EOSC ENVRI DevOps framework -- Progress report

Zhiming Zhao

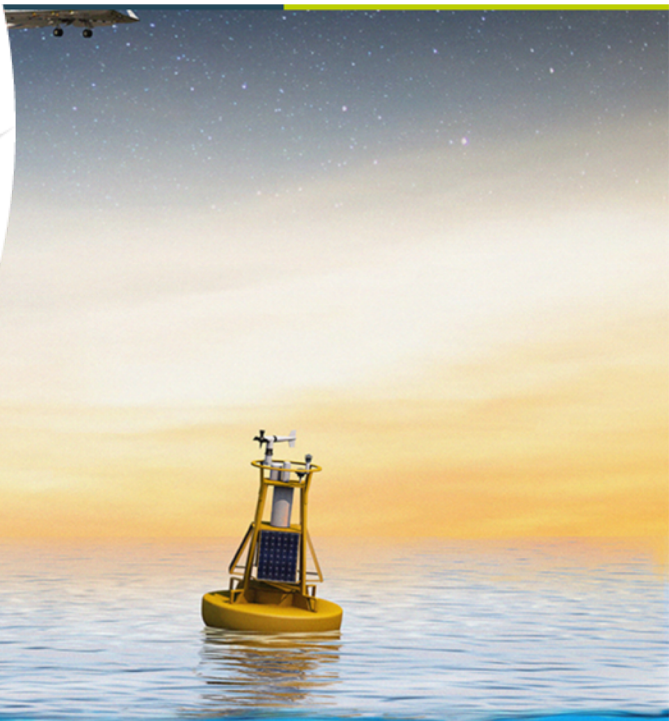
University of Amsterdam

ENVRI-FAIR WP7 leader

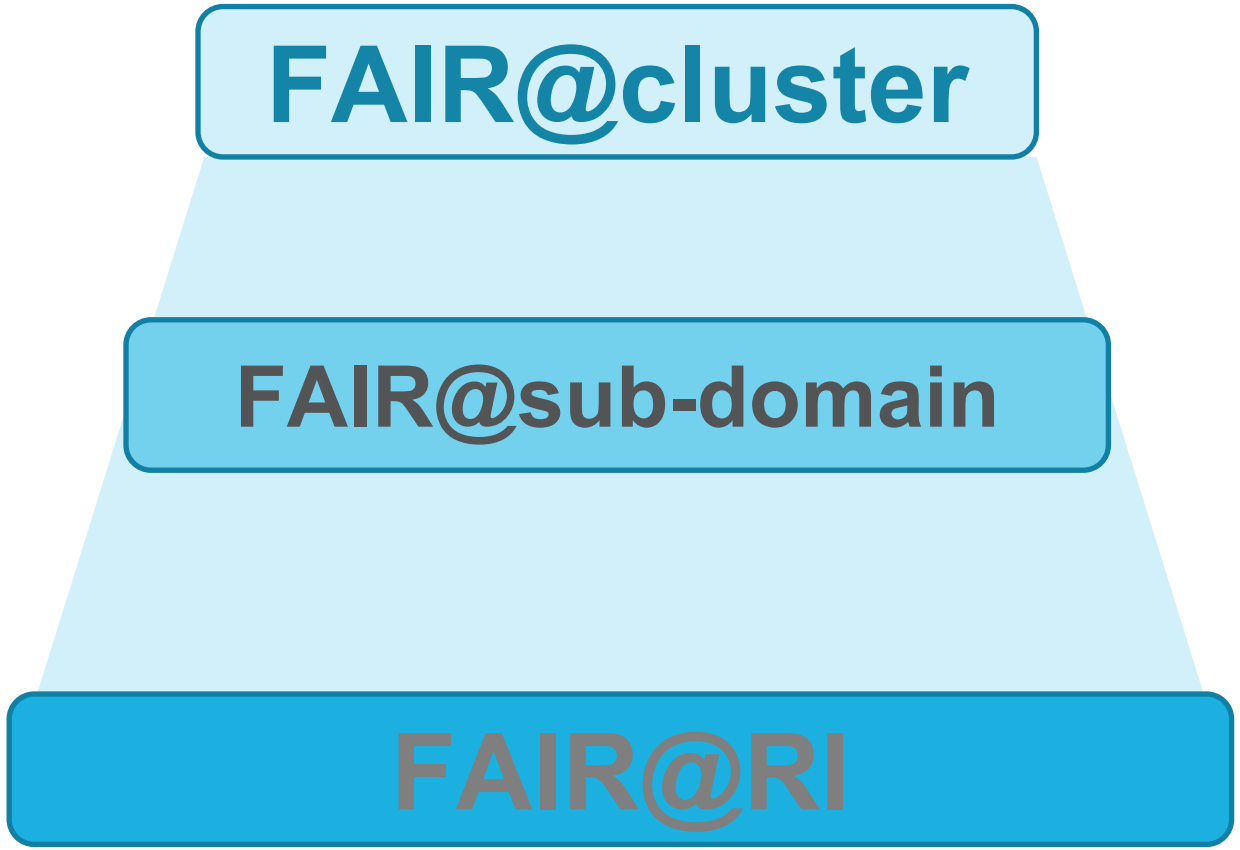
ENVRI-FAIR has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824068

ENVRI: a cluster of research infrastructures in environmental and earth sciences

www.envri.eu



ENVRI-FAIR development activities



Time line

- Use case 1: workflow automation
- Use case 2: Jupyter notebook for data intensive science
- Use case 3: DOSC DevOps framework

Phase 1	Phase 2	Phase 3	Phase 4
Describe the key use case: scenario, scope, KPI, steps etc. **Get familiar with the EOSC services**, following training and practices from the other projects etc. Get the requested resource provisioned Setup OLA with resource providers and agreement with Jelastic.	**DevOps pipeline configured**, including Git, automated testing, integration and **deployment demonstrate** in at least via two service development	**Demonstrate the initial version of the workflow from ENVRI-FAIR**, with automated workflow execution in Cloud; **Demonstrate the other common data services** identified in the ENVRI communities (optional)	**Exploit** the results to the development activities in ENVRI-FAIR sub domain **Sustain** the development by finding new opportunities, e.g., new EOSC projects etc.

