DOCUMENT

Announcement of Opportunity for PLATO Payload and Science Ground Segment components

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1 INTRODUCTION

1.1 Purpose and Scope

PLATO is an ESA mission with contributions from the ESA Member States and with a potential international participation. In February 2010, PLATO was selected by the Science Programme Committee (SPC) to enter a competitive Definition phase as an M-class mission candidate for the 2017/2018 M1/M2 launch opportunities of the Cosmic Vision 2015-2025 Plan. PLATO is currently in a competitive Definition Phase, together with Euclid and Solar Orbiter. At most two out of the current three candidates will be adopted for implementation in 2011. The responses to the current AO must be binding for the Definition Phase and in draft form for the Implementation Phase. Should PLATO not be adopted in 2011 for a launch in 2017 or 2018, all activities undertaken during the Definition Phase as a result of the present AO will be ceased.

The PLATO Announcement of Opportunity (AO) is organised in line with the process defined for the definition and selection of the next M-class missions, i.e. with a definition phase starting in July 2010, the selection for implementation in June 2011 and and a start (conditional to the mission being adopted for implementation by the SPC) of the industrial implementation phase in summer 2012. The main activities of the consortium during the definition phase shall be in support of the preparation of the implementation phase, i.e.

- support of the space segment design activities through the consolidation of the instrument design and instrument requirements,
- preparation of the instrument implementation phase through early prototyping/ development models, ultimately with the objective to secure the instrument development schedule for the implementation phase,
- support to the Science Ground segment definition, through definition of the overall concept, preparation of the science implementation requirements, and preparation of the science operations.

It is the intention to select the Consortium for the PLATO mission on the basis of the present AO. Therefore, the proposal shall include all Consortium elements necessary for the implementation phase, clearly defining the task and level of commitment.

With the maturation of the interface and programmatic documentation for the instrument provision and the finalisation of the science ground segment responsibilities, ESA will

release an updated set of AO documents (e.g. SMP, EID-A, SIRD, etc.) before entering the implementation phase.

In order to allow the planned selection of M-class missions in June 2011, ESA will iterate with the PLATO Mission Consortium to establish, on the basis of the definition phase activities, a clear understanding of the technical and programmatic status (maturity of the design, remaining identified risks, potential showstoppers, etc.) of the consortium contributions to the mission.

The selected Consortium shall complete and update its draft proposal for the implementation phase in line with the updated AO documentation and shall submit the updated version to ESA for evaluation. If the PLATO mission is adopted by SPC in 2011 for implementation, and following the positive evaluation of the final proposal for the implementation phase, a Multi Lateral Agreement (MLA) will be established between ESA and the funding agencies of the selected Consortium. This MLA is planned to be submitted for approval to SPC by the end of 2011

The PLATO Announcement of Opportunity (AO) solicits proposals from a single consortium to cover all nationally-funded contributions to the mission, namely

- The payload, i.e. the scientific instruments (for definitions see below),
- Elements of the Science Ground Segment (SGS) and
- Consortium-appointed membership in the PLATO Science Team (PST).

Selection of the Independent Legacy Scientists for the PST will be subject to a separate AO.

The proposal will be examined by an Evaluation Committee appointed by ESA's Director of Science and Robotic Exploration (D/SRE) and reviewed from the scientific point of view by ESA's Advisory Structure. Based on the assessment of the Evaluation Committee and the recommendation of the Advisory Structure, the formal pre-selection of the Consortium will be presented by the Executive to the SPC for approval. The confirmation of the Consortium for the implementation phase will be contingent on the adoption of the mission into implementation phase, and to the subsequent positive evaluation of the final proposal and its approval by SPC.

The AO is open to individuals and scientific groups affiliated with institutions in ESA Member States. The schedule for the complete AO cycle and the PLATO programme is given in Table 1. Details on the submission and proposal evaluation criteria are given in Section 4.

The PLATO Science Management Plan (SMP, ESA/SPC(2010)11) defines the top-level scientific management of the PLATO mission, and describes the respective roles of the parties involved. The SMP is an applicable document and as such has been included in the AO data package.

Table 1: PLATO AO Cycle

Date	Event
July 22, 2010	Release of AO for PLATO
July 29, 2010	Submission of Letter of Intent and questions for briefing
August 27, 2010 (TBC)	Briefing meeting
October 29, 2010	Proposals Due
November 1 2010 - January, 2011	Proposal evaluation
5 January 2011	Evaluation results to AWG
25-26 January 2011	AWG recommendation
1-2 February 2011	SSAC recommendation
10-11 February, 2011	SPC decision
March – May 2011	ESA/Consortium/Funding agencies iterations to support M-class Mission selection
May 2011	Formal release of updated AO documents for implementation phase
June 2011	Completion of industrial studies (Phase A)
21-22 June 2011	M-class mission selection by SPC
July 2011	Final proposal for implementation phase
July-September 2011	Final proposal evaluation
July-October 2011	MLA negotiations with national funding agencies PLATO
October 2011	Evaluation results to AWG
October 2011	AWG recommendation
2-3 November 2011	SSAC recommendation
16-17 November 2011	Consortium confirmation by SPC and MLA SPC approval
December 2011	Completion of industrial studies (Phase B1)

Definitions

The following definitions have been established for the PLATO mission and are recalled here for clarity:

- **Telescope:** unit which includes the barrel, optics, support structure, the dedicated baffle (if present) and the dedicated thermal hardware.
- **Detection subsystem:** FPA + FEE + related interface harness.
- **Camera:** sub-assembly which includes the telescope and detection subsystem.

- **Data Processing System (DPS)**: DPU, fast DPU, ICU, and software.
- **Instrument:** one full functional chain including a camera, and all the electronics and software associated to the camera (one DPU, ICU and the AEU) and internal harness up to the interface with the SVM.
- **Payload**: the full set of Instruments.
- **Payload Module (PLM)**: the full set of Instruments, optical bench, supporting structures and the hardware thermal control. Note: the Sunshield is not part of the PLM.

The spacecraft is constituted by the SVM, PLM and Sunshield.

