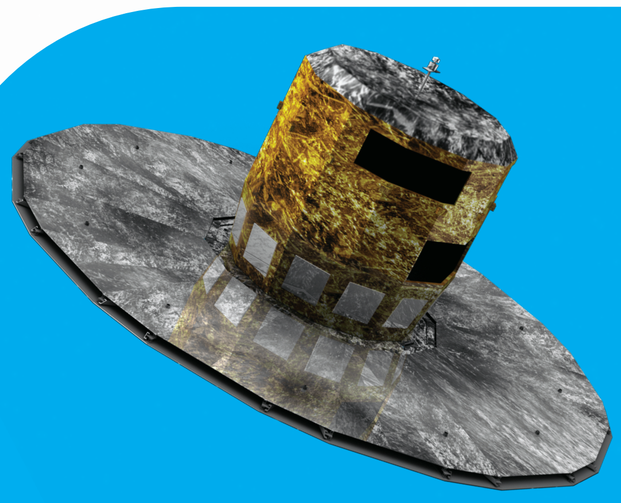


Credit: ESA - C. Carreau

From Observation to Gaia Catalogue

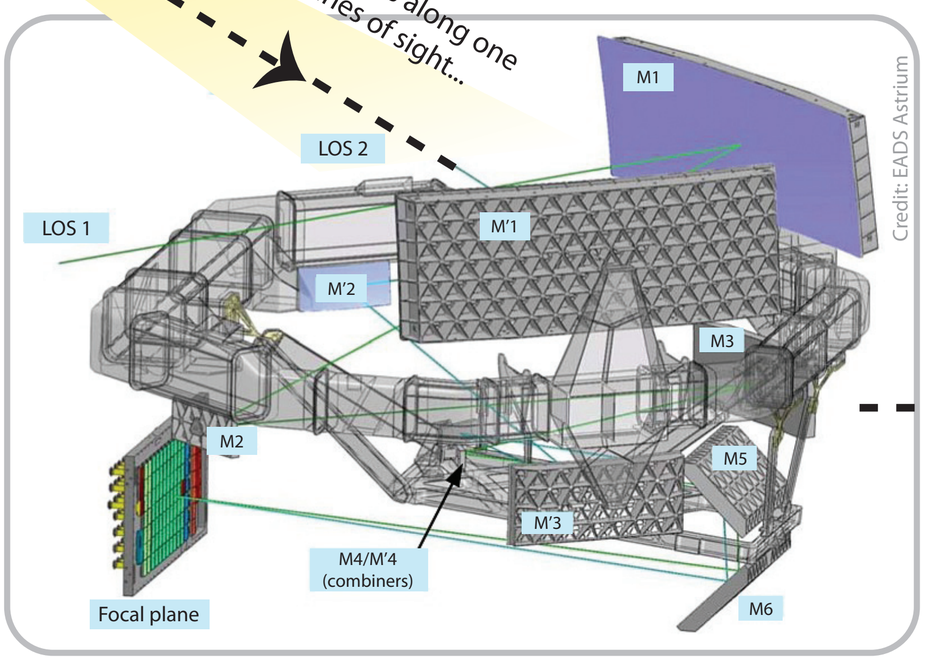
Star

Gaia will detect all celestial bodies down to the very faint magnitude 20, amounting to about a billion objects. This catch-all survey will naturally observe many objects beside stars, including minor Solar System bodies, brown dwarfs, quasars and supernovae.

