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Open Science Clusters' Action for Research & Society

Funded Project

Gaia All-Sky Parameters for Stars (GASPS) service

Principal Investigator: Iain McDonald, University of Manchester
Project team members: Albert Zijlstra (UoM), Nick Cox & Jeronimo Bernard-Salas (ACRI-ST)

Implemented by

The University of Manchester

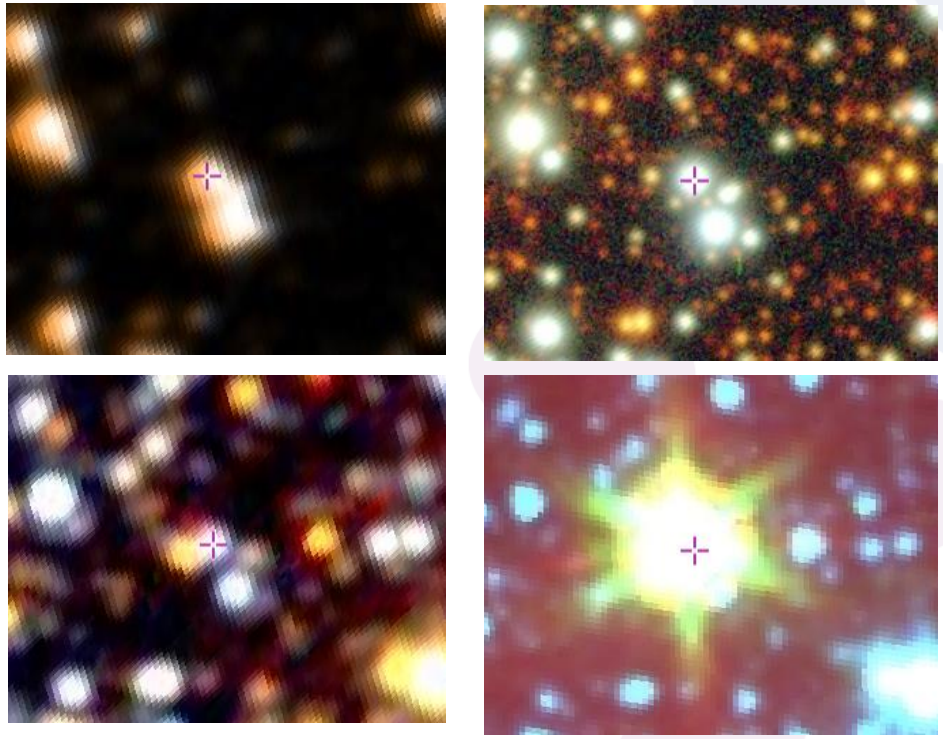
ACRI ST

Funded by the European Union

Context

Astronomers observe brightnesses of stars at different wavelengths

But it can be hard to understand the stars from these alone.



