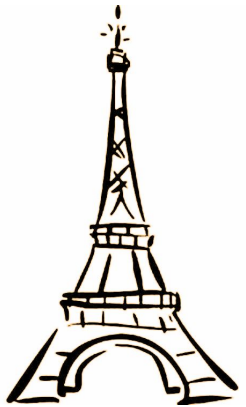
WES up?

#15 - Development of a GA4GH-compliant, language-agnostic workflow execution service

BioHackathon 2018 Paris

November 12, 2018

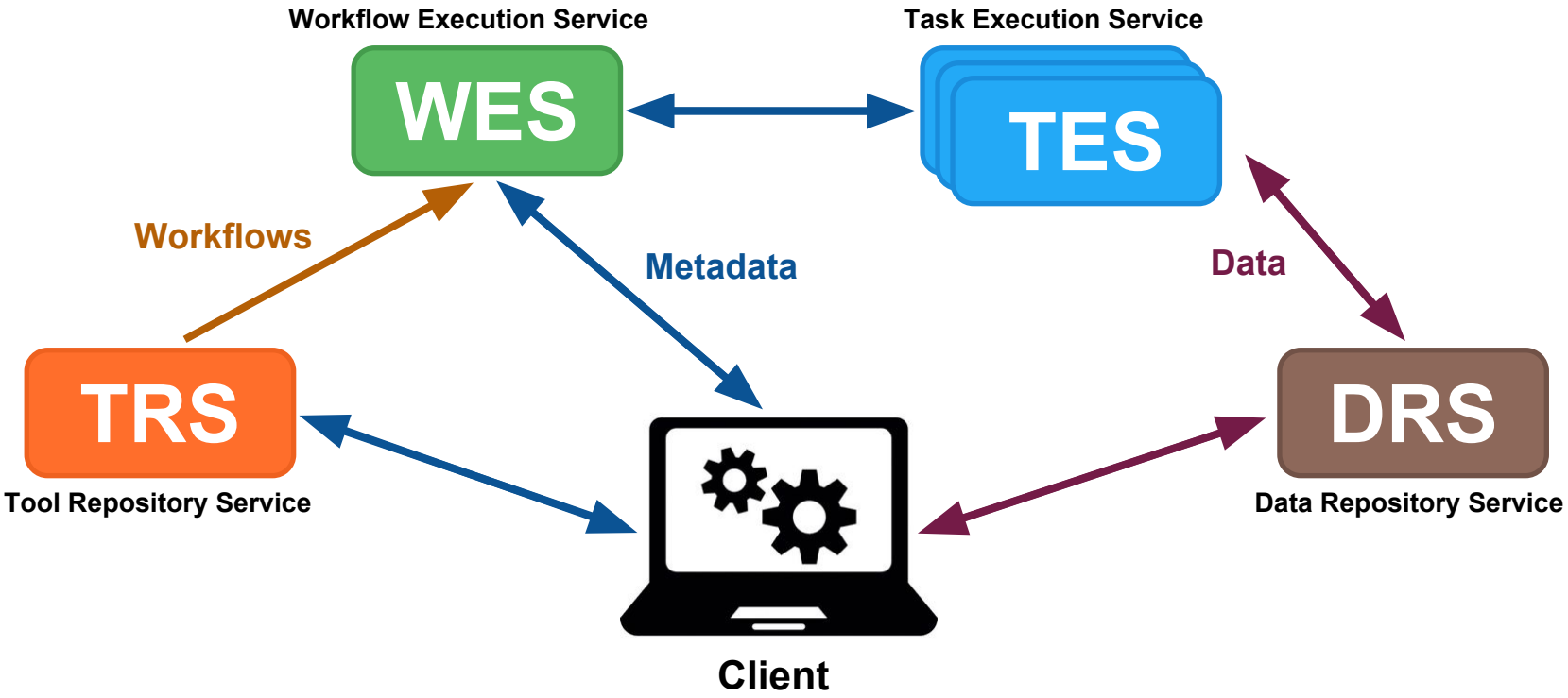


Global Alliance for Genomics & Health (GA4GH)

