

Systematic Evaluation for Long Term Data Preservation Technologies

Rubén F. Pérez ⁽¹⁾, Luís Gonzalo ⁽¹⁾, Juan Castillo ⁽¹⁾, Mirko Albani ⁽²⁾, Rosemarie Leone ⁽²⁾

⁽¹⁾ *GMV Innovating Solutions SAU*

Isaac Newton 11, 28760 Tres Cantos (Madrid), Spain

Email: rfperez@gmv.com, lgutierrez@gmv.com, jcastillo@gmv.com

⁽²⁾ *ESA/ESRIN EOP-G Department*

Via Galileo Galilei , 00044 Frascati (Rome), Italy

Email: mirko.albani@esa.int, rosemasie.leone@esa.int

ABSTRACT

Long Term Data Preservation (LTDP) is aimed at ensuring the data availability, integrity and their accessibility for very long terms, in principle without time limitation.

This concept involves a continuous consolidation and technical evolution of archives, archive management systems and the related data access systems to guarantee the basic data preservation and proper data accessibility. This evolution concerns not only data and format migration, but also the processing chains, the algorithms and the data access technology so the data products can be received and managed by the user community in accordance to the up to date requirements.

In the context of Earth Observation (EO), the need to ensure the data preservation has been expressed by most environmental monitoring programmes and recently again through the Climate Change Initiative. ESA started the set-up of a cooperation framework with other European space agencies and EO satellite operators to address LTDP issues from a technical point of view and to pursue a stronger coordination at European level which has ended in the establishment of a set of European LTDP common guidelines.

In this context, the object of the Long term data Archive Study on new Technologies (LAST) activity is to perform an independent study on best practices and assessment of different archiving technologies mature and available on the market for operation in the short and mid-term time frame, or eventually available in the long-term.

LAST activity can be considered as a due diligence process where the following results are presented:

- Collection and analysis of the archiving and retrieval requirements from ESA, its partners, and other organizations both from the EO domain and other fields where similar archiving needs do exist.
- An archiving technology survey, where an extensive analysis of technologies already available in the market, or currently in development but expected to be ready in the short/mid-term is performed.
- Evaluation method and Evaluation Models that take into account the preferences and specific requirements of long term archiving systems, classified by a number of general technological areas previously identified during the collection of requirements.

The final scenarios and methods for the benchmarking and testing of complete solutions are also described, including the most relevant techniques and technologies (i.e. Virtualization) for this purpose.