Challenge addressed

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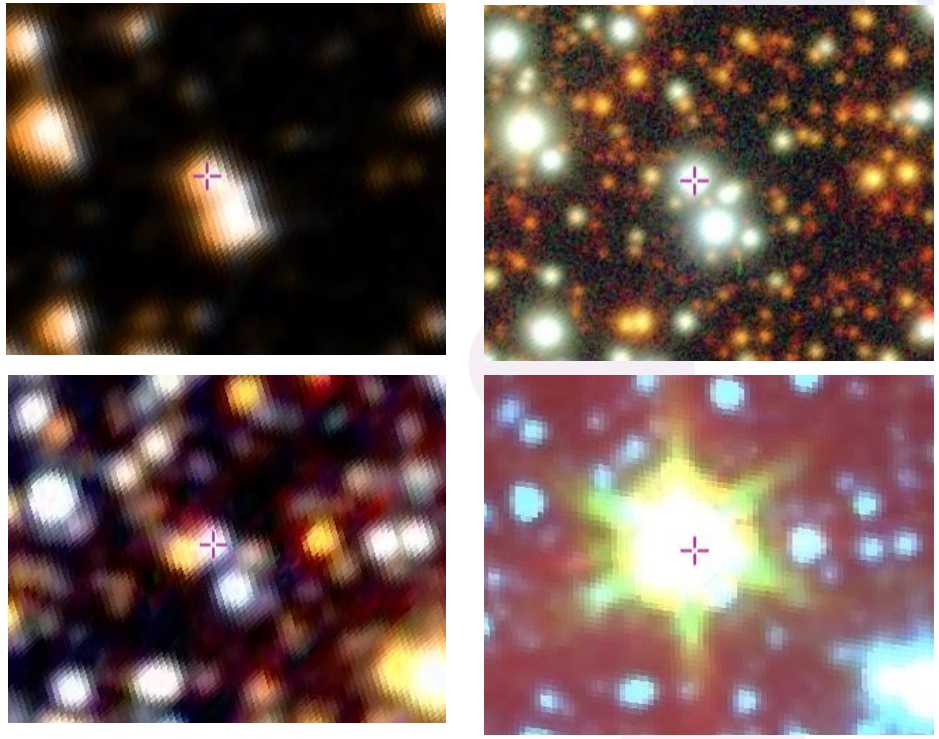
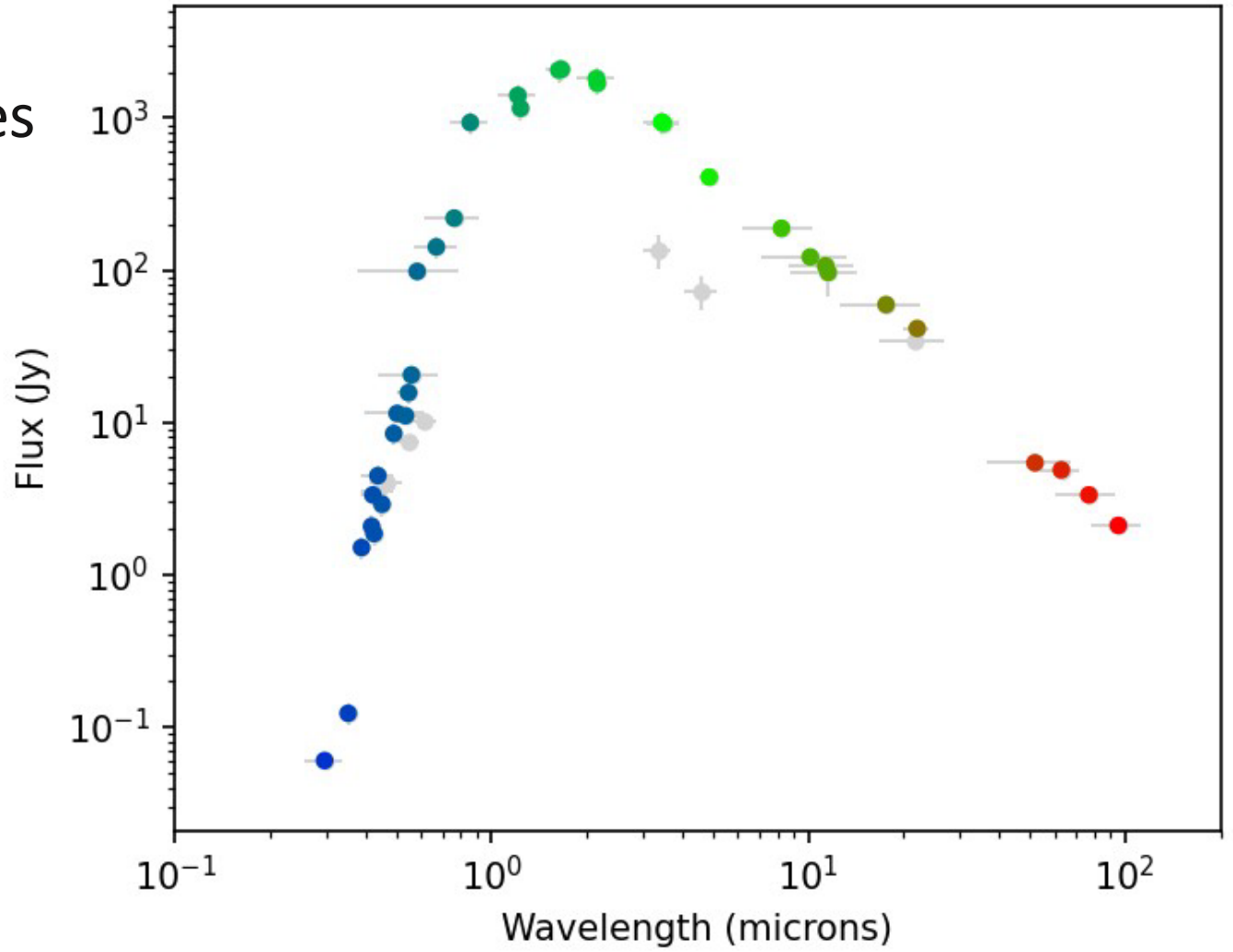
We can graph these brightnesses against wavelength