Agreements and confluence pages

1. EGI OLAs agreed with the resource providers (CESGA and INFN-CATANIA

2. VO vo.envri-fair.eu setup and SLA agreed
   a. https://operations-portal.egi.eu/vo/view/voname/vo.envri-fair.eu
   b. https://documents.egi.eu/public/ShowDocument?docid=3595

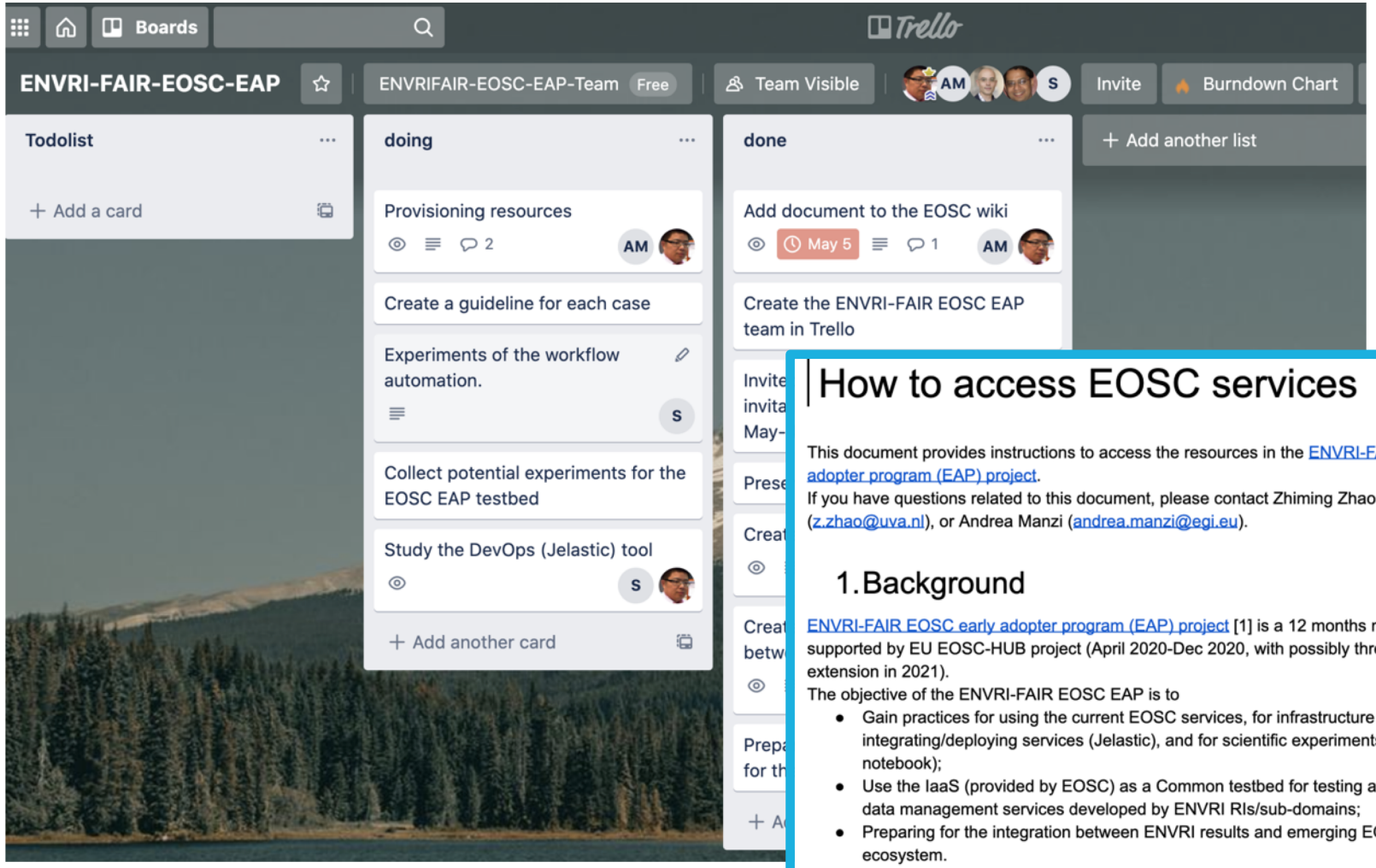
3. Signed agreement with Jelastic for the installation of the platform

4. EAP confluence page updated:
   a. https://confluence.egi.eu/display/EOSC/EOSC+DevOps+framework+and+virtual+infrastructure+for+ENVRI-FAIR+common+FAIR+data+services

5. CRM DB entry added:
   a. https://confluence.egi.eu/display/EOSC/ENVRI-FAIR

Internal management

- WP7 members from ENVRI-FAIR project
- Weekly call of WP7
- Current status:
  - Develop a demonstrator for IaaS
  - Provided a cloud introduction training
  - Integrating the Jupyter development
  - Collecting workflow and test cases
  - Learning Jelastic



How to access EOSC services

This document provides instructions to access the resources in the ENVRI-FAIR EOSC early adopter program (EAP) project.
If you have questions related to this document, please contact Zhiming Zhao (z.zhao@uva.nl), or Andrea Manzi (andrea.manzi@egi.eu).

