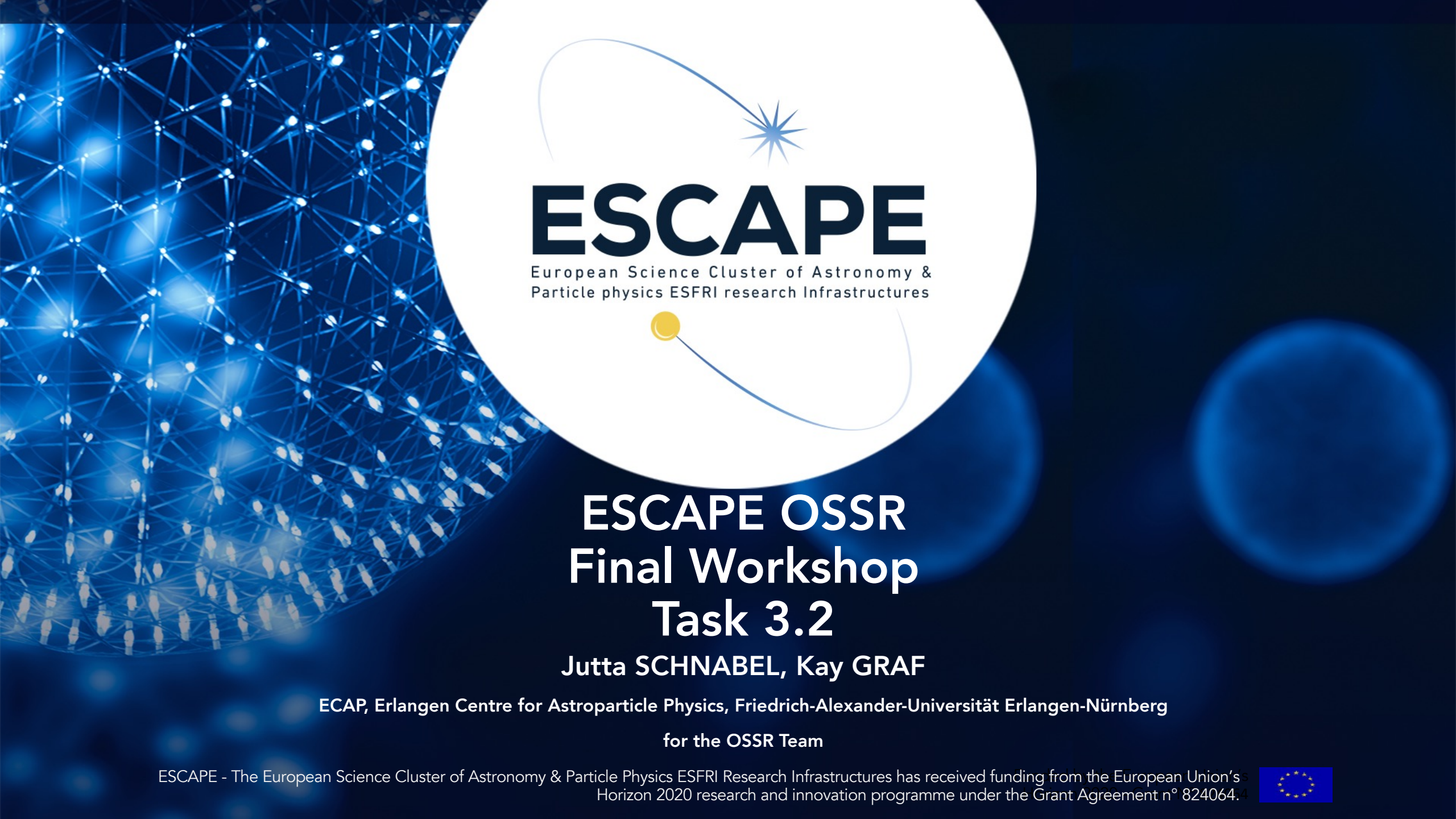


ESCAPE OSSR Final Workshop Task 3.2

Jutta SCHNABEL, Kay GRAF

ECAP, Erlangen Centre for Astroparticle Physics, Friedrich-Alexander-Universität Erlangen-Nürnberg

for the OSSR Team

ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.