Challenge addressed

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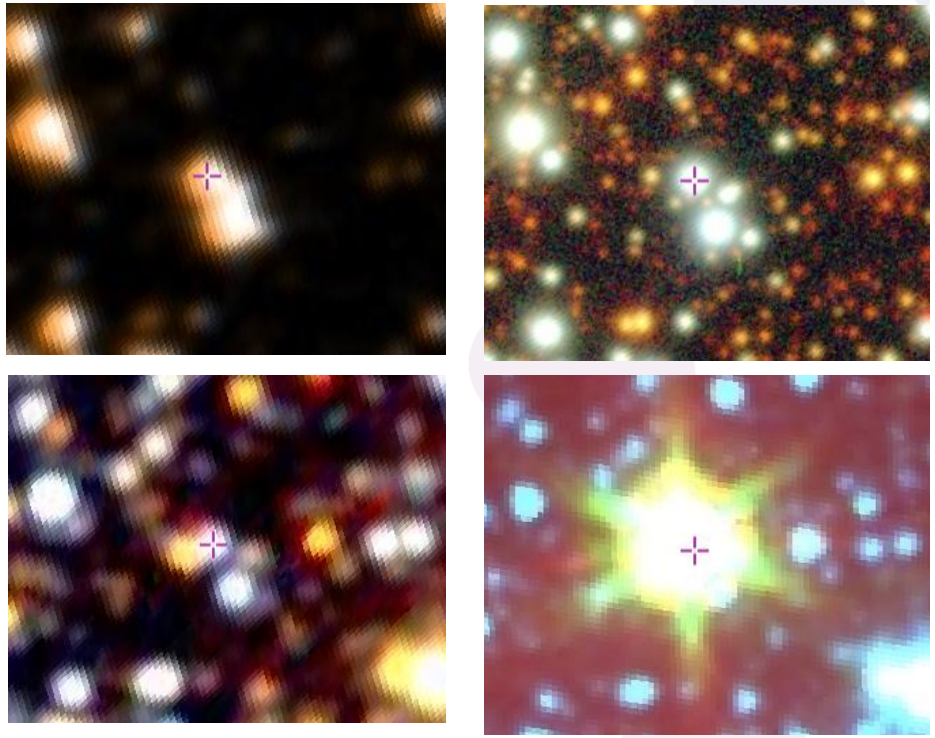
