ESCAPE:WP2 Workshop Summary

Aris Fkiaras (CERN)

Rucio Development Meeting, 1 Aug 2019

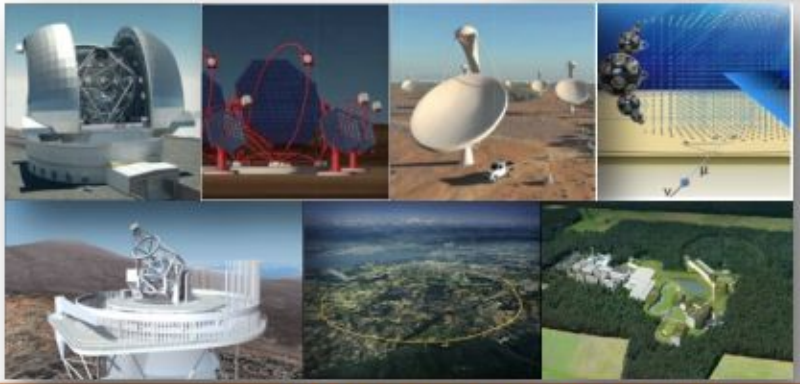
ESCAPE - The European Science Cluster of Astronomy & Particle Physics ESFRI Research Infrastructures has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement n° 824064.

ESFRI Science Projects

HL-LHC	SKA
FAIR	CTA
KM3Net	JIVE-ERIC
ELT	EST
EURO-VO (LSST)	EGO-VIRGO (CERN,ESO)

ESCAPE

European Science Cluster of Astronomy & Particle physics
ESFRI research infrastructures



Goals:

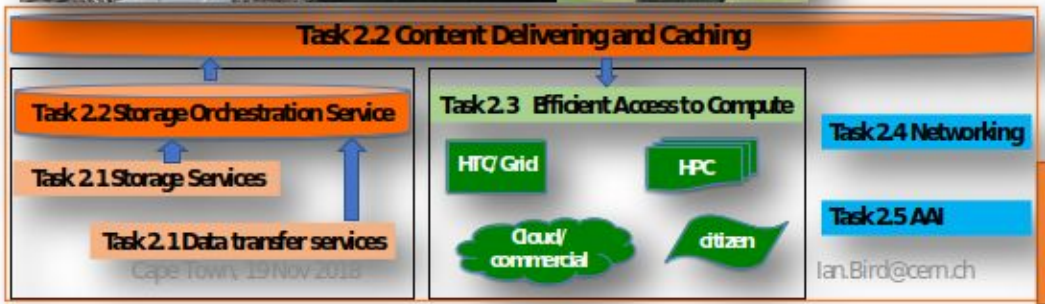
Prototype an infrastructure for the EOSC that is adapted to the Exabyte-scale needs of the large ESFRI science projects.

Ensure that the science communities drive the development of the EOSC.

Has to address *FAIR* data management, long term preservation, open access, open science, and contribute to the EOSC catalogue of services.

Work Packages

WP2 – Data Infrastructure for Open Science
WP3 – Open-source scientific Software and Service Repository
WP4 – Connecting ESFRI projects to EOSC through VO framework
WP5 – ESFRI Science Analysis Platform



Data centres (funded in WP2)
CERN, INFN, DESY, GSI, Nikhef, SURFSara, RUG, CCIN2P3, PIC, LAPP, INAF

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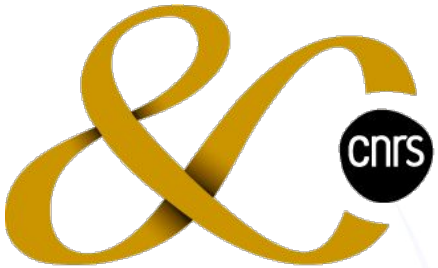
ESCAPE in numbers

- **31** partners (including 2 SMEs)
- **7** ESFRI projects & landmarks: CTA, ELT, EST, FAIR, HL-LHC, KM3NeT, SKA
- **2** pan-European International Organizations: CERN, ESO (with their world-class established infrastructures, experiments and observatories).
- **4** supporting ERA-NET initiatives: HEP (CERN), NuPECC, ASTRONET, APPEC
- **1** involved initiative/infrastructure: EURO-VO
- **2** European research infrastructures: EGO and JIV-ERIC
- Budget: **15.98 M€**
- Started: **1/2/2019**
- Duration: **42** months (end date 31/7/2022)
- Coordinator: **CNRS**



Depuis 80 ans, nos connaissances bâtissent de nouveaux mondes

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Work Package 2

- Task 2.1 Data Lake Infrastructure and Federation Services. CERN (Xavier Espinal)
- Task 2.2 Data Lake orchestration service. DESY (Patrick Fuhrmann)
- Task 2.3 Integration with Compute Services. NOW-I-ASTRON (Yan Grange)
- Task 2.4 Networking. SKAO (Rosie Bolton)
- Task 2.5 Authentication and Authorization. INFN (Andrea Ceccanti)