ESCAPE EOSC cell

ESCAPE OSSR
Catalogue & Repository of resources

Datasets
Software & services
Tutorials
Training
Publications

ESCAPE VO Virtual Observatory

Astronomy Data centres
VO Registry

VO Registry
Analysis Tools
VO Services

TSP's
RI-Specific Science Platforms

ESCAPE SAP Science Platforms

Workflows, notebooks, deployment platforms, packaging

ESCAPE CS Citizen Science

ESCAPE DIOS Data Lake

FAIR data management
Content discovery and delivery

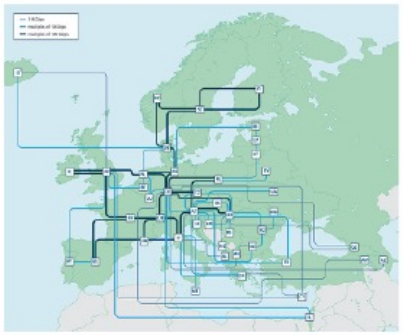
HPC
PRACE
EuroHPC Joint Undertaking

HTC
Grid clusters, etc

Private/public clouds

Commercial clouds

GÉANT



Funded by the European Union's Horizon 2020 - Grant N° 824064

Work Organisation – 5 Tasks and Focus Groups

- Tasks
  - 3.1: Management Activities, Policy and Support Action (MAPS) – Providing assistance and support for work package related activities
  - 3.2: ESFRI Software and Services Collection (ESSC) – Systematically list available software and requirements to facilitate integration into the repository
  - 3.3: Common Approaches: Software and Services (CASS) – Fostering common developments and facilitate sharing of software
  - 3.4: Foundation of Competence for Software and Service Innovation (COSSI) – Establish competence group for mainstreaming new approaches to data analysis (e.g. deep learning)
  - 3.5: Repository Implementation and Deployment (RIAD) – Setting up a demonstrator for a common software repository
- Focus groups
  - Focus group 1: Collecting Software requirements (related to Task 3.2)
  - Focus group 2: Technical implementation of the repository (related to Task 3.5)
  - Focus group 3: Innovative workflows (related to Task 3.4)
  - Focus group 5: Common approaches to CORSIKA (related to Task 3.3)
  - Focus group 6: Common Data Formats (related to Task 3.3)

Funded by the European Union's Horizon 2020 - Grant N° 824064

Task 3.2

- ESFRI Software and Services Collection – K. Graf (FAU):
  - Development, benchmarking and **onboarding of software** within and across partners;
  - Gathering of **common practices** and know-how towards the definition of best practices to be shared with the community (WOSSL workshop)
  - **Workflow and co-ordination** for software onboarding
  - Software to become part of the repository collected
    - partners started to add and prepare the software for repository integration;
  - Co-operation with HGF DMA project
- Open points: finalise onboarding of partner software; onboard test science project software and those of other WGs

23 July 2020 to28 July 2020

ESCAPE Workshop on Open-Source Software Life Cycles

Virtual

Software development is an integral part of modern science, gaining knowledge from data. All ESCAPE partners develop and

[...]

Funded by the European Union's Horizon 2020 - Grant N° 824064

Cross-check with Deliverable D3.1 ✅

3.2 Task 3.2: ESFRI Software and Services Collection (ESSC)

Aims

Collection of software, evaluation and exploitation of common practices in software development, maintenance and distribution. ✅

Extended to: collection of best/common practices and exchange of needs/experiences

High-level Description

This task will provide the **platform for incorporation, development, testing, efficiency optimization and benchmarking of software and services** into the EOSC regime. The needs for development will be purely science-driven by the ESFRIs. The aim is to provide tools in a way that makes it easy for both other facilities and the general scientific community to use and adopt the developed software and services.

The basic inputs to this task will be the official analysis software and services as released and quality-controlled by the ESF/RIs themselves. An initial list, to be extended during the project, is given below. If applicable, the software and services will be made accessible and comparable through the common EOSC repository via Task 3.5.

Detailed Tasks

The following activities are foreseen – additional approaches may be added during the project:

Funded by the European Union's Horizon 2020 - Grant N° 824064

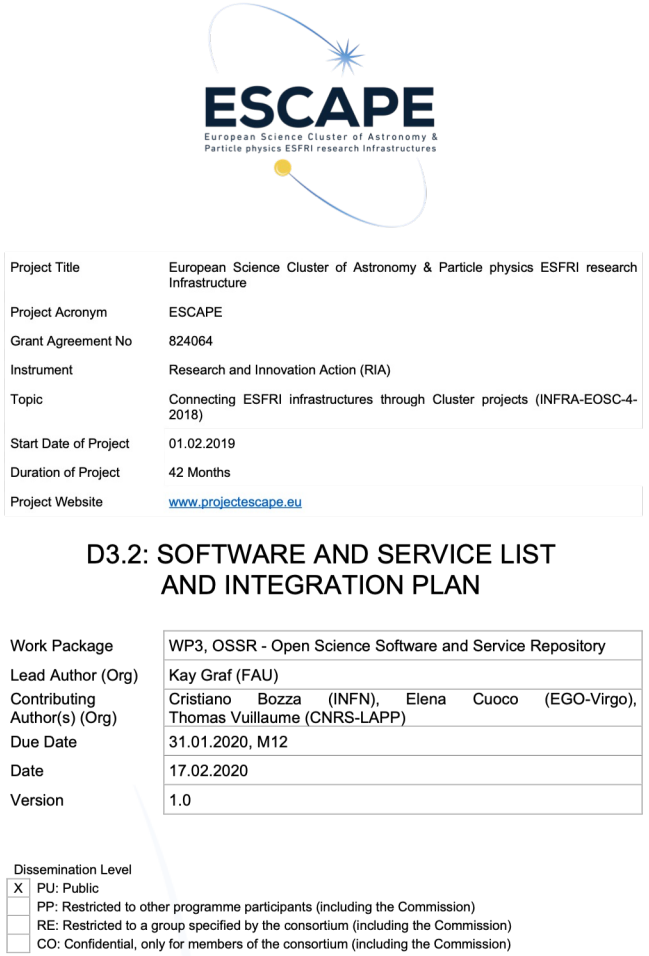
ESF/RI	Task	Responsible Partner
-	Evaluation common practices in software development, maintenance and distribution (together with Task 3.3).	CERN, CNRS-LAPP, CTAO, FAU, NWO-I-Nikhef, GSI, JIVE, SKAO
-	Establishing a platform for incorporation, development, testing, efficiency optimization and benchmarking of software and services.	CERN, CNRS-LAPP, CTAO, FAU, NWO-I-Nikhef, GSI, JIVE, SKAO
-	Definition of requirements and recommendations for software and services to be part of the repository (together with Task 3.5).	CERN, CNRS-LAPP, CTAO, FAU, NWO-I-Nikhef, GSI, JIVE, SKAO
-	Establish the link to WP2 and WP5 for collecting the software and services developed in these work packages.	CERN, FAU
CTA	Development, benchmarking and deployment of • the HPC reconstruction and analysis software stack; • open science tools and software packages for astroparticle physics that work on high-level CTA data formats. • an interface between low-level analysis pipeline and high-level science tools, and specifically of an open-source software for the instrument response function production.	CNRS-LAPP CTAO, MPG-MPIK CTAO
EGO-Virgo	Evaluation and development of the open software currently developed and managed by the gravitational wave community with respect to its publishing via the repository.	EGO-Virgo
ELT	Collection and evaluation of software developed under Task 3.4	HITS
EST	Collection and evaluation of software developed under Task 3.4	AIP, NWO-I-CWI, UNITOV
FAIR	Release of the community framework for distributed data processing to a wider scientific community; evaluation of the framework abstraction for the users to utilize heterogeneous platforms within the ESCAPE context.	GSI
HL-LHC	Contribution of existing CERN/LHC open software to the service catalogue, especially file transfer services, low-latency storage service, and a ROOT-based pipeline for analysis preservation.	CERN
JIVE	Integrating radio-astronomical data reduction techniques into a Jupyter notebook, and offering this in containerized form to the user community; creation of data reduction pipelines, while continuing the development and modification of existing data-reduction tools to make them ready for the large instruments of the future and more suitable for integration into the EOSC environment.	JIVE
KM3NeT	Deploying the processing toolchains based on a C++ and ROOT-based data model, as well as Python and HDF5-file format to the community profiting of containerisation techniques.	FAU, INFN, NWO-I-Nikhef
SKA	Make the SKA software stack open source and develop it to run on e-Infrastructures in general such as the SKA Regional Centres. Tools and techniques within the stack are general purpose in some areas and would therefore have potential benefits for other communities wishing to carry out data analytics in the Exabyte regime on data lake infrastructures	SKAO