- International non-profit organization, formed in 2013
- Creates frameworks & standards for responsible, voluntary & secure sharing of health-related data
- Supports & promotos ***FAIR*** data principles
  - ***F****indable*
  - ***A****ccessible*
  - ***I****nteroperable*
  - ***R****e-usable*

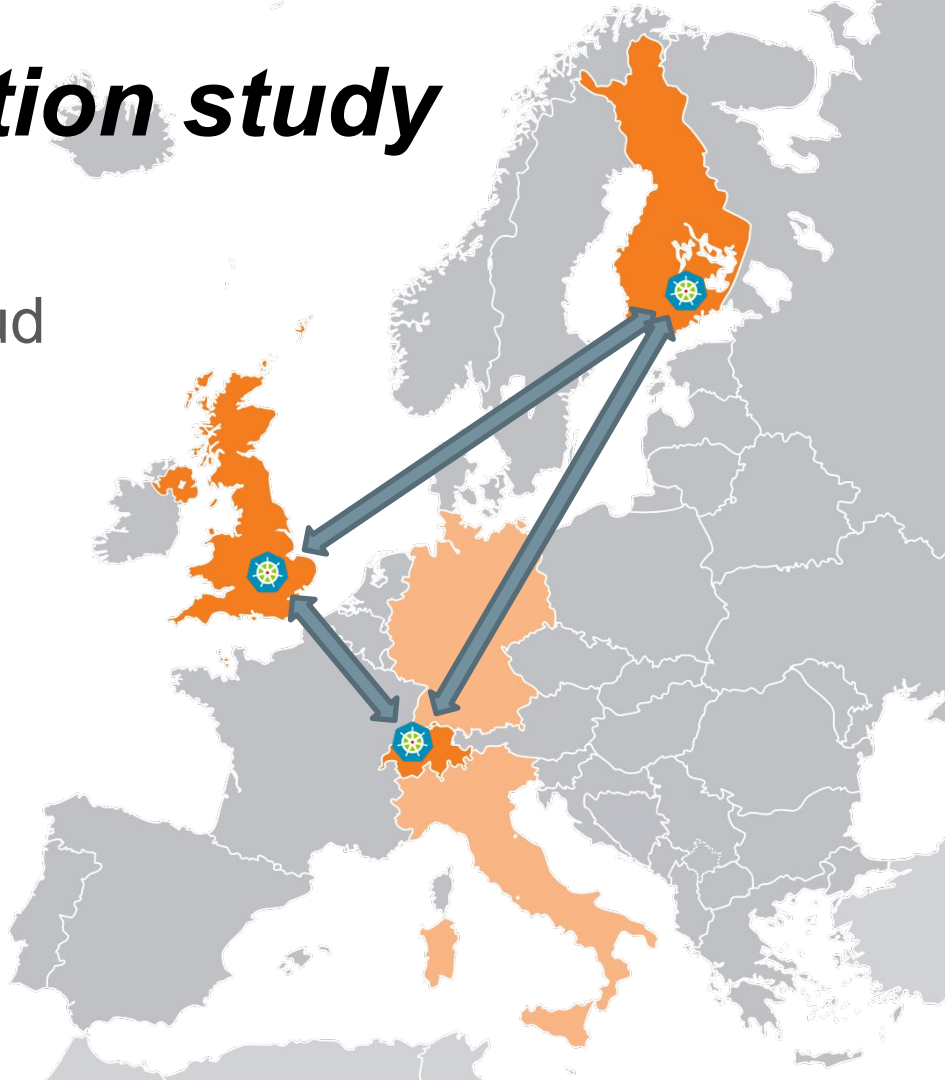
Global Alliance
for Genomics & Health

GA4GH “Cloud Work Stream” APIs



ELIXIR Implementation study

- Operationalize *GA4GH* Cloud WS standards
- **Federated** *GA4GH* workflow ecosystem
- Nodes in
  - UK
  - Finland
  - Switzerland
  - Germany (*soon!*)
  - Italy (*soon!*)
  - ...

