ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research Infrastructures

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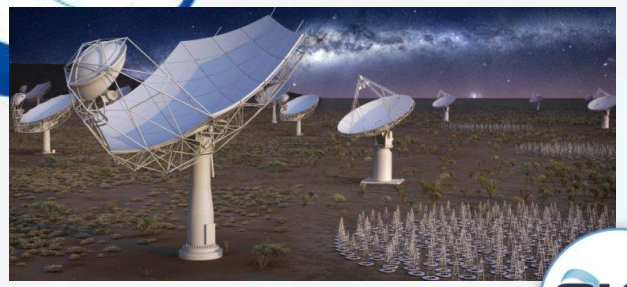
CNRS-LAPP

EOSC Symposium 2022
16th Nov 2022

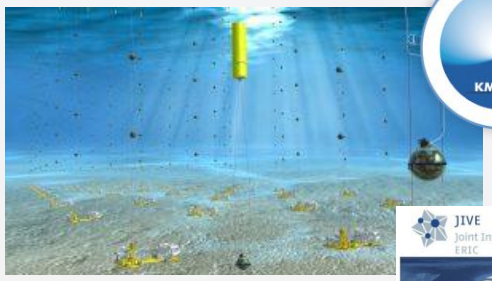
ESCAPE: Cluster of Astronomy & Particle Physics in EOSC

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 Grant Agreement no. 824064.










of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement no. 824064.

ESCAPE: ”EOSC cell”

- **ESCAPE services moving into the EOSC-Exchange layer**
- **Rely on EOSC-Core for underpinning aspects, e.g. AAI**