1. Background

ENVRI-FAIR EOSC early adopter program (EAP) project [1] is a 12 months mini-project supported by EU EOSC-HUB project (April 2020-Dec 2020, with possibly three-month extension in 2021).
The objective of the ENVRI-FAIR EOSC EAP is to

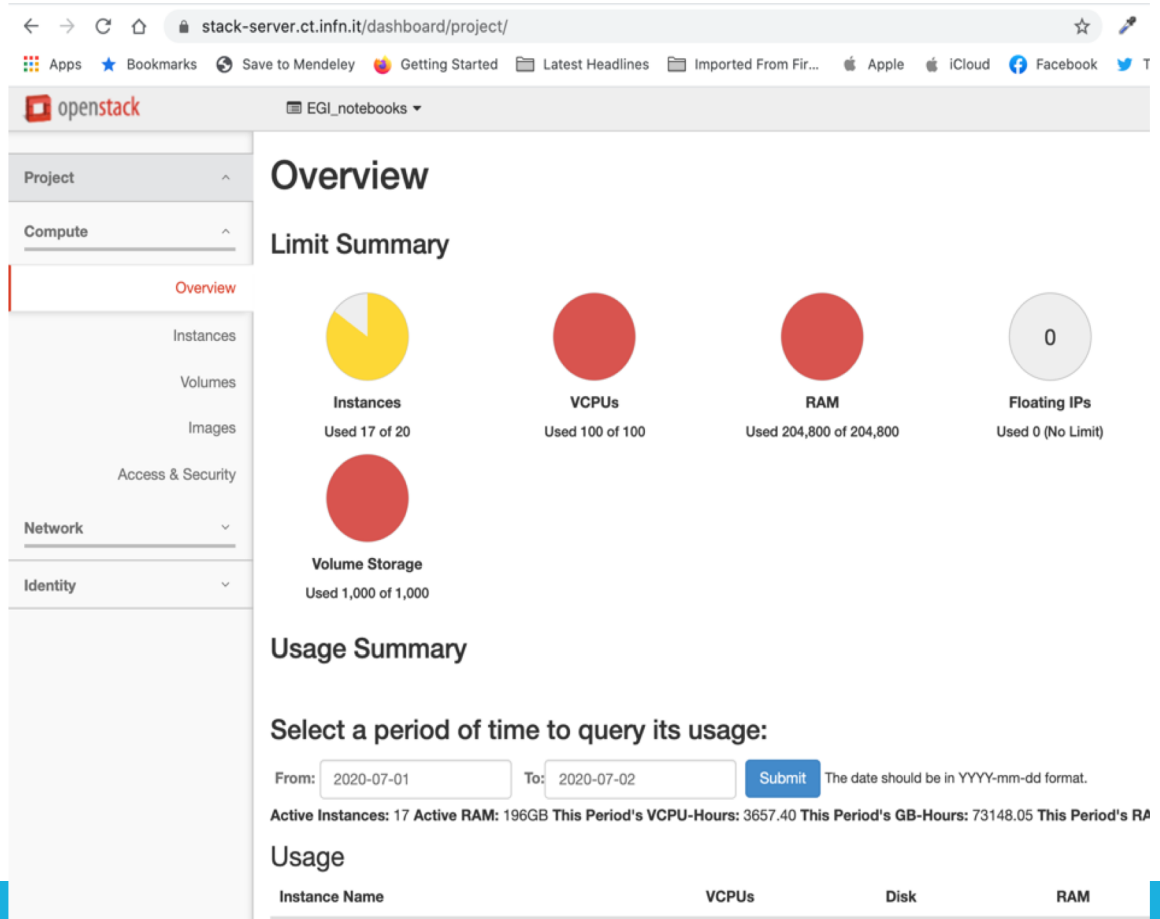
- Gain practices for using the current EOSC services, for infrastructure (IaaS), for integrating/deploying services (Jelastic), and for scientific experiments (e.g., Jupyter notebook);
- Use the IaaS (provided by EOSC) as a Common testbed for testing and integrating data management services developed by ENVRI RIs/sub-domains;
- Preparing for the integration between ENVRI results and emerging EOSC ecosystem.

