

The SQAaaS platform

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SQA as a Service (SQAaaS)

What?

- Web service to compose *workflows to assess EOSC software & services*
- Currently *under development* (EOSC-Synergy), to be added to EOSC portal

Why (goals)?

- Foster **good practices within research software & service development** life cycle
- **Highlight the quality attributes/criteria** of EOSC services

How?

- Through **graphical composition of CI/CD pipelines** (DevOps)
 - **Criterion-driven** arrangement (see slide about SQA criteria documents)
 - CI/CD technology agnostic
- Issuing **digital badges** (Open Badges specification, rich metadata)

The SQAaaS platform

2 modules for a 2-fold objective

1. Bring over novel software engineering SQA practices close to researchers → DevOps
 - Common **struggle for researchers** (many CI tools & languages, not clear SQA criteria, ..)
 - *Graphical composition allows independence from CI/CD technology*
 - Implementation: harnesses **CI/CD pipelines**

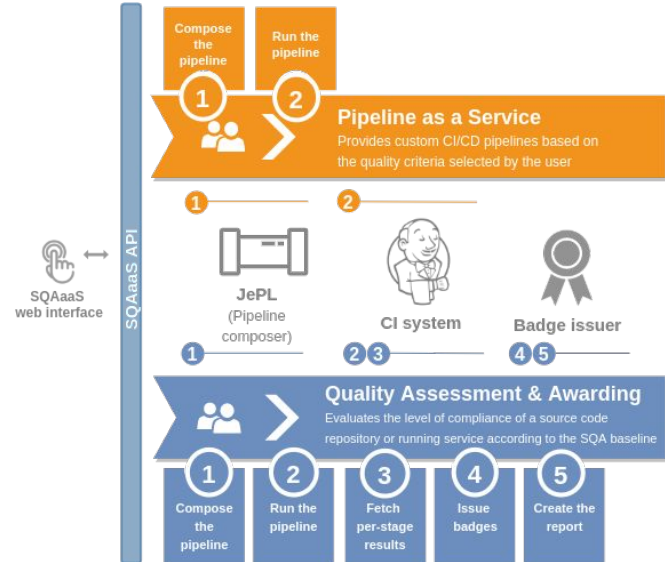


⇒ Pipeline as a Service

2. Take proper credit for your achievements through a SQA assessment tool
 - Outcome: **verifiable & shareable digital badges**



⇒ Quality Assessment & Awarding



<https://sqaas.eosc-synergy.eu>

SQAaaS portal: Pipeline as a Service

SQAaaS Software Quality Assurance as a Service

Pipeline as a Service

Compose and test your own customized quality pipelines

- 1 REPOS
- 2 SERVICES
- 3 CRITERIA
- 4 PIPELINE

[← BACK](#)

Quality criteria define the CI/CD pipeline work

It is then the underpinning part where the pipeline's purpose takes shape. The associated properties for each criterion will be displayed once selected in the dropdown list below

CHOOSE A CRITERIA

QC.Sty
 Select ...
QC.Sty
 QC.Uni
 QC.Fun
 QC.Sec
 QC.Doc

SELECT THE SERVICE

scipion-hadolint

Builder settings

According to the programming language in use, you can choose between builders. As a category for carrying out the work aligned with the given criterion.

CHOOSE A BUILDER TOOL


Select ...

[BACK](#)

Your pipeline has been successfully created!


[Download](#)

Discover the additional features we provide




Config summary

Provides a table-like view with the selections made when the pipeline was composed



JePL files


Check out the files that drive the execution of the pipeline



Pull request

Create a pull request to add the pipeline to your preferred repository

[GitHub only](#)





Try out

Execute the composed pipeline and check the results

<https://sqaaas.eosc-synergy.e>

What about the quality criteria?