Simone Campana (CERN) as WP leader, Rosie Bolton (SKAO) as deputy

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WP2 fortnightly meetings https://indico.in2p3.fr/category/843/

- Prentations (from field experts) + Discussions for following topics
  - Rucio
  - Qos
  - Caching
  - Hammercloud
  - Datalake Ideas
  - AAI

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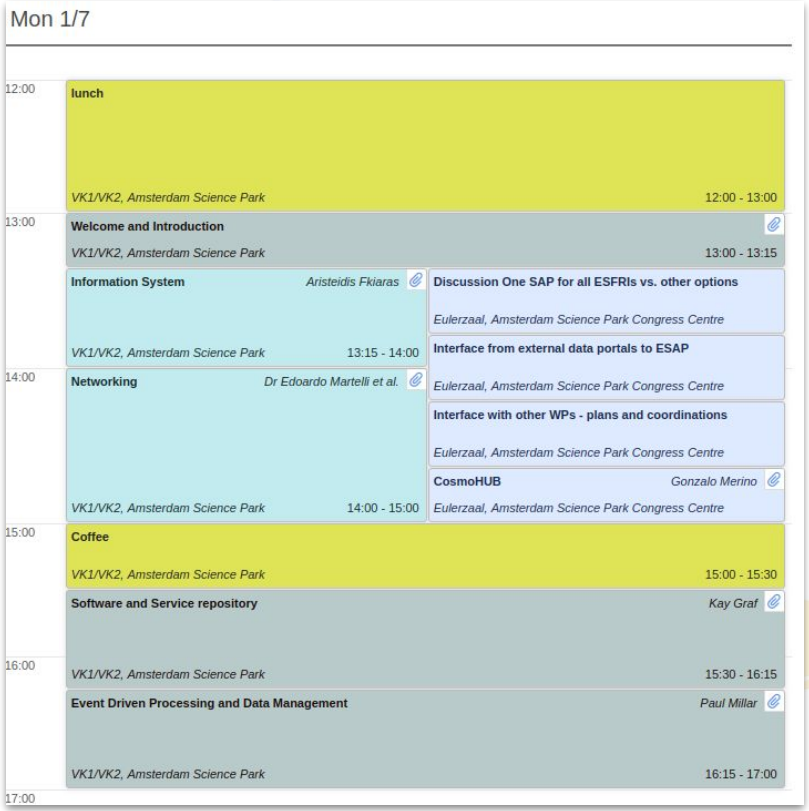
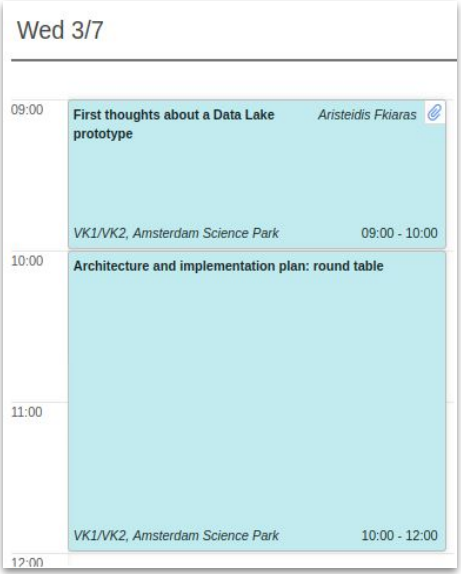
WP2 Kickoff Meeting

