



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR RESEARCH AND INNOVATION

RTD.G – Research & Innovation Outreach
G.03 – Research & Industrial Infrastructures

GENERAL PROJECT REVIEW CONSOLIDATED REPORT

Grant agreement (GA) number:	824064
Project¹ Acronym:	ESCAPE
Project title:	European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures
Type of action:	RIA
Start date of the project:	01/02/2019
Duration of the project:	48
Name of primary coordinator contact and organisation:	Giovanni Lamanna (CNRS)
Period covered by the report:	from 01/02/2019 to 14/12/2020
Periodic report/Reporting period number:	Assessment not linked to the end of a reporting period
Date of first submission of the periodic report (if applicable):	Not applicable
Amendments (latest AMD concerning description of the action)²	12/10/2020 (AMD-824064-27)
Date of meeting with consortium (if applicable):	27/11/2020
Name of project officer:	Mina KOLEVA
Name(s) of monitors:	– Eva Maria Méndez Rodriguez <ul style="list-style-type: none"> • Universidad Carlos III de Madrid • UC3M • UC3M

¹ ‘Project’ means the same thing as ‘action’.

² Only amendments to the description of the action (DoA; AT21) are relevant for general project reviews since they always have to be carried out against the latest version of the DoA

1. Overall assessment

1. Overall assessment
Project has achieved most of its objectives and milestones for the period with relatively minor deviations.
2. Significant results linked to dissemination, exploitation and impact potential
<p>Project has delivered exceptional results with significant immediate or potential impact (even if not all objectives mentioned in the Annex 1 to the GA were achieved).</p> <p>ESCAPE has delivered good results with significant immediate and potential impact. However, the main objectives highlighted by the project ("Improve access to data and tools to unlock innovation for the society at large; Facilitate interoperability in research between different sciences to increase efficiency; Build a European cross-border and multi-disciplinary open innovation environment for research data, knowledge and services", etc.) are not yet achieved.</p> <p>ESCAPE (European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures aims to address the Open Science challenges shared by ESFRI facilities (SKA, CTA, KM3Net, EST, ELT, HL-LHC, FAIR) as well as other pan-European research infrastructures (CERN, ESO, JIVE) in astronomy and particle physics. It has have demonstrated, during the evaluated period, its interest to be integrated into the EOSC ecosystem and a great understanding of Open Science, in general. In this period of the project, the performance and ambitions have been adequate.</p> <p>The project has developed different elements (DIOS, OSSR, CEVO, ESAP and ECO) developed in the different WPs (WP2, 3, 4, 5 and 6) fostering the interoperability among the participant infrastructures within the project, in the fields of particle physics and astrophysics. However, some of the work packages and elements are not very much related among them (ex. WP4) and within the main public services of the project (ex. Web). WP4 the Virtual Observatory is a micro-project inside the ESCAPE project, very well-conceived but with its own users, standards, etc. inheriting ASTERICS objectives, but not completely integrated with DIOS or other developments of ESCAPE). The web of the project is merely descriptive of the objectives of the ESCAPE components, but it fails to link to the real services of the project to the target audiences (ex. if you click on "ESCAPE Catalogue of Services" (http://escape.trust-itsservices.eu/escape-catalogue) there is a file not found; that prevents potential users to navigate through the two categories of ESFRI and understand how ESCAPE is facilitating the interdisciplinary research between different sciences).</p> <p>Sometimes it is difficult to understand what is the added value of the project from previous projects and activities of the consortium. The real integration of ESCAPE with EOSC is not yet fully demonstrated. Its major contribution is the domain data-lake as a federated structure.</p> <p>The data management (DMP, including privacy issues: POPD requirements and a particular DPO for the project), as well as the Open Science approach and uptake, are outstanding.</p>
3. General comments
<p>The project so far has contributed to the idea de EOSC but its impact is limited to the participant ESFRIs and facilities (RIs), not to the astrophysics and particle physics researchers in general. The main achievement of the project is the data lake, along with the public engagement and citizen science efforts. The data lake as a distributed storage infrastructure for scientific data is presented to the user as a single system, but it is difficult to identify who is "the user" and to see the data lake as a service.</p> <p>ESCAPE goes beyond the state-of-the-art understanding of the infrastructure (RI) as an observatory and including new technologies like Machine learning to add value to the scientific products or datasets collection in the repository. However, is difficult to see where is "the repository", and clearly differentiate the real added value from previous projects of the consortium members.</p> <p>The project has presented 14 deliverables from the 17 listed in the Periodic Report (including D4.4 submitted on November 30th). Other pending or delayed deliverables are duly justified and rescheduled for delivery: D3.4 (D9, to be submitted in March 2021), D4.3 (D16, to be submitted in April 2021, but p. 89 of the PR says 2020), D4.5 (D10, to be delivered on February 2022).</p> <p>ESCAPE has achieved its main milestones for the evaluated period with minor and clearly justified deviations.</p> <p>The dissemination activities are correct but slightly jeopardized by the covid-19 effect and the lockdown, but also enriched in the online-virtual environment. The most interesting dissemination activities are Citizen Science and ECO (WP6) activities. However, is again difficult to see the societal engagement with the RI. The dissemination of the ESCAPE to "general public" includes the figure of 2000, which is not a great societal impact.</p>