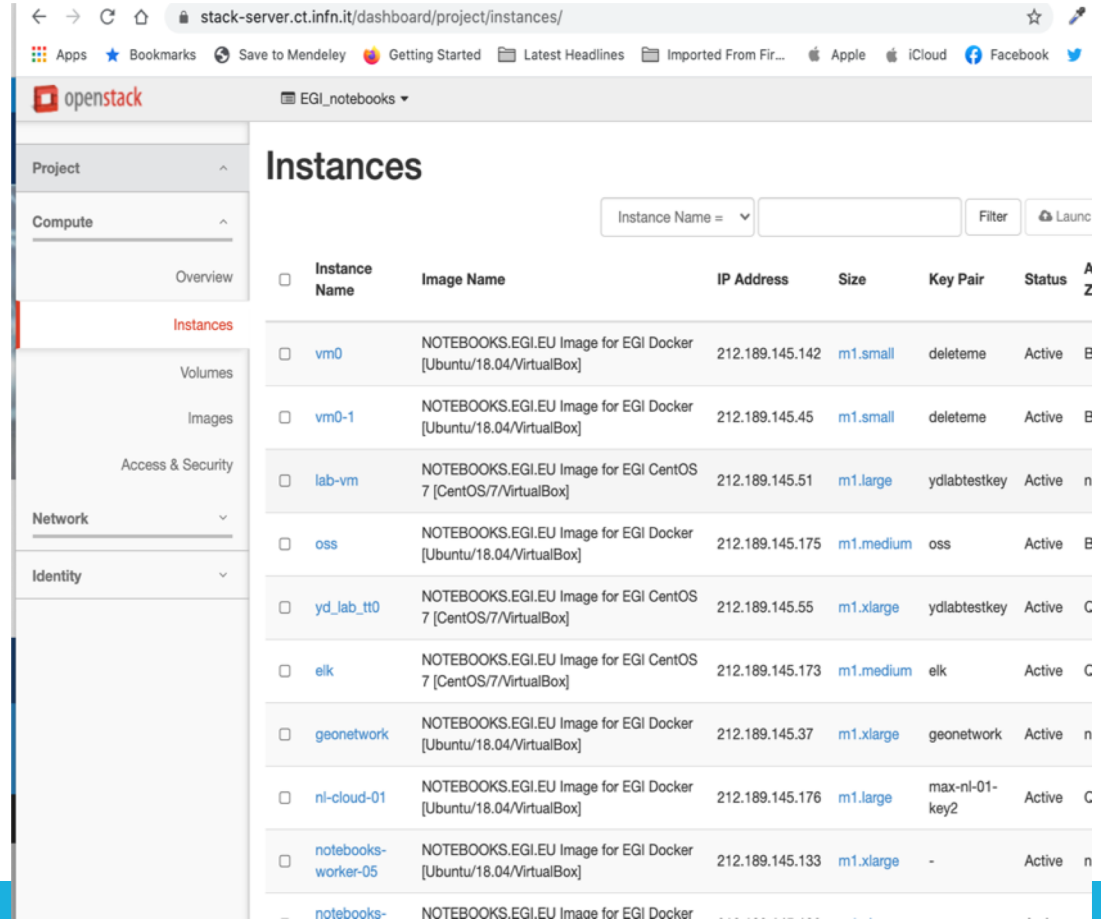
The EAP is structured into three scenarios:

- Automated virtual infrastructure provisioning and software deployment for scientific workflows
- Continuously software testing, integration and deployment for data management

