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ESCAPE ESFRI Science Analysis Platform

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ESCAPE (European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures) addresses 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. ESCAPE actions are focused on developing solutions for the 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-messenger 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 result into a data-lake infrastructure as cloud open-science analysis facility linked with the EOSC. ESCAPE supports already existing infrastructure 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 astronomy and particle physics community.

The main objectives of ESCAPE Work Package 5, ESAP - ESFRI Science Analysis Platform, are to define and implement a flexible science platform for the analysis of open access data available through the EOSC environment that will allow EOSC researchers to identify and stage existing data collections for analysis, tap into a wide-range of software tools and packages developed by the ESFRIs, bring their own custom workflows to the platform, and take advantage of the underlying HPC and HTC computing infrastructure to execute those workflows.

Our approach is to provide a set of functionalities from which various communities and ESFRIs can assemble a science analysis platform geared to their specific needs, rather than to attempt providing a single, integrated platform to which all researchers must adapt. Deploying an EOSC-based science platform provides a natural opportunity to integrate with the data and computing fabric this environment encompasses while simultaneously accessing the tools, techniques, and expertise other research domains bring to that environment.

The ESFRI Science Analysis Platform (ESAP) developed through ESCAPE WP5 will provide a flexible and expandable analysis environment for the astronomy and physics community and constitute an absolutely essential resource for the big data challenges of the next generation of ESF/RIs.

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