See partner reports

Funded by the European Union's Horizon 2020 - Grant N° 824064

D3.2: SOFTWARE AND SERVICE LIST AND INTEGRATION PLAN

- survey to gather the necessary information on the software and services to be exposed to the EOSC catalogue of services
- plan to integrate the (initial) software and services list into the repository detailed



Project Title	European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructure
Project Acronym	ESCAPE
Grant Agreement No	824064
Instrument	Research and Innovation Action (RIA)
Topic	Connecting ESFRI infrastructures through Cluster projects (INFRA-EOSC-4-2018)
Start Date of Project	01.02.2019
Duration of Project	42 Months
Project Website	www.projectescape.eu

D3.2: SOFTWARE AND SERVICE LIST AND INTEGRATION PLAN

Work Package	WP3, OSSR - Open Science Software and Service Repository
Lead Author (Org)	Kay Graf (FAU)
Contributing Author(s) (Org)	Cristiano Bozza (INFN), Elena Cuoco (EGO-Virgo), Thomas Vuillaume (CNRS-LAPP)
Due Date	31.01.2020, M12
Date	17.02.2020
Version	1.0

Dissemination Level

[X] PU: Public
[ ] PP: Restricted to other programme participants (including the Commission)
[ ] RE: Restricted to a group specified by the consortium (including the Commission)
[ ] CO: Confidential, only for members of the consortium (including the Commission)

Funded by the European Union's Horizon 2020 - Grant N° 824064

MS 14: Review of D3.2

A review of the *D3.2: Software and Service List and Integration Plan* was performed in a review session and a collection of feedback by all partners.

The deliverable was reviewed along the following guidelines:

- General content;
- Extent and completeness of the software and service list, especially with the

objective of enabling open science involving the ESCAPE communities;

- Solidity of the implementation scheme;
- Missing steps towards OSSR (from the software/service collection perspective).

Also, feedback from the E-EAB review of M1-M12 of the project was received and taken into consideration:

"Annex A of D3.2 is really helpful in understanding what could be the content of the OSSR. It would be useful to expand further the software integration requirements to understand the real system and technical requirements that will need to be defined and implemented."

Project Title	European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructure
Project Acronym	ESCAPE
Grant Agreement No	824064
Instrument	Research and Innovation Action (RIA)
Topic	Connecting ESFRI infrastructures through Cluster projects (INFRA-EOSC-4-2018)
Start Date of Project	01.02.2019
Duration of Project	42 Months
Project Website	www.projectescape.eu

MS14: LIST OF SOFTWARE AND SERVICES

Work Package	WP3, OSSR - Open Science Software and Service Repository
Lead Author (Org)	Kay Graf (FAU)
Contributing Author(s) (Org)	
Due Date	30.04.2020, M15
Date	29.04.2020
Version	1.1

