



small satellites

Welcome to the PROBA website .
 PROBA is a small satellite mission in the ESA technology demonstration program. This site informs you on the the mission and the satellite platform that has been used.

PROBA stands for project for onboard autonomy, and has as goal to develop enabling technologies for future high demanding earth observation , telecom and scientific missions based on small LEO(Low Earth Orbit) satellites
 In near future small satellites will become crucial platforms in space missions. This evolution is based on following elements:

Economics

Small satellites are cheaper than traditional satellites in development, launch and operation.

Miniaturisation of electronics

Continuous miniaturisation of electronics and payloads allow smaller platforms.

Time to market / space

Shorter development times guarantee shorter time to market/space and is the only way to keep state of the art in onboard technology.

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Payload & Mission

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Ground station & operations

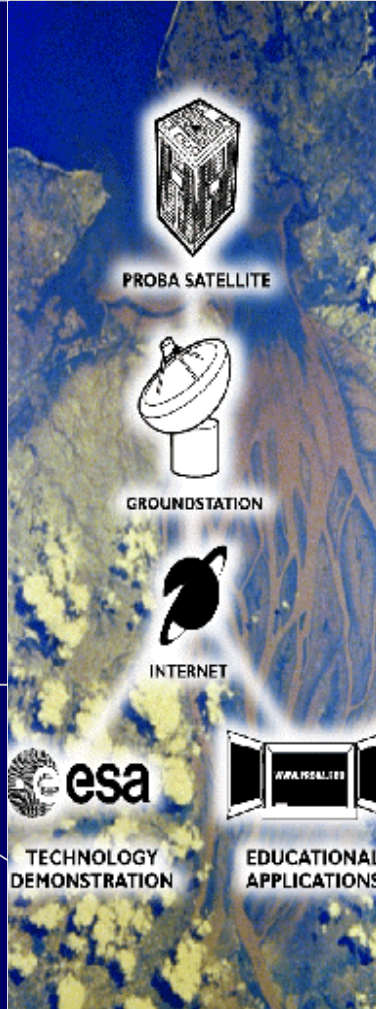
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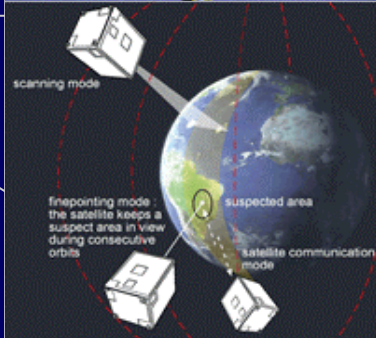
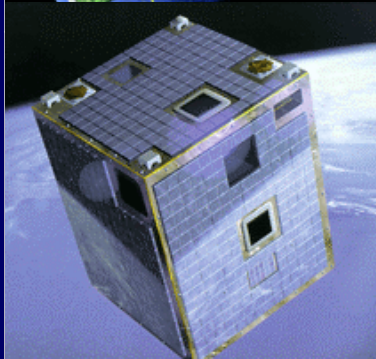
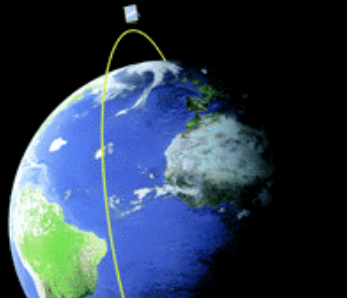
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The PROBA mission makes use of the Verhaert satellite bus with the same name PROBA.

This satellite bus is probably the most advanced small satellite available on the market today.

Its main features are:

- Satellite autonomy in :
 - Planning and scheduling
 - Resource management
- High accuracy AOCS (Attitude and Orbit Control System)
- Internet access
- High performance onboard electronics
- Compatible with most launchers

The combination of these features allows in most missions to reduce the cost of :

- Operation due to the lack of manned ground stations
- Satellite infrastructure due to combination of scanning and fine pointing modes

Specifications:

- Mass: < 100Kg (94 kg)
- Volume 80cm / 60cm / 60cm
- Power 40 to 90W
- Accuracy 10 m on 600km



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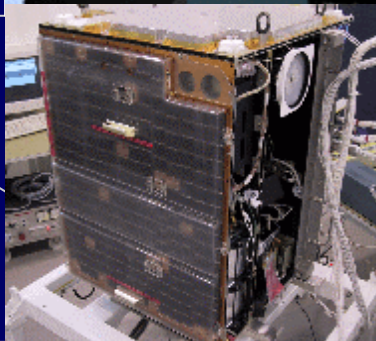
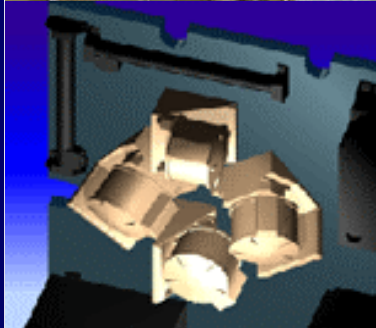
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Instrumentation

