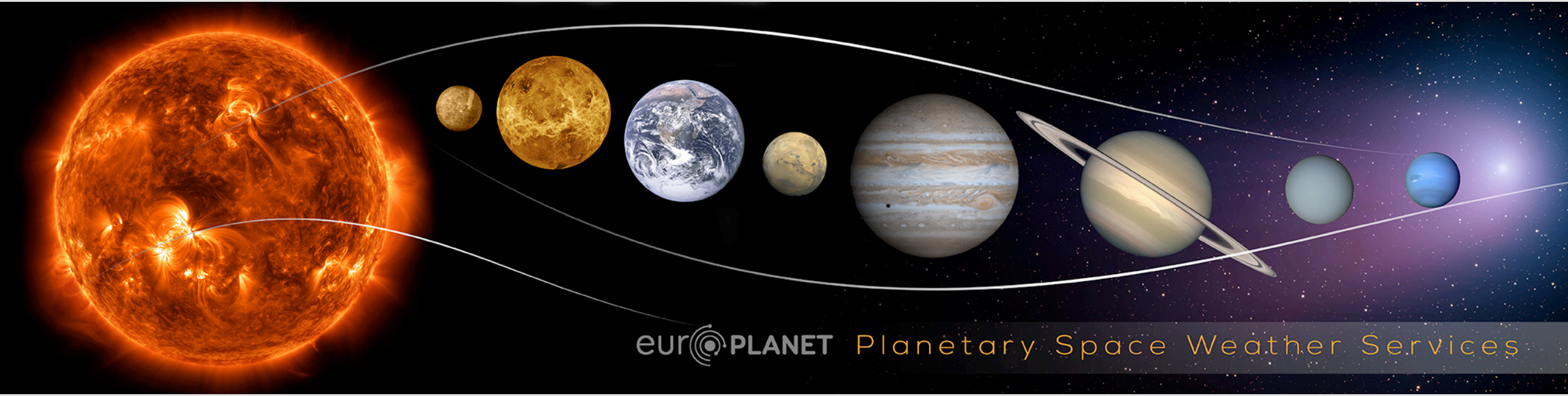