1. Starlight travels along one of Gaia's lines of sight...

Payload

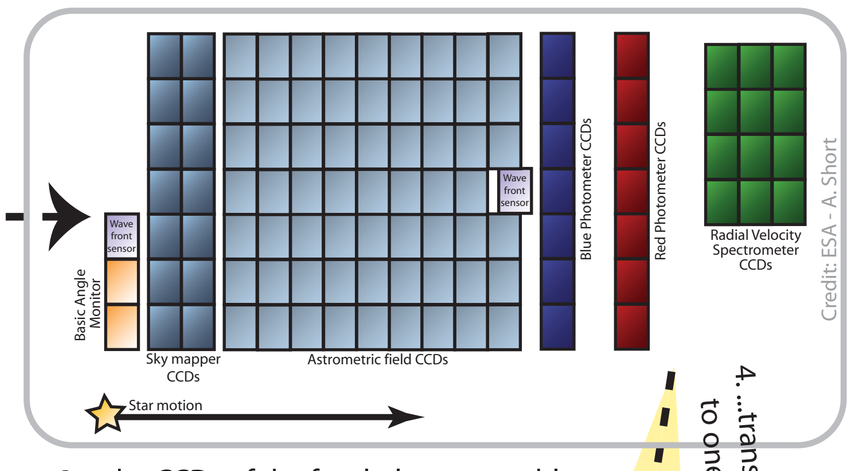
Light from a celestial object enters Gaia's payload arrangement through one of the two viewing apertures, striking the large primary mirror opposite (M'1 in the case pictured). The light is bounced by a series of mirrors along a total focal length of 35m. The light paths from the two viewing directions meet at the M4/M'4 beam combiner before finally reaching the shared focal plane.



2. ...enters Gaia's instruments, and is reflected along a 35m focal length to hit...

Focal plane

At the focal plane is a large mosaic of sophisticated charge-coupled devices (CCDs). Containing 106 of these light detectors, the focal plane assembly comprises a total of nearly one billion pixels - a 'gigapixel'.



3. ...the CCDs of the focal plane assembly, thereby being detected before...

4. ...transmission by low gain antenna to one of Gaia's ground stations...

Gaia DPAC
Data Processing & Analysis Consortium

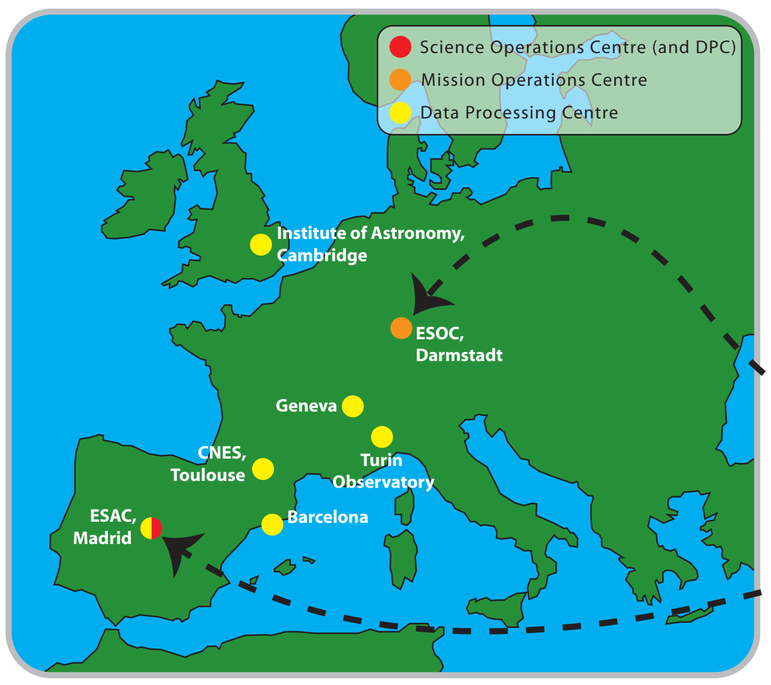
Data Processing Centres

Following the preliminary processing, the data passes to Gaia's Data Processing Centres (DPCs). Data processing is the task of DPAC, the Data Processing and Analysis Consortium. DPAC draws its membership of over 300 scientists and developers from all over Europe; the processing itself takes place at these six DPCs.

6. ... and processed by DPAC into the final...

Science Operations Centre

Gaia's Science Operations Centre is based at ESA's European Space Astronomy Centre (ESAC) in Spain. ESAC receives all of Gaia's science telemetry for preliminary processing in the Initial Data Treatment. Also carried out here is Detailed First Look processing, Gaia's regular science 'health check'.



5. ...the telemetry is then transmitted onto the Mission and Science Operation Centres...

Ground station

Gaia will be making use of two ground stations, each with 35m deep space dish antennae: Cebreros in Spain and New Norcia in Australia.

Gaia Catalogue

The final Gaia Catalogue, containing the precise astrometric, photometric and spectroscopic details of about a billion celestial objects, is scheduled for publication in 2020. Gaia's processed data will then immediately be freely available for investigation by the world's scientific community.

For more information or to download this poster:
www.rssd.esa.int/Gaia

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Gaia: Surveying the Galaxy