Publications and data are openly available, however, the publications are all declared as “green OA” when in several cases there is no link to the repository (ex. <https://link.springer.com/content/pdf/10.1007/s11207-020-01629-9.pdf>, OA directly with the publisher that seems to be Gold-hybrid OA). 10 datasets are published in Zenodo, but some of them have a copyright license (e.g. 10.5281/zenodo.3356656). Even when the periodic report says that the DMP does not require an update (p. 87), the proper nature of the DMP, as a live document, requires a periodic update, or at least, periodic review.

4. Recommendations concerning the period covered by the report

The project is on track regarding the envisaged objectives, and it has reacted adequately to COVID-19 situation. It does not make much sense to make recommendations for a past time, however, some lessons learned could be applied or taking into account, for example, searching for new mechanisms to engage with the so-called “users”.

5. Recommendations concerning future work, if applicable

Some general comments/recommendations for the future of the project are:

- Make clearer the relationship between the scientific platform and the users, defining who are “the users” and targeting in a specific way researchers at large or “the community of scientists” through EOSC.
- P. 47 of PR says: “The ESCAPE catalogue is presented as central to the ESCAPE-EOSC thematic cell. It does not only highlight and serve the users (the community scientists) as the centre of EOSC, but also establishes links to other communities”. These other communities should be clearly identified and targeted, and the software and services collected in the intended “knowledge base” should really promote “cross-fertilisation across domains” outside the consortium.
- Continue the cooperation and alignment with other EOSC projects (EOSC-clusters, FAIRsFAIR, EOSC Enhance, EOSCFuture, etc.).
- Use the common terminology and standards in the FAIR technical understanding (ex: PIDs Persistent Identifiers instead of DID "data identifiers")

2. Objectives and workplan

1. Is the progress reported in line with objectives and work plan as specified in the DoA? If there are significant deviations, please comment.	Yes
ESCAPE is in line with the objectives and the Work Plan as specified in the DoA. No significant deviations were detected over the review session/material.	
2. Are the objectives of the project still scientifically and /or technologically relevant?	Yes
The project continues to be technologically relevant and challenging. The objectives are still relevant and the methodology is adequate. However, ESCAPE has to continue the effort to keep track to the evolution and alignment of EOSC, including the work done in other EOSC-family-projects and the effort to go beyond the selected group of researchers implied in the consortium.	
3. Are the critical implementation risks and mitigation actions described in the DoA still relevant?	Partially
New risks were identified (all the COVID-related issues) but they will not put the outcomes of the project in danger.	
4. Have the pilots/case studies started to showcase innovative results as described in the DoA?	Not applicable
5. Have the ethics deliverables due for the current period been adequately addressed and approved?	Yes
The only ethical issue addressed is the personal data management, and it is addressed timely and in an outstanding way.	
6. Have the comments and recommendations from previous project reviews been taken into account?	Not applicable