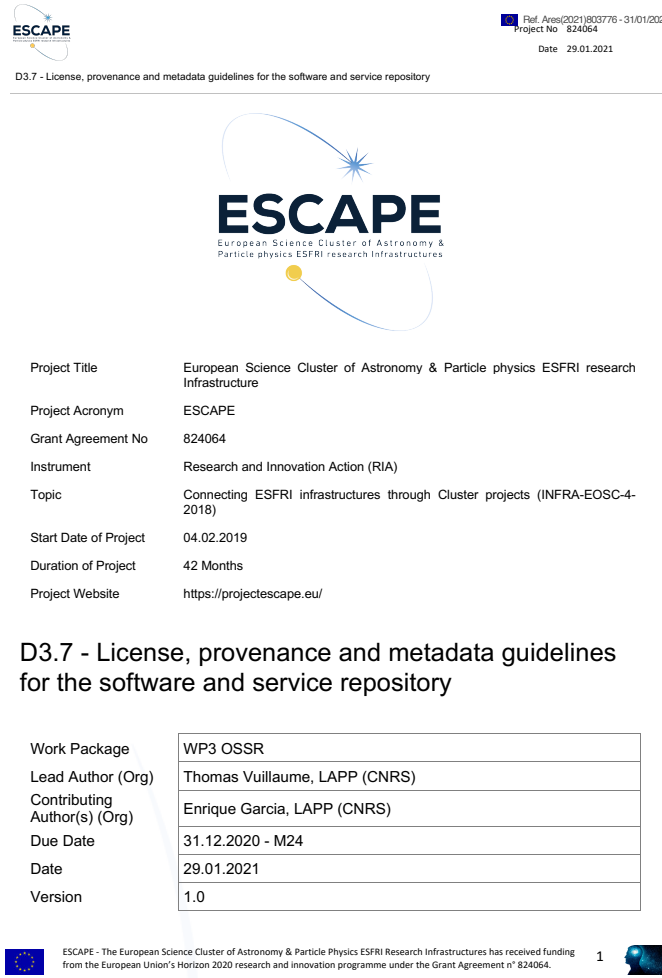
Dissemination Level

- [X] PU: Public
- [ ] PP: Restricted to other programme participants (including the Commission)
- [ ] RE: Restricted to a group specified by the consortium (including the Commission)
- [ ] CO: Confidential, only for members of the consortium (including the Commission)

Funded by the European Union's Horizon 2020 - Grant N° 824064

D3.7 - License, provenance and metadata guidelines for the software and service repository

- Proposal for
  - the open licenses,
  - the metadata schema and
  - the minimum provenance information that any software should contain to be included in the OSSR.
- Discuss provenance for the OSSR is discussed and a unified metadata implementation, using the *CodeMeta* standard.
- expose guidelines and an example of a project following these principles in the OSSR, providing guidance for future partners and projects.



ESCAPE

Ref. Ares(2021)803776 - 31/01/202

Project No 824064

Date 29.01.2021

D3.7 - License, provenance and metadata guidelines for the software and service repository

ESCAPE

European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures

Project Title	European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructure
Project Acronym	ESCAPE
Grant Agreement No	824064
Instrument	Research and Innovation Action (RIA)
Topic	Connecting ESFRI infrastructures through Cluster projects (INFRA-EOSC-4-2018)
Start Date of Project	04.02.2019
Duration of Project	42 Months
Project Website	https://projectescape.eu/

D3.7 - License, provenance and metadata guidelines for the software and service repository

Work Package	WP3 OSSR
Lead Author (Org)	Thomas Vuillaume, LAPP (CNRS)
Contributing Author(s) (Org)	Enrique Garcia, LAPP (CNRS)
Due Date	31.12.2020 - M24
Date	29.01.2021
Version	1.0

ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.