- SQAaaS' single source of truth, 2 sets:
 - **Software:** adopted, mature document
 - **Services:** by virtue of EOSC delivery model
- Criteria identified through **unique codes**, e.g:
 - **QC.Sec:** security of code (static analysis),
 - **SvcQC.Sec** security of services (dynamic analysis)
- Research oriented, DevOps nature
 - Towards **reproducible & sustainable** research software
 - **Automated** assessment, technology agnostic
- Currently, **defining concrete tooling** for each criterion
- Anyone can contribute
 - **Improved accessibility** through Github
 - Changes drawn upon discussions

 <http://dx.doi.org/10.20350/digitalCSIC/1254>
 <https://github.com/indigo-dc/sqa-baseline>

A set of Common Software Quality Assurance Baseline Criteria for Research Projects















A set of Common Service Quality Assurance Baseline Criteria for Research Projects



A DOI-citable version of this manuscript is available at <http://hdl.handle.net/>.

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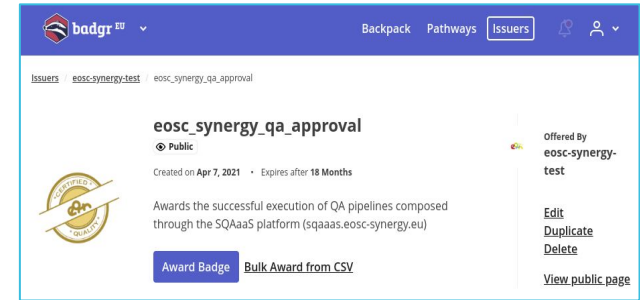
 <http://dx.doi.org/10.20350/digitalCSIC/12533>

 <https://github.com/EOSC-synergy/service-qa-baseline>

What about the badges?

Using Open Badges v2.1 specification

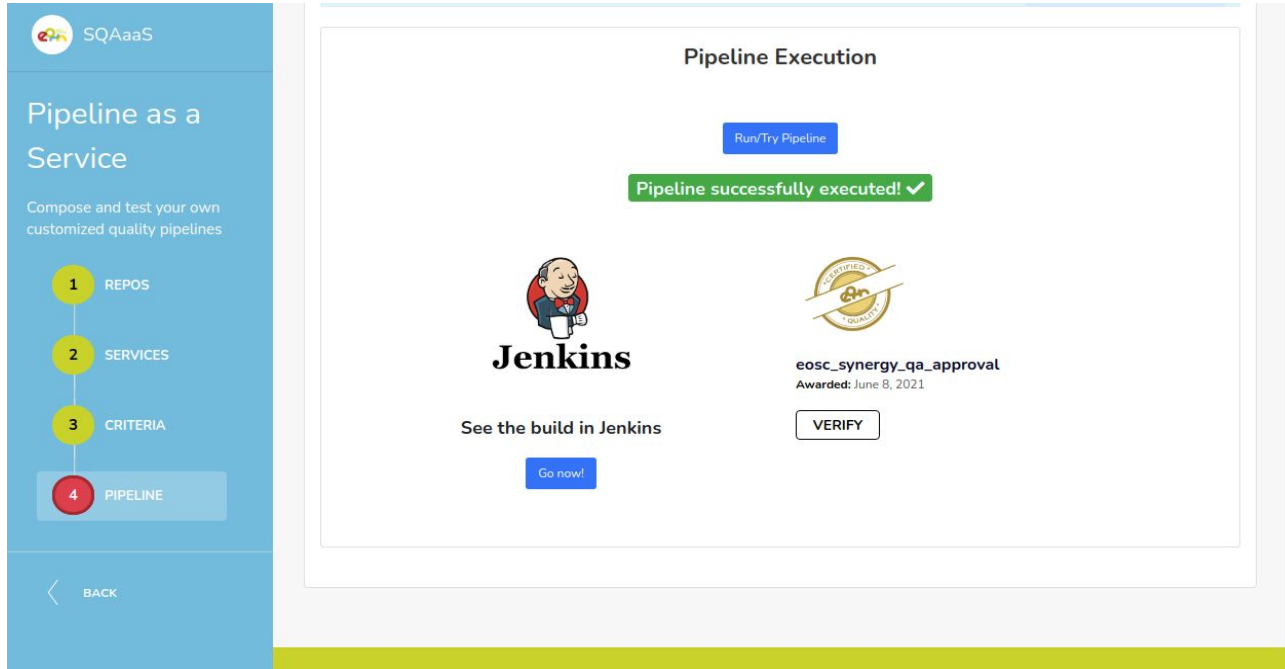
- **EOSC-Synergy issuer profile** in Badgr Europe
 - Upon execution of the QA assessment pipeline
 - 3 different levels of compliance
- Digital **badge's metadata** provides..
 - Earning criteria: specific Software & Service criteria being fulfilled
 - Evidence: [permalink to CI system build](#), including i) code version, ii) artefacts, iii) build reports