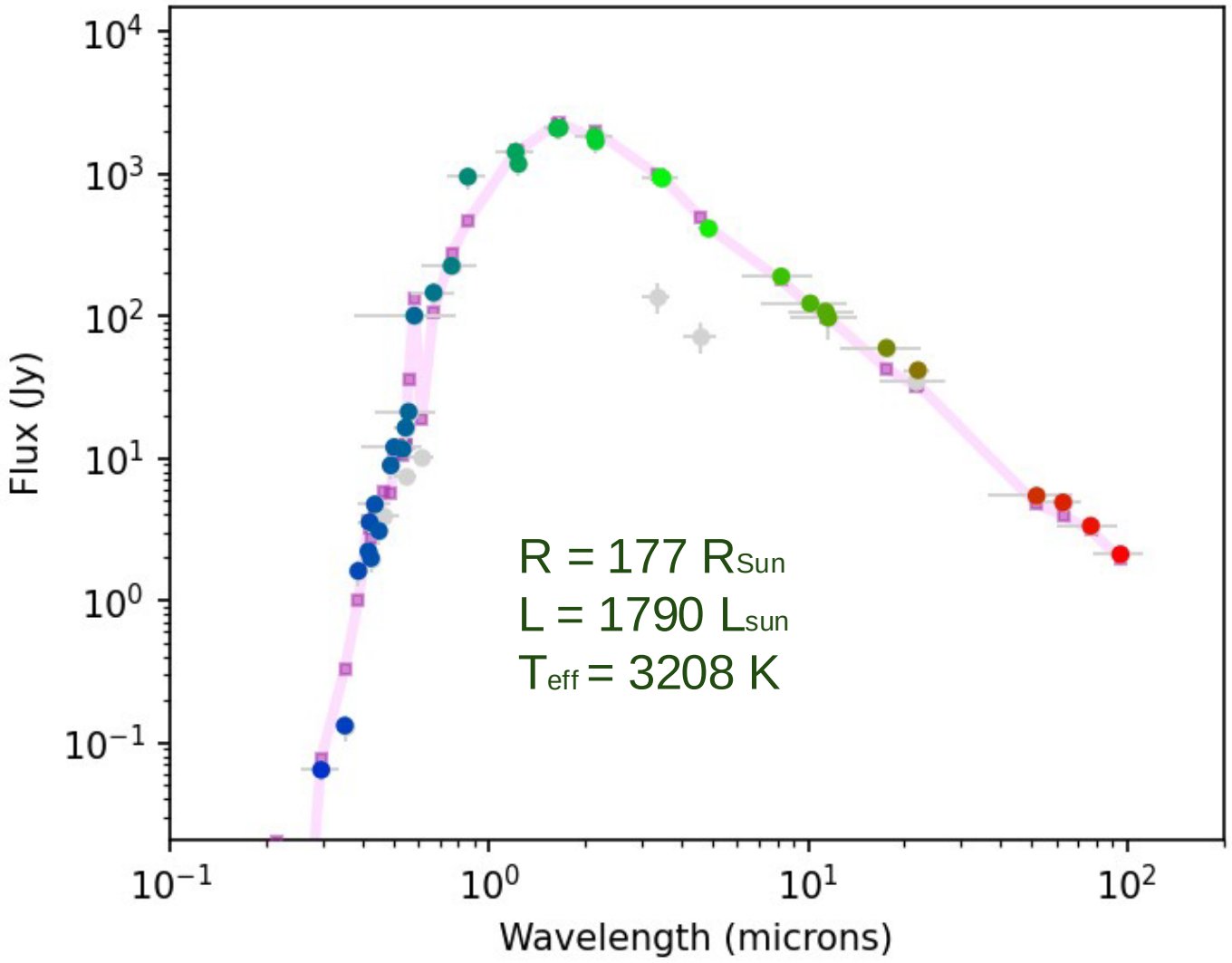
And fit them to get a star's properties