3. Impact

1. Does the work carried out contribute to the expected impacts detailed in the DoA?	Yes
The work carried out for the period contributed to the expected impacts detailed in the DoA. However, there is still room (as well as time and resources) for improvement. ESCAPE might improve its impact on defining and targeting specific researchers.	
2. Does the work carried out follow the plan detailed in the DoA to enhance innovation capacity, create new markets opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, address industrial and/or societal needs at regional level or bring other important benefits for society? Give information on the relevant innovation activities carried out (prototypes, testing activities, standards, clinical trials) and/or new product, service, reference materials, process or method (to be) launched to the market, if any.	Not applicable
3. Does the work carried out contribute towards European policy objectives and strategies and have an impact on policy making?	Yes
The project has an impact in the Open Science policy in Europe, particularly in the challenges related with infrastructures and data (EOSC and FAIR data). It has a very clear focus in Open Science as a whole and its understanding, including also Citizen science practices.	
4. Does (or will) the work carried out have an impact on SMEs?	Partially
Not directly applicable	
5. Have the beneficiaries reached gender balance at all levels of personnel assigned to the action? If not, have the reasons been explained in the periodic report?	No
The consortium cares about gender balance but being a discipline with few women it is understood that it is hard. The figures about men-women are still far away from a gender-balanced team. Women are 1/5 approximately even in the Advisory Board.	

4. Implementation

1. Has the project been efficiently and effectively managed?	Yes
The project has been very effectively managed, and also efficiently. It is a very big and diverse consortium that has always the need of adjustments.	
2. Is the management of the project in line with the obligations of beneficiaries (including ethics and security requirements, risk and innovation management if applicable)?	Yes
Despite the size of the consortium (39 beneficiaries/participants) it is pretty well managed. Ethical issues, mainly related with the use of personal data, are particularly well managed.	
3. Is the contribution of each beneficiary in line with the work committed in the DoA? (applicable only to multibeneficiary projects)	Yes
Each beneficiary has performed as foreseen.	
4. Have the beneficiaries disseminated project results (foreground) in scientific publications as planned in the DoA (including the deposition of publications in open access repositories)? Do they include a reference to EU funding?	Partially
The publications are all OA, in general, submitted to a preprint service (arXiv.org) but for some of them, as mentioned before, do not have a deposit in a long-term green OA repository.	
5. Have the beneficiaries disseminated and communicated project activities and results by other means than scientific publications (social media, press-release, the project web site, video/film, etc) as planned in the DoA? Do they include a reference to EU funding?	Yes
Yes, different activities and a variety of channels are described, quantified and identified in the continuous report. However, sometimes there are absolute figures that do not give any further information. I nice video and brochure have been also produced but there are difficult to understand if you are in another field or out of the intended context of the project.	
6. Has the plan for the exploitation and dissemination of the results (if required) been updated and implemented as described in the DoA, in particular as regards intellectual property rights? Is it appropriate?	No
The consortium stated that the update was not required. However, an update or at least a follow-up report on the Dissemination KPIs (Table 16 of D6.2) would be needed. The update will be also necessary following up the objective of the Dissemination plan on "providing extra attention to engaging with the general public" and reviewing audiences. Also, due to COVID19 new dissemination mechanisms might be introduced, changed or improved.	
7. Has the data management plan (DMP) (if required) been updated and implemented? Is it appropriate?	No
ESCAPE has created a very sensible DMP as a deliverable in M6 (D1.3), with also an extensive reflection regarding privacy issues and personal data management. But the DMP, by its own nature, should be a live document and reviewed periodically.	
8. Have the proposed institutional changes been appropriately promoted?	Not applicable