- High Resolution Camera (HRC)
- Compact High Resolution Imaging Spectrometer (CHRIS)
- Wide Angle camera (WAC)
- SREM
- DEBIE
- Sub systems

3-axis stabilised ACNS

- 4 reaction wheels
- 4 magneto-torques
- 2 three-axis magnetometers
- redundant star tracker with 2 optical heads
- 1 star tracker as payload
- 1 GPS with 4 antennas



project

Team

Proba is assigned by the European Space Agency to Verhaert as main contractor, with Space Applications Software, Spacebel, SSF, SIL, Officine Galileo and the University of Sherbrooke as subcontractors. The project was made possible by the support of the OSTC, Federal Office for Scientific, Technical and Cultural Affairs.

Phases

Design	February 98 – September 98
Prototype	September 98 – November 98
Flight Model	November 98 – March 2001
System testing	March 2001 – September 2001
Preparation launch	Mid September 2001
Launch	22 October 2001
Test in orbit	3 months
Mission	2 years

Launch

Proba is launched by ANTRIX/ISRO with the Polar Satellite Launch Vehicle (PSLV) in Shriharikota in South-East India

Ground station

ESA ground station at Redu, Belgium

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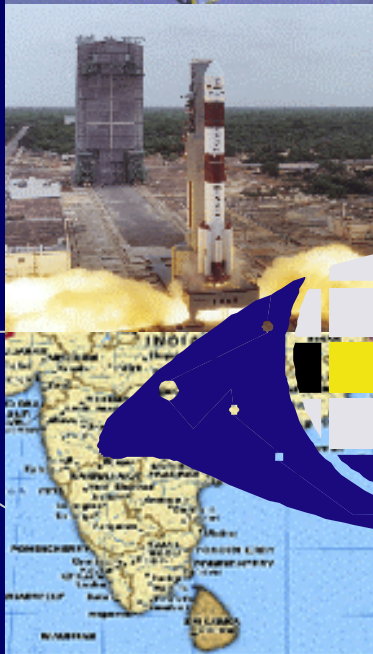
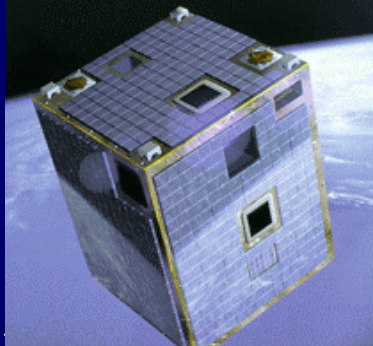




in orbit

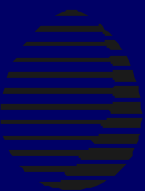
Mission

- Low earth orbit (LEO) at 570 – 638 km
- Near polar with an inclination of 97.8°
- Period 96,75 minutes
- Polar Satellite launch vehicle (PSLV) by Antrix / ISRO , India
- launch 22 October 2001
- Launch site: Shriharikota



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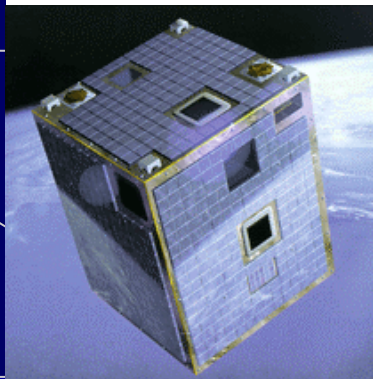
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Ground station

All operations will be carried out from the ESA ground station at Redu, Belgium.

Features ground station :

- 2.4m S-Band Antenna
- "Light out" mission control centre

Internet access

- after commissioning to command the imaging payloads (CHRIS, HRC, WAC) and to download the acquired data of all payloads for :

Scientists

EDUPROBA contestants, more information on EDUPROBA can be found in the teacher's corner of the website of [OSTC](#),

Instructions for PROBA users : to be confirmed later



contractors

More info on the contractors can be found in the press information pdf on the occasion of the press conference from October 22nd.

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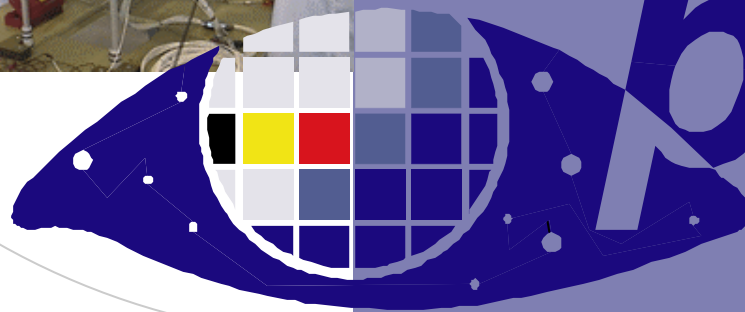
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proba

s a t e l l i t e





strategy

Verhaert has been able to develop a number of key technologies and is now able to demonstrate these technologies, thanks to the PROBA project.

