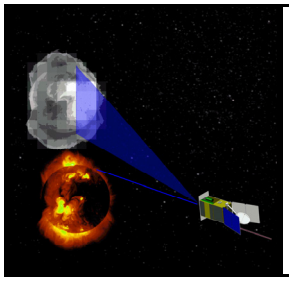
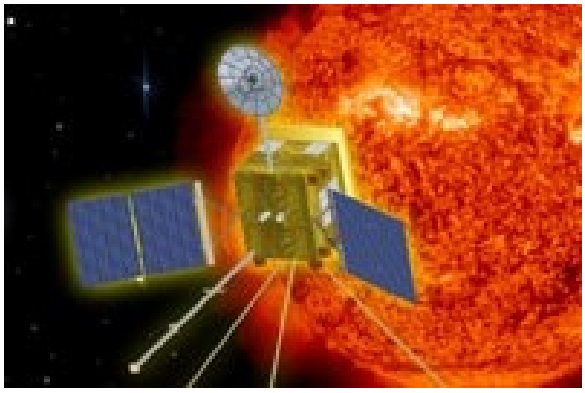


Istituto di Fisica dello Spazio Interplanetario

Financial Plan

SCENARIO
NSWD
(Neutral Solar Wind Detector)

ESA/NASA - Solar Orbiter



prepared by	SCENARIO NSWD TEAM		
approved by	Stefano Orsini, Principal Investigator (INAF-IFSI)		
endorsed by	Enrico Flamini (Agenzia Spaziale Italiana)		
reference	SO-NSW-PL006		
Issue	1	revision	0
date of issue	JANUARY 2008		

INAF IFSI
Area Ricerca Tor Vergata, Via del Fosso del Cavaliere 100, 00133 Rome - ITALY
Tel (39) 49.93.46.12 - Fax (39) 49.93.43.83

DISTRIBUTION

name	organisation
Solar Orbiter Project Office	ESA and related Solar Orbiter Program Science Panel & Industrial working team.

CHANGE LOG

date	issue	revision	pages	reason for change
January 2008	1	0		1st Issue

Acronym List

Applicable Documents

AD1: SOL-EST-IF-0050 "SOLO EID-A", Version 1 Rev 0, 9 October 2007

SOL-EST-SP-00705, " Solar Orbiter Payload Definition Document ", 3 October 2007

SCI-S/2007/157, " Solar Orbiter Science Management Plan ", 15 October 2007

SCI-SH/2005/100/RGM, " Solar Orbiter Science Requirements Document ", 31 March 2005

TABLE OF CONTENTS

INAF IFSI
Area Ricerca Tor Vergata, Via del Fosso del Cavaliere 100, 00133 Rome - ITALY
Tel (39) 49.93.46.12 - Fax (39) 49.93.43.83

1 Financial Cost Estimates

PIs and Co-Is are responsible for funding the management and the activities as listed below:

GROUP	ROLE	Responsibility
IFSI, Italy (with the contributions of AMDL, IFN, ISM, UNI RM2)	PI PM	Sensor Responsibility
Physikalisches Institut, University of Bern, Switzerland	CO-I	Ionizing surfaces, Calibration
CESR, Toulouse, France	CO-I	High Voltages
Center for Space Research, Warsaw, Poland	CO-I	Low DC/DC power supply, supporting activity for post delivery integration & test
FMI, Finland	CO-I	Scientific EGSE

Table 1. Responsibilities of the Institutions.

Sections 1.1 to 1.2 detail the estimated resources for each activity subdivided into subsystems.

All the funds needed for all the phases of the development and operations of the SCENARIO instrument will be provided by ASI and the National Funding Agencies of each Co-I country, following the instrument selection, as stated in the Letter of Endorsement

The overall cost plan of this proposal is provided as Appendix A. It is available at ASI (Rome). ASI has the formal responsibility to provide information on the SCENARIO Cost Plan.

1.1 NSWD SCENARIO System CU (SCU) and sensor unit. Funding plan

1.1.1 Organization and management structure of the SCU and NSWD SCENARIO team

SCENARIO SCU System I/F and sensor unit will be designed, manufactured, tested and calibrate at INAF - Istituto di Fisica dello Spazio Interplanetario (IFSI), Rome.