1.2 Mission summary

PLATO is a mission with the objective to detect and characterise a sample of exoplanets sufficiently large and with a photometric accuracy high enough that the data can be used to:

- Build a statistically significant sample of Earth-size planets orbiting main sequence F-, G-, K-type (Solar Type) and M-stars in their habitable zone.
- Determine, through asteroseismology, the radius and mass of both the parent star and the planet(s) orbiting it with an accuracy of ~1%, and derive the age of the systems to an accuracy better than 10%
- Derive a planetary mass function extending from Brown Dwarfs down to planets smaller than the Earth.
- Allow the selection of a sample of bright and nearby systems for further studies with ambitious future facilities.

The above objectives are achieved by collecting long, uninterrupted, ultra-high precision photometric light-curves of a sample of at least 20 000 relatively bright stars, and using them for detecting exoplanets via the occultation techniques while simultaneously using the same light curves to characterise their host star by asteroseismology.

In addition to the seismic analysis of planet hosting stars, which is a key tool to reach the mission objectives, asteroseismology of the many other stars present in the field of view will be used to study stellar evolution. Light curves of stars of all masses and ages across the HR diagram, including members of several open clusters and old population II stars, will be collected for this purpose.

Besides the core program, PLATO will allow a broad range of studies involving photometric variability. Its high signal to noise, long time coverage and the very large field of view, will enable the study of variability on several time scales – between 1 minute and several years – on statistically significant stellar samples. These properties will be used to address many different questions, mainly (but not exclusively) in the area of stellar physics.

The PLATO reference payload consists of 34 refractive cameras (i.e. telescope & detectors) each with a 120 mm entrance pupil and 6 lenses (including one aspheric lens) and mounted on a dedicated platform. Cameras are grouped in 4 subsets with slightly different Lines-of-Sight (LoS) but with significant overlap of their Field-of-Views (FoV). Each camera has a FoV with a diameter of 37^{o}. Each individual camera is part of one individual Instrument.

PLATO will be launched by a Soyuz Fregat into a large-amplitude libration orbit around the Sun-Earth second Lagrange point, L2. Commissioning of the spacecraft as well as calibration and performance verification of the payload will be performed during the cruise phase to L2. The 6-years nominal duration of the scientific exploitation phase consists of three parts: two long-duration observations (of 3 & 2 years respectively), each focusing on a particular part of the sky with a high density of F, G and K dwarf stars, plus a one year long step-and-stare phase where a small number of selected fields will be monitored for a few months each. A mission extension of one (or more) years is possible.

Each of the long-duration observations will monitor a separate field in the sky that together will be encompassing a minimum of 20000 dwarf stars of spectral type later than F5, each sufficiently bright to reach a photometric accuracy $\leq 2.7 * 10^{-5}$ in one hour. The photometric precision required by the mission puts stringent requirements on the pointing stability and accuracy of the spacecraft which must reach 0.2 arcseconds (Relative Pointing Error) over time scales of 2.5 seconds to 14 hours. The step-and-stare phase will consist of a series of separate observations each lasting up to 5 months. The rationale is to extend the surveyed area of the sky and to further characterise planetary candidates that were found to have two or more transits during the long observations.

1.3 Proposal information package

The AO documentation package is listed in Table 2.

Table 2: AO Document Package

Document
Cover Letter
Announcement of Opportunity for PLATO Payload and Science Ground Segment components (this document)
PLATO Science Management Plan (SMP)
PLATO Science Requirements Document (Sci-RD)
Experiment Interface Document Part A (EID-A) draft
Experiment Interface Document Part B (EID-B) template
Proposal Templates
Science Ground Segment Interfaces Document

2 RESPONSIBILITIES

This paragraph defines the responsibilities of ESA and the PLATO Mission Consortium. The responsibilities and the details of the management interaction will be formalised through a Multi Lateral Agreement that will also define the role of the national funding agencies (e.g. establishing a steering committee) that will provide support to the PLATO Mission Consortium.

2.1 Responsibilities of ESA

For the definition and implementation of the PLATO mission ESA has the following responsibilities:

- The overall PLATO mission design and execution.
- The design, procurement, integration and verification of the PLATO spacecraft and the integration of the PLATO payload in the spacecraft.
- A coordinated procurement system for Hi-rel electronic parts, with the objective to ensure that common parts and designs are used wherever practical.
- The launch of the PLATO spacecraft.
- PLATO spacecraft operations through the Mission Operations Centre (MOC) at ESOC Darmstadt.
- The overall PLATO Science Ground Segment (SGS).

2.2 Responsibilities of the PLATO Mission Consortium

2.2.1 Overview

The PLATO Mission Consortium is responsible for the provision of:

- The full set of instruments fully integrated, verified and calibrated for later integration into the PLATO spacecraft by ESA, according to the interfaces outlined in the PLATO Experiment Interface Document – Part A (EID-A).

- The resources (manpower and facilities) to support the post-payload delivery integration and testing activities.
- The Consortium part of the SGS, manpower and facilities for the processing of the PLATO scientific and housekeeping data generated by the payload as specified in the SMP.

The PLATO Mission Consortium shall be led by a single person, the PLATO Consortium Lead (PCL). The PCL is the single formal interface for the consortium with ESA. The PCL shall be supported by a PLATO Instrument Project Manager (PIPM) for the PLATO instruments and by the PMC Data Processing Manager (PDPM) for the Consortium contribution to the PLATO SGS.

On all technical and managerial matters, the single interface to the PLATO Consortium within ESA will be the ESA PLATO Project Manager during the Definition and Implementation phases, and the ESA PLATO Mission Manager during the Operation and Post-Operation Phases. On all scientific matters, the single interface to the PLATO Consortium within ESA will be the ESA PLATO Project Scientist during all mission phases.

The PIPM is responsible for the overall management of the instruments development. The PDPM is responsible for the overall management of the SGS development of the PLATO Mission Consortium contribution to the SGS. The PIPM and PDPM will interact with their respective ESA counterparts for the day to day work, while the overall Consortium work coordination will be ensured by the PCL.