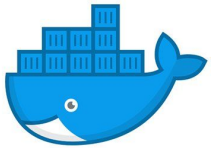


WES-ELIXIR

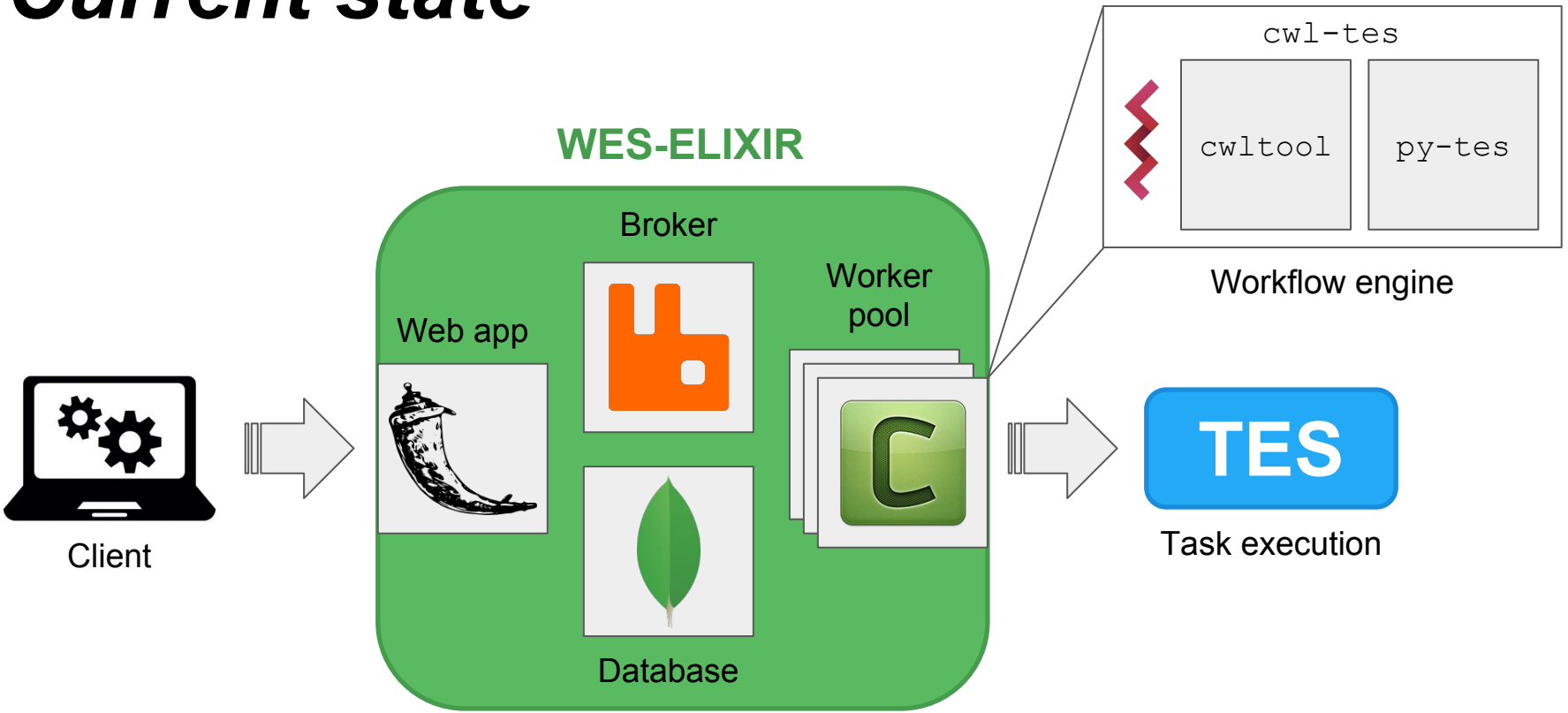
http://193.167.189.73:7777/ga4gh/wes/v1/ui/