ESCAPE OSSR | Open-source Scientific Software and Service Repository

Catalogue & Repository of resources

Datasets
Software & services
Tutorials
Training
Publications

ESCAPE VO | Virtual Observatory

Virtual Observatory

TSP’s

RI-Specific Science Platforms

ESCAPE ESAP | ESFRI Science Analysis Platform

Science Platforms

Workflows, notebooks, deployment platforms, packaging

ESCAPE CS | Citizen Science

Citizen Science

ESCAPE DIOS | Data Infrastructure for Open Science

Data Lake

FAIR data management
Content discovery and delivery

HPC

PRACE
EuroHPC Joint Undertaking

HTC

Grid clusters, etc

Private/public clouds

Commercial clouds

GÉANT

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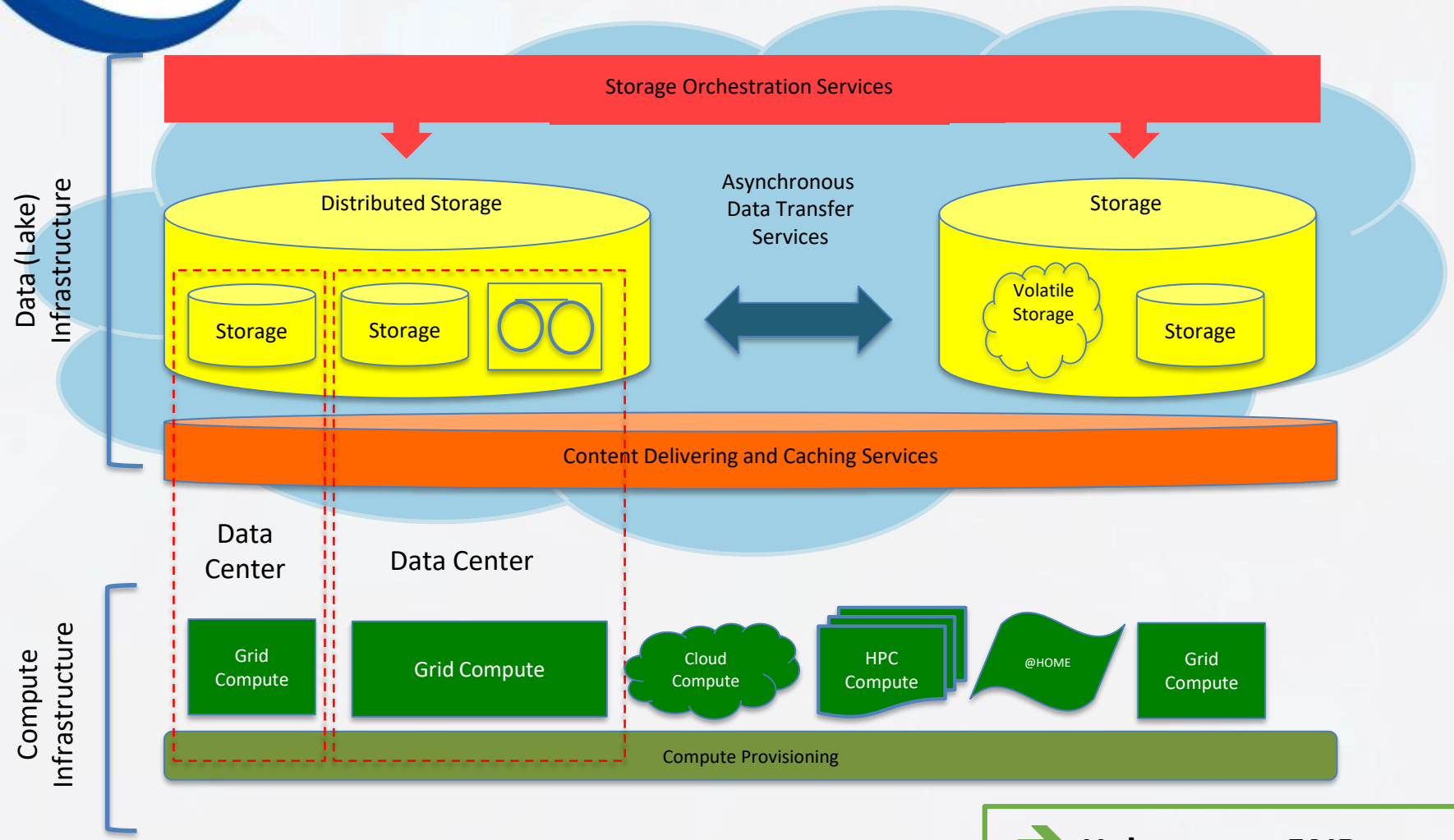
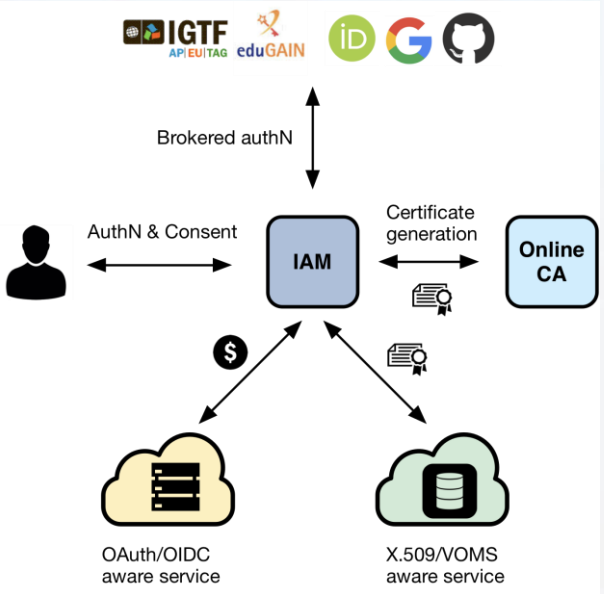
Data Infrastructure (Data Lake) concept