<https://eu.badgr.com/public/issuers/aS1IWKglR4u8bGjPZUzAyg/badges>



SQAaaS portal: badges

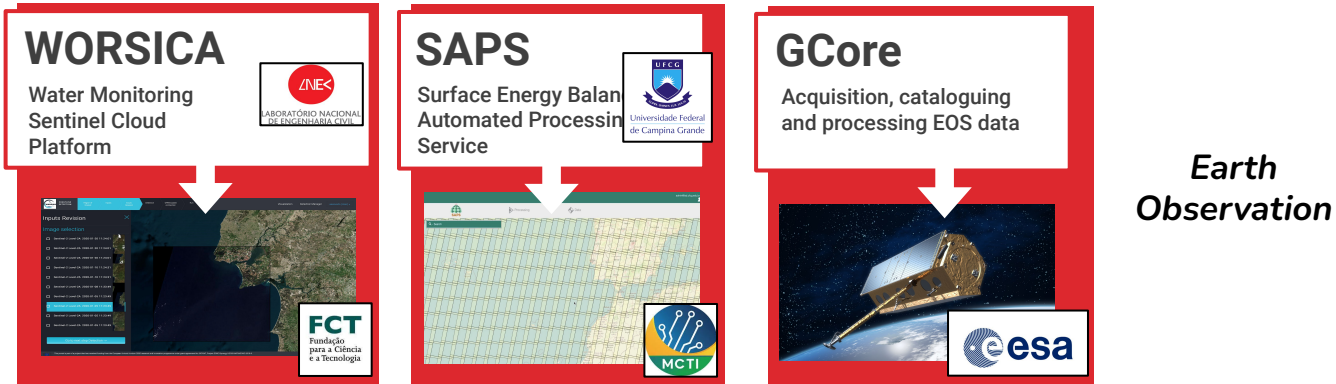


The screenshot displays the SQAaaS portal interface. On the left, a blue sidebar contains the SQAaaS logo and a navigation menu with four items: 1 REPOS, 2 SERVICES, 3 CRITERIA, and 4 PIPELINE (highlighted in red). Below the menu is a 'BACK' button. The main content area is titled 'Pipeline Execution' and features a 'Run/Try Pipeline' button. A green notification bar states 'Pipeline successfully executed! ✓'. Below this, the Jenkins logo is shown on the left, and on the right, a circular badge for 'eosc_synergy_qa_approval' is displayed, awarded on June 8, 2021. A 'VERIFY' button is positioned below the badge. At the bottom of the main area, there is a 'See the build in Jenkins' link and a 'Go now!' button.

<https://sqaas.eosc-synergy.eu>

Who is using SQAaaS?


Quality is essential for enhancing usability and fostering adoption of EOSC services
SQAaaS is validating the EOSC-Synergy Thematic Services



Who is using SQAaaS?


