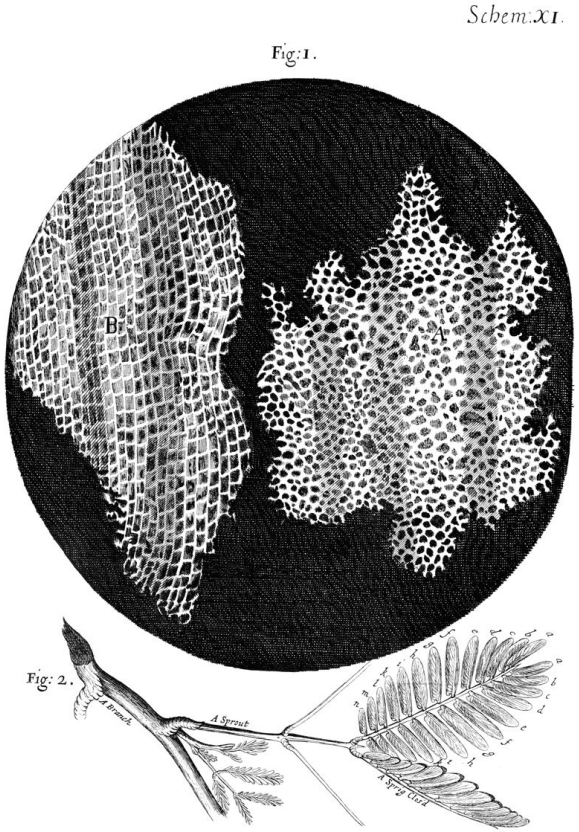
Bridging the gap

A brief history



A brief history





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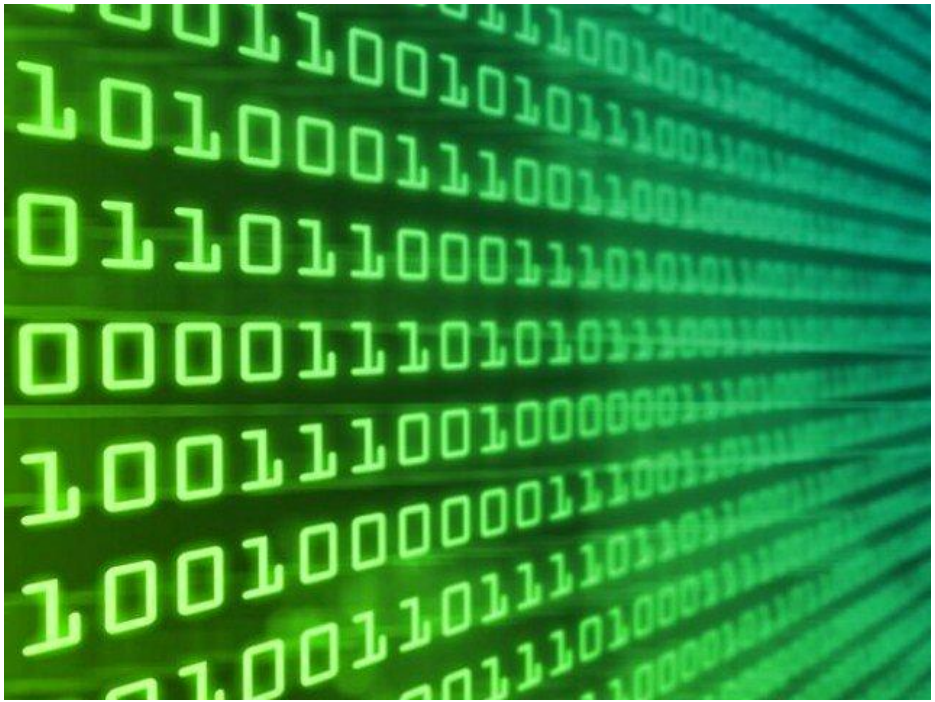