More precisely, the PLATO Consortium Lead shall:

- Take full responsibility for the provision of all elements falling under the responsibility of the PLATO Mission Consortium provision,
- Act as the single and formal managerial interface of the PLATO Mission Consortium to ESA,
- Ensure the Consortium activities are timely and properly executed with deliveries to ESA according to schedule in line with the standards and technical requirements,
- Efficiently support ESA for the overall science performance evaluation and monitoring,
- Provide early warnings to ESA in case of delay in the work execution and propose, on behalf of the Consortium, corrective actions to be discussed and agreed with ESA,
- Attend meetings of the PST and supporting groups as appropriate, to report on development of the instruments and SGS programmes,

- Establish and maintain an efficient and effective managerial scheme which will be valid for all aspects of instrument provision and participation to the SGS, both headed by dedicated Element Managers,
- Define role and responsibilities of the managerial leads of PLATO Mission Consortium provisions,
- Define and maintain the instrument specification and verify compliance with the science requirements,
- Ensure an adequate level of test and calibration of the instrument, both on ground and in orbit,
- Provide overall documentation during the project's lifetime as defined in the EID-A,
- Ensure availability of adequate funding at the required time(s) for all aspects of the PLATO Mission Consortium work, by maintaining constant coordination with the funding agencies as represented in the Steering Committee that will be established through the MLA.

The PCL has to demonstrate to ESA in regular reports and during formal reviews compliance with the scientific mission requirements, the spacecraft system constraints, the spacecraft interfaces and the programme schedule as defined in the mutually agreed Experiment Interface Documents and Science Implementation Plan.

The PCL, the PIPM and the PDPM shall participate in the PLATO Science Team as non-voting members.

2.2.2 Provision of Payload

The payload development will be led by the PLATO Instruments Project Manager (PIPM). The PIPM is reporting to the PLATO Mission Consortium Lead. Within the PMC the PIPM is responsible for the delivery of the full set of instruments, the payload.

In order to discharge his/her responsibilities the PIPM shall:

- Provide the necessary resources to develop, deliver and operate the PLATO payload in line with the scientific performance requirements and as defined in the Instruments Specification and the EID-A.

- Establish and maintain a well specified and identified management organization to handle the development and delivery of the payload.

The PIPM supports the PCL through regular reports and support during formal reviews to demonstrate compliance with the scientific mission requirements, the spacecraft system constraints, the spacecraft interfaces and the programme schedule as defined in the mutually agreed Experiment Interface Documents.

Note:

- The CCD detectors will be procured by ESA and formally delivered to the PMC by ESA. The PMC shall consider the detectors as integral part of the instruments and is responsible of the overall instruments performance. The Consortium shall carry out the subsystem and interface engineering tasks for the ESA-provided CCDs as for any other subsystem and unit. The PMC team shall provide all necessary support to ESA in the CCD detector procurement for ensuring the science mission performance is effectively met.

- The PMC shall support in the definition of the overall verification approach, the model philosophy and any specific requests. Further, it includes definition of and participation to potential validation tests at CCD level, and to Payload module and system integration and tests. The PMC shall participate in all formal reviews and shall support the related progress meetings as necessary.

2.2.3 Provision of SGS Components: The PLATO Data Centre (PDC)

The Plato Ground Segment includes the Mission Operations Centre (MOC), Science Operations Centre (SOC), both ESA-provided, and the Plato Science Data Centre, provided by the Plato Mission Consortium.

The Consortium part of the science ground segment will be led by the PMC Data Processing Manager (PDPM). The PDPM is reporting to the Consortium Lead. Within the PMC the PDPM is responsible for the development and execution of the contribution of the PMC to the PLATO SGS. More specifically, the PDPM will be responsible for:

- The development, integration, validation, maintenance and operations of the data analysis system (hardware and software) that will be used by the PDC to process and validate all PLATO data from Level 1 upward. This includes any simulations and modelling tools required to achieve that goal.

- Delivery to the SOC of the detailed definitions of all algorithms needed for evolving L0 data into L1 data and for processing images for support to on-board processing as well as providing input catalogue parameters for the jitter correction algorithm.

- Detailed study and characterisation of the stellar fields that will be observed by PLATO. This may entail dedicated wide-field observations with other ground or space based facilities, as needed.

- The delivery of validated payload operations procedures (nominal and contingency) to ESA for their integration into the MOC and SOC. This includes the procedures required to monitor the performance of the payload, identify possible malfunctions and take corrective actions as appropriate.

- The pre-launch and in orbit calibration and characterisation of the PLATO payload.

- The maintenance of the payload during operations. This includes maintenance of the observing modes and operations of the Instruments as well as their on-board software.

- The organization and execution of follow-up activities required to further characterise planetary candidates found with PLATO, such as radial velocity monitoring and additional ground based photometric, spectroscopic, and imaging.

- The production of all level-2 data products as well as higher level scientific products of the mission such as catalogues, and their delivery to ESA for archival and distribution.

The PMC is expected to satisfy the following conditions:

- Each element of the PDC within the PMC shall have a well specified and identified management layer.

During the Definition phase, the specific contributions from international partners to the PDC will be studied, agreed and consolidated. As a starting point, the proposal shall assume that the implementation of a database system for PLATO ancillary data and of software to determine stellar rotation and activity are covered under a preliminary international cooperation agreement.

The PDPM supports the PCL through regular reports and support during formal reviews to demonstrate compliance with the scientific mission requirements, as defined in the mutually agreed Science Implementation Plan.

2.2.4 Representation in the PLATO Science Team (PST)

The PMC is responsible for the provision of 6 members to the PST with the following profiles and detailed responsibilities:

- One Programme Scientist. The Programme Scientist provided by the PMC is closely involved in the selection of the specific fields to be observed by PLATO. After selection of the fields, he/she is also heavily involved in the selection of the actual target stars within each field. This requires knowledge on all aspects of the scientific capabilities and calibration of PLATO.

- Two Calibration Scientists. The Calibration Scientists will have specific expertise in the PLATO Instruments, their calibrations, and data processing. These scientists have preferentially an instrumental background, they will have a close involvement in setting up and implementation of the on-ground and in-orbit calibration plans, and will be involved in the analysis of the calibration data and the characterisation of the instrument.

- One Follow-up Scientist. The Follow-up Scientists will have specific expertise in the PLATO-related ground-based activities (preparation and follow-up).

- Two Data Processing Scientists. Each Data Processing Scientist is familiar with the processing pipelines which are developed for PLATO, and may be specialised in or overseeing one or more processing pipelines, covering:
  - data processing infrastructure and interfaces
  - product generation,
  - simulations and modelling infrastructure.