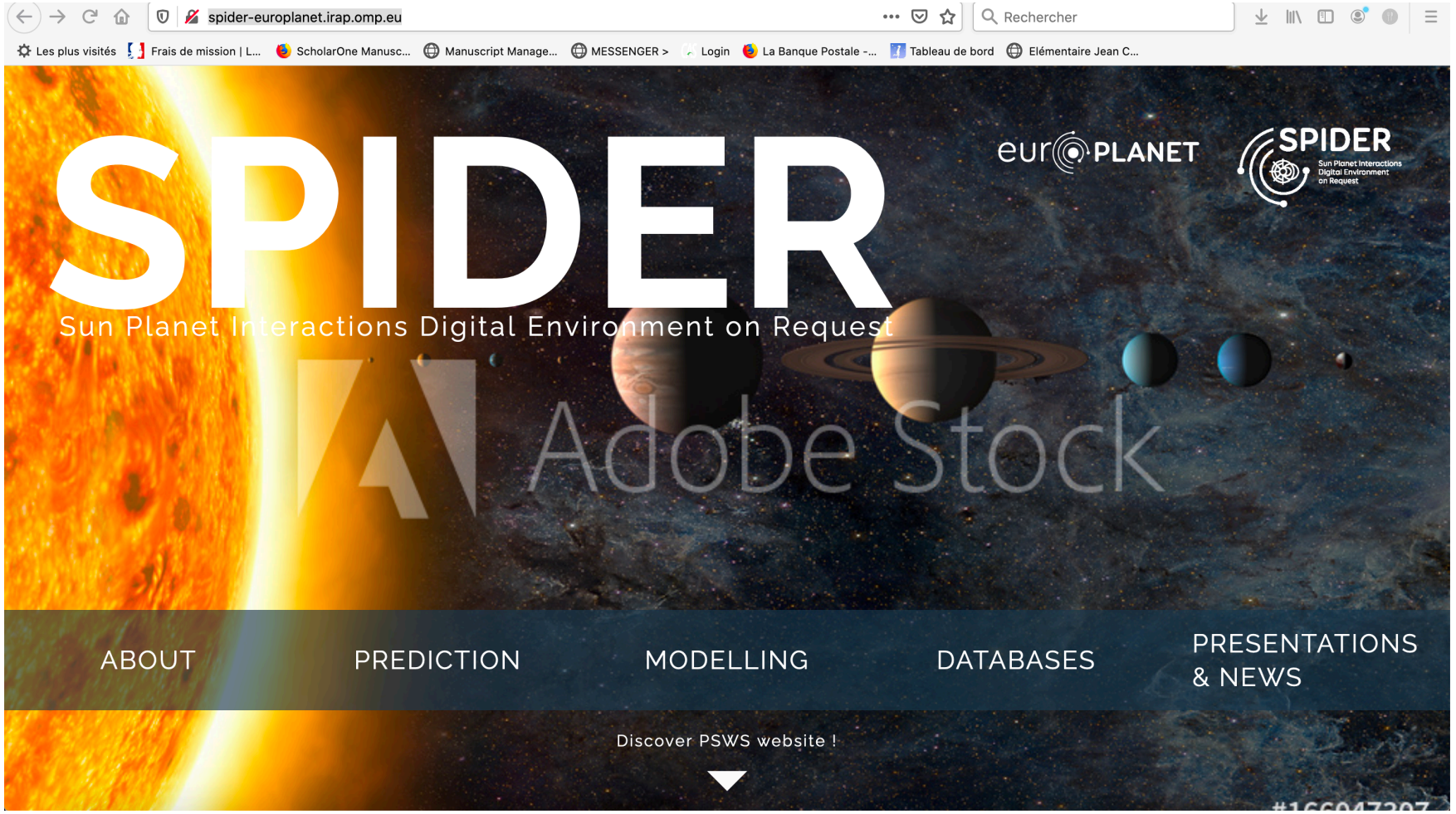
# SPIDER