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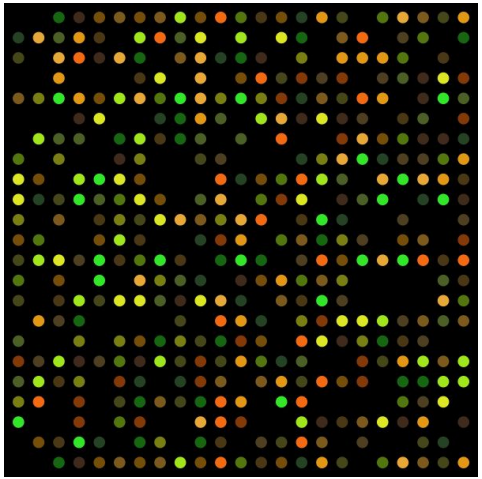
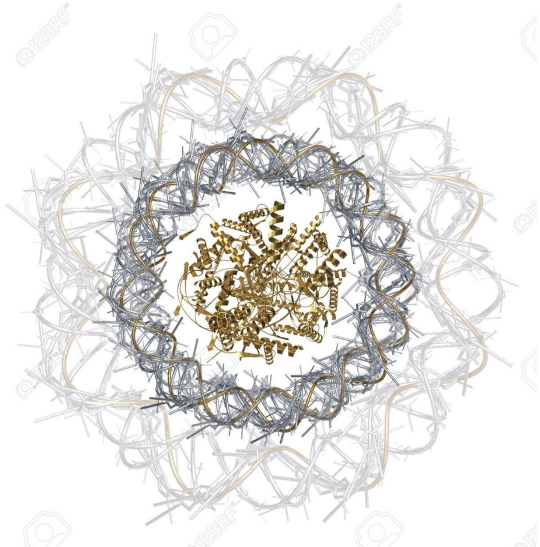
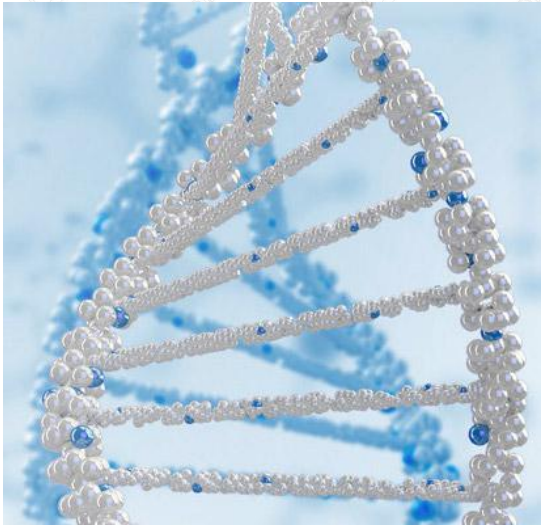