The scientists selected according to the above specifications are expected to fully take part in the tasks of the PST. In particular, the PST acts as a focus for the interest of the scientific community in PLATO and advises the Project Scientist on:

- Maximizing the scientific return of PLATO within its programmatic constraints, while at the same time ensuring that the development of the mission remains compatible with the main scientific objectives

- The scientific aspects of the development of the payload and spacecraft

- Formulating, optimizing, and maintaining the observing plan and the calibration strategy

- Defining data rights and publication policy within the guidelines established in the Science Management Plan

- The promotion of the public awareness and appreciation of the PLATO mission, supporting ESA in its outreach efforts

- Overseeing the analysis of the data

- The supervision and authorisation of the release of the final scientific data products to the community
- The organization of the data archive(s).

The PCM members of the PST are expected to attend the PST meetings and take active part in all PST activities, in particular in the tasks related to their specialisation. As members of the PST they monitor and give advice on all aspects of PLATO which affect its scientific performance. They participate in major project reviews, and perform specific tasks as needed during the development and operation phases.

The PST is also responsible for the definition of the external data required by the PLATO mission to achieve its scientific goals. The PST members will organise and coordinate the procurement of the data, both prior to launch as well as during and after the operations phase.

3 CONTENTS OF THE PROPOSAL

The response to the present AO shall be split into four sections (or sub-proposals). The first section (cf. Section 3.1) will cover the activities proposed to be carried out in the Definition Phase. The second section will be a draft proposal (c.f. Section 3.2) for the implementation phase. The third section (cf. Section 3.3) will be the proposed PLATO Mission Consortium membership in the PST. The fourth section (cf. Section 3.4) will consist of the Letters of Endorsement by the funding agencies.

3.1 Proposal for Definition Phase

The proposal for the definition phase shall include the following documents. For each of the documents the scope is outlined below.

Part I:	Instrument Definition and Consolidation
Part II	Instrument Pre-developments
Part III:	Science Ground Segment Definition
Part IV:	Management Proposal for the Definition Phase
Part V:	Financial Plan for the Definition Phase

3.1.1 Part I: Instrument Definition and Consolidation

The Definition Phase for the PLATO instruments shall be used to establish a robust instrument design, consolidate the relevant interfaces to the spacecraft to a level of quality sufficient to allow entering the implementation phase and establish draft instruments and subassembly specifications and interface definitions. The activities considered necessary to achieve this are:

- The elaboration of the instruments requirements specification and interface requirements documents,
- The technical and performance specification of all instrument subsystems, including the interface requirements to ESA-provided equipment, i.e. the CCD,
- The definition, supported by analysis, of the overall architecture and opto-mechanical-thermal-electrical-data design and interfaces of the instruments and of its key subsystems and components,
- Support to the definition of the accommodations of the payload in the spacecraft

- Support to instruments concept and accommodation trade offs. The PMC shall in the proposal indicate the possible areas for optimisation and trade off as an input to ESA,

- The description of the system EMC concept,

- The description of the instrument contamination control approach,

- The description of the instrument radiation control (e.g. on detectors) approach,

- The definition of the instrument operation modes and preparation of instrument operation concept document,

- The definition of the instrument software requirements.

Further, in support of the preparation of the payload detailed schedule the necessary design and development, verification, AIT plans shall be established.

One major result of the definition phase will be the instrument requirement specification that will technically govern the instrument implementation phase. The proposal shall include a first complete draft of this document and describe how to finalise this specification during the definition phase.

The proposal shall consider the need of providing results of the instrument activities as input to the industrial definition phase studies with the major milestones being the Preliminary Configuration Definition Review (PCDR – mid October 2010), the Preliminary Requirements Review (PRR – mid May 2011) and Baseline Design Configuration Review (BDCR – end November 2011). Participation in and support to these reviews as well as limited participation in and support to the progress meetings of the industrial studies shall be considered.

In addition the proposal shall consider the planned instrument level reviews and the need to provide data packages for the Preliminary Instruments Requirement Reviews (PIRR) to be held in May 2011 and for Instrument Design Consolidation Reviews (IDCR) to be held in October 2011 (TBC). A preliminary description of the data packages for these reviews is given in the EID-A.

The contributions expected to the above reviews include updates of the EID-B. In particular the following elements are expected:

- The optical interfaces of the instruments regarding field of view, straylight, thermal emission, alignment, in agreement with the overall mission science performance including throughput, and image quality,

- The mechanical interfaces of the instrument units with the payload module regarding envelopes, mounting, ground access, integration and test aids, launch loads, venting and purging, …

- The thermal interfaces specially regarding energy dissipation, operation temperature and stability of critical units in the relevant environments,

- The electrical interfaces specially regarding power supply, voltage and distribution, overall power allocation, on-board data handling and timing, temperature monitoring,

- The generation of mathematical models (first issue to be delivered to ESA before December 2010) including geometrical models of instrument units, finite element models, geometrical and thermal models, reduced thermal mathematical models and optical models (see EID-A).

A preliminary version of the Experiment Interface Document – Part B (EID-B) shall be provided in the proposal for the Definition Phase.

3.1.2 Part II: Instrument Pre-developments

The instrument development in the implementation phase will have to follow a tight schedule. In order to support the implementation phase and to allow timely provision of instrument hardware and software a number of pre-developments are expected to be necessary. The readiness of technology development is conveniently defined by TRL levels and it is expected that a Technology Readiness Level 5 (TRL 5) is achieved for all equipment by the end of 2011.

The proposal shall describe how the PMC plans to address these pre-developments and how to reach a level of maturity in the critical instrument development areas (min. TRL 5) such that that a reliable development plan for the implementation phase can be established.

For each of the pre-development activities the proposal shall include a description of the activity planned with its relevance for the overall instrument development, the input needed and the output produced. The major milestones of each pre-development shall be provided. It is expected that there is a need for pre-development in the following areas:

- Telescope optical unit

- Normal and fast FEE,
- FPA,
- Electronic units,
- FEE/FPA testing,
- Integrated camera testing.

ESA will carry out the pre-development for the instrument CCDs. The PMC shall include in its proposal how it intends to support ESA in this pre-development.

Status reports showing the actual status of development shall be made available at regular (quarterly) intervals in particular by May 2011 and the final one by the end of the definition Phase.