Use case 1: automated workflow using IaaS

1.Get familiar with the OpenStack dashboard

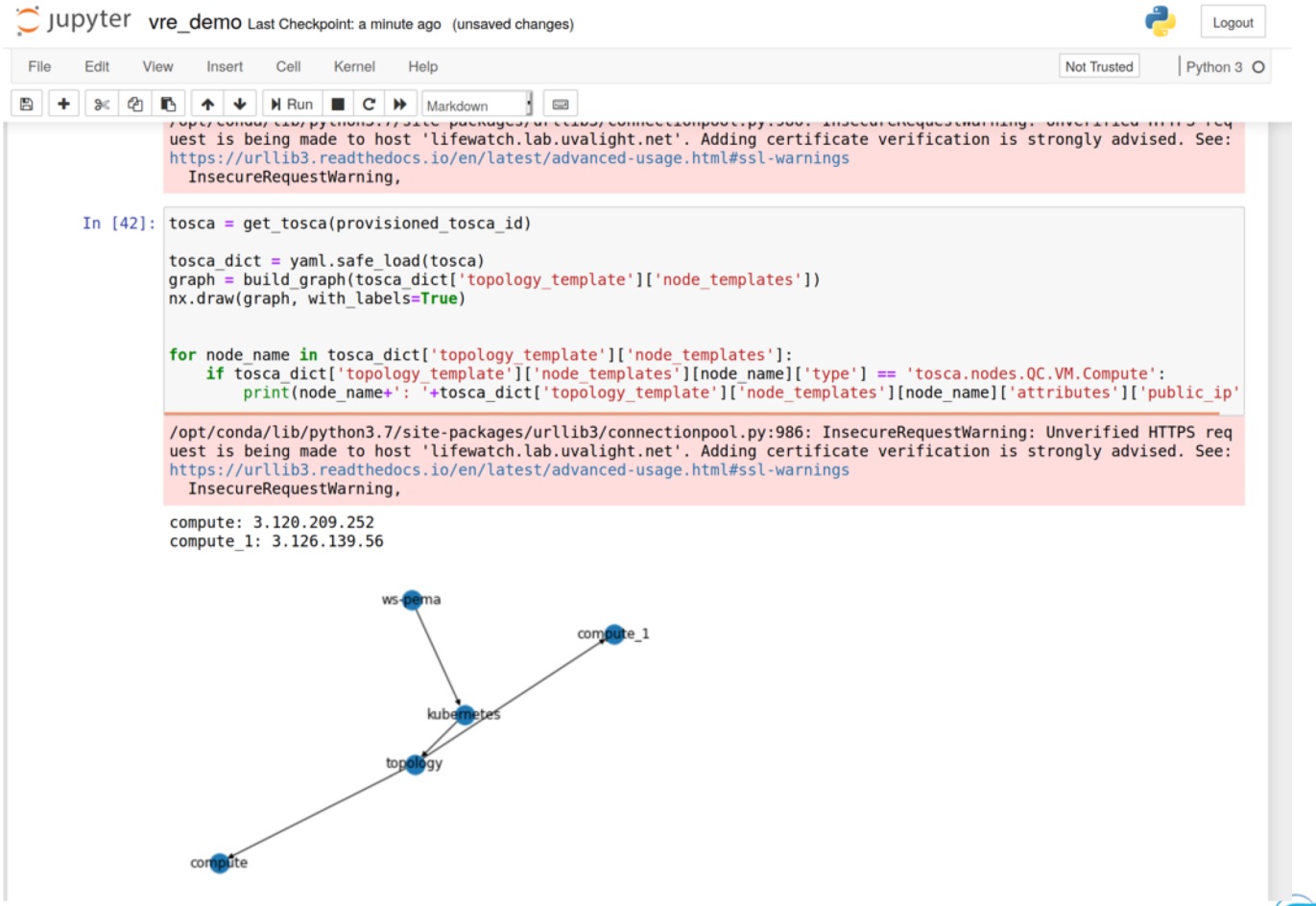




Use case 1: automated workflow using IaaS

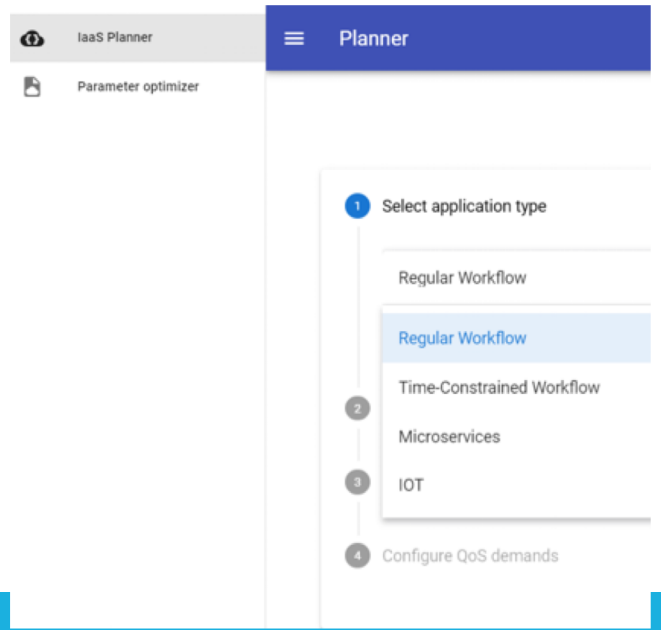
1. Get familiar with the OpenStack dashboard
2. Notebook of the automation tool, working on the code for the EAP IaaS

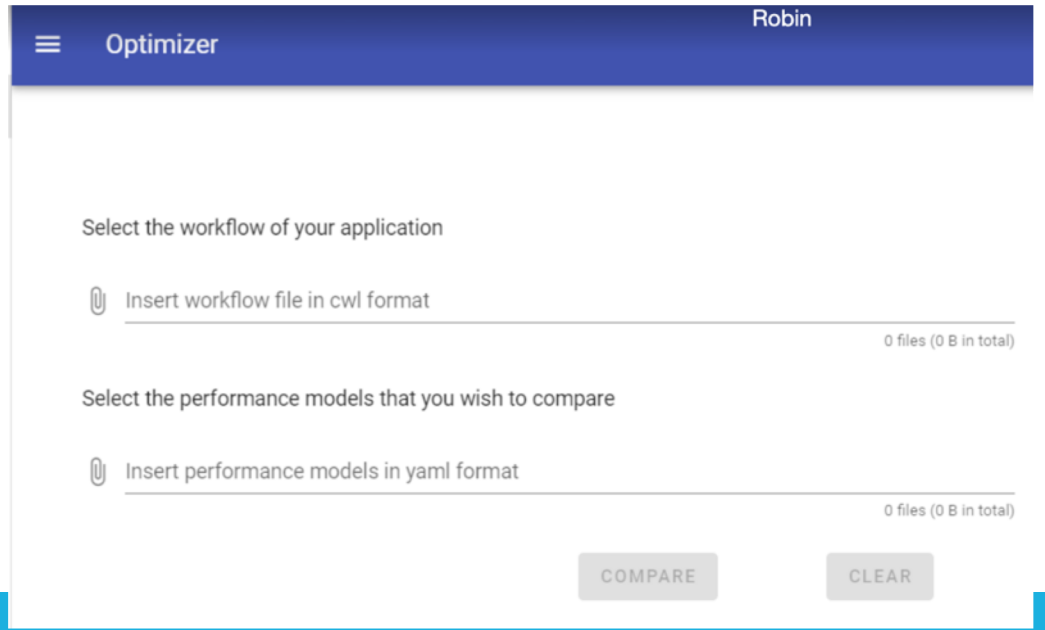
https://github.com/QCDIS/CONF/blob/develop/jupyter_notebooks/vre_demo.ipynb