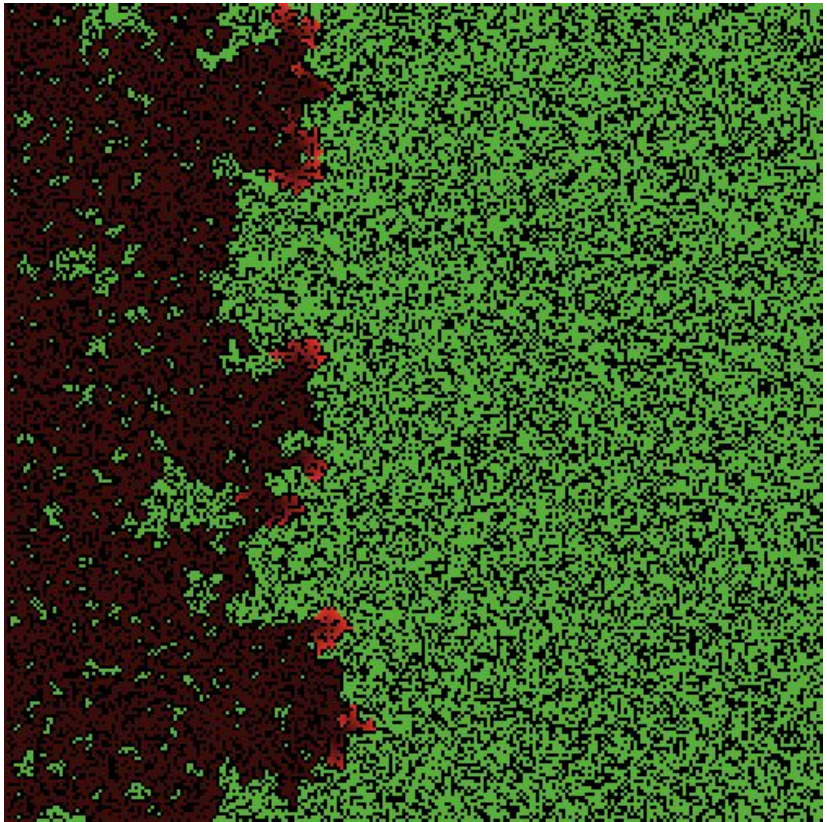
Workflow systems

Encapsulate processes

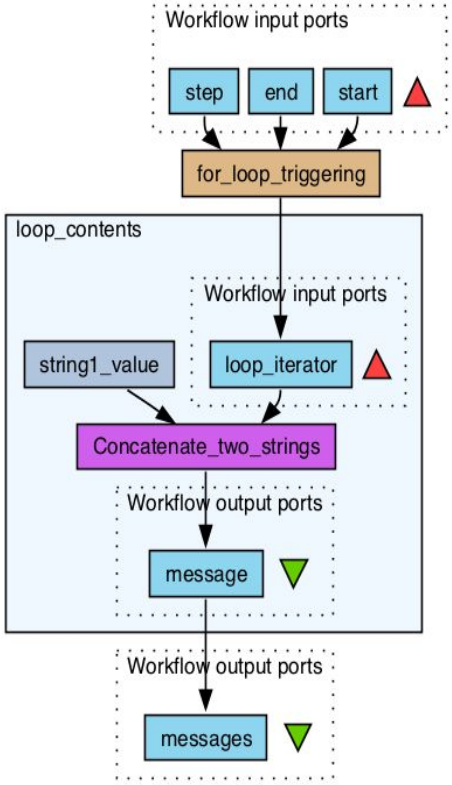
Remote execution

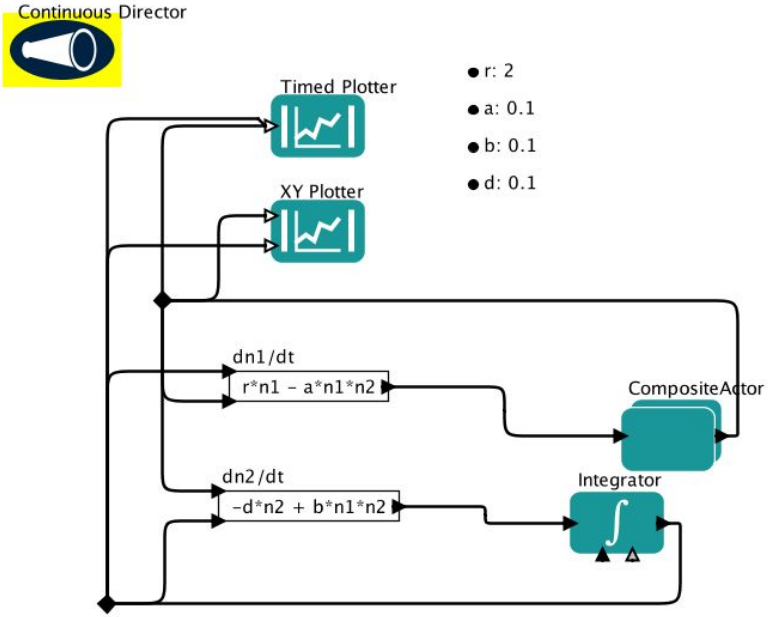
Data provenance

Parameter space exploration



Workflow systems






```
val i = Val[Double]
val res = Val[Double]

val exploration = ExplorationTask(i in (0.0 to 10.0 by 1.0))

val model =
  ScalaTask("val res = i * 2") set (
    inputs += i,
    outputs += (i, res)
  )

val env = LocalEvironment(5)

exploration -< (model on env hook ToStringHook())
```