- Developed in Basel (ELIXIR Switzerland)
- Compliant (almost) with most recent WES specs (`v1.0.0`)
- Lean service designed to work together with TES
- Currently only CWL support
  (via `cwl-tes`, `cwltool` and `py-tes`)

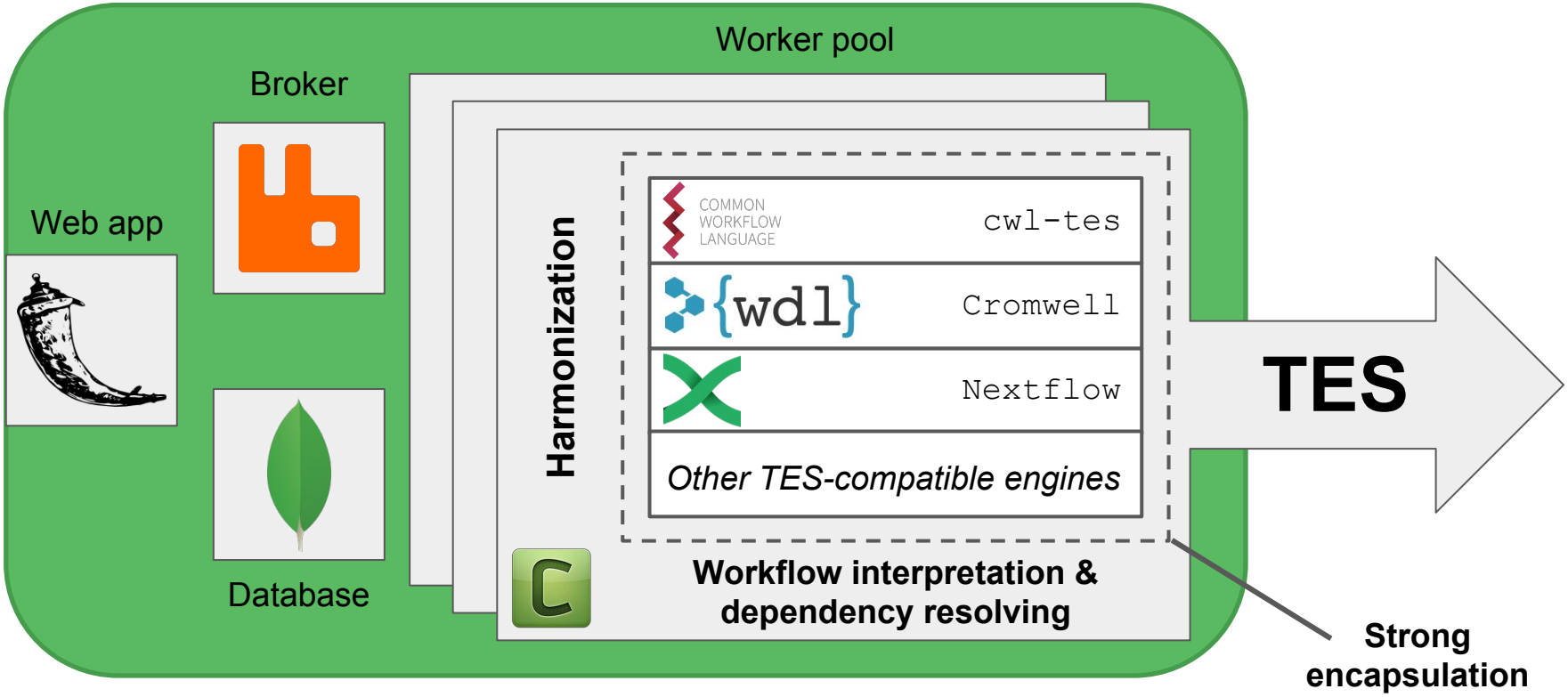
- Python Flask microservice with
  - “Modelless” API rendering by Zalando Connexion and Swagger/OpenAPI
  - MongoDB database
  - Background execution of cwl-tes via Celery/RabbitMQ
  - Containerized deployment via Docker