3.1.3 Part III: Science Ground Segment Definition

Expected outputs of the definition phase

The definition phase for the PLATO Science Ground Segment shall be used to establish the requirements baseline for the SGS and to develop the operations concept, architecture and interfaces. The main outputs expected are:

- A Science Operations Concept Document (SOCD), which describes the proposed scenario for the operations of the mission. It expands the concepts contained in the SMP to describe how SGS operations (including mission planning and data processing and management) will be performed and establishes the high-level system partitioning. It will be a source for writing the top-level requirements documents.
- A draft Science Implementation Requirements Document (SIRD). The SIRD contains the requirements applicable to the development and operations of the whole Science Ground Segment (both ESA- and PMC-supplied components). In other words, the SIRD takes the concepts documented in the SOCD and turns them into specific top-level requirements.
- Two draft Science Implementation Plans (SIP), one covering the ESA-supplied elements and the other the PMC-supplied elements. The SIPs specify the activities to be undertaken to implement and operate the SGS and also detail the necessary schedules and resources. They are the responses to the SIRD in that they explain how the SGS will be built to fulfil the requirements in the SIRD.

The expected minimum contents of these documents are:

- Science Operations Concept Document (SOCD):
    - Mission overview,

- Approach for Science Operations,
- Overall Ground Segment design,
- Stakeholders in science operations,
- Actors (people or systems) and interfaces between actors,
- Functional requirements.

- Science Implementation Requirements Document (SIRD):
  - Assumptions,
  - Functional requirements,
  - Operational requirements,
  - Performance, Availability & Security requirements,
  - Validation and Verification requirements,
  - Management requirements,
  - Product Assurance and Configuration Management requirements.
- Science Implementation Plan (SIP):
  - SGS development, operations and post-operations phase activities,
  - Demonstration of the understanding of the SIRD requirements and their interpretation in terms of implementation,
  - Assumptions,
  - Organization
    - Management structure,
    - Membership and assigned roles,
    - Product tree,
    - Documentation tree,
    - Work Breakdown Structure.
  - Management approach
    - Project control,
    - Monitoring mechanisms,
    - Formal Reviews,
    - Reporting and Internal Reviews,
    - Risk Management.
  - Development plan
    - Milestones,
    - Schedule,
  - Development approach
    - Verification and validation,
    - Product and Quality Assurance,
    - Configuration Management,
    - Maintenance.
  - Cost envelope,
  - SIP to SIRD and SIRD to SIP compliance,
  - Top level Work Packages and manpower profile.

Organisation of the definition phase

In order to define a coherent and optimised SGS, it is expected that all SGS-related activities in the definition phase shall be carried out in close co-operation between ESA (SOC) and the PMC. It is expected that the SOCD and draft SIRD will be jointly generated during the definition phase. As shown in Figure 1, the draft SIRD after review and any necessary updates will be formally issued by ESA after the definition phase as an input to subsequent phases. Each party will be responsible for their draft SIP which responds to the draft SIRD.

Activities are expected to build upon those carried out in the assessment phase and in the Consortium proposal preparation. Thus, as summarised in Figure 1, the starting points for definition phase work will be the Science Management Plan (SMP), the PLATO SGS Interfaces Document (SGSID, derived from the assessment phase Science Operations Assumption Document (SOAD) and defining the responsibilities, interfaces and high-level assumptions/requirements of the SGS), the Consortium proposal for definition phase activities (WBS/WPD, see management proposal paragraph, part IV) and the Consortium Implementation Proposal (IP, see section 3.2.3 for details). During the course of the definition phase, it is expected that the SGSID will evolve into the draft SIRD and the SGS part of the IP into the draft SIP for the PMC contributions (see overall schedule in table 1).

The proposal to be made in response to this AO by the Consortium for SGS-related activities must contain two elements. The first is a proposal for PMC definition phase activities (specifically a short technical/programmatic note linked to the WBS/WPS described in section 3.1.4). The second is an outline proposal for PMC activities for all other phases of the mission (see sections 3.2.3, 3.2.4, 3.2.5).

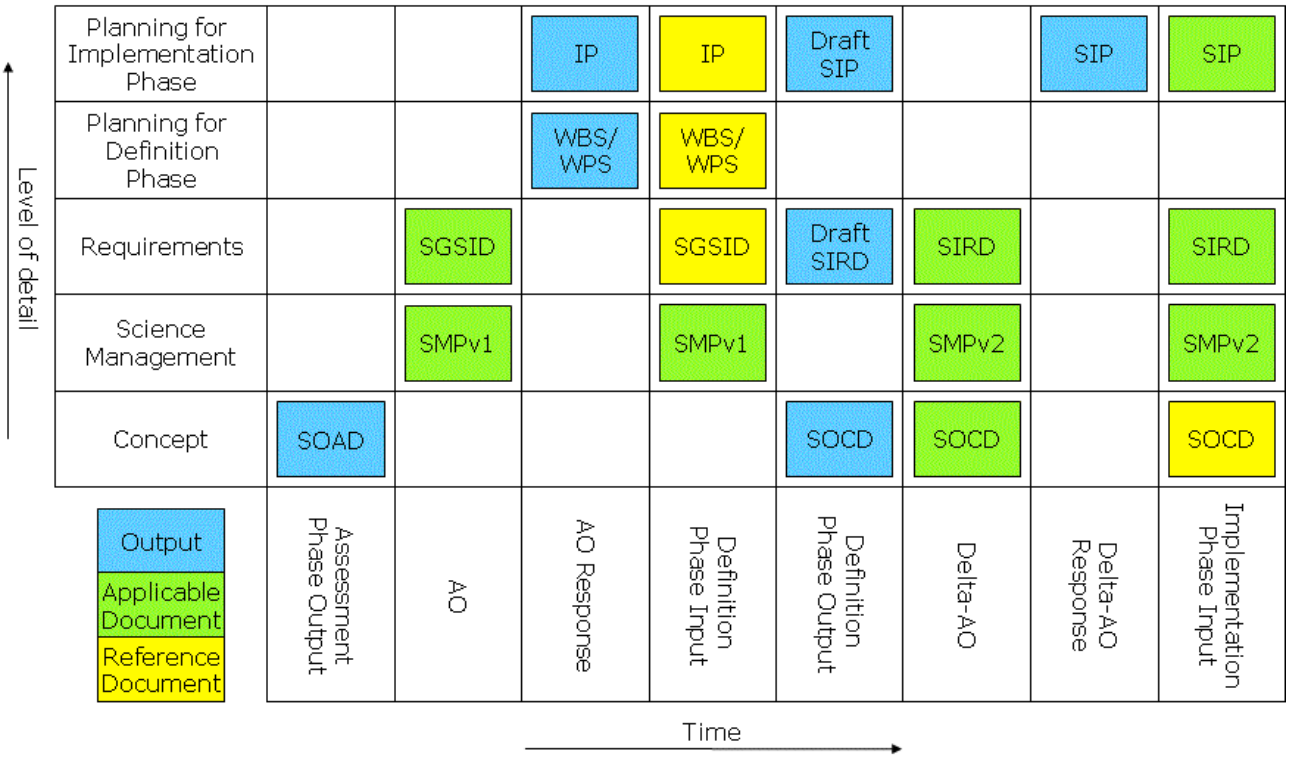

Figure 1 SGS inputs and outputs over time

3.1.4 Part IV: Management Proposal for the Definition Phase

The PMC proposal shall provide a clear management scheme of the Consortium with respective roles and responsibilities of key persons. In particular it will:

- Establish an efficient and effective managerial scheme which will be valid for all aspects of instrument provision and participation to the SGS, headed by dedicated Managers,
- Define role and responsibilities of the managerial leads of PMC element provisions,
- Nominate (by name) key PMC team members responsible for science management, technical management, technical interfacing, SGS management and operational management.

The proposal shall contain a Work Breakdown Structure and a set of Work Package Descriptions (WBS/WPD) which identify the activities required to achieve the necessary output as defined above. It shall equally identify the manpower effort allocated and nominated (by name) WP managers and support personnel. Sufficient detail must be included to enable evaluators to assess whether the proposed activities and associated resources are sufficient to achieve the objectives of the definition phase.

The management proposal shall address the definition phase activities. It shall also allow a seamless transition to the management scheme for the implementation phase already included in the draft proposal for the implementation phase. The contribution of each institution must be clearly indicated and the responsibilities of each participant described in detail. Emphasis should be placed on a simple management scheme with as few interfaces as necessary.

Organization charts shall be provided and shall contain the names of all partners, PIPM, PDPM and all key personnel. The PMC shall show, in particular, how they participate in the overall activities. The fraction of time available for the activities shall be given for each individual for the definition phase.

3.1.5 Part V: Financial Plan for the Definition Phase

The proposal shall include a Financial Plan with the detailed breakdown of the activities in the definition phase with the costs for each participating country. The breakdown shall be done separately for the payload elements and the science ground segment, as indicated in the document template given in Annex 1. The financial plan shall follow the work breakdown structure (WBS). In particular the funding dedicated to each pre-development shall be explicitly identified.

For estimating the necessary resources the following details are required:

- Internal manpower resources (FTEs) and associated costs
- Additional manpower resources (FTEs) provided to support the development but not costed within the project
- External contracts
- Capital equipment costs required in the development of the instrument
- Computer equipment costs for data processing

The assumptions made in the calculation of the costs shall be given explicitly in the document.

3.2 Draft Proposal for Implementation Phase

The draft proposal for the implementation phase shall comply with the scientific and operational objectives of the mission and with the programme definition and constraints. The core scientific objectives are defined in the PLATO SMP and in the PLATO Science Requirements Document (Sci-RD).

The draft proposal shall consist of the set of documents listed below. It shall present the information required in the form specified hereafter:

Part I: Executive Summary and Scientific Objectives

Part II: Instrument Design and Development

- Part II.1: Instrument Requirements Specification
- Part II.2: Instrument Design and Performance
- Part II.3: Instrument Development
- Part II.4: Experiment Interface Document – Part B
- Part II.5: Product Assurance Plan

Part III: Science Ground Segment Implementation Plan

Part IV: Management Proposal for Implementation Phase

Part V: Financial Plan for Implementation Phase

Part VI: Public Relations Plan

The following sections describe the information the PMC shall present as a minimum in the proposal.

3.2.1 Part I: Executive Summary and Scientific Objectives

3.2.1.1 Cover Page

The Cover Page shall contain the information as requested in section 4.

3.2.1.2 Executive Summary

The executive summary shall include the title of the proposal and shall outline the following aspects:

- Objective of the proposal and its compliance with the SMP and, where relevant, the Sci-RD,
- Overall performance of the instrument and of the PMC contribution to the SGS required to fulfil the anticipated goals,
- Instrument design,
- Summary of required spacecraft resources and compliance with allocated resources,
- PMC contribution to the SGS (Instrument operations and scientific analysis),
- Management scheme,
- Summary of the financial status,
- Possible departure from the constraints stated in the EID-A,
- Requirements imposed on other instruments or spacecraft subsystems,
- Annex: Instrument data sheet.

If the proposal violates any of the constraints described in the EID-A, a clear statement about each violation, together with its justification, shall be included in the summary. Each violation shall be further detailed in the appropriate sections. The instrument requirements shall be summarised in a tabular form. The template of this table is included in the EID-B template (part of the AO document package).

3.2.1.3 Scientific Objectives

This section shall clearly describe the scientific objectives and the overall capability of the instrument, in the light of the global mission requirements as defined particularly in the SMP and, where relevant, also in the Sci-RD. The overall performance of the instrument under nominal orbit conditions shall be described. It is important to list any assumptions required to achieve the science objectives. In particular details affecting performance and as a result the science objectives related to the following need to be clearly indicated:

- PLATO spacecraft performance
- PLATO orbit
- Other PLATO payload module elements
- Ground segment

Expected results shall be outlined and discussed, as far as possible, in both qualitative and

quantitative terms. If the proposal contains any violation of the technical or programmatic constraints, the scientific justification shall be given in this section.

3.2.2 Part II: Instruments Design

3.2.2.1 Part II.1: Instruments Requirements Specification

The purpose of the Instruments Requirements Specification is to specify all scientific, functional and performance requirements of the instrument as well as their verification and calibration requirements. It shall include the following information:

- instrument description,
- scientific requirements,
- functional requirements,
- performance requirements,
- interface requirements,
- observational requirements,
- environmental requirements,
- operational requirements,
- verification and validation requirements,
- calibration requirements.

The Instruments Requirements Specification shall be consistent with the PLATO Science Requirement Document and with the Experiment Interface Documents.

3.2.2.2 Part II.2: Instruments Design and Performance

3.2.2.2.1 Instruments Technical Description and Design

This section shall include a comprehensive design description of the proposed instruments, including resource budgets.