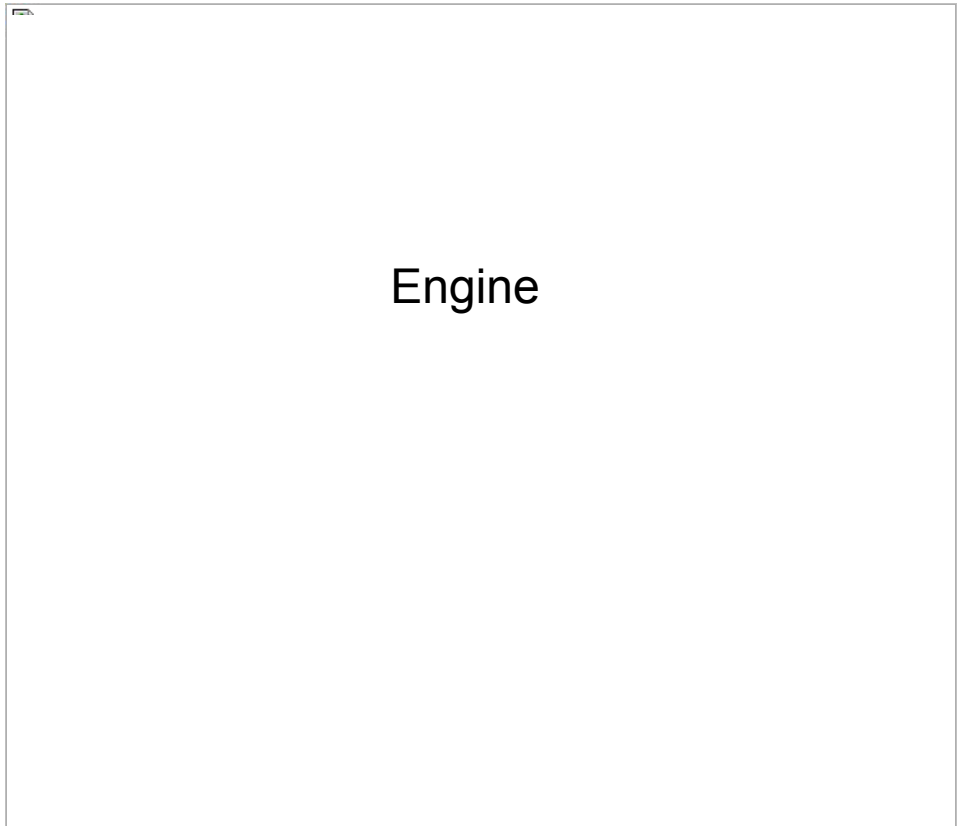
Common Workflow Language

Unifies workflow systems under one language

Provides its own schema language for validation

Supports many essential features for workflows

OpenMOLE


Language
Engine
Workflow Editor
Remote Execution
Client Program

OpenMOLE

Advantages:

- model experiments
- remote execution

Disadvantages:

- no data provenance tracking

OpenMOLE DSL

Scala

Tasks

Samplings

Hooks

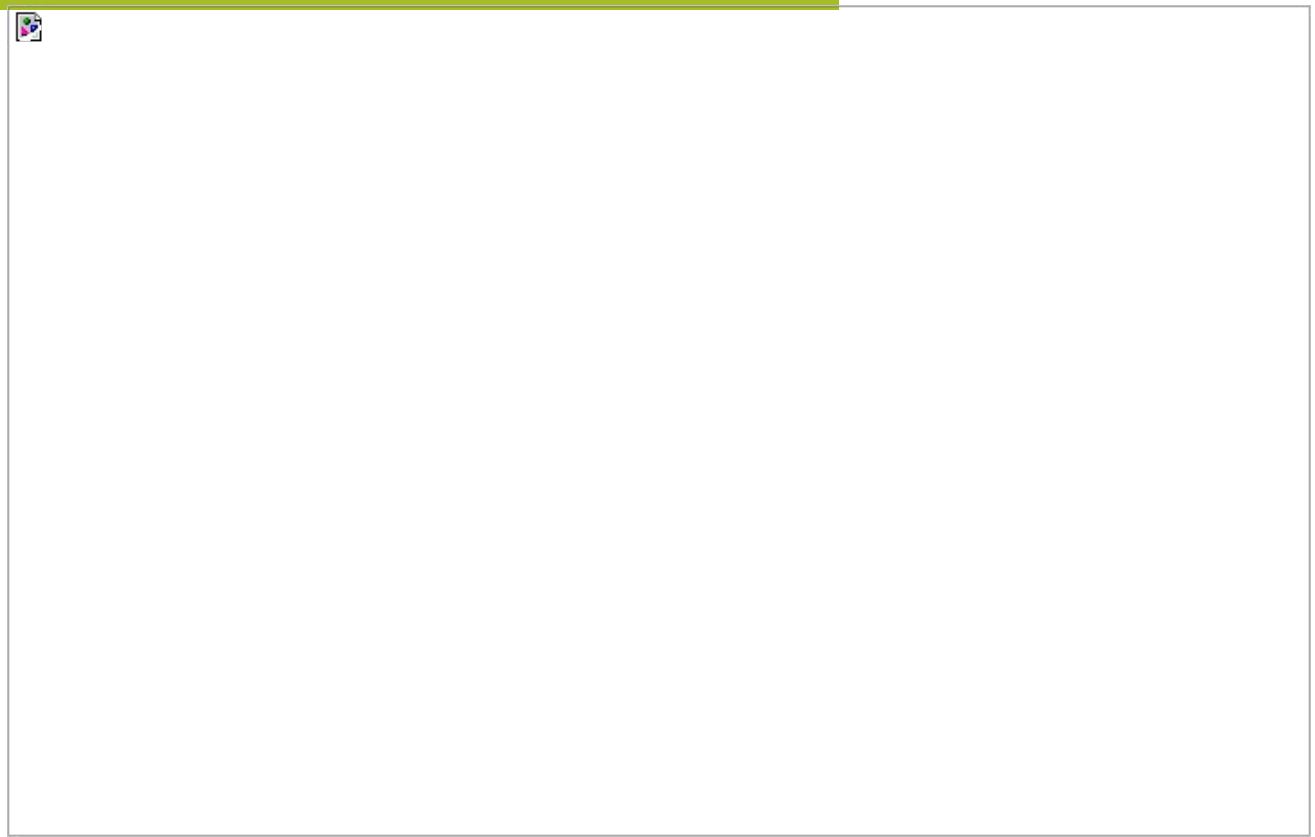
Environments

Goal

Comparison

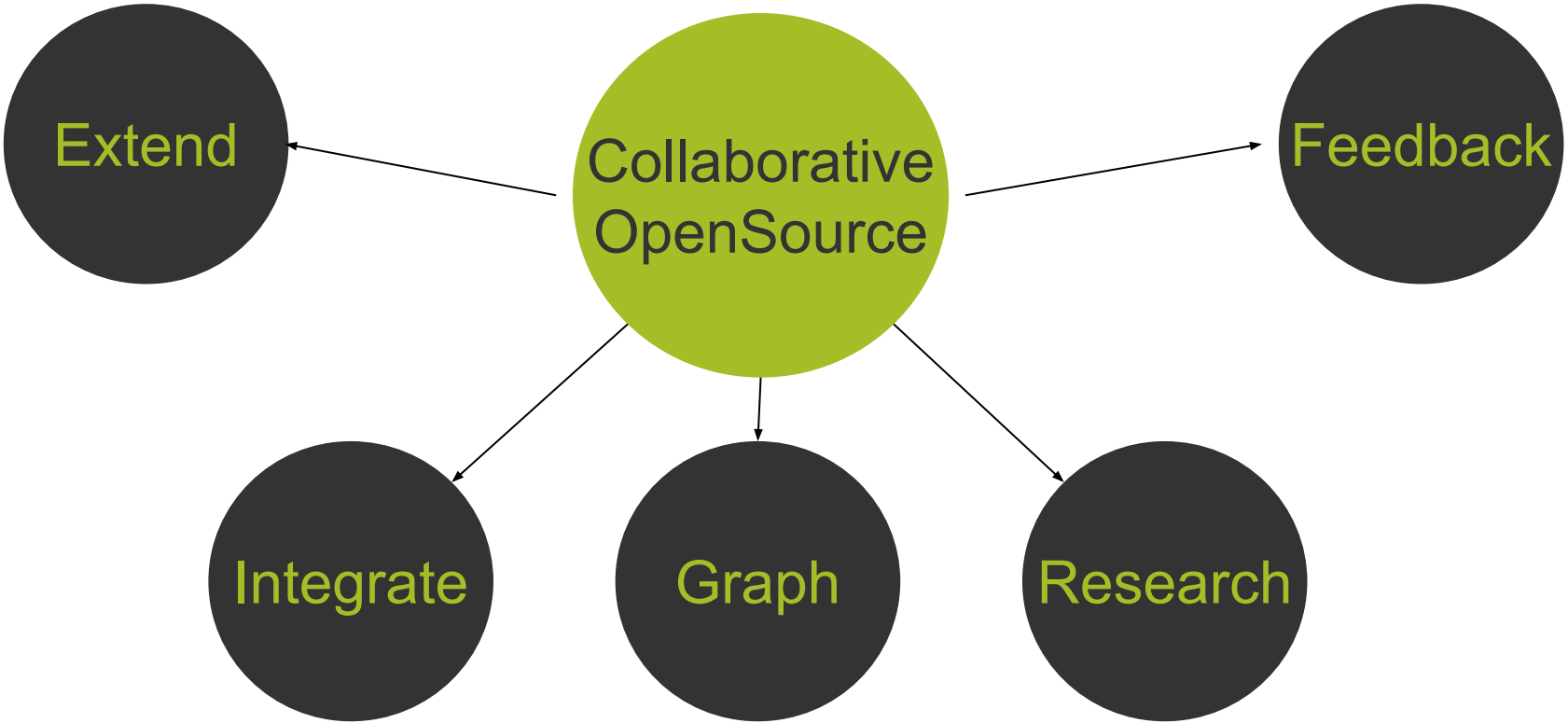
- Steps
- Labels
- Types
- Natural parallelism
- Exploration
- Aggregation
- Inline Javascript expressions
- Docker
- Shell
- User control over HW resource allocation

Design and Implementation



DEMO

So what's next?



