# DEAVI: Dynamic Added Value Interface

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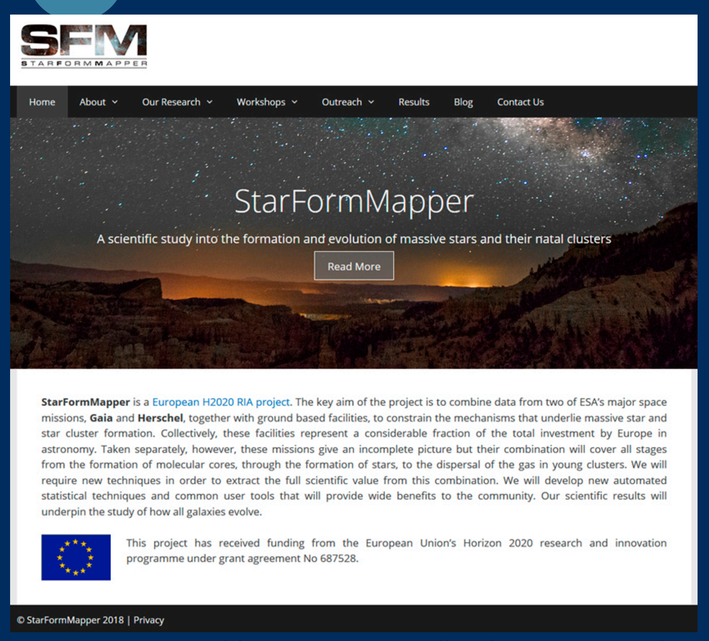
We present DEAVI, an Added Value Interface (AVI) to manage and exploit data from the ESA missions Gaia and Herschel. AVIs are software packages that provide scientists with the mechanisms to submit their own code to be executed close to the ESA mission archives. The proposed AVI is part of the software package being developed by Quasar Science Resources S. L. for the "*StarFormMapper (SFM): A Gaia and Herschel Study of the Density Distribution and Evolution of Young Massive Star Clusters*" project, funded by the European Union under the Horizon 2020 programme.

**QUASAR Science Resources S. L.** http://quasarsr.com/, is a private company that provides consulting Software and System Engineering services for Research and Development projects.

Our activities cover many different areas, including scientific software development and data reduction techniques, handling and exploitation of scientific data bases, archive engineering and data mining, computer systems engineering, including virtual machine infrastructure, network, data storage and backup.

**Introduction** The SFM project combines data from two of ESA's major space missions, Gaia and Herschel, together with ground-based facilities, to constrain the mechanisms that underlie massive star and star cluster formation.

Quasar Science Resources involvement deals with the creation of the necessary software tools in order to handle the scientific algorithms for the analysis of the combined Gaia, Herschel and other data of young star clusters, including the visualization of the results.




*Home page of SFM project, https://starformmapper.org/*

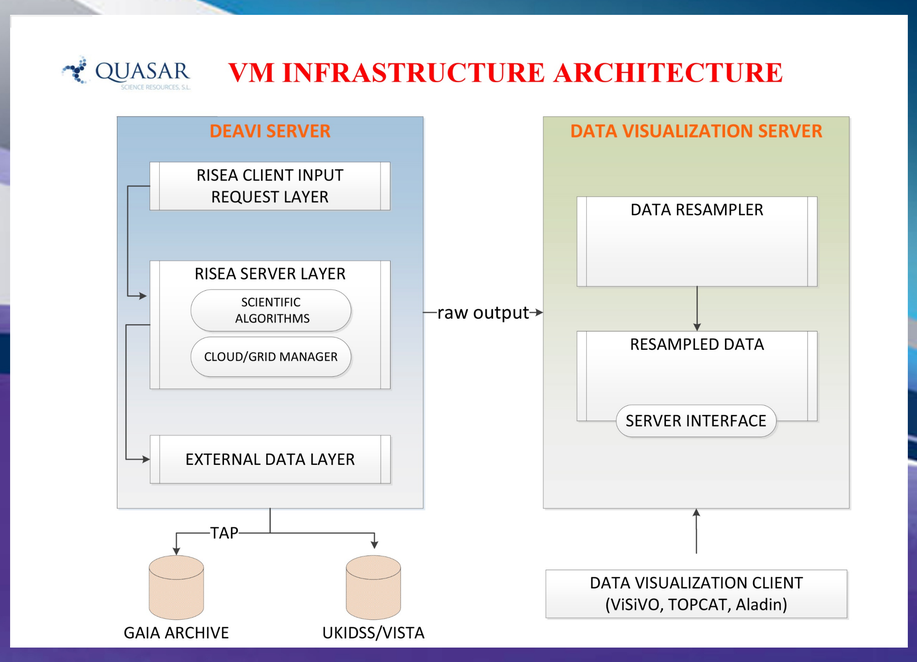
## DYNAMIC EVOLUTION ADDED VALUE INTERFACE

### 1. DEAVI Server

- RISEA Client interface: allows a user to interact with the scientific algorithms in order to add/modify/implement physical conditions, input parameters and output data.
- RISEA Server: Runs on a virtualized infrastructure, and handles and injects different scientific algorithms.
- Data Access Interface: gives access to the Gaia and Herschel data archives.

### 2. Data Visualization Server

- Visualization libraries: The system supports the libraries bokeh and d3.js for 2D and 3D data visualization.
- The SAMP protocol has been implemented to exchange information between the server and the client side. For example, access to TOPCAT is available.
- The system allows the download of data and products for local use.




*Designed Virtual Server architecture for the SFM project.*


*Example of a simple algorithm working in the DEAVI prototype: star positions with their proper motions.*

## DEPLOYMENT OF DEAVI IN GAVIP

DEAVI is being deployed in the Gaia Added Value Interface Platform (GAVIP, https://gavip.esac.esa.int/) at the European Space Astronomy Centre (ESAC). GAVIP allows the global science community to run scientific code close to the Gaia and Herschel data archives. This has two significant advantages: 1) Allows data processing without moving data through the network. 2) More computing power thanks to the use of the infrastructure available at ESAC (RAM, HDD, etc.)

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