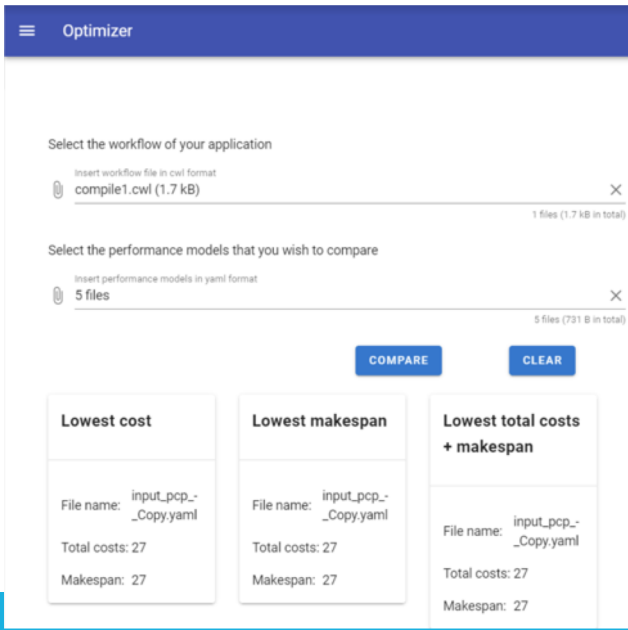


Use case 1: automated workflow using IaaS

1. Get familiar with the OpenStack dashboard
2. Notebook of the automation tool, working on the code for the EAP IaaS
3. Develop the infrastructure planner GUI for workflow







Use case 1: automated workflow using IaaS

1. Get familiar with the OpenStack dashboard
2. Notebook of the automation tool, working on the code for the EAP IaaS
3. Develop the infrastructure planner for workflow (screen snapshot)
4. Delivered a training

Programme and speakers

- **July 13th 2020**
  - 09.30 - 10.00 (CEST): Welcome and general presentation
  - 10:00 - 12:00 (CEST): **Cloud computing and application development for research infrastructures**

    In this webinar, we will discuss the basic concepts of cloud computing, including virtualization, containerization, service models, and cloud application development. We will also discuss how clouds can support data management and scientific workflows in the research infrastructures via examples from ENVRIplus and ENVRI-FAIR projects.

    Speaker: Zhiming Zhao

    Dr Zhiming Zhao is an assistant professor at University of Amsterdam (UvA). He leads the "Quality Critical Distributed Computing" research team in the group of Multiscale Networked Systems (MNS) at the System and Networking Lab (SNE). His research interests include big data management, Cloud and edge computing, software engineering, and blockchain. He leads the development support WP in ENVRI-FAIR and the VRE development in the LifeWatch-ERIC Dutch Virtual Laboratory Innovation Center. He is also the UvA PI in SWITCH, ENVRIplus, ARTICONF and several other projects.

After the course: http://tiny.cc/phbasz

Tutorial for the Webinar "An introduction to Cloud computing"

Speaker: dr. Zhiming Zhao, Support: dr. Spiros Koulouzis,
University of Amsterdam, Amsterdam, NL
LifeWatch ERIC, vLab & Innovation Center, Amsterdam, NL

The tutorial is part of the webinar "an introduction to Cloud computing", in the ENVRI community winter school 2020. In this tutorial, you will learn how to define a simple REST service using OpenAPI. You will also learn how to use Ansible and Kubernetes, a.k.a K8s to deploy the RESTful Web Service on a VM in Cloud environments.

We sincerely thank dr. Giuseppe Larocca and dr. Andrea Manzi from EGI to provide the testbed via the EGI training platform. The tutorial is supported by the EOSC early adopter program via ENVRI-FAIR project, and LifeWatch-ERIC. The testbed will be accessible after the webinar for 10 days; during those days we will also provide support for all technical questions.

0. Before you Begin

Install Ansible on local machine (laptop)

You will need Ansible for the assignment. Please install it on your local computer based on the following instructions:

What you need:
1. **A laptop**
2. **Follow instruction to get a VM (from EGI)**
3. **Follow the tutorials.**

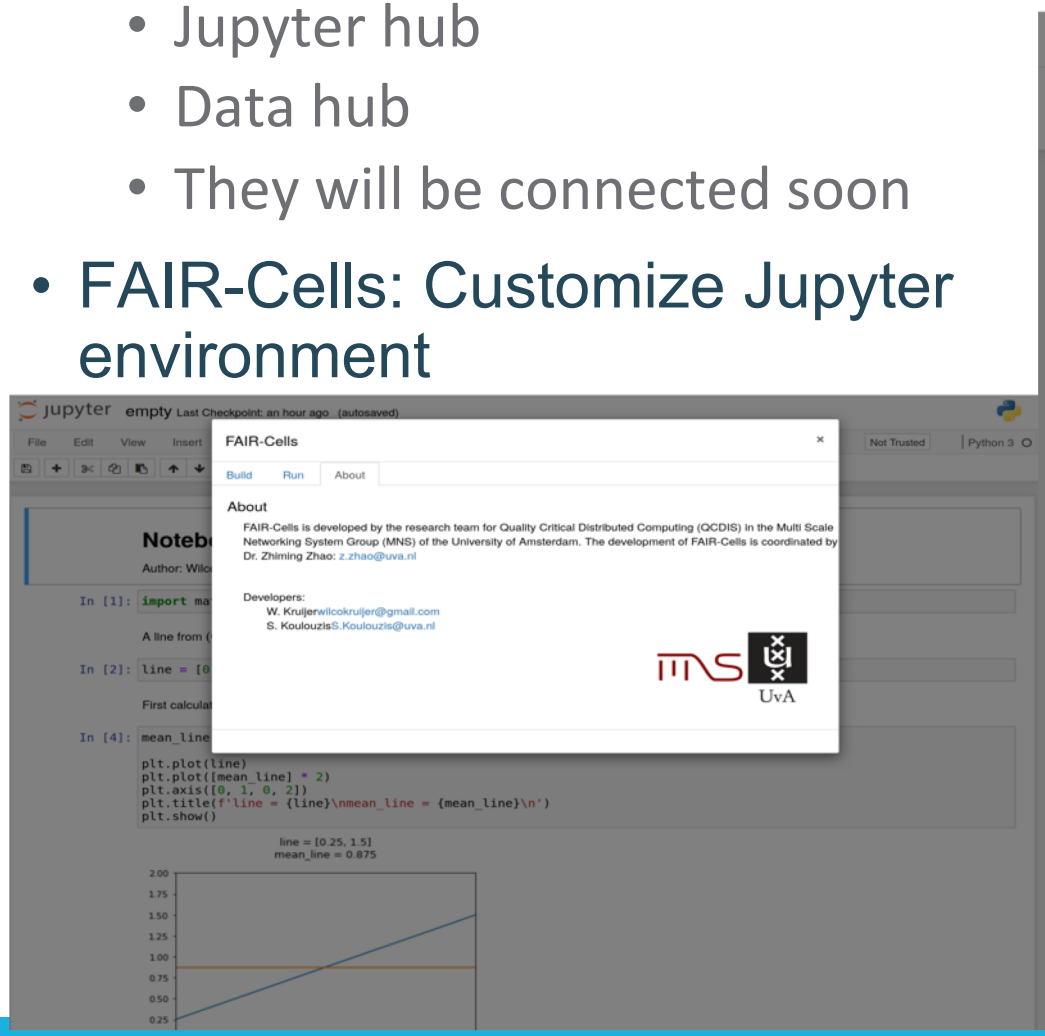
The VM will be available for 10 days.