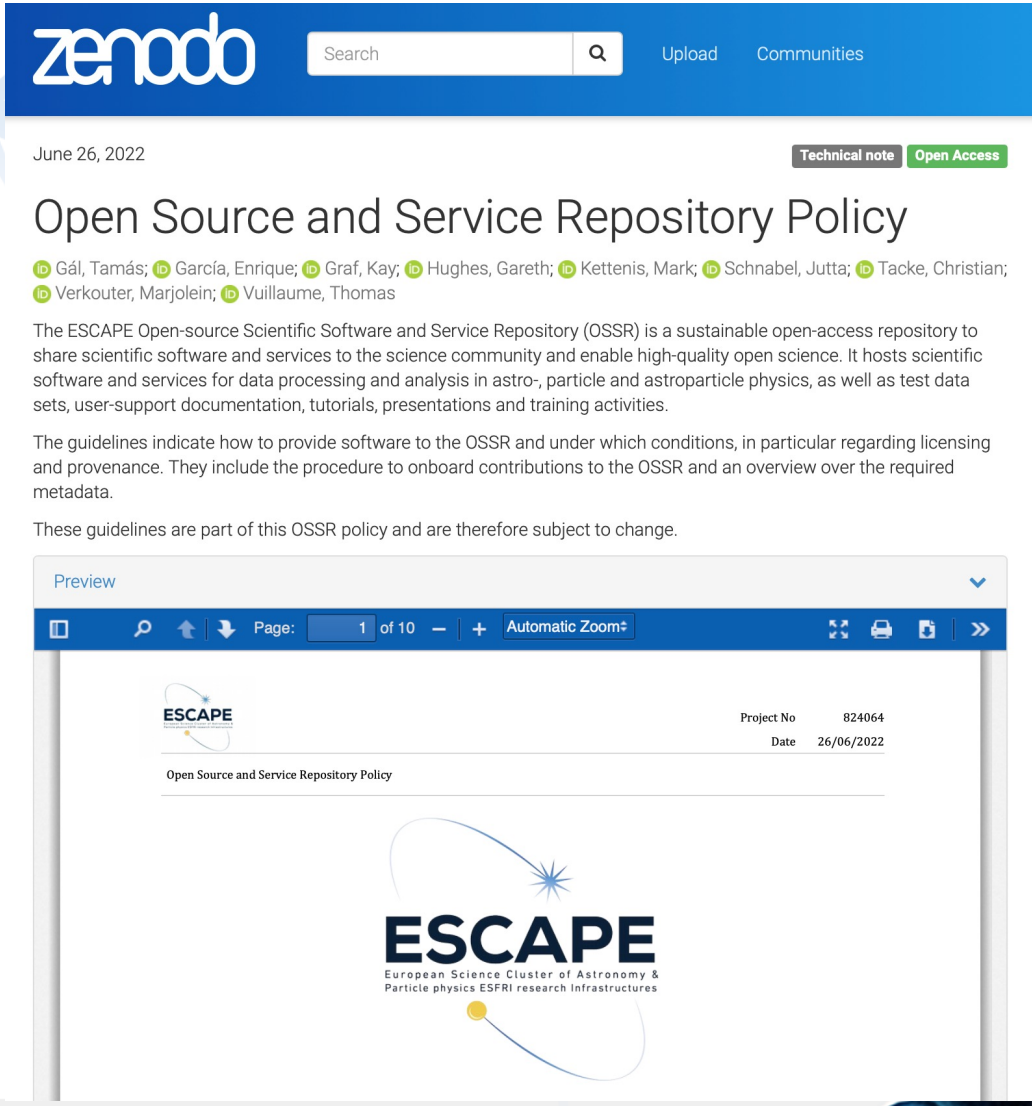
1

Funded by the European Union's Horizon 2020 - Grant N° 824064

Open Source and Service Repository Policy

DOI 10.5281/zenodo.6757113

- The ESCAPE Open-source Scientific Software and Service Repository (OSSR) is a sustainable open-access repository to share scientific software and services to the science community and enable high-quality open science. It hosts scientific software and services for data processing and analysis in astro-, particle and astroparticle physics, as well as test data sets, user-support documentation, tutorials, presentations and training activities.
- The guidelines indicate how to provide software to the OSSR and under which conditions, in particular regarding licensing and provenance. They include the procedure to onboard contributions to the OSSR and an overview over the required metadata.
- These guidelines are part of this OSSR policy and are therefore subject to change.



Funded by the European Union's Horizon 2020 - Grant N° 824064