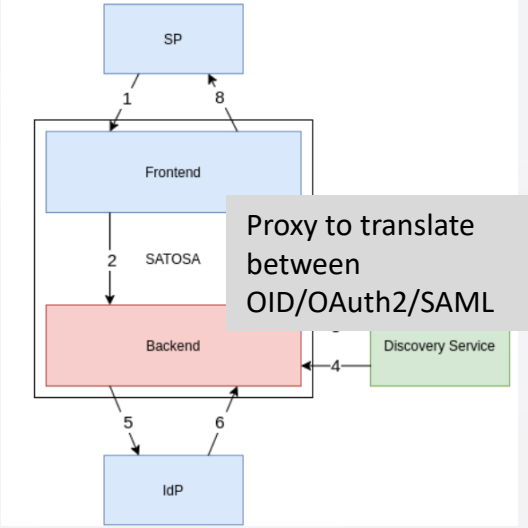
- Federation through AAI
  - Federated with EOSC-AAI
- Policy-driven data replication and distribution
- Distributed storage for reliability, accessibility, sustainability
  - Scales to multi-Exabyte
- Serving data, remote, cached, streaming, to heterogeneous compute facilities
- Hide complexity – transparent access to data

➔ **Help ensure FAIRness of scientific data**

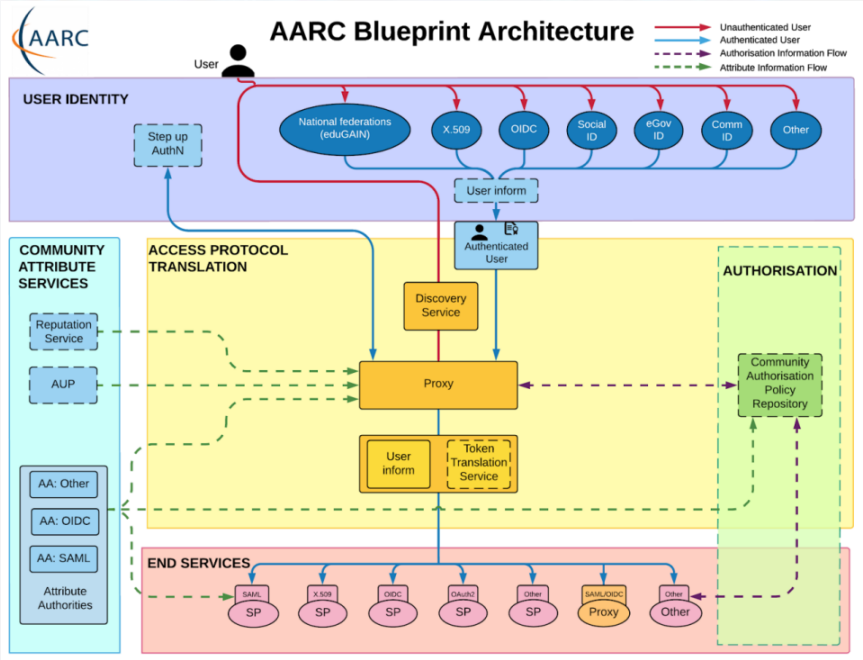
ESCAPE AAI part of EOSC AAI Federation



Hybrid – supports legacy infrastructure while migrating



Proxy to translate between OID/OAuth2/SAML



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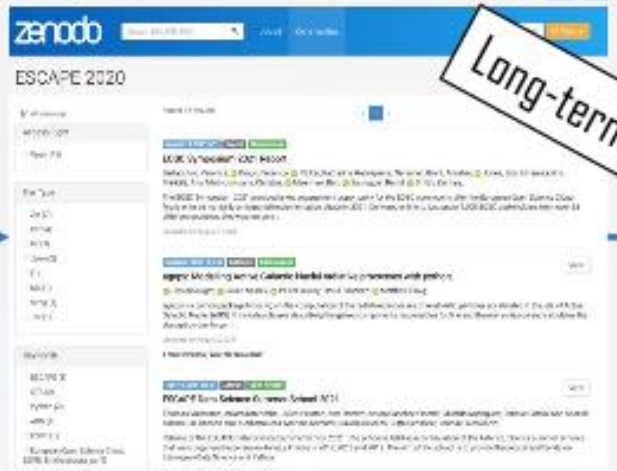
OSSR – User's View

