The data perspective
(in multi-messenger astronomy context)

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PREAMBLE

ESFRI and other world-class research infrastructures (RI), such as the ones on the APPEC roadmap, *"are underline{characterised by the very significant data volumes they generate and handle."*

"Effective data preservation and open access for immediate and future sharing and re-use are a fundamental component of today's research infrastructures"

◆ Horizon 2020 actions aim at addressing the current situation where *"researchers are still confronted with a fragmented research data landscape."*

*ESFRI and other RI have to guarantee that multi-wavelength/messenger data are handled according to the **FAIR (Findable, Accessible, Interoperable and Re-usable)** principles and in line with the objectives of **Open Science**."*

Openness is critical to the modern data-driven scientific enterprise. It concerns the world-wide scientific community as well as members of the public.

◆ Main areas are digital infrastructure and online digital repositories.

Two considerations:

1) ESFRI and other world-class RIs are invited to guarantee the data openness and they are the unique subjects in assuring the quality of their scientific data and the correct implementation of solutions for that. Some common and/or aligned interests (also with astronomy and particle/nuclear physics) exist and they should facilitate the connection among RIs.

2) The EC is proposing the implementation of EOSC – European Open Science Cloud. A framework for addressing fragmentation. RIs commitment in building EOSC is envisaged in order to contribute in shaping and steering shared solutions for long-term sustainability of RIs data and operation.

APPEC shareholders' cooperative actions* could address three main issues.

In the following I report a few examples recently discussed with key representatives of major AP RIs within the ASTERICS-H2020 cluster. These examples can help to build an "Open Data multi-lambda and cross-domain research environment".

1) Data sharing

- Solutions for heterogeneous and interoperable regional/national computing and data resources …

- Open-source software repository. Sharing and co-developing scientific software is critical. Provision of open science tools; services for multi-wavelength quasi-real-time follow-up analysis…

2) Data access

- "Open Access and user-support portal" (for data and software)

A "portal" implementing the access to data to combine and to analyse, visualise the results and instruct new workflows.

-> Policy for sharing to be subscribed by the Ris.

3) Data re-use

- Preservation solutions (for data, software and framework) and long-term sustainability.

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