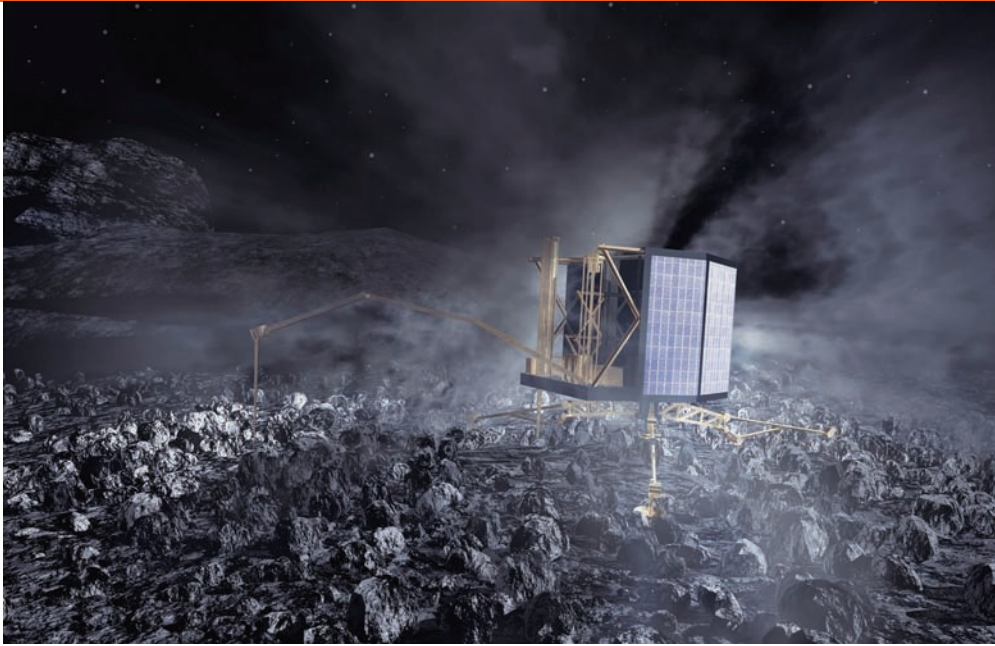


SINPLEX

Small Integrated Navigator for PLanetary EXploration



Rosetta's Philae lander on comet nucleus.

© ESA - AOES Medialab



Stephan THEIL
Project Coordinator

ABSTRACT

SINPLEX develops the technology for a low mass vision-based navigation system. It will be based on functional integration and the utilization of micro and nanotechnologies.

DEVELOP A LOW MASS HIGH PERFORMANCE NAVIGATION SYSTEM FOR PLANETARY EXPLORATION

The main goal of SINPLEX is to develop an innovative solution to reduce significantly the mass of the navigation subsystem for exploration missions which include a landing and/or a rendezvous and capture phase. It is a contribution to the strengthening of the European position for space exploration. It targets at increasing the scientific return of exploration missions, enabling new types of missions and reducing launch cost and travel time.

Future space exploration missions target asteroids, comets, planets and planetary moons. They will bring robotic vehicles to these targets and will provide the capability to return samples to Earth. In general, for all space missions, but in particular, for this kind of mission, mass is one of the most critical factors. Therefore, reducing the mass of components or complete subsystems of an exploration vehicle is a key enabling factor for the future exploration of our solar system and beyond.

The mass reduction is achieved by applying functional integration of the different sensors, utilizing micro and nanotechnologies for compacting electronics, and using sensor hybridization approaches, to improve the performance of the complete navigation subsystem.

The project objectives are: the development of integrated novel navigation subsystem architecture, the production of a breadboard and the demonstration of its applicability for object-relative robotic navigation for space applications.

QUESTIONS & ANSWERS

What is the project designed to achieve?

The project aims to develop a miniaturized vision-based integrated navigation subsystem for planetary exploration with a substantial mass reduction compared to existing conventional systems. The target total mass shall be below 3kg.

Why is this project important for Europe?

The miniaturized SINPLEX system will add new capabilities to future exploration missions. The used miniaturization approach is a pathfinder for miniaturization of other spacecraft subsystems, thus allowing more mass-efficient space missions.

How does this project benefit European citizens?

The miniaturization of space components and subsystems is a key for creating more mass-efficient spacecrafts. New exploration mission targets can be reached or more scientific instruments can be placed on planet surfaces with the same or less effort.

SINPLEX

Small Integrated Navigator for PLanetary EXploration

LIST OF PARTNERS

- Deutsches Zentrum für Luft- und Raumfahrt (DLR), Bremen, Germany
- Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, Netherlands
- Cosine Research BV, Netherlands
- ÅAC Microtec AB, Sweden
- SystematIC design B.V., Netherlands

COORDINATOR

Deutsches Zentrum für Luft- und Raumfahrt,
Bremen, DLR, Germany

CONTACT

Dr. Stephan THEIL
Tel: +49 421 24420-1113
Email: Stephan.Theil@dlr.de

PROJECT INFORMATION

Small Integrated Navigator for PLanetary EXploration (SINPLEX)

Contract N°: 284433
Starting Date: 01/01/2012
Duration: 24 months
EU Contribution: € 1.998.619,00
Estimated total cost: € 2.614.981,87