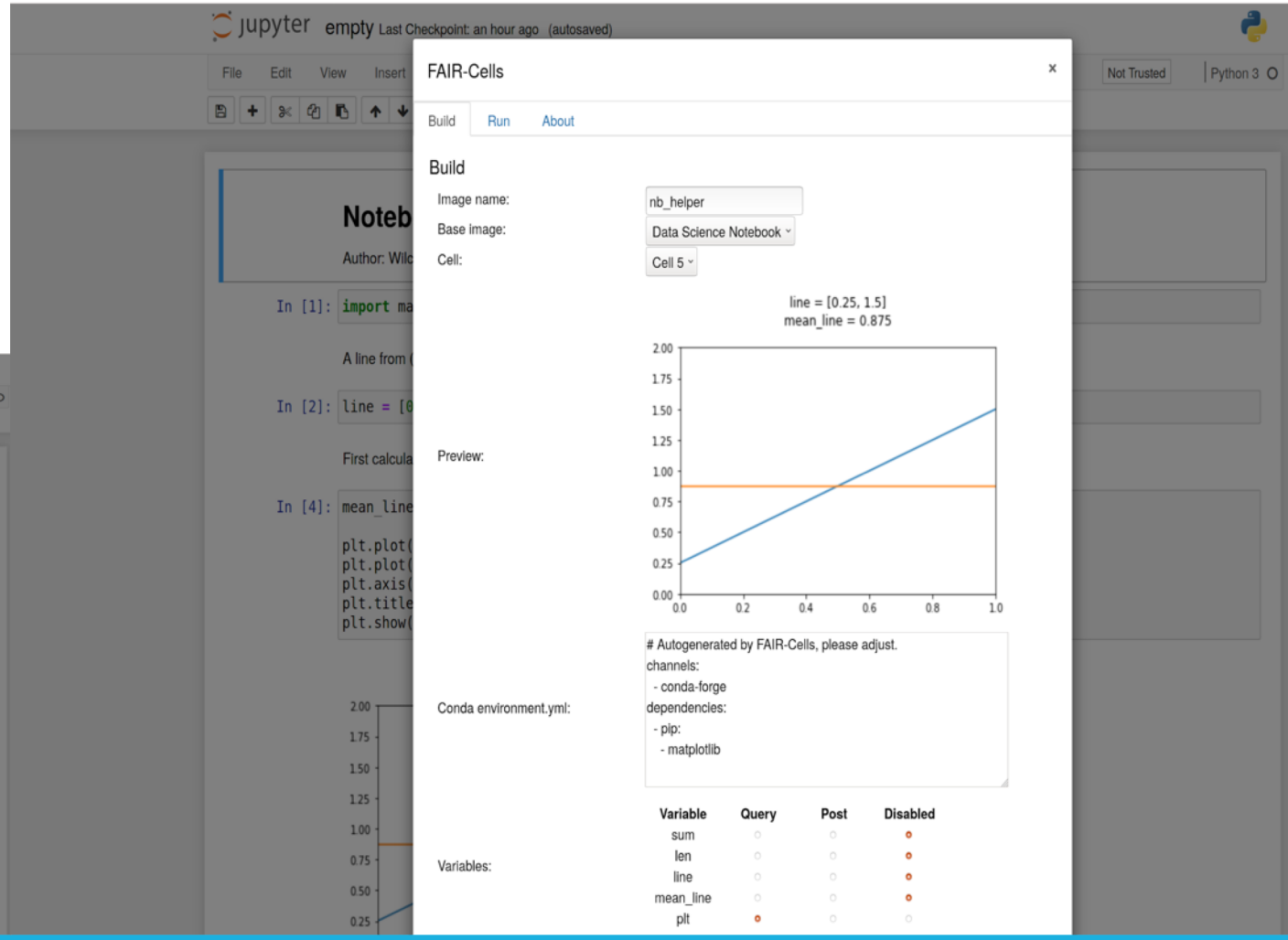
Use case 2: notebook for data sciences

- Jupyter extension development
  - Jupyter hub
  - Data hub
  - They will be connected soon