https://indico.in2p3.fr/event/19214





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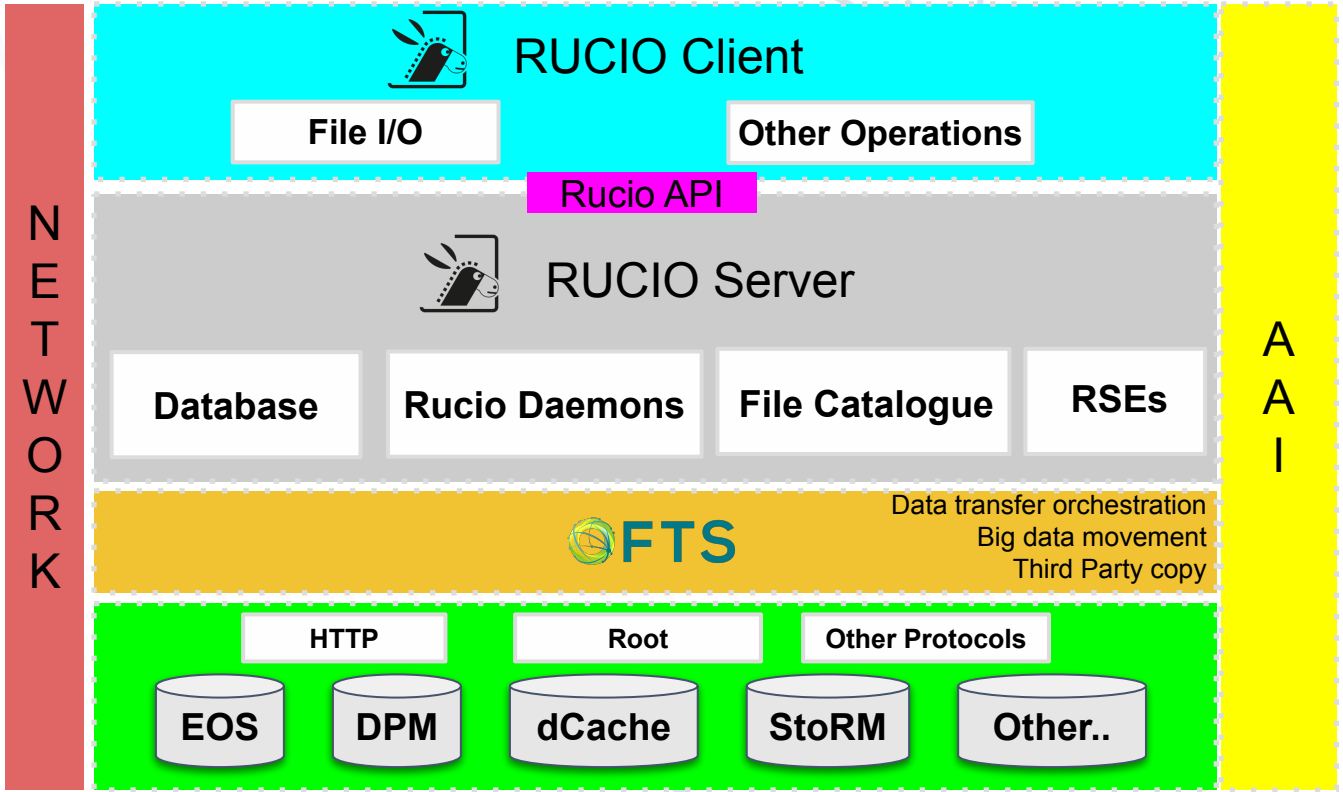
ESCAPE Data infrastructure for Open Science



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Agreed to use Rucio as a reference implementation

- Proposal for Rucio testbed was well received
- It's up to the sciences to decide if they are going to use Rucio
  - Some might decide to use only part of the infrastructure
  - We have a reference implementation of what a data management and orchestration tool should look like

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First Step

- Get ESCAPE partners involved to provide storage resources
  - Aiming to have at least one of each storage system technology in the prototype (dpm, dcache, eos, storm..)
  - Most partner institutes are already involved in WLCG as T1s and T2s and participate in RnD and discussions about the evolution of WLCG

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Next Steps

- Investigate/Evaluate/Develop
  - QoS
  - AAI
  - Multi VO Rucio
  - Integration with CRIC
  - Event Driven Processing
  - Metadata Support
  - Integration with the Virtual Observatory
  - Caching solutions (XCache)
  - Network Solutions

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For the ESCAPE prototype

- Everybody on the same Rucio instance
  - MultiVO Rucio will be great, currently everybody under ESCAPE VO
- Use experimental features and contribute back to the tools used when possible
- Document
  - How the datalake was set up
  - Experiences / Lessons learned

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At the end of ESCAPE (31/07/2022)

- ESCAPE is an integration and deployment project, it is not intended to operate services after its end. Therefore at the end of ESCAPE we should be in the situation where each science project and the involved institutes have expertise to run their instance of Rucio and other services.
- Valuable outcome
  - Contributions back to technologies
  - Knowledge transferred between ESCAPE partners
  - Documentation

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Thank you

Comments?

Questions?

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Backup slides...

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ESCAPE goals

1. Implementing Science Analysis Platforms for EOSC researchers to stage data collections, analyse them, access ESFRIs' software tools, bring their own custom workflows.

2. Contributing to the EOSC global resources federation through a Data-Lake concept implementation to manage extremely large data volumes at the multi-Exabyte level.

3. Supporting "scientific software" as a major component of ESFRI data to be preserved and exposed in EOSC through dedicated catalogues.

4. Implementing a community foundation approach for continuous software shared development and training new generation researchers.

5. Extending the Virtual Observatory standards and methods according to *FAIR* principles to a larger scientific context; demonstrating EOSC capacity to include existing frameworks.

6. Further involving SMEs and society in knowledge discovery.

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ESCAPE work programme

WP1 MIND (Management, Innovation, Networking and Dissemination)
Leader: Giovanni Lamanna, LAPP-CNRS

WP2 DIOS (Data Infrastructure for Open Science)
Leader: Simone Campana, CERN

WP3 OSSR (Open-source scientific Software and Service Repository)
Leader: Kay Graf, FAU

WP4 CEVO (Connecting ESFRI projects to EOSC through VO framework)
Leader: Mark Allen, CDS-CNRS

WP5 ESAP (ESFRI Science Analysis Platform)
Leader: Michiel van Haarlem, ASTRON-NWO

WP6 ECO (Engagement and Communication)
Leader: Stephen Serjeant, Oxford Open University

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