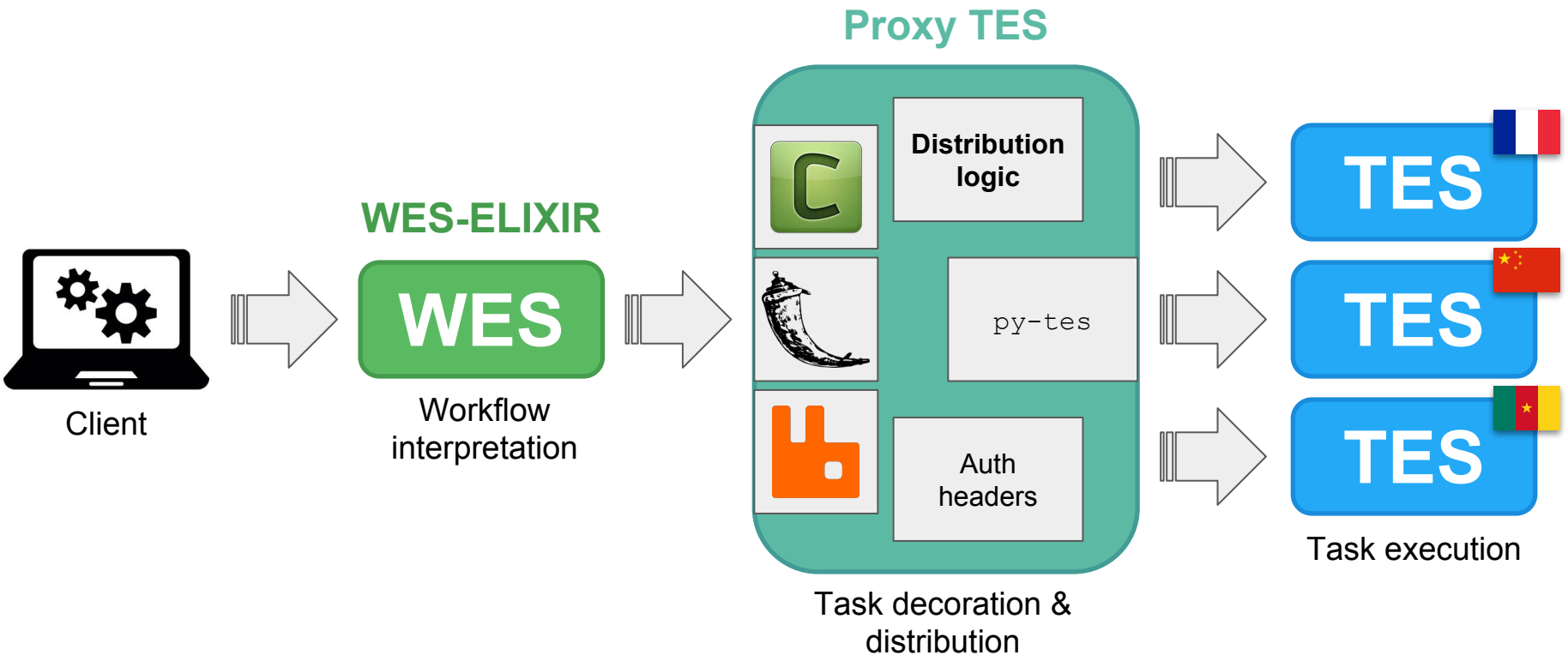
Current state



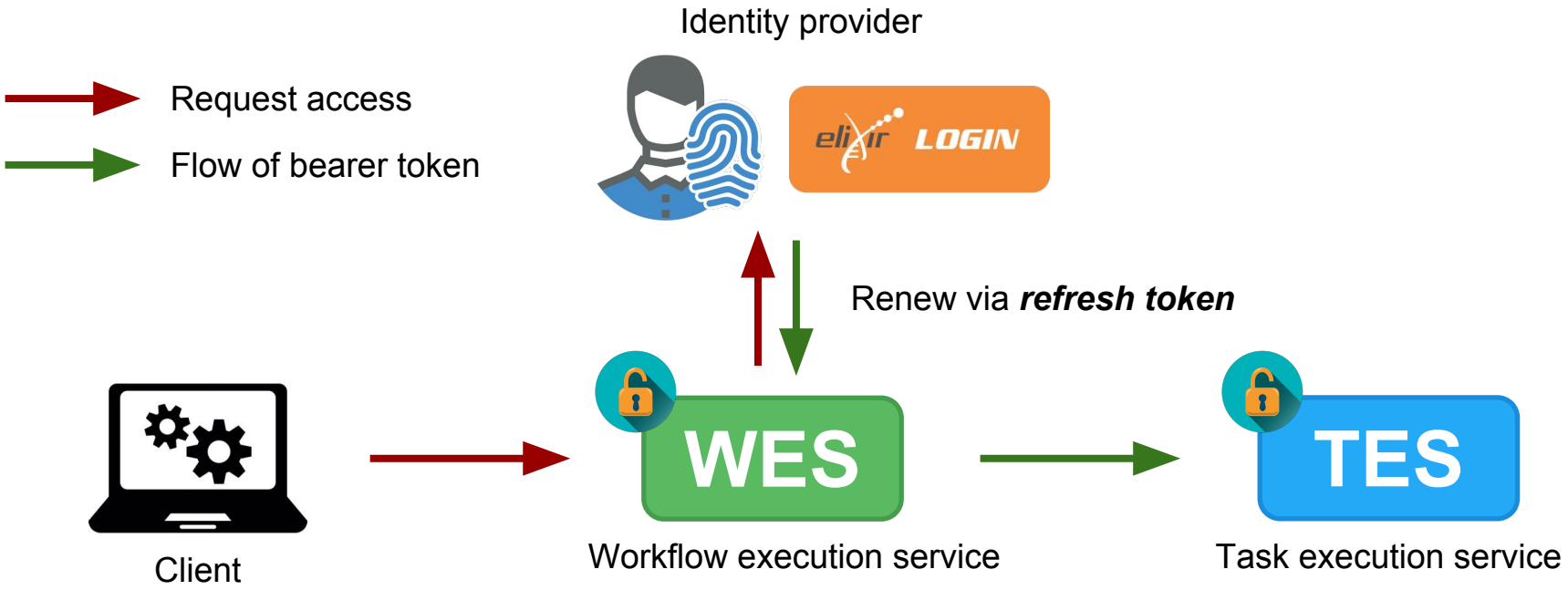
WP1: Pluggable workflow engines



WP2: Task distribution



WP3: OpenID Connect authorization



WP4: Production-grade deployment

- Packaging WES-ELIXIR & TESK*

  *TES implementation developed mainly at EBI
- Setting up Gunicorn & NGINX HTTP servers
- Kubernetes deployment scripts

WP5: Few small self-contained issues

- Validation/matching of offered and requested service info
- Database life-cycle management
- ...

Acknowledgments

Global Alliance for Genomics & Health

elixir

COMMON WORKFLOW LANGUAGE

CSC

EMBL-EBI

SIB

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Hackers welcome!*

*** Programmers, web developers, bioinformaticians, devops engineers, anyone else with an interest**

https://github.com/**elixir-europe/WES-ELIXIR**