# Sun Planet Interactions Digital Environment on Request

Europlanet H2024, Visio, 14 September 2020

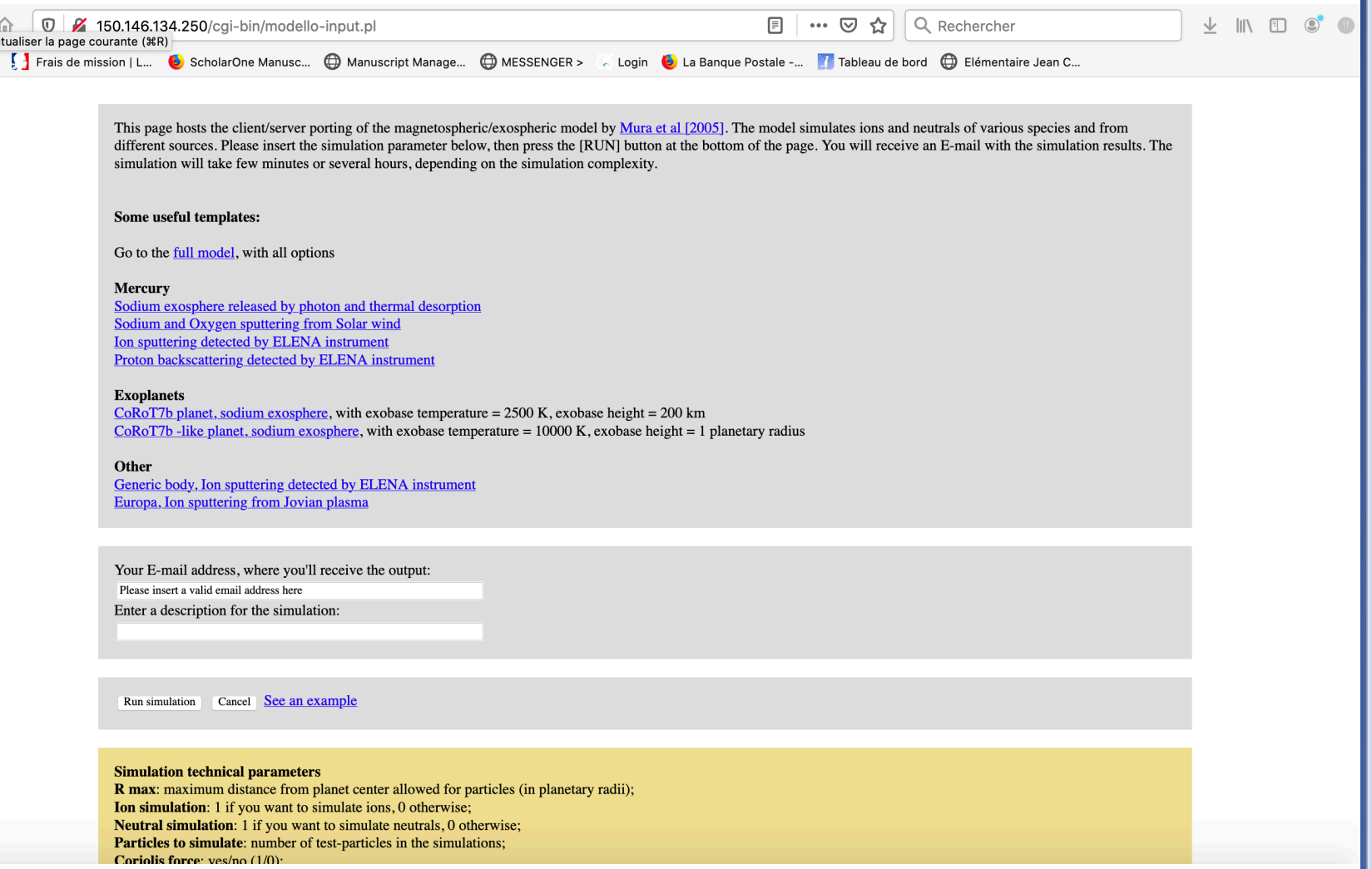
# http://spider-europlanet.irap.omp.eu/

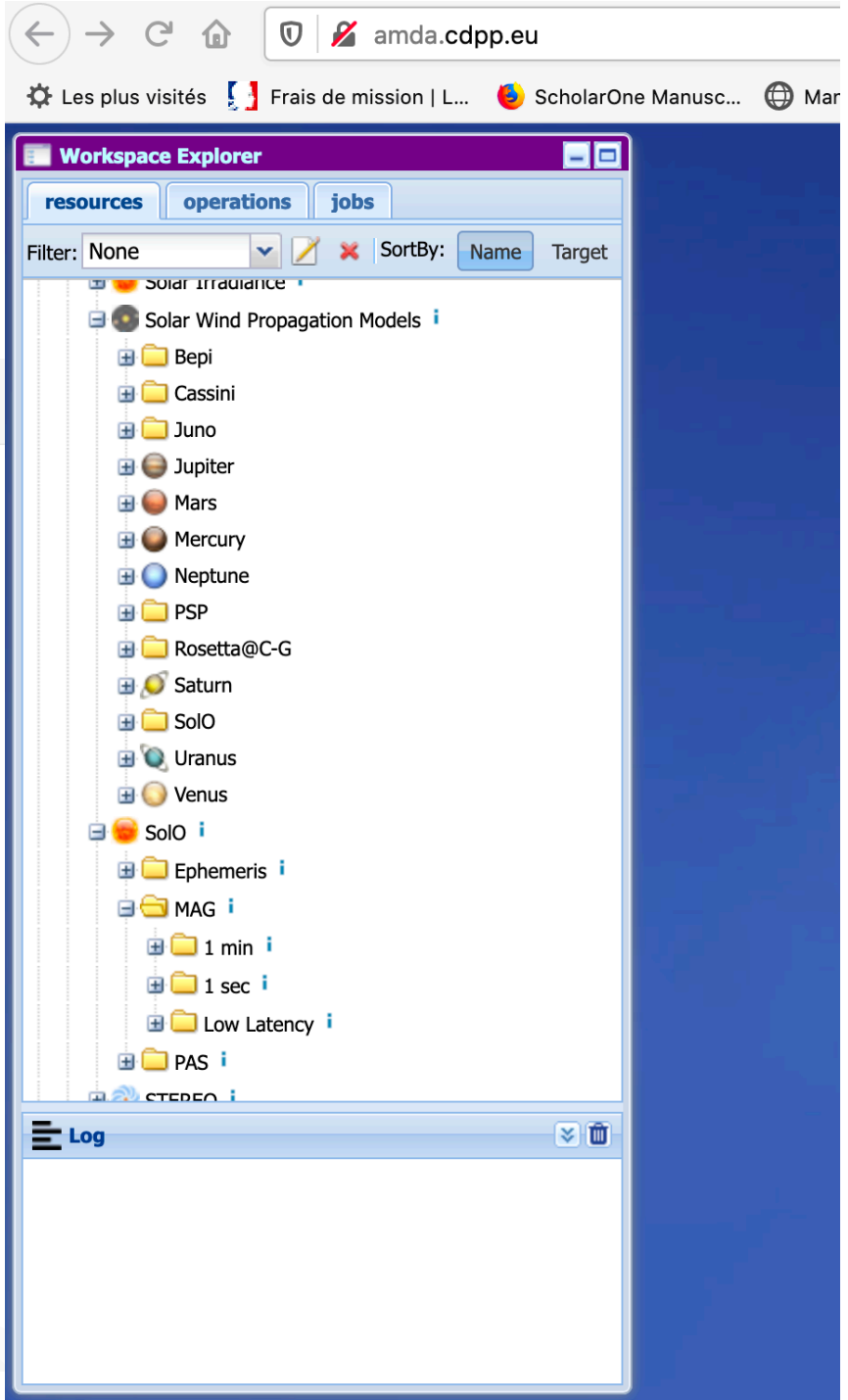


# 1st year achievements

- SPIDER Website
- Inputs to Europlanet RI H2024 DMP
- EPSC session on planetary space weather
- 1st publication submitted to PSS by S. Aizawa et al.:
  numerical simulations of Mercury's magnetosphere
- 1st BepiColombo, Solar Orbiter data ingested in CNRS tools
- Publicly available Parker Solar Probe data ingested in CNRS tools
- Extension of the Europlanet RI H2020 Heliopropa service for Bepi, Solo, PSP
- 1st background plasma data from MEX delivered by IRF to be ingested in CNRS tools before PM12
- Run on request service from INAF for Mercury' and Europa's exopheric modelling available, still preliminar ( http://150.146.134.250/cgi-bin/modello-input.pl)

# 1st year achievements



EUROPLANET

## Key missions in the period:

- Solar Orbiter / Solar Parker Probe
- BepiColombo
- JUICE

## Services to be focused on:

- Heliosphere
- Mercury
- Jupiter and Galilean moons

bepicolombo

juice

# Services

## C. Model - INAF, ONERA, UCL:

C5. A service for runs on request of models of Jupiter's moon exospheres as well as the exosphere of Mercury.

C6. A service to connect the open-source Spacecraft-Plasma Interaction Software (SPIS) software with models of space environments in order to compute the effect of spacecraft potential on scientific instruments onboard space missions. Pre-configured simulations will be made for Bepi-Colombo and JUICE missions.

C7. A service for runs on request of particle tracing models in planetary magnetospheres.

# Services

## E. Databases - IRF and CNRS:

E1. A database of the high-energy particle flux proxy at Mars, Venus and comet 67P using background counts observed in the data obtained by the plasma instruments onboard Mars Express (operational from 2003), Venus Express (2006–2014), and Rosetta (2014–2015).

E2. A simulation database for Mercury and Jupiter's moons magnetospheres and link them with prediction of the solar wind parameters from Europlanet-RI H2020 PSWS services.