Gaia All-Sky Parameters for Stars (GASPS) service

Properties of over 150 million stars in the night sky

OSCARS Funding:

€ 248,000

Project Start:

01 Dec 2024

Project End:

30 Nov 2026

Field:

Astrophysics (ESCAPE)

Principal Investigator:

Iain McDonald

University of Manchester

Other Researchers involved:

Albert Zijlstra

Nick Cox

Jeronimo Bernard-Salas

Challenge addressed

Determining the fundamental properties of stars to understand the history and evolution of our Galaxy and others

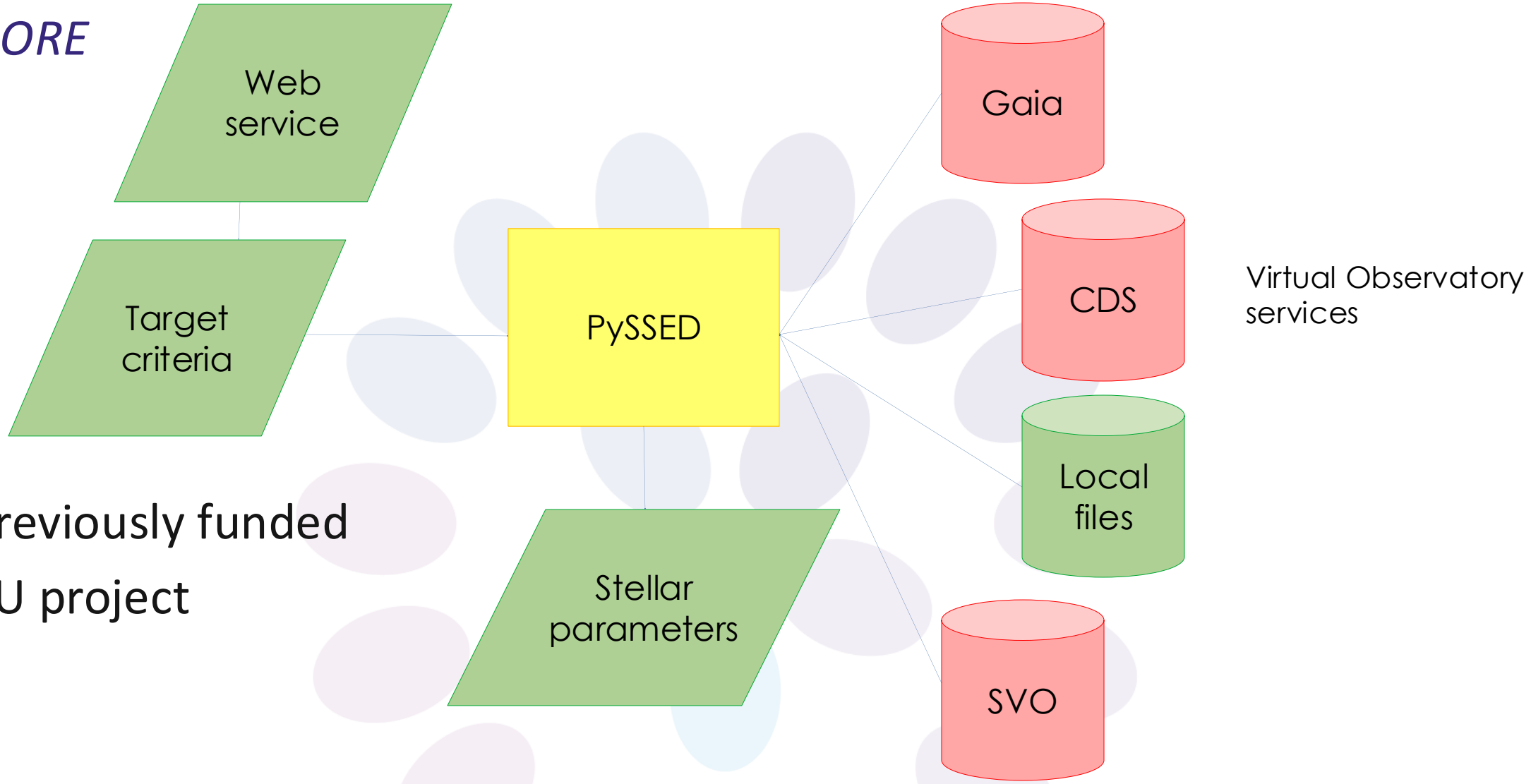
Deliverables

We will:
(1) Publish a public catalogue of temperatures and brightnesses of over 150 million stars, and
(2) Detections of any material around them.
(3) Provide a web interface to visualise this information.
(4) Published the fitting code used in the analysis.