The key members of the team are:

1.1.1.1 Principal Investigator:

Dr. Stefano Orsini (INAF/IFSI). Supported by: the PI Project Office; the Project Scientists; the Project Manager; the h/w providers and science leading Co-Is; the other Co-Is and team members, he has the responsibility of the whole project. He is also responsible for funding the management and overall activities of the SCENARIO project.

1.1.1.2 Project Manager:

Dr. Andrea Maria Di Lellis (AMDL s.r.l.). He has the responsibility to coordinate technical and programmatic activities of the whole project.

1.1.2 Funding requirements

1.1.2.1 INAF, Istituto di Fisica dello Spazio Interplanetario

Funding Agencies: ASI, Italian Space Agency

1.1.2.2 Physikalisches Institut, University of Bern, Switzerland

Funding Agencies: University of Bern, Physics Institute internal funding; PRODEX funding

1.1.2.3 Centre d'Etude Spatiale des Rayonnements, Toulouse, France

Funding Agencies: CNES

1.1.2.4 Finnish Meteorological Institute, Helsinki, Finland

Funding Agencies: Finnish Meteorological Institute (FMI)

1.1.2.5 Space Research Centre, Warsaw, Poland

Funding Agencies: Polish Academy of Sciences

1.2 Letter of Commitment by Lead Funding Agency

The Letter of Commitment is collected at INAF-IFSI (Rome). A copy is attached below.

agenzia spaziale italiana

D. Southwood
ESA/HQ (D/SCI)
8-10 Rue Mario Nikis
75738 Paris Cedex 15
France

SUBJECT: ASI endorsement to the participation of the SCENARIO experiment on the Solar Orbiter Mission in response to ESA Announcement of Opportunity for the Solar Orbiter Payload (Ref.: D/SCI/DJS/SV/val/23487and D/SCI – 23482)

The Italian Space Agency hereby endorses the proposed participation by the Solar Corona ENA Radiation Imagine Observer (SCENARIO) experiment for the ESA Solar Orbiter mission. The SCENARIO investigation Team is lead by the P.I. Dr. Stefano Orsini of IFSI– INAF.
Should the SCENARIO experiment be selected, ASI will manage all the industrial and scientific contracts in Italy as well the agreements, based on non exchange of funds, with the hardware contributors belonging to the other National Funding Agencies or Institutions. The letters of endorsement for the hardware contribution from FMI Finland, University of Bern Switzerland, CESR Toulouse, France and Space Research Center, Poland are in annex to this letter. Therefore, FMI, CNES, SPR are expected to guarantee the funding of the respective Co-PI contributions by formal interagency agreements with ASI as the Lead Funding Agency.
In case of selection of the SCENARIO instrument ASI will make its best effort to support the full development and the exploitation of this experiment, in coordination with the other National Funding Agencies who will contribute to the realization of the experiment.
The level of this support will be subjected to the availability of funds within the global Italian budget allocation for the Solar Orbiter mission payload.

Dr. Simonetta Di Pippo
Director, Observation of the Universe
Italian Space Agency

Cc. M. Coradini ESA/HQ (D/SCI), **R. Marsden** ESA/ESTEC (SCI-SM), **Ph. Kletzkine** ESA/ESTEC (SCI-PS), **S.Orsini** (INAF-IFSI), **E. Flamini** (ASI- UOU)

Presidenza, Direzione Generale
Amministrazione e Uffici
Centro di Geodesia Spaziale "G. Colombo"
Base Lancio Palloni Stratosferici "L. Broglio"

Viale Liegi, 26 - 00198 Roma - Italia
Viale di Villa Grazioli, 23 - 00198 Roma - Italia
Località Terlecchia - C.P. 11 - 75100 Matera - Italia
S.S. 113 N. 174 Contrada Milo - 91100 Trapani - Italia

Tel. (+39.06) 85671
Tel. (+39.06) 8567471
Tel. (+39.0835) 3779
Tel. (+39.0923) 539928

Fax (+39.06) 8567267
Fax (+39.06) 8567267
Fax (+39.0835) 339005
Fax (+39.0923) 538493

2 Inter-Agency Agreements

The Letters of Commitment are collected at INAF-IFSI (Rome). A copy is attached in the following pages.