Use case 2: notebook for data sciences

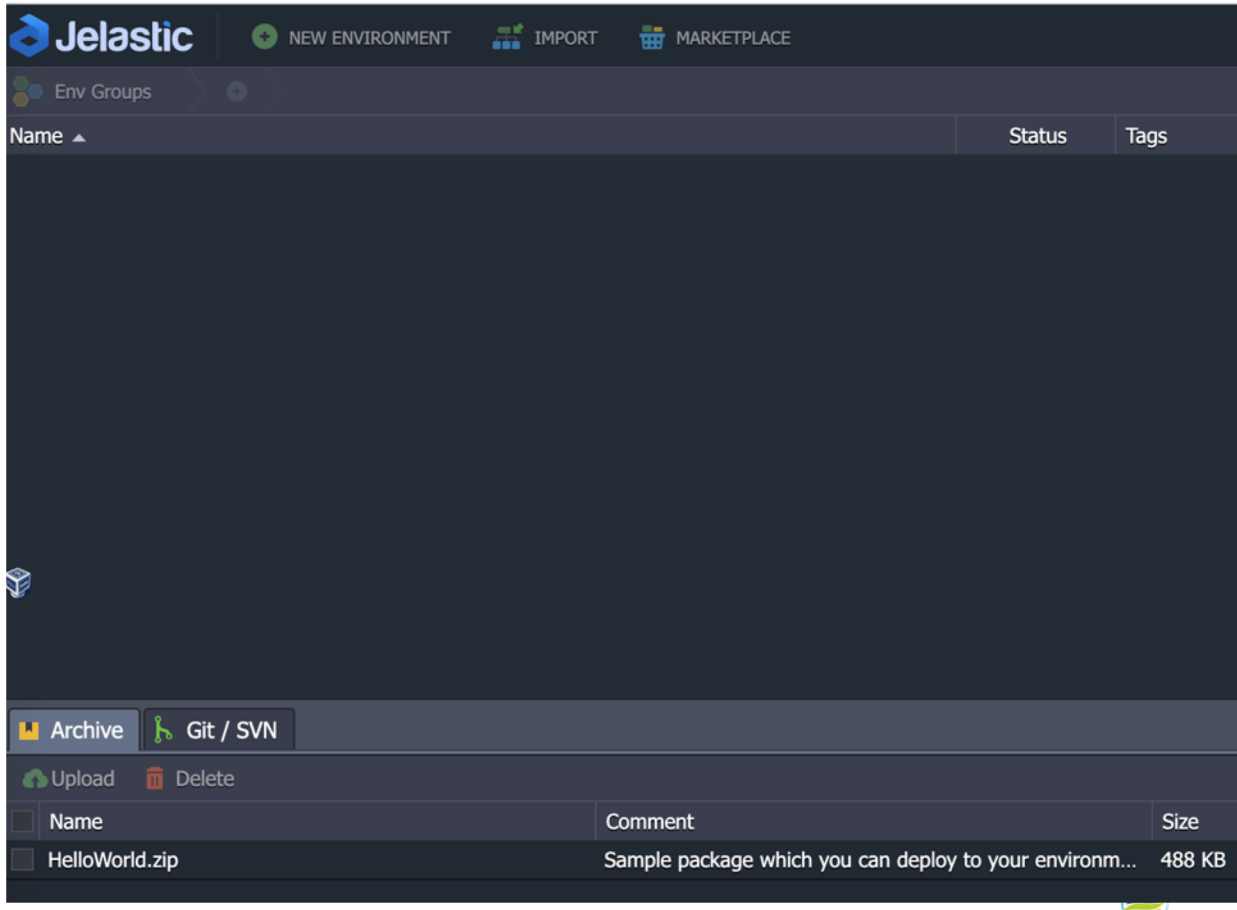
- Jupyter extension development
  - Jupyter hub
  - Data hub
  - They will be connected soon
- FAIR-Cells: Customize Jupyter environment





Use case 3: DevOps

- Get Jelastic provisioned
- Learning the technology



Summary

Phase 1	Phase 2	Phase 3	Phase 4
Describe the key use case: scenario, scope, KPI, steps etc. **Get familiar with the EOSC services**, following training and practices from the other projects etc. Get the requested resource provisioned Setup OLA with resource providers and agreement with Jelastic.	**DevOps pipeline configured**, including Git, automated testing, integration and **deployment demonstrate** in at least via two service development	**Demonstrate the initial version of the workflow from ENVRI-FAIR**, with automated workflow execution in Cloud; **Demonstrate the other common data services** identified in the ENVRI communities (optional)	**Exploit** the results to the development activities in ENVRI-FAIR sub domain **Sustain** the development by finding new opportunities, e.g., new EOSC projects etc.

Next phase

- Use case 1:
  - Demonstrator: infrastructure planning + automation
- Use case 2:
  - Demonstrator 2.1: from Jupyter to service flow
  - Demonstrator 2.2: demos from community
- Use case 3:
  - Demonstrator 3.1: demonstrate the automation of testing, integration, deployment

Sustainability

1. Exploitation of the results to the ENVRI communities
2. Getting support from other ongoing relevant projects, e.g. ARTICONF, BlueCloud and CLARIFY
3. Other opportunities

EOSC Earlier Adopter Program

www.envri.eu

envri.eu/envri-fair

@ENVRIcomm

ENVRI community

facebook.com/ENVRIcomm