Organisations involved:

Proposed solution

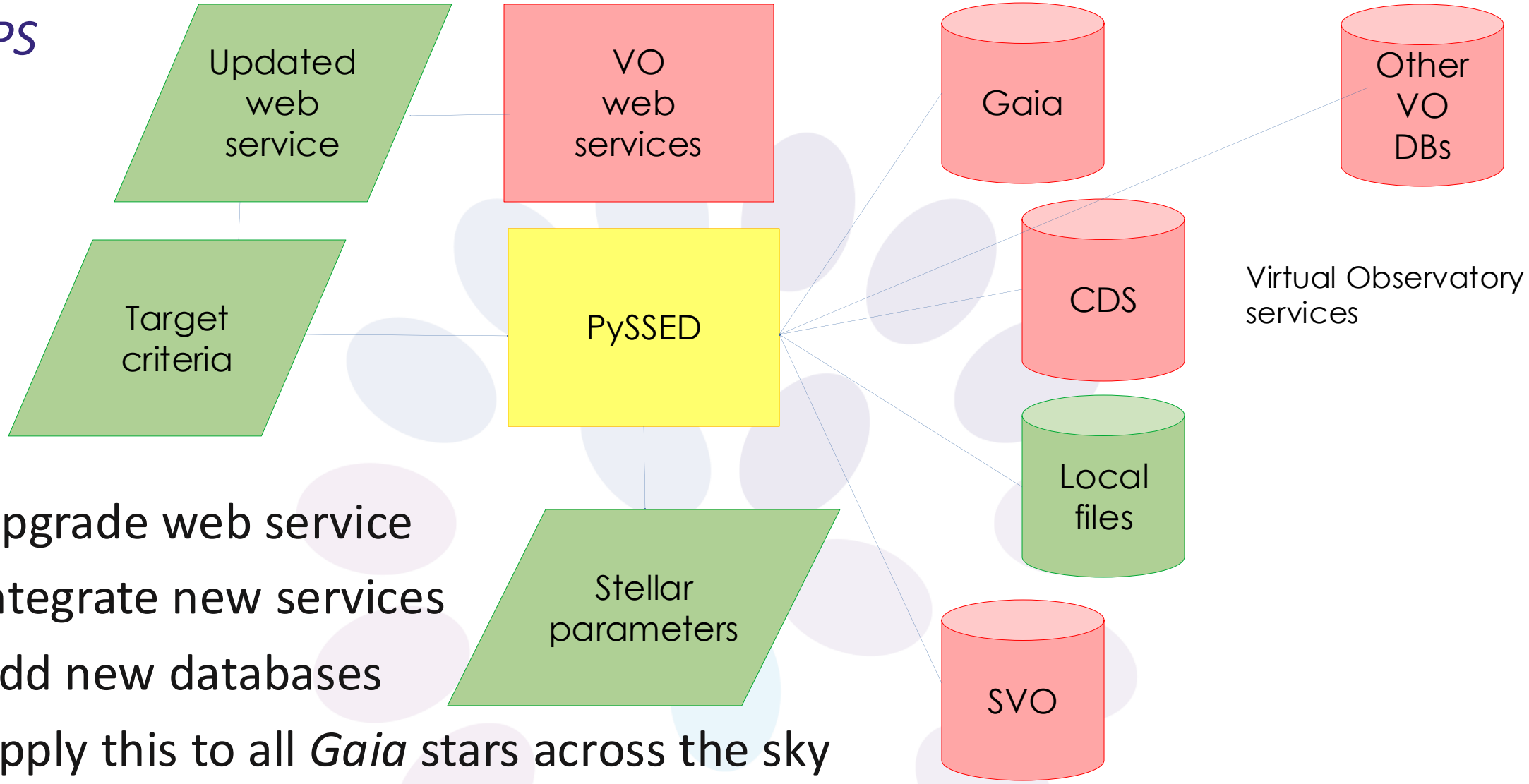
EXPLORE



- Previously funded
- EU project

Proposed solution

GASPS



- Upgrade web service
- Integrate new services
- Add new databases
- Apply this to all *Gaia* stars across the sky

Next Steps & Expected Scientific Impact

- **Science goal:** understand dust around stars in the Milky Way Galaxy.
- **Community product:** Temperatures and brightnesses of >150M stars.
- **Community service:** Web interface to explore properties of stars.
- **Released code:** All data and code on permanent public repositories → continuity after the project end, allows bespoke re-analysis.
- **Interface with community:** Enhance code to allow compatibility with other services in the worldwide Virtual Observatory.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Thank you