2.1 Physikalisches Intitut, University of Bern, Switzerland

b
UNIVERSITÄT
BERN

Phil. Nat. Fakultät
Physikalisches Institut
Weltraumforschung
und Planetologie

Dr. Stefano Orsini
Istituto di Fisica dello Spazio Interplanetario
Consiglio Nazionale delle Ricerche
via del Fosso del Cavaliere, 100
I-00133 ROMA
ITALY

Re: "Neutral Solar Wind Detector" on Solar Orbiter

Dear Dr. Orsini: 9. January 2008

The Physics Institute of the University of Bern, Switzerland, is pleased to endorse the participation of Prof. Dr. P. Wurz as a Co-Investigator in the Neutral Solar Wind Detector (SCENARIO) instrument, lead by Dr. S. Orsini, which is proposed for the Solar Orbiter Mission of ESA. Prof. P. Wurz will be responsible for the calibration of the SCENARIO instrument using the MEFISTO calibration facility of the University of Bern. Also, the University of Bern will provide a small hardware contribution to the SCENARIO instrument.

The Physics Institute is firmly committed to supporting Prof. Dr. P. Wurz participation in the SCENARIO instrument of Solar Orbiter, if the instrument is selected by ESA. The calibration effort will be covered by internal funds; the hardware contribution will have to be financed via the PRODEX programme of ESA. The latter funding can only be secured after ESA's official selection of SCENARIO as a Solar Orbiter payload.

If you have any questions, please do not hesitate to contact me at (+41) 31 631 44 02.

Sincerely,

W. Benz

Prof. Dr. Willy Benz
Institute Director

Prof. Dr. Willy Benz
Physikalisches Institut
Sidlerstrasse 5
CH-3012 Bern
Switzerland

Tel. +41 31 631 44 03
Fax +41 31 631 44 05
willy.benz@space.unibe.ch
www.space.unibe.ch

2.2 Centre d'Etude Spatiale des Rayonnements, Toulouse, France

WWW.CESR.FR
CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE
CESR
UNIVERSITE PAUL SABATIER
TOULOUSE - FRANCE
UNIVERSITE PAUL SABATIER
TOULOUSE III

Centre d'Etude Spatiale des Rayonnements
UMR 5187 – CNRS - Université Paul SABATIER
9, avenue du Colonel ROCHE - Boîte postale 44346
31028 Toulouse Cedex 4
tél. 05 61 55 66 66 - Fax 05 61 55 86 92

CNRS CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

Le directeur,

Toulouse, le 04 janvier 2008

Dr. Stefano Orsini
INAF
Istituto di Fisica dello Spazio Interplanetario
via del Fosso del Cavaliere 100
00133 ROMA
Italy

Objet : Participation of the CESR group in the SCENARIO experiment (Solo)
Nos réf. : CESR/DIR/JGA/02/2008

Dear Dr. Orsini,

It is my pleasure to endorse the proposed participation of the CESR group in the SCENARIO experiment, proposed by you to ESA as part of the Solar Orbiter payload in order to study the neutral solar wind.

Institutional support will be provided throughout all the phases of the mission. We understand that the role of CESR during the experiment development phase will be.

1) Provision of all h/w for high voltage power supply;

2) Support to instrument design;

3) Support to science objectives definition and data simulation;

4) Support to calibration.

Provision of the hardware is contingent on the availability of funding. CESR will do its best for ensuring that proper funding will be available, and a proposal is submitted to our national space agency, the CNES.

The CESR group participating in this proposed experiment will be lead by Dr. Iannis Dandouras.

We are looking forward to working with you on this exciting project.

Sincerely,

Jean-André Sauvaud
Director of the CESR

CENTRE D'ETUDE SPATIALE des RAYONNEMENTS CESR Le Directeur

cnes
CENTRE NATIONAL D'ÉTUDES SPATIALES

Directorate for Strategy, Programmes and International Relations

Stefano ORSINI
IFSI
Via del Fosso del Cavaliere 100
00133 ROMA, Italy

stefano.orsini@ifsi-roma.inaf.it

Paris, January 8, 2008
CNES/DSP/EU-2008/0166

Dear Dr Orsini,

The present letter is to confirm that the Centre National d' Etudes Spatiales (CNES) is aware that you are currently coordinating a proposal concerning a Neutral Solar Wind Detector named SCENARIO (Solar Corona ENA Radiation Imaging Observer) for the Solar Orbiter mission.

