

# SMPAG

## UK Industry Background

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# UK Industrial Capabilities & Interests

## Interplanetary spacecraft & propulsion module manufacture

Mission prime & subsystems:

Airbus Defence & Space  
SSTL

First-tier & specialist suppliers:

QinetiQ	Electric propulsion; communications
e2v; Neptec	Detectors & sensors
SEA	Electronics
Moog; ESP	Chemical propulsion equipment
Magna Parva	Mechanisms
ABSL	Batteries

## Software & simulation

Scisys; CGI; Tessella; Fluid Gravity; Star Dundee

## Trajectory optimisation

Airbus Defence & Space

## Nuclear power sources

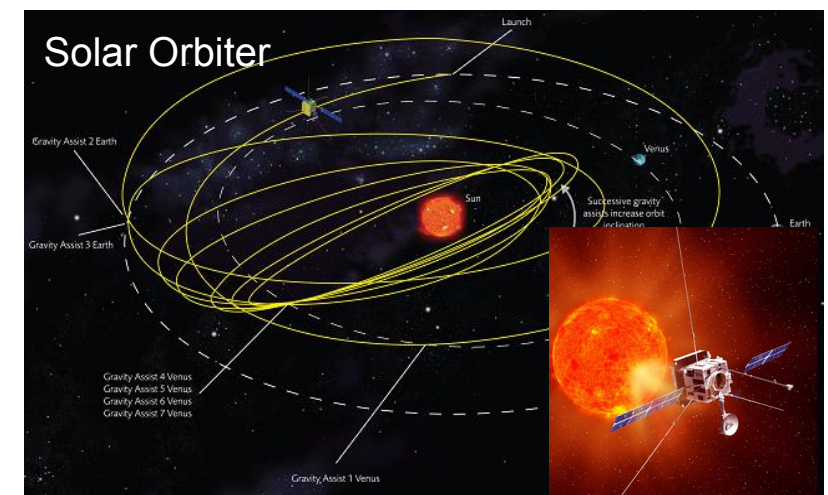
National Nuclear Laboratories



## Implementation of ESA interplanetary missions

Contributing to / leading European consortia:

- Giotto
- Rosetta
- Mars Express & Venus Express
- BepiColombo
- Exomars
- Solar Orbiter



## ESA Scientific mission studies & technologies

- Phobos Sample Return (Phootprint)
- Asteroid Sample Return (MarcoPolo)
- Penetrators technologies

## European Commission research (Framework 7)

- NEOShield – Mitigation studies & tradeoffs
- Megahit - Nuclear Electric Power roadmapping

## NEO Mitigation Studies

Kinetic Impactor Missions:

- Don Quijote (ESA)
- Apophis Explorer (Planetary Society 2007)
- Impactor & explorer spacecraft (NEOShield)

Optimisation:

- Yarkowski Effect modelling
- Gravity Tractor mission design