The mechanical, optical, thermal, power, data, EMC (Electromagnetic Cleanliness/compatibility) and operational interfaces between the proposed instrument and the spacecraft shall be clearly specified and justified based on practical considerations such as test and integration requirements. The various functional operating modes shall be clearly identified and their rationale explained. In particular any operating modes, which place different requirements on scientific operations and data analysis, shall be described. Detailed information on the instrument software shall be given in the EID-B.

The current status and availability of the proposed technologies in the baseline design shall be defined together with the risk associated in any assumption of developing technologies.

New advanced technologies shall be clearly described and identified as alternative options. The impact of these options upon scientific return, interfaces, schedule, etc. shall be explained together with an assessment of the associated risk. The extent to which the design utilises space qualified and space experienced hardware shall be stated.

3.2.2.2.2 Instruments Performance

A detailed analysis of the proposed instruments performance shall be provided, including sensitivities and supported by instrument simulations. All assumptions made in this performance analysis shall be explicitly explained. In addition, it shall also be stated which degradation in performance is expected if key instrument characteristics turn out to be unachievable during the instrument development programme. Details associated with instrument performance milestones within the instrument development shall be indicated and the milestones also incorporated in the instrument development plan. Instrument performances shall be evaluated, not only for the baseline design, but also for options including potentially proposed back-up designs for cases where technology still has to be developed for the baseline.

3.2.2.3 Part II.3: Instruments Development

3.2.2.3.1 Instruments Development Plan

The instruments development plan shall describe in detail the planned instruments development and shall contain the following details:

- Engineering plan, including engineering logic, design reviews and schedule
- Instrument Model Philosophy
- Instrument verification strategy and flows including the related schedule
- Assembly, integration and test plan
- Technology development plan required to achieve the instruments science objectives. Within this plan the following issues need to be addressed:
    - Identification of all required technology developments
    - Current status of each technology development item
    - Assumed source of funding for each technology development item. The assumed source of funding shall be identified within Part VI “Financial Plan” of the proposal.
- Instrument back-up development plan should some technology developments not be successful.

3.2.2.3.2 Instrument Test and Calibration Plan

This section shall describe all test and calibration (ground/pre-launch, cruise and in-orbit) plans and procedures deemed necessary to verify the instrument is functioning correctly to achieve the scientific requirements. The test and calibration plan shall be provided as a function of the instrument development schedule and include the relevant details associated with the various instrument models.

The requirement and availability of suitable test and calibration facilities (e.g. vacuum, thermal-vacuum, optical beams, computer etc.) either in-house or in industry shall be clearly indicated. The ground test and check-out equipment to be supplied with each instrument shall be described. Assumptions with respect to test facilities or equipment under ESA's responsibility shall be indicated.

Any test requirements needed during the cruise phase must be justified fully in this section. Details of the specific tests and calibrations required during the science operations phase including procedures and timelines are required. Assumptions and requirements related to instrument cross-calibrations or tests/calibrations requiring data from other instruments shall be clearly specified.

Effort should be made to make the software and data systems used during instrument level testing, system level testing and in-flight operations as common as possible.

3.2.2.3.3 System Level AIV

This section shall describe the compliance of the instrument qualification flow with the project provided pre-launch Verification Programme Requirements (see EID-A) and the Spacecraft system level AIV (Assembly, Integration and Verification) flow, from which the characteristics of the instrument models that are to be delivered are derived. Instrument characteristics that do not comply shall be identified together with any special requirement. The optical, mechanical and electrical ground support equipment (OGSE, MGSE and EGSE) as well as any additional calibration equipment shall be identified and described in the EID-B (see template). Special services required at system level or at launch site shall be identified giving technical justification for it.

3.2.2.4 Part II.4: Experiment Interface Document Part B

The purpose of the Experiment Interface Document - Part B (EID-B) is to formalise the Consortium response to the technical and programmatic requirements. After selection, the EID-B will be maintained and updated at regular intervals, and will become essentially a contractual document between ESA and the selected Consortium. This document shall be arranged according to the template provided as annex to this AO and will provide, as a minimum, information on the following topics:

- Technical instrument description
- Interface requirements and resource allocations:
  - Budgets
  - Mechanical-optical
  - Thermal
  - Electrical
  - Data handling
  - Electromagnetic compatibility
  - Software
- Description of ground support equipment as an annex

Complementary inputs not required within the EID-B format may be added at the discretion of the PLATO Mission Consortium with a technical justification, which will be assessed in the frame of the proposal evaluation process.

3.2.2.5 Part II.5: Product Assurance Plan

Part II.5 shall describe in detail the instrument PA (Product Assurance) plan and must contain the details as required in the EID-A:

- Product assurance
- Quality assurance
- Safety assurance
- Dependability assurance
- Parts and materials
- Software product assurance
- Cleanliness and contamination control

3.2.3 Part III: Science Ground Segment Implementation Plan

This section describes what the proposal in response to this AO must contain regarding PMC contributions to the SGS in the implementation, operations and post-operations phases. It concludes with a brief explanation of the expected activities at the end of the definition phase prior to entering the implementation phase.

For the SGS, the top-level documents are the SIRD/SIPs combination. The requirements for the SGS implementation and operations are defined in the Science Implementation Requirements Document (SIRD). The response to the SIRD is the PMC and SOC Science Implementation Plans (SIP); these documents describe the technical and managerial planning and demonstrate compliance to the SIRD (see figure 1).

As stated in section 1.1, it is the intention to select the PLATO Mission Consortium for the entire mission on the basis of the present AO. Thus, to enable an evaluation of the Consortium's plan for the entire mission before the start of the definition phase, the PMC response to this AO shall contain an "Implementation Proposal" from the Consortium which describes the planning for the implementation, operations and post-operations phases. It shall be based on the Consortium's understanding of the tasks required as described in the PLATO Science Ground Segment Interfaces Document (SGSID) and the SMP. The Implementation Proposal shall contain in this Part III:

- Technical proposal
  - PMC SGS architecture and identification of major systems within the PMC SGS including:
    - Interfaces between major PMC SGS systems and between the PMC SGS and the rest of the Ground Segment as specified with SGSID,
    - Interfaces with the PLATO Instrument Teams,
  - Integration, validation and verification approaches,
  - Science and instrument operations through all mission phases,
    - Operational roles and responsibilities in the PMC SGS,
    - Operations interfaces within the PMC SGS and between PMC SGS and the rest of the Ground Segment as specified with SGSID,
  - Data management and modelling principles.
- Programmatic Proposal
  - Development approach,
  - Product and quality assurance approach,
  - Implementation milestones and schedule.