SCIPION

CryoEM data processing for Structural Biology




OpenEBench

ELIXIR benchmarking and technical monitoring platform




LAGO

Latin American Giant cosmic ray Observatory




UMSA

Untargeted Mass-Spectrometry Analysis



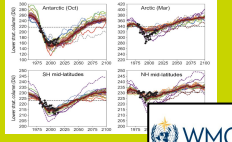
MSWSS

Water Supply Systems modeling and analysis



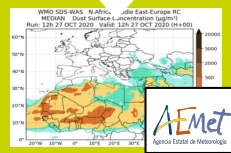
O3AS

Ozone Analysis Service



SDS-WAS

A Service related to the mineral dust forecast



**Biomedicine
&
Astrophysics**

Code languages:
↑Python, Java

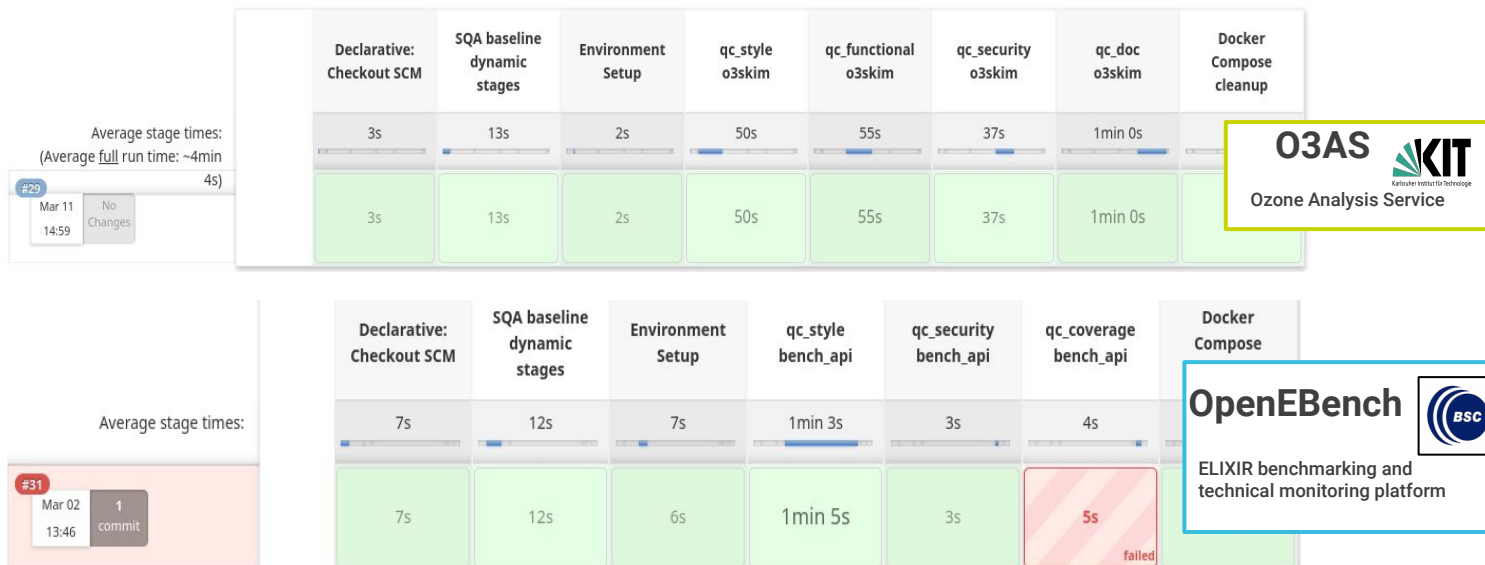
Code platforms:
↑GitHub, Gitlab

Distributed as:
↑Docker images

Deployment:
↑Infrastructure Manager
↑Kubernetes

**and
Environment**

Who is using SQAaaS?



Synergies (CSIRT & SQAaaS)

1. Feedback from the security PoV (CSIRT → SQAaaS)
 - a. Security **criteria**:
 - i. Improve the current set of requirements for individual Software and Services
 - b. Security **tools**:
 - i. Identify the relevant tools for security assessment

2. Extend automated security assessment & acknowledgement in the EOSC (SQAaaS → CSIRT)
 - a. **Composition of pipelines** for EOSC services (help covering security framework)
 - i. Automated validation, incorporate new tools to cover both SAST and DAST
 - b. **Issue digital Badges** specific to Security
 - i. Badge metadata including evidence of security assessment
 - ii. Can be shared/displayed in EOSC portal

Thank you

For further information:

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www.eosc-synergy.eu