CNES is also aware that the Centre d'Etude Spatiale des Rayonnements (CESR) in Toulouse is participating to this proposal with specific commitments regarding the procurement of hardware sub-systems and that Iannis Dandouras from this institute is involved as Co Investigator.

CNES is committed to support the participation of French scientists for the Solar Orbiter Definition Phase in accordance to the above mentioned proposal.

Once the instrument consortia are selected by ESA (by fall 2008), CNES will assess the level of resources that would be required for a full support of the French contribution to Solar Orbiter.

Should priorities be necessary, after consulting its advisory committee (CPS), CNES will enter a discussion phase with ESA and the concerned partners in order to seek a share of contributions within this consortium that is compatible with our expected level of resources and then settle the required frame of Inter Agency agreements.

Best regards,

F. Casoli

Fabienne CASOLI
Head, Space Science and Exploration Office

Copies :

Marcello Coradini	ESA/HQ
Philippe Kletzkine, Richard Marsden	ESTEC
Iannis Dandouras	CESR

Siège : 2 place Maurice Quentin - 75039 Paris cedex 01 - tél. : 33 (0)1 44 76 75 00 - **www.cnes.fr**
Direction des lanceurs : Rond-Point de l'Espace - Courcouronnes - 91023 Evry cedex - tél. : 33 (0)1 60 87 71 11
Centre spatial de Toulouse : 18 avenue Edouard Belin – 31401 Toulouse cedex 9 - tél. : 33 (0)5 61 27 31 31
Centre spatial guyanais : BP 726 – 97387 Kourou cedex - tél. : 33 (0)5 94 33 51 11

RCS Paris B 775 665 912 Siret 775 665 912 000 82 code APE 731 Z N° d'identification TVA. FR 49 775 665 912

2.3 Finnish Metereological Institute (FMI), Helsinki (Finland)

Helsinki, December 20, 2007

To whom it may concern,

The Space Research Unit of the Finnish Meteorological Institute (FMI/AVA) is a participating institution in SCENARIO/Solar Orbiter instrument proposal, leaded by Dr. Stefano Orsini and IFSI.

By this letter the FMI/AVA confirms its support for the proposal and its intention to provide EGSE to the SCENARIO instrument. Provision of the hardware is contingent on the availability of funding. The FMI/AVA will do its best for ensuring that proper funding will be available, and will see to that measures will be taken at the proper time for obtaining the necessary funding from the national funding agencies.

Sincerely yours,

Prof. Tuija I. Pulkkinen
Space Research Unit, Head
Finnish Meteorological Institute
PO Box 503, FIN-00101
Helsinki, Finland

tel. +358-9-19294654
fax +358-9-19294603
e-mail: tuija.pulkkinen@fmi.fi

2.4 Space Research Centre, Warsaw, Poland

POLSKA AKADEMIA NAUK
CENTRUM BADAŃ KOSMICZNYCH
UL. BARTYCKA 18A
00-716 WARSZAWA

Warsaw, 21.12.2007

Marek Banaszkiewicz
Space Research Centre
Polish Academy of Sciences
Bartycka 18a
00-716 Warsaw, Poland

Dr Stefano Orsini
INAF, Instituto di Fisica dello Spazio Interplanetario
Via del Fosso del Cavaliere 100
0133 Roma
Italy

Letter of Commitment

This letter is to formally confirm our interest in participating in the Solar Corona ENA Radiation Imaging Observer (SCENARIO) instrument planned for ESA's Solar Orbiter mission. We will strongly support the hardware, software and scientific contributions by Polish scientists.

We have been informed by Dr. Andrzej Czechowski of the Space Research Centre in Warsaw that the currently planned contributions by Poland are:

- Low DC/DC power supply system
- Supporting activities for post-delivery integration and test activities
- Development of specific data analysis software modules
- Post-launch science data analysis and interpretation

We have been briefed on the implications, responsibilities and costs related to these activities. We commit ourselves to supporting these activities including the delivery of the corresponding hardware. This commitment is subject to the availability of funds.

Dr Marek Banaszkiewicz
Director
Space Research Centre

-Tel.: +22 8403766; Fax: +22 8403131; Komertel tel./fax: +22 840 35 70
NIP: 525-000-94-99, e-mail: cbk@cbk.waw.pl

APPENDIX A. Cost Plan.

As requested, the Cost Plan matrix has been delivered to ASI Headquarters.