Contributions

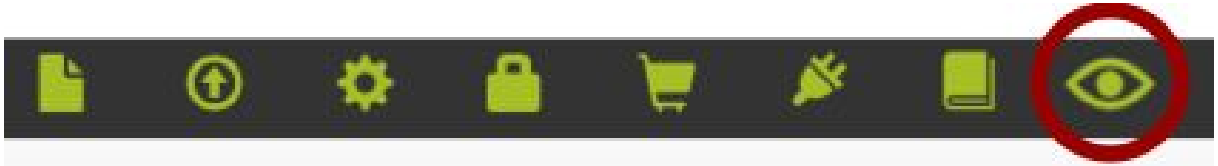
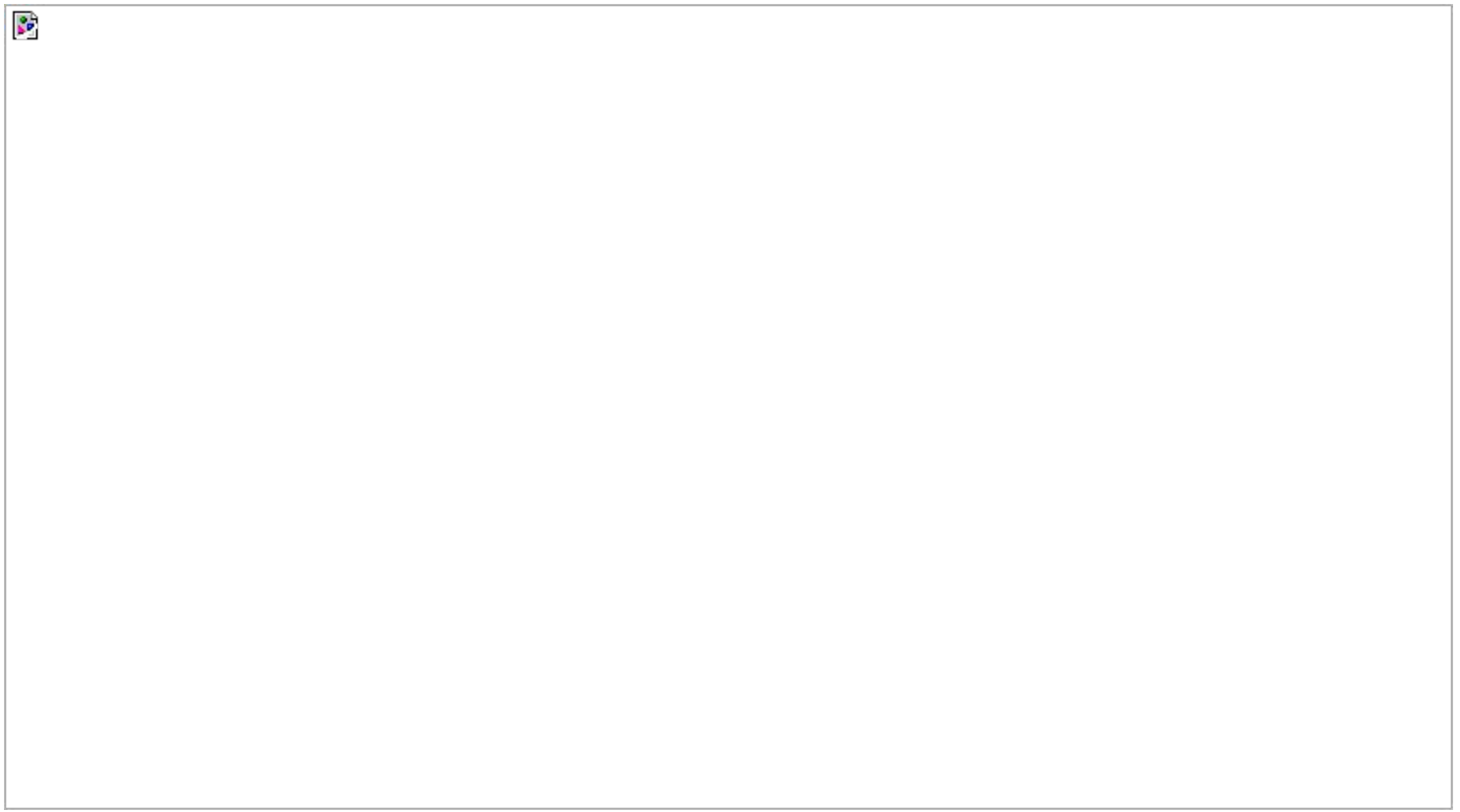
Analysed existing workflow platforms

Comparison between CWL and the OpenMOLE DSL

Extendable and modularised approach

Parser and Translator (basic implementation)

Prototype for graphical representation

Thank you!

Questions?