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D3.4 - Establishing of an Innovation Competence Group (IWAPP Workshop)

Work Package	WP3 OSSR
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Dissemination Level

☒	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)

Versioning and contribution history

Version	Date	Authors and Contributors	Notes
1.0	30.03.2021	Elena Cuoco, Kay Graf, Jutta Schnabel	Summarizing IWAPP

Disclaimer

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.

Executive Summary

This document constitutes deliverable D3.4 of the ESCAPE project, a report on the IWAPP workshop that instrumented *Establishing of an Innovation Competence Group*.

Project Summary

ESCAPE (European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures) addresses the Open Science challenges shared by ESFRI facilities (CTA, ELT, EST, FAIR, HL-LHC KM3NeT and SKA) as well as other pan-European research infrastructures (CERN, ESO, JIVE and EGO) in astronomy and particle physics. ESCAPE actions are focused on developing solutions for the FAIRness of large data sets handled by the ESFRI facilities.

These solutions shall: i) connect ESFRI projects to EOSC ensuring integration of data and tools; ii) foster common approaches to implement open-data stewardship; iii) establish interoperability within EOSC as an integrated multi-probe facility for fundamental science. To accomplish these objectives, ESCAPE aims to unite astrophysics and particle physics communities with proven expertise in computing and data management by setting up a data infrastructure beyond the current state-of-the-art in support of the FAIR principles. These joint efforts are expected to result in a data-lake infrastructure providing an open science cloud-based analysis facility linked with the EOSC. ESCAPE supports already existing infrastructures such as astronomy Virtual Observatory to connect with the EOSC. With the commitment from various ESFRI projects in the cluster, ESCAPE will develop and integrate the EOSC catalogue with a dedicated catalogue of open-source analysis software. This catalogue will provide researchers across the disciplines with new software tools and services developed by the astronomy and particle physics communities. Through this catalogue, ESCAPE will strive to provide researchers with consistent access to an integrated open-science platform for data-analysis workflows. As a result, a large community “foundation” approach for cross-fertilisation and continuous development will be strengthened. ESCAPE has the ambition to be a flagship for scientific and societal impact that the EOSC can deliver.

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Acronym list

AI:	Artificial Intelligence
COSSI:	Foundation of Competence for Software and Service Innovation, Task 3.4 of ESCAPE WP3
DL:	Deep Learning, an AI technique
ESCAPE:	European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures
ESFRI:	European Strategy Forum on Research Infrastructures
ESF/RI:	ESFRIs and major RIs as projects within ESCAPE
FAIR:	Findable, Accessible, Interoperable, Reusable
ML:	Machine Learning
OSSR:	Open Science Software and Service Repository (ESCAPE WP3)
RI:	Research Infrastructure
WP:	Work Package

1. Summary

This deliverable summarises the successful *Establishing of an Innovation Competence Group* which was finalized by the organisation of an all-hands meeting of the *Task 3.4: Foundation of Competence for Software and Service Innovation (COSSI)* of the *Open-source Scientific Software Repository (OSSR)*. The results of the implementing online workshop *IWAPP - Innovative Workflows in Astro & Particle Physics* are openly available at <https://indico.in2p3.fr/event/20424/>, including agenda and contributions (presentations and recordings).

The construction of the innovation group started with a series of 12 dedicated meetings of the Focus Group 3 and Task 3.4 of OSSR¹ where the different ESCAPE partners presented their activities in terms of innovation in data management, software and data analysis.

There were many commonalities in the approaches of the ESFRI groups involved. In particular in the use of artificial intelligence and especially in the form of deep-learning techniques for querying large data archives, pre-processing data, object classification and parameter inference.

During the IWAPP workshop, we invited experts from different fields within the astronomy, astroparticle physics, astrophysics, nuclear and particle physics communities and brought together researchers with different backgrounds and expertise. We organized working groups and a common discussion panel, which let us create the innovation group. The latter has communication channels and mailing lists to progress in cooperation and in search for common solutions. The group is already active on some specific topics, but we have also created the ground for future developments and the use of common techniques and software even on different data than currently implemented.

D3.4 as in-person workshop and the establishment of the innovation competence groups as MS15 have originally been planned for M18 and M21 (07/2020 and 10/2020), respectively. Due to the CoVID-19 pandemic, the meeting has been first postponed and finally transferred into an online meeting prepared in Task 3.4 as described above. The gained preparation time allowed for the simultaneous successful fulfillment of the deliverable and the milestone.

A parallel interaction social channel (gather.town) was used in addition to the Indico platform and a Zoom meeting, which proofed to be a very beneficial and active combined solution for active interactions and discussions during the workshop.

2. IWAPP Overview

A total of 85 participants registered for the workshop, out of which 45 persons have attended simultaneously. 46 contributions have been added in form of presentation, hands-on sessions, tutorials and discussion groups.

¹ See [https://wiki.escape2020.de/index.php/WP3 - OSSR#FG3 Innovative workflows](https://wiki.escape2020.de/index.php/WP3_-_OSSR#FG3_Innovative_workflows)



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Monday, 8 March 2021	Tuesday, 9 March 2021	Wednesday, 10 March 2021	Thursday, 11 March 2021	Friday, 12 March 2021
10:00 Overview presentations	09:30 Specific approaches	09:30 Solutions in Research Infrastructures	09:30 Presentations	10:00 Summary & Outlook
15:00 Bring your own container - open interactive session	15:00 Plenary	14:00 Open interactive session	15:00 Discussion groups	
		17:00 Finding common ground		

Figure 1 IWAPP Schedule

The workshop was held in morning and afternoon sessions (CET), where morning sessions focussed mainly on presentations and talks, while afternoon sessions have been reserved for hands-on tutorials, interactive sessions and discussion rounds. The invited evening talk on 10/03 by Mauricio Santillana on *Machine Learning in Healthcare* provided valuable insight on the possibilities of innovative workflows outside of the community.

All presentations were recorded and made available on the workshop webpage² alongside the presentation materials.

Especially the Thursday and Friday sessions were dedicated to the evaluation of common goals in the implementation of innovative workflows, and various points for future cooperation were identified. As example for the discussion output, the copy of one commonly created whiteboards is provided below in Figure 2.

A link to the EGI AI/ML working group was established with a presentation and discussion.

² <https://indico.in2p3.fr/event/20424/>

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Figure 2 Whiteboard interactive generated during the workshop

24/03/2021 IWAPP - Innovative Workflows in Astro- & Particle Physics (8-12 March 2021): Overview · IN2P3 Events Directory (Indico)

Public Europe/Paris K. Gof



IWAPP
INNOVATIVE WORKFLOWS
IN ASTRO & PARTICLE PHYSICS

8-12 March 2021
Online
Europe/Paris timezone

Overview
Online location & sessions
Timetable
My Conference
My Contributions
Registration
List of Participants
Meet@Gather
Feedback form

Contact
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dcsz@unsa.it
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escape.iwapp@gmail.com

Innovative workflows - the agenda

The use of machine and deep learning techniques has become increasingly common in scientific communities. The large amount of data to analyze and the need for real-time analysis are driving the search for cutting-edge techniques and new data analysis paradigms.

Especially the field of deep learning for event-based, image-based and signal-based applications of two and higher dimensions has been intensively followed by expert groups within the ESFRIs and will be deployed to the EOSC via ESCAPE.

The objective of this workshop is to bring together the scientists' communities of Astrophysics, Astroparticle Physics and Particle Physics who are leading the development of Innovative Workflows within their domain and explore common approaches for innovative workflows.

Interactive format and contributions

The workshop aims to increase exchange and discussions between the participants. In addition to the presentations in the main sessions, all registrants are therefore invited to share their work in **open interactive sessions**.

Technical support and uploads

For any questions on technical support, please contact escape.iwapp@gmail.com.

If you would like to upload material to your contribution and cannot access your contribution, you can also drop your files (named name_contribution.format, eg. Jones_presentation.pdf) in **this folder**.

Starts 8 Mar 2021, 10:00
Ends 12 Mar 2021, 13:00
Europe/Paris

Online
<https://fzj.zoom.us/j/925554648591>
pwd=8b6HUEBjvRBMWJhVnJd8K1BZD9V4JT09

Elena Cucco
There are no materials yet.

The workshop is held as part of the **ESCAPE** project and has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 824064.

Registration
You are registered for this event. 84 See details

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<https://indico.in2p3.fr/event/20424/> 1/1

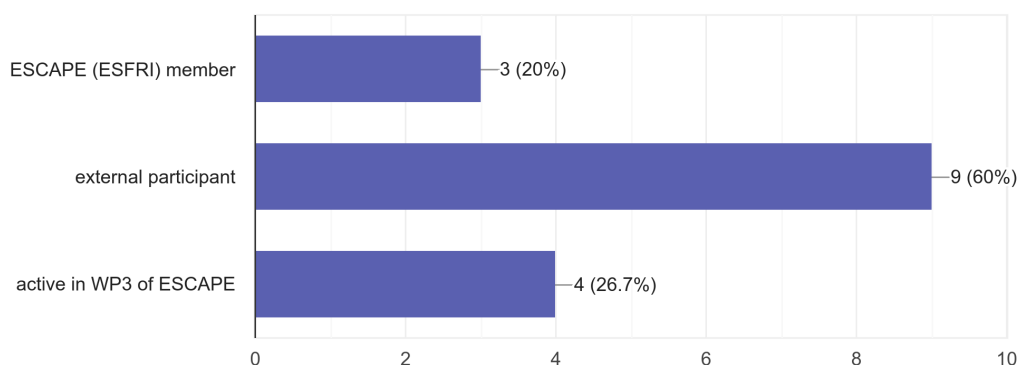
Figure 3 IWAPP Indico Page - available from <https://indico.in2p3.fr/event/20424/>

3. Feedback Form

A feedback form was generated and a total of 15 responses have been collected:

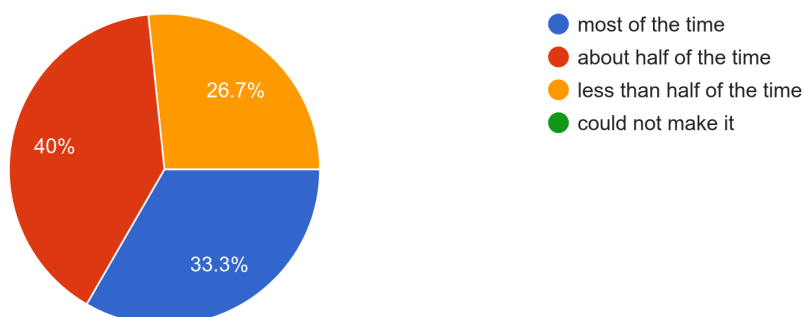
Involvement in ESCAPE:

15 responses



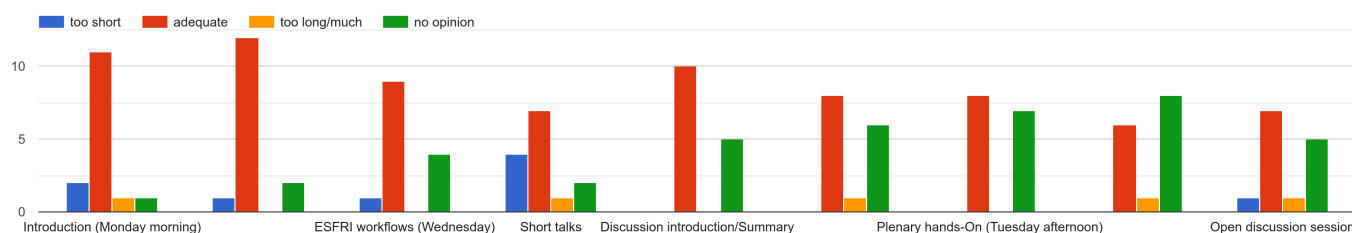
Attendance to the Workshop:

15 responses



Duration of the Sessions:

Duration/Portion of the sessions



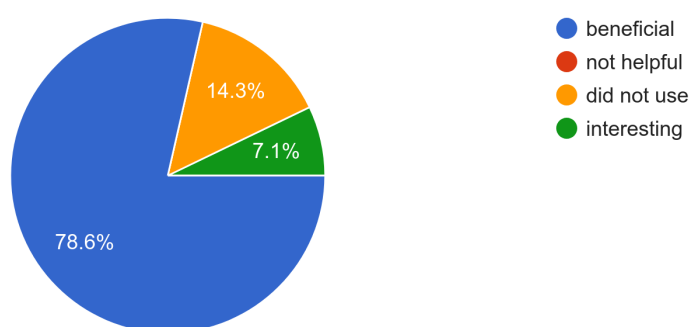
Missing Information or Sessions:

(3 responses)

- partly very domain-specific info in talks that was difficult to grasp in a short time
- Working in Nuclear Physics, I missed a more general/complete talk at the very beginning about escape in general
- data format (i know there was a space prepared for discussion, maybe i missed when it happened)

Additional Social Interaction Platform (gather.town):

14 responses



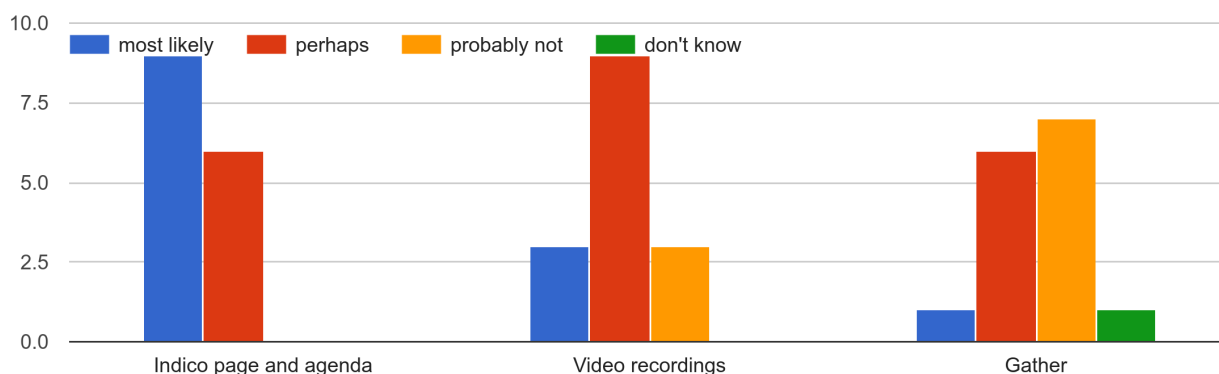
Additional Comments/Suggestions on the Organization of the Workshop

(4 responses)

- It was a very friendly and inclusive meeting - thanks!
- Perhaps the only suggestion I would make is to avoid, in the future, to split too much the discussion session in too many groups with respect to the number of participants.
- Not directly to the workshop, but because I feel escape might be interesting for me in the future, I have tried to register to the escape web site twice without having back a mail to confirm my registration
- I found the level of the workshop too high for someone starting on machine learning, and that made loose interest in the sessions. But that is not a problem of the workshop of course, its mine!. I would love if you ever organize something for begginers, with a mixture of hands-on sessions and "theory" sesions, where the characteristics of each network ingredient is explained.

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Follow-Up of the Workshop Information Envisioned via Re-Visiting:



Follow-Up of Issues/Topics:

