PLATO, the M3 mission in ESA's Cosmic Vision programme

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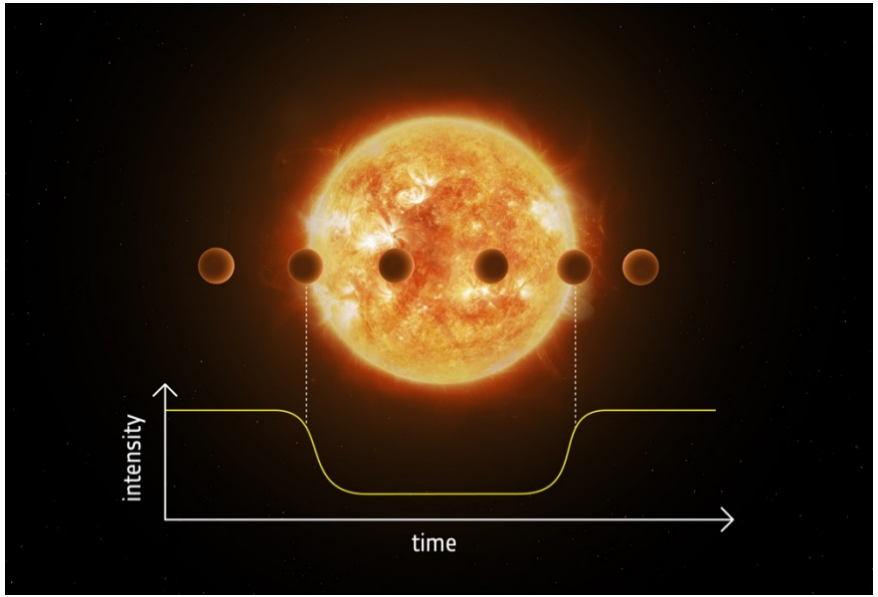
History of the PLATO mission

- October 2007: Selection of PLATO for an Assessment Study for the M1/M2 mission launch opportunity – Proposal led by C. Catala (FR)
- February 2010: Downselection of PLATO for a competitive Definition phase
- October 2011: Non-selection of PLATO as M1/M2
- March 2013: A PLATO proposal with a new Consortium organisation, led by H. Rauer (DE), is accepted by ESA and PLATO joins the M3 competition
- February 2014: SPC selects PLATO as the M3 mission
- October 2014: The Definition Study starts
- June 2016: SPC approves the Science Management Plan
- June 2017: SPC adopts PLATO as the M3 mission in the Cosmic Vision Programme, for a launch in 2026

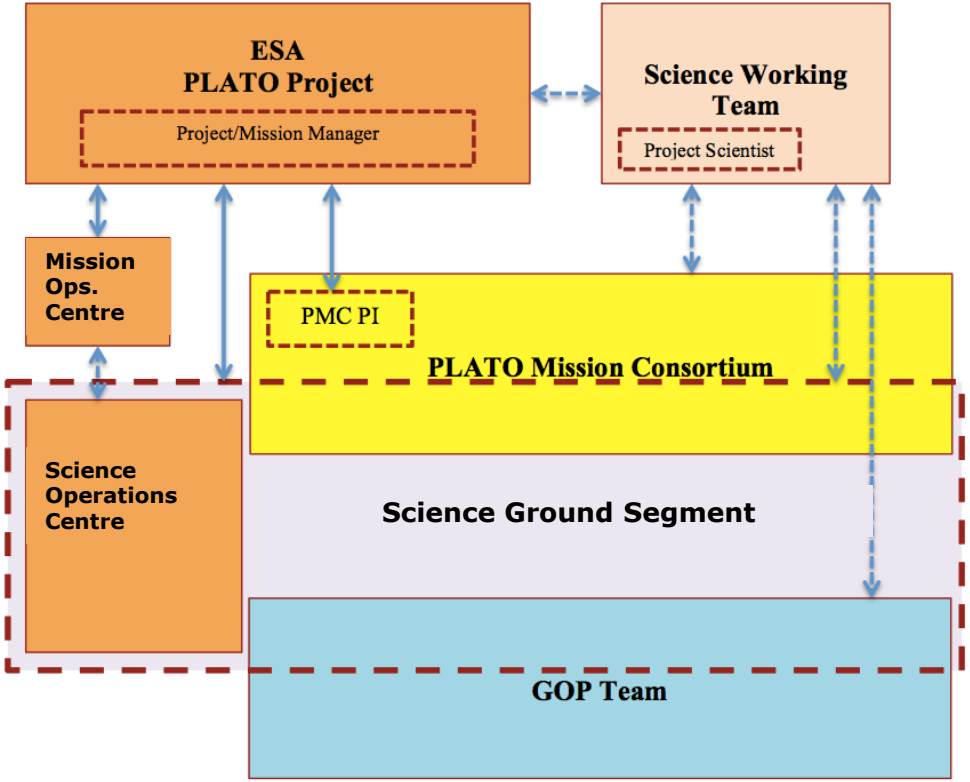
PLATO science objectives

The Science Management Plan states:

The *PLAnetary Transits and Oscillations of stars* mission (PLATO) is the M3 mission in ESA's Cosmic Vision Programme. PLATO aims at finding and studying a large number of extrasolar planetary systems, with emphasis on the properties of terrestrial planets in the habitable zone around solar-like stars. PLATO aims also at investigating seismic activity in stars, enabling the precise characterisation of the planet's host star, including its age.



PLATO high-level organisation



PLATO Science Working Team

- Chaired by the Project Scientist
- Members:

  Heike Rauer (DLR, DE)
  Conny Aerts (KUL, BE)
  Magali Deleuil (LAM, FR)
  Laurent Gizon (MPS, DE)
  Marie-Jo Goupil (Obs. Paris, FR)
  J. Miguel Mas-Hesse (CAB, ES)
  Giampaolo Piotto (U. Padova, IT)
  Don Pollacco (U. Warwick, UK)
  Roberto Ragazzoni (INAF, IT)
  Stephane Udry (U. Genève, CH)

PLATO data products (i)

Level-0 (L0):

- The imagettes of selected targets for all individual telescopes.
- The validated light curves and centroid curves of selected targets for all individual telescopes.
- Housekeeping data, ancillary data, e.g., pointing information.
- Quality control data

Level-1 (L1):

- The calibrated light curves and centroid curves per target, corrected for instrumental effects. Moreover, for the normal telescopes and for each star, the Level-1 light curves and centroid curves are (suitably) averaged, and an associated uncertainty is provided.
- Processed imagettes of selected targets and images of sky regions.
- Ancillary data, e.g. pointing information, associated calibration data.
- Quality control data

PLATO data products (ii)

Level-2 (L2):

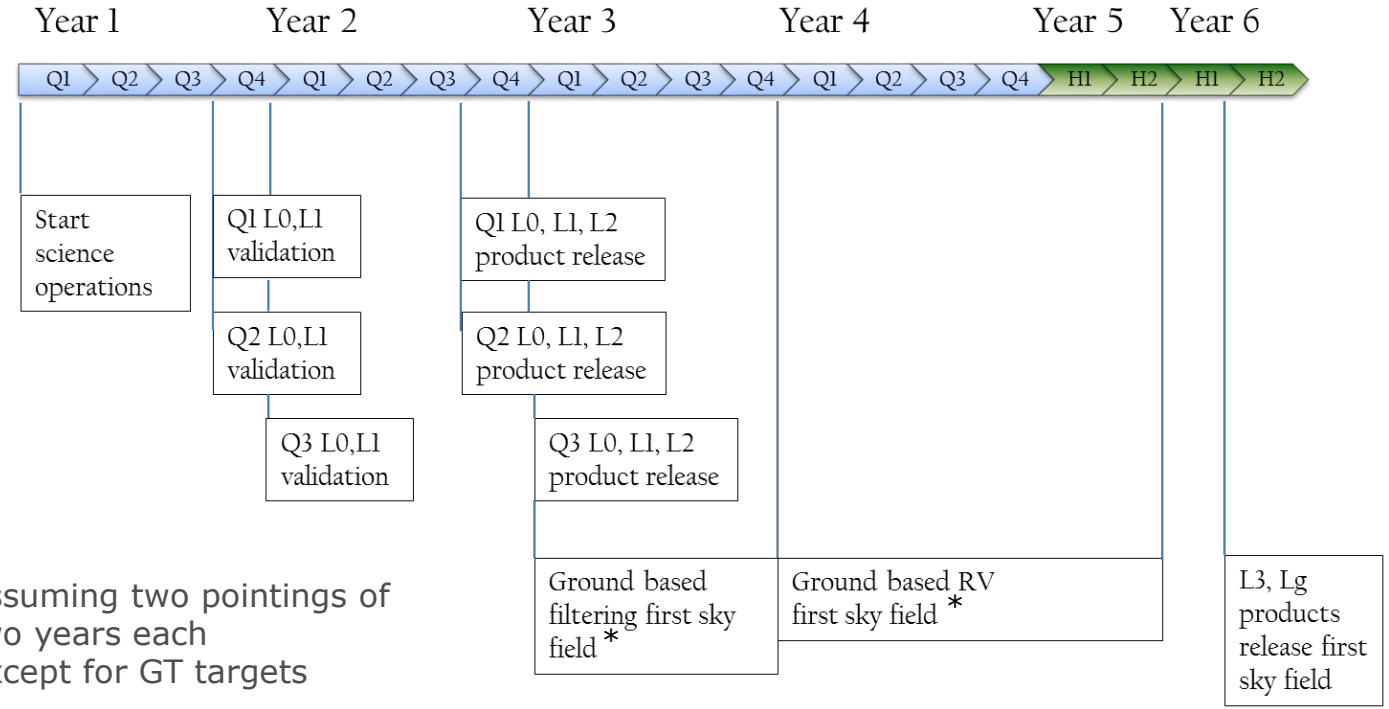
- The planetary transit candidates and their parameters
- The results of the asteroseismological analysis
- The stellar rotation periods and stellar activity properties inferred from activity-related periodicities in the light curves.
- The seismically-determined stellar masses, radii and ages of stars, obtained from stellar model fits to the frequencies of oscillation.
- The list of planetary systems confirmed through the detection of Transit Time Variations (TTVs).

Level-3 (L3)

- The list of confirmed planetary systems, which will be fully characterised by combining information from the planetary transits, the seismology of the planet-hosting stars the results of ground-based observations.

Ground-based observations data (Lg)

Data products release scheme



- Assuming two pointings of two years each
- Except for GT targets

* For long period planets, approximate duration

Participation of the community

The scientific community will be able to participate in the mission as:

- Member of the PLATO Mission Consortium
- Community scientist in the Science Working Team (SWT), selected through an ESA AO
- Guest observer
- Member of the Ground-based Observations Programme Team

In addition, the science community will be able to access all science products available in the PLATO Science Archive, after any proprietary period has expired.

Guest Observer programme

- ESA will issue calls for proposals for complementary science programmes
- The targets must be within the PLATO sky fields defined by the SWT
- The duration of the proposed observations cannot exceed the observation durations of the corresponding sky fields.
- The first call will be issued nine months before launch
- More open calls will be issued during the mission (once per year, TBC)
- At any given time, 8% of the science data rate (excluding calibration data) will be allocated to the guest observers
- Proposals on targets of opportunity possible, but they will be executed on a best effort basis

GOP Team

- ESA will issue an AO for the selection of a Ground-based Observations Programme (GOP) Team, three years (TBC) before launch

- The GOP Team will organise and execute the ground-based observations dedicated to planet confirmation and mass determination of the candidates of the “prime sample”


PLATO has been adopted
This Conference marks the beginning of the building phase