This is the basis for further positioning of Verhaert as a leading company in the building of advanced and qualified small satellites for specific earth observation missions.

Verhaert's commercial strategy regarding satellites is on the one hand focused on the building of satellites for the programs of the agencies (ESA, NASA,...). For this matter meaning interplanetary missions, satellites for micro gravity research, research of the atmosphere, universe and missions to validate new technologies and earth observation.

On the other hand Verhaert starts a marketing campaign within the commercial space market. For this matter Verhaert will close within the near future cooperation agreements with different eminent market players in security and surveillance sector, and with the governments within and outside Europe.

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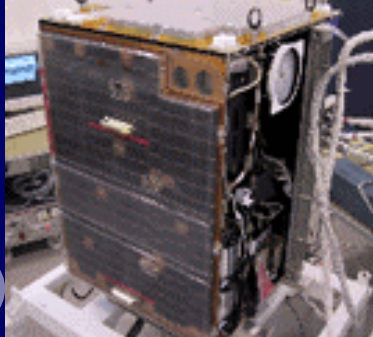
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August 28th, 2002 : press release : PROBA passes Belgium for a thousandth times : [dutch version](#) – [french version](#)

January 18th, 2002 : press release : PROBA takes 1st picture : [dutch version](#) – [french version](#) – [english version](#)



North sea & Bruges, Belgium – 04012002 – resolution : 20 at 60m

November 27th, 2001 : press release : PROBA satellite completes 1st month of its lifetime with success! : [dutch version](#) – [french version](#) – [english version](#)

October 22nd, 2001 : Launch PROBA

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more information

Press Conference 22/10/01 : [Dutch version](#) - [French version](#) - [English version](#)

Press Release 29/09/01 : [Dutch version](#) - [French version](#) - [English version](#)

[Technical information](#)

Websites

[ESA's PROBA website](#)

[DWTC](#)

[Eurospace Foundation - EDUPROBA](#)

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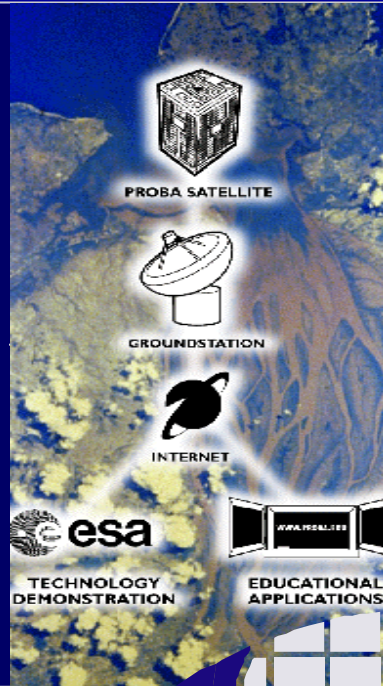
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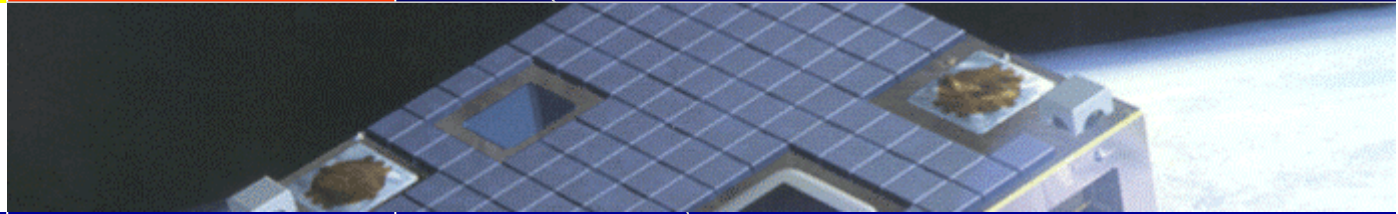
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Here under you find a selection of pictures taken by the PROBA satellite during the first months.

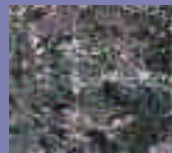
Recent pictures and more information on PROBA can be found on [ESA's PROBA website](#)



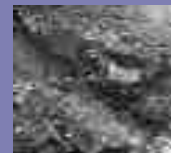
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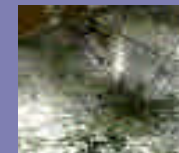
25/02/02



08/02/02



29/01/02



04/01/02

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