http://purl.org/escape/ossr

Entry



Long-term

EOSC Integration

Federation

OpenAIRE

openAIRE

Training

ESCAPE Software Schools

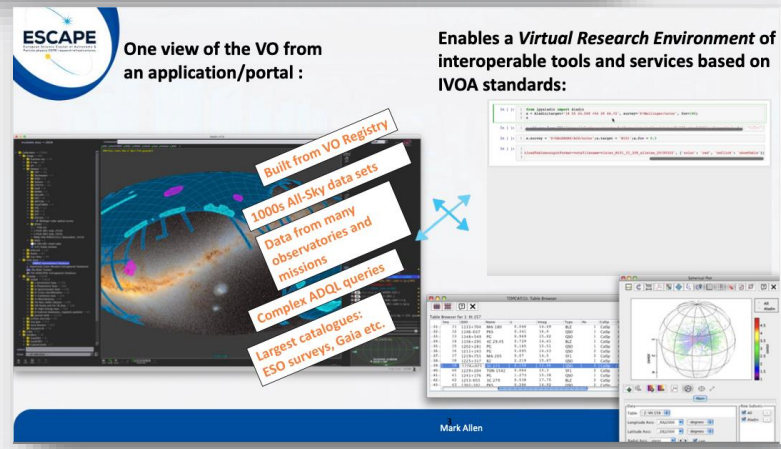
+ related projects / collections

Catalogues & Data

Self contained Open Science objects:

1. OSSR ➔ has been onboarded into EOSC Explorer
   - This is scalable for ESCAPE – if we put ESCAPE products into OSSR
     will automatically be visible in EOSC Marketplace
2. Virtual Observatory – data and tools
3. HEP Open Data portal

❑ Both of these are complete services, providing data, tools, software, tutorials, etc.

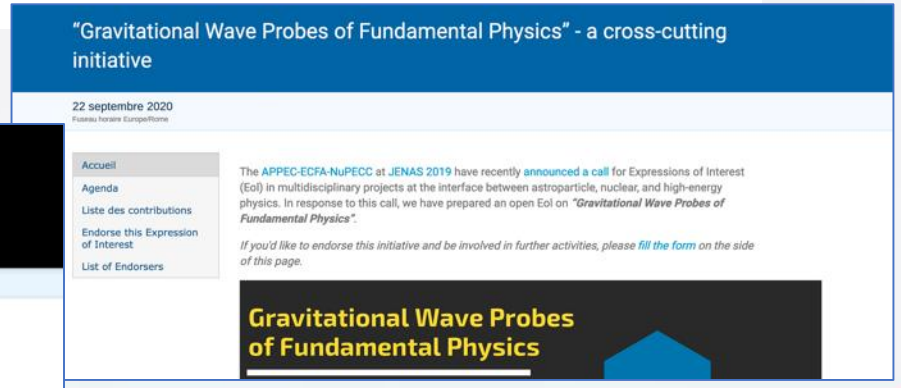


ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Researc
from the European Union's Horizon 2020 research and innovation programme under

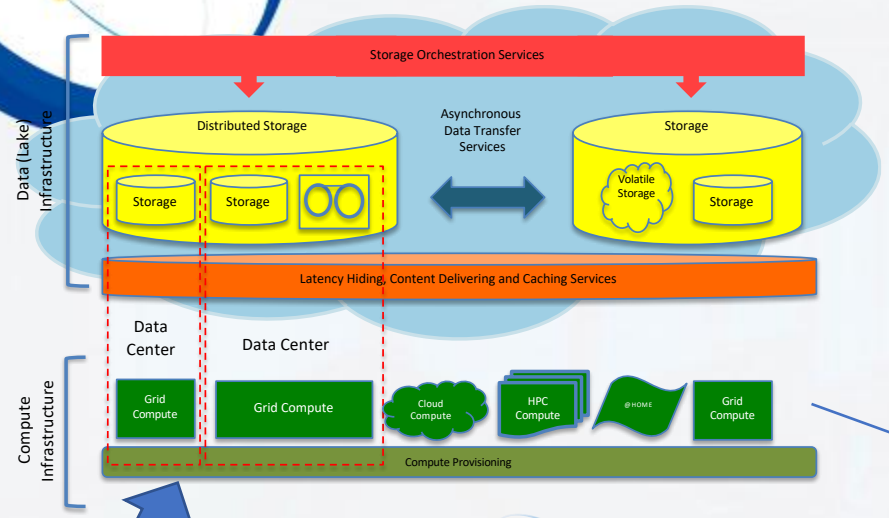
Demonstrators: Cross-cutting Science Projects