# Services

## A. Predict - CNRS:

A1. An extension of the Europlanet-RI H2020 PSWS Heliopropa service in order to ingest new observations from Solar missions like the ESA Solar Orbiter or NASA Solar Parker Probe missions and use them as input parameters for solar wind prediction.

# Deliverables

- D5.1 Mercury exosphere run on request service (INAF) M10
- D5.2 Planetary plasma instrument background count database and service (IRF) M10
- D5.3 SPIDER 1st annual report (CNRS) M12
- D5.4 SPIDER 2nd annual report (CNRS) M24
- D5.5 Planetary SPIS service (ONERA) M25
- D5.6 Galilean exosphere run on request service (INAF) M25
- D5.7 Planetary particle tracing service (UCL) M25
- D5.8 SPIDER 3rd annual report (CNRS) M36
- D5.9 Advanced Heliopropa Service (CNRS) M37
- D5.10 Run on request architecture implementation (OBSPARIS) M40

# Milestones

| | |
|---|---|
| • MS2 SPIDER KO meeting | M2 |
| • MS3 Set up VA review board | M3 |
| • MS19 EPSC 2020 SPIDER session | M8 |
| • MS45 EPSC 2021 SPIDER session | M20 |
| • MS78 EPSC 2022 SPIDER session | M32 |
| • MS105 EPSC 2023 SPIDER session | M44 |

# Interfaces

- SPIDER/VESPA
  - New databases to be published in VESPA (both observational and numerical)
  - Use of EOSC to be studied

- SPIDER/ML
  - How to connect ML tools to SPIDER tools (like AMDA for example) ?
  - Dedicated plug-ins ?

- SPIDER/GMAP
  - Connection surfaces/external environment ?

# Tasks

- VA
  - *Task 1. Coordination (Lead: CNRS, Deputy: WIGNER)*
  - *Task 2. Implementation of new planetary space weather services (Lead: CNRS, Deputy: INAF, IRF, ONERA, UCL)*
  - *Task 3. Deployment of the runs on request modeling center architecture (OBSPARIS, CNRS)*
  - *Task 4. Dissemination and Liaisons (WIGNER, CNRS)*

# Beneficiaries

Centre National de la Recherche Scientifique (CNRS) – France *(21.7 PMs)*

Istituto Nazionale di Astrofisica (INAF) - Italy *(24 PMs)*

Institutet För Rymdfysik (IRF) – *Sweden (6 PMs)*

*Office National d'Etudes et de Recherches Aérospatiales* (ONERA) - *France (5.5 PMs)*

*Observatoire Paris Meudon (OBSPARIS) – France (1.5 PMs)*

*University College London – UK (2.73 PMs)*

Wigner Institute (Wigner) – Hungary *(3 PMs)*

# WP 5 – VA1 (SPIDER)

## Beneficiaries

| | |
|---|---|
| Centre National de la Recherche Scientifique (CNRS) – France *(21.7 PMs)* | *117.5 keuros* |
| Istituto Nazionale di Astrofisica (INAF) - Italy *(24 PMs)* | *125 keuros* |
| Institutet För Rymdfysik (IRF) – *Sweden (6 PMs)* | *50 keuros* |
| *Office National d'Etudes et de Recherches Aérospatiales* (ONERA) - *France (5.5 PMs)* | *50 keuros* |
| *University College London – UK (2.73 PMs)* | *28 keuros* |
| *Observatoire Paris Meudon (OBSPARIS) – France (1.5 PMs)* | *20 keuros* |
| Wigner Institute (Wigner) – Hungary *(3 PMs)* | *13.6 keuros* |
| 64.43 PMs | *404.1 keuros* |

# VA Commonalities

- Common DMP
  - SPIDER services to be accessed through VESPA
  - EOSC to be considered for run on request infrastructure
- Common VA external review board
  - Suggestion: Caitriona Jackman (Female), Univ. College Dublin for SPIDER (N.B.: also relevant for ML)