GAIA SCIENCE

Gaia- Unlocking the Milky Way

00:10

VO: Throughout history, astronomers from Hipparcos’s time to the present day have looked to the stars to tell us something about the universe we inhabit and to understand how we got here.

*Images- Image of Starry night from ESAC Europe’s window on Space,* 30/01/2008, *Drawing of Hypparchus and sexton on map milky way from Hipparcos 5/5/97ESA , then Animation of Galaxy from Euronews space 10* **:** 24-26th June 2013

00:22 VO: The European Space Agency is about to launch Gaia, a dedicated Astrometry satellite that will map a billion stars of our Milky Way; unlocking the structure and history of our galaxy.

*Images- intergration of Gaia in clean room Kourou OCT 2013*

00:34 - VO: To do this, Gaia will look at the galaxy from an extremely stable orbit far away from earth’s atmosphere around the Lagrange point 2. To cover an area as large as possible with detailed precision Gaia will scan the sky with 2 telescopes set at a 106.5° angle, while at the same time gyrating on a tipped slant called a precession axis.

*Images - animation of Gaia Euronews space* **:** 24-26th June 2013,  *and Lagrange 2, Gaia scanning the sky ESA/Astrium Feb 2013/*

**00:59 Giuseppe Sari B-Roll, Gaia project manager, OCT 2013-10-28 –**

**by combining the spinning and the precession, the spacecraft is able to span the full sky, actually more than one time, is scan something around 70 time in the full life of the spacecraft which is 5 year”.**

01:14 -VO: Gaia will have 3 instruments on-board that will allow it to map the sky in unprecedented detail. An astrometric instrument will measure the position of stars, while a photometer will deduce the temperature and chemical composition of celestial objects by analysing their colour spectrum. And finally, a spectrometer will measure the speed at which objects are moving towards or away from us. It’s the combination of all three measurements that will enable scientists to get better understanding of the evolution of the Milky Way.

***Images -*** *animation of interior of Gaia ESA/Astrium Feb 2013, instrument bench, and gaia’s internal structure with mirrors and focal plane GmbH / ESA 2013, Gaia scanning the sky ESA/Astrium Feb 2013/, then image of star formations Euronews space* **:** 24-26th June 2013, clean room shots of Optical bench Astrium February 2013, then animation map of sky *ESA/Astrium Feb 2013*

**01:46 INTERVIEW Carmen Jordi, astronomer, university of Barcelona, filmed in Astrium 2013\_09\_27 - “Never before there is the kind of large homogenous survey that the Gaia will be. So the combination of the properties of the stars plus the motion of the stars will tell us families of stars and make us to reconstruct the history of the galaxy//44:35  the key point is this large amount of data which has high accuracy in positions and distances and motions”.**

02:23 -VO: But it’s not just the stars Gaia will be mapping. Its data harvest will be of an almost inconceivable size and is expected to contain the discovery of thousands of new celestial objects including; asteroids, comets, and exoplanets, as well as stars of all ages.

Images – Starry night, *XXM Newton 10 years 2010– then images from computer room at ESAC, ESA's astronomy centre in Spain 2008, then animation of Galaxy from ESAC Europe’s window on Space,* 30/01/2008 ending on image of star formation from preview 2013.

**02:42 Timo Prusti, Gaia project scientist, Kouru OCT 2013-10-**

**by far most of the objects Gaia detects are stars, because Gaia is optimised for stars, but we are also going to observe solar system objects, we are also going to see exogalactic objects, and this will be a database which will be used by the scientists worldwide when the Gaia data is made available for them//**

03:00 VO: It’s likely that the extent and Gaia precision of Gaia’s measurements will make its findings the main reference for scientists for years to come.

*Images – animation of stars and scientist using Hypparcos catalogue from Hipparcos 1997*

**03:09 Carmen Jordi, astronomer, university of Barcelona, filmed in Astrium 2013\_09\_27 “….basically almost all of the fields in astrophysics will be affected or will be in some way touched by the Gaia observations”.**

Gaia will help us delve into the archeology of the Milky Way, helping us to understand the history, the formation, the evolution and maybe even the origin of our own galaxy.

*Images – time lapse nighttime sequence from the radar station DIANE shot in Kourou, ESA-Manuel Pedoussaut , June 2013, star formations Euronews space* **:** 24-26th June 2013

**03:36 - End**

**B-Roll**

**ITW Giuseppe Sari Gaia project manager, Korou OCT 2013-10-28 (**

**03:36- How Gaia scans the sky (English)**

**04:31 - How Gaia scans the sky (French)**

**ITW Timo Prusti, Gaia project scientist, Kourou Oct 28 2013**

05:28 - Overview of the Gaia Mission (English)

06:12 - Gaia, discovering new celestial objects ( English)

06:45 - Overview of the Gaia Mission (Dutch)

-07:32 Gaia, discovering new celestial objects ( Dutch)

08:16 - Overview of the Gaia Mission (Finnish)

08:53 - Gaia, discovering new celestial objects ( Finnish)

**ITW Carmen Jordi, astronomer, university of Barcelona, Astrium 2013\_09\_27**

**09:21 - Thor**oughness of Gaia survey.

**10:32 -** The central goal of the Gaia mission

**11:58 Gaia Animations x 5**

**14:58 end**