- **Dark Matter:**
  - understand the nature of dark matter by collecting data, analysis pipelines and results from complementary astronomy, particle and nuclear physics sources on a broad platform that will be ultimately be hosted on the EOSC Portal
  - exploit synergies and complementarities across different communities, creating a unique link between dark matter as a fundamental science question and the ESCAPE Open Science services needed to answer it
- **Extreme Universe:**
  - do 'frontier' multi-messenger science to understand extreme matter and particle processes in strongly curved space-time
  - combine astronomy and e-infrastructures and focus on data organisation
  - organise data from different wavelengths/messengers - and different types of extreme astrophysical transients (SNe, GRBs, FRBs, TDEs) - so that they can be easily gathered, analysed and modelled holistically, and not remain fragmented as present

Linked to two corresponding JENAA EoIs
(with already about 1000 subscribed scientists)



ESCAPE tools and EOSC integration



ESCAPE AAI

EOSC Future

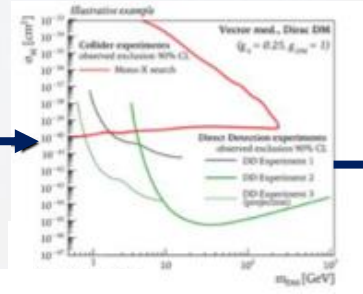
AAI Federated with EOSC

ESCAPE Data Lake (Federated storage)

Hosts/ingests open data sources into a common store; Includes EOSC Exchange provisioned storage

EOSC Future

Virtual Research Environment (VRE)



Publish results to Zenodo

zenodo

Cloud computing using EOSC Exchange provisioned compute, & HPC

EOSC Future

Software Repository

Archive of reusable pipelines: Onboarded to EOSC marketplace

EOSC Future

Data Lake: RUCIO

VRE: jupyter reana kubernetes

Software Repo: ESCAPE OSSR Open-source Scien and Service Repos zenodo

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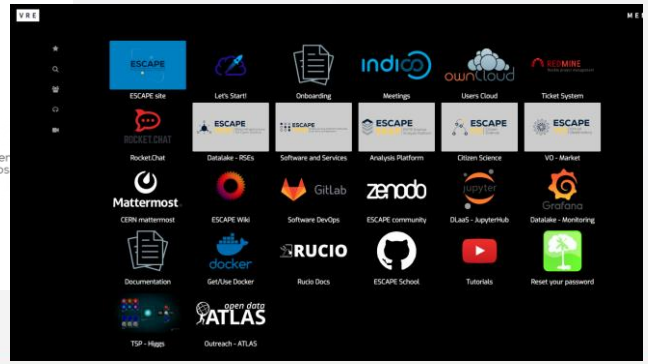
Virtual Research Environment

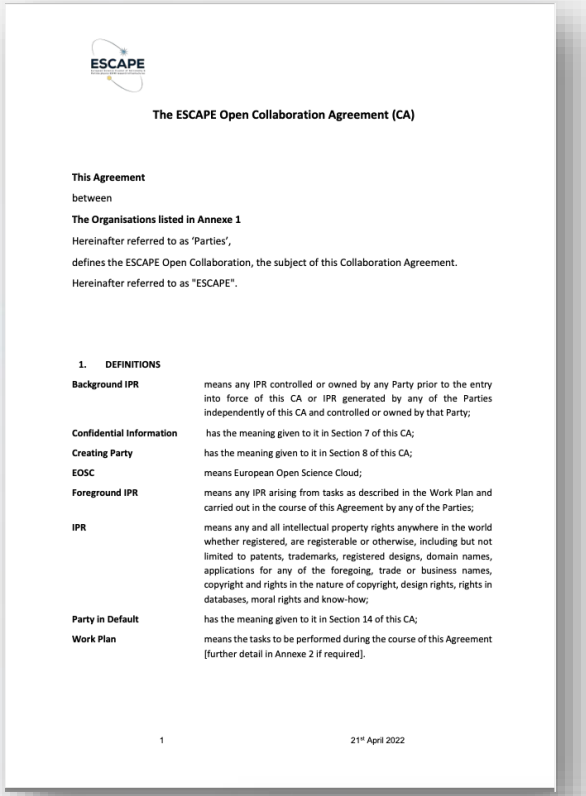


EOSC Core:
+ Helpdesk as a service (+monitoring) (+accounting)