Note: As stated in section 1.1, before entering the implementation phase, the Consortium will have to submit to ESA a revised and updated proposal. Regarding the SGS-related elements, the Consortium will have to respond with an updated SIP. It is likely that the documentation accompanying this request (referred to in figure 1 as a "delta-AO") will be an updated SMP, the SOCD from the definition phase and an official SIRD with a full set of requirements. The PMC's updated SIP should be based on the draft produced during the definition phase and must contain, inter alia, a full costing with corresponding funding commitments from national funding authorities.

3.2.4 Part IV: Management Proposal for the Implementation Phase

The management plan shall cover all aspects of the proposed activities for the entire duration of the mission. The PMC shall show how they establish an efficient and effective management scheme that shall include the PMC Lead, PMC Instrument Project Manager and the PMC Data Processing Manager.

The management proposal shall respond to the management requirements as defined in the EID-A and the assumptions in the SGSID. In particular the contribution of each institution must be clearly indicated (product tree) and the responsibilities of each participant described in detail. It is essential to provide a clear management plan, which is adequate with respect to the instrument complexity and the interfaces within the Consortium. Emphasis should be placed on a simple management scheme with as few interfaces as necessary. It shall include a Work Breakdown Structure (WBS) and Work Package Descriptions (WPD) with identification of WPD responsible persons.

Organization charts shall be provided and shall include the names of all partners, PCL, PCIPM, PDPM and all key personnel. The PMC shall describe, in particular, how they participate in the overall activities. The fraction of time available for the activities shall be given for each individual throughout the instrument development cycle and the following mission phases:

- Development phase up to end of in orbit commissioning
- Science operations phase (routine operations)
- Archival phase

Furthermore the management plan shall contain all information related to the compliance of management requirements as laid down in EID-A and the SGSID. These requirements address the subjects:

- Project Management and Control (including reporting to ESA),
- Reviews,
- Documentation management and Configuration Control,
- Deliverable items,
- Instrument schedules.

The PLATO Mission Consortium is expected to describe its compliance to these requirements and their expected implementation.

3.2.5 Part V: Financial Plan for the Implementation Phase

The proposal shall include a Financial Plan with the detailed breakdown of the full mission estimated costs for each participating country, as well as for the total development, as a function of the development cycle. The breakdown shall be done separately for each payload element and the science ground segment, as indicated in the document template given in Annex 1 and shall follow the WBS. Activities related to instrument post delivery

and operations shall be identified separately. The Financial Plan shall also contain, clearly identified and duly justified, the necessary contingencies.

For estimating the necessary resources the following details are required:

- Internal manpower resources (FTEs) and associated costs
- Use of facilities (e.g. test facilities)
- Additional manpower resources (FTEs) provided to support the development but not costed within the project
- External contracts
- Capital equipment costs required in the development of the instrument
- Computer equipment costs for data processing

The assumptions made in the calculation of the costs shall be given explicitly in the document.

The financial plan shall have a yearly granularity and shall serve as a reference for monitoring the evolution of the cost through regular Estimates at Completion (EAC).

3.2.6 Part VI: Public Relations Plan

The public relations plan addressing the outreach and education activities of the Consortium throughout the mission life cycle shall be defined. The plan shall describe, in line with the PLATO SMP, the scope of the outreach activities, the interface to the ESA outreach office, the target groups and the allocated resources for the activities.

3.3 Proposals for PLATO Science Team Members

This part of the proposal will consist of the proposed appointment of six consortium members as members of the PLATO Science Team (PST) in line with the qualifications as outlined in paragraph 2.2.4 above.

For each proposed member the proposal shall include

- Name, title, position, institute, address, telephone number and e-mail address,
- The scientific and technical experience,
- Expertise relevant to the PLATO mission, in particular the expertise related to the specific areas of work in the science team,

- The fraction of the proposed member's time available for work on PLATO,
- A description of the planned contribution to the Science Team and of the related Consortium activities. The description shall also state how the candidate PST member is embedded in the organisation of the PMC,
- The necessary financial support for the proposed PST member shall be included in the financial plan of the PMC.

3.4 Letters of Endorsement

Letters of Endorsement from the national funding agencies expected to fund the proposed PLATO Consortium and its contributions to the missions are requested as part of the proposal. The Letters of Endorsement should clearly acknowledge the expected level of support (both financial and in terms of manpower resources) and be binding for the Definition Phase and indicative for the Implementation Phase, taking into account that the draft nature of the proposal for the Implementation Phase. The name and contact details of the contact person in the funding agency responsible for the contribution to the PLATO Consortium must be provided in the Letter. Original, signed copies of the letters should be sent by the same deadline as for the proposal itself to the address indicated in Section 4.1. Electronic versions of the same letters should be submitted as part of the proposal.

4 SUBMISSION OF THE PROPOSAL AND EVALUATION

4.1 Proposal Submission

Proposals shall be submitted electronically in PDF format using the interface available at

http://sci.esa.int/PLATO-AO2010

The proposals must be received not later than:

29 October 2010 at 12:00 Central European Time

The sub-proposals (Proposal for Definition Phase, Draft Proposal for Implementation Phase, Proposal for PLATO Science Team Members and collated Letters of Endorsement) shall be submitted as a single tar or zip archive containing each sub-proposal as a PDF document. Each sub-proposal shall be limited in size to 50 Mb. For each sub-proposal the cover page shall include:

- The title of the proposal,
- The names, addresses, telephone and fax numbers, and e-mail addresses of the proposal contact person,
- The list of the supporting national funding agencies.

In parallel, a hardcopy signed version shall be submitted by the same deadline to the following address:

Ana M. Heras
ESA/ESTEC (SRE-C)
P.O. Box 299
2200 AG Noordwijk
The Netherlands
Ana.Heras@esa.int

The proposal contact person shall inform the address listed above by e-mail of the mailing date of the hardcopy version of the proposal and of the electronic submission. ESA will confirm by e-mail the reception of the proposal hardcopy and electronic version.

In addition, a copy of the complete proposal must be sent to each of the funding agencies that have provided a Letter of Endorsement.

Proposing parties are requested to send a Letter of Intent by e-mail to the above addresses by **29 July 2010