5. Resources

1. Were the resources used as described in the DoA and were they necessary to achieve its objectives? If there are deviations from planned budget, have they been satisfactorily explained? Have they been used in a manner consistent with the principle of sound financial management (in particular economy, efficiency and effectiveness)?	Yes
<p>Direct costs budget was spent as planned and almost linear with the exception of a few partners. This linear trend in expenditure was not expected considering the ramp-up phase as well as COVID-19 impacts. The financial resources (total direct costs) used in the first 18 months of the project corresponds to an overall 33%. The non-cost extension of the duration of the project (6 months) is justified.</p>	

Expert opinion on deliverables

Deliverable number	Deliverable name	Status	Comments
D2.1	Implementation plan and design of pilot; R&D questions that will be addressed in the pilot and prototype	Accepted	The deliverable was completed and issued as planned.
D3.1	Detailed project plan for WP3	Accepted	The deliverable was completed and issued as planned.
D3.2	Software and service list and integration plan	Accepted	The deliverable was completed and issued as planned.
D3.3	Conceptual design report on the software and service repository, demonstrator online	Accepted	The deliverable was completed and issued as planned.
D4.1	Detailed project plan for WP4	Accepted	The deliverable was completed and issued as planned.
D4.2	Intermediate analysis report on use for IVOA standards for FAIR ESFRI and community data	Accepted	The deliverable was completed and issued as planned.
D4.4	Intermediate analysis report on integration of VO data and services into the EOSC	Accepted	The deliverable was completed and issued as planned.
D5.1	Preliminary report on requirements for ESFRI science analysis use cases	Accepted	The deliverable was completed and issued as planned.
D5.2	Detailed project plan for WP5	Accepted	The deliverable was completed and issued as planned.
D6.1	ESCAPE project website live	Accepted	The deliverable was completed and issued as planned.
D6.2	Dissemination and exploitation plan	Accepted	The deliverable was completed and issued as planned.
D6.3	Brochure publication	Accepted	The deliverable was completed and issued as planned.
D7.1	POPD - Requirement No. 1	Accepted	The deliverable was completed and issued as planned.

Expert opinion on milestones

Milestone number	Milestone name	Achieved	Comments
MS1	Project Kick-Off meeting	Yes	This milestone was achieved as planned, 20 days before envisaged in the DoA.
MS2	1st E-GA meeting. Governance entities (e.g. E-EB, E-EAB) and E-MST fully appointed	Yes	This milestone was achieved as planned and clearly commented in the PR.
MS3	1st E-EAB evaluation	Yes	This milestone was achieved but delayed one month later, but clearly explained and justified in the PR.
MS7	First WP2 workshop on the initial design and goals of the first pilot data lake, prepare D2.1	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS8	Initial pilot data lake with at least 3 core data centres	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS9	Second WP2 workshop to analyse the performance of the pilot, prepare D2.2	No	Not under mid-term review. Foreseen in December 2020
MS14	List of software and services	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS20	Presentation of progress and results and discussion of priorities at IVOA (1)	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS21	Progress and priorities at IVOA (2)	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS22	Progress and priorities at IVOA (3)	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS23	Progress and priorities at IVOA (4)	No	This milestone was not due under the mid-term review. Foreseen for December 2020.
MS27	First WP5 workshop on Science Platform design and requirements	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS28	Review of preliminary report on requirements for ESFRI science analysis use cases by WP5 task leader and ESFRI representatives	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS29	Initial science platform prototype with discovery and data staging	Yes	This milestone was achieved and clearly explained and justified in the PR.
MS30	Deployment of initial set of ESFRI software on prototype platform	Partially	This milestone is under development showed at the mid-term review meeting
MS38	First periodic report	Yes	This milestone was achieved and clearly explained and justified in the PR, but itself and also in the list of milestones.