EOSC Future

ESCAPE sustainability

- ESCAPE has a new Collaboration Agreement signed by Directors of all the partner RIs
  - The agreement will come into effect at the end of ESCAPE project → ESCAPE Open Collaboration
  - Recognises many synergies: communities, technical, coordination, political, funding …
- Common position with other clusters
  - want to effective mechanisms to enable cross-cluster & cross-domain collaborations
  - but not an additional layer of governance



ESCAPE

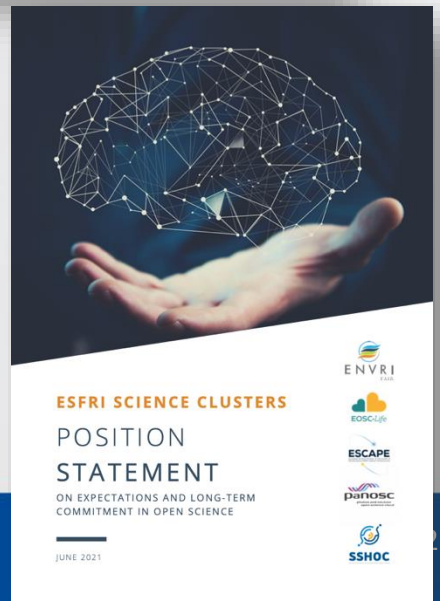
The ESCAPE Open Collaboration Agreement (CA)

This Agreement
between
The Organisations listed in Annexe 1
Hereinafter referred to as 'Parties',
defines the ESCAPE Open Collaboration, the subject of this Collaboration Agreement.
Hereinafter referred to as "ESCAPE".

1. DEFINITIONS

Background IPR	means any IPR controlled or owned by any Party prior to the entry into force of this CA or IPR generated by any of the Parties independently of this CA and controlled or owned by that Party;
Confidential Information	has the meaning given to it in Section 7 of this CA;
Creating Party	has the meaning given to it in Section 8 of this CA;
EOSC	means European Open Science Cloud;
Foreground IPR	means any IPR arising from tasks as described in the Work Plan and carried out in the course of this Agreement by any of the Parties;
IPR	means any and all intellectual property rights anywhere in the world whether registered, are registerable or otherwise, including but not limited to patents, trademarks, registered designs, domain names, applications for any of the foregoing, trade or business names, copyright and rights in the nature of copyright, design rights, rights in databases, moral rights and know-how;
Party in Default	has the meaning given to it in Section 14 of this CA;
Work Plan	means the tasks to be performed during the course of this Agreement [further detail in Annexe 2 if required].

1 21st April 2022



ESFRI SCIENCE CLUSTERS
POSITION STATEMENT
ON EXPECTATIONS AND LONG-TERM COMMITMENT IN OPEN SCIENCE
JUNE 2021

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What does ESCAPE bring to EOSC?

- ESCAPE represents a broad set of communities, with significant technical requirements and expertise →
- Exabyte-scale data management: expertise accumulated over 20 years and evolved/validated in ESCAPE to be ready for next generation of Exabyte data generating experiments
  - HL-LHC & SKA >> Exabyte/year; others few PB – 100 PB/year
- Globally federated compute infrastructures
- Long term expertise in reliable operation & support of federated infrastructures
- Expertise & experience in all aspects of collaborative software & computing;
  - focus on performance, efficiency etc. Relevant for energy efficiency
  - Initiatives on career development, training, etc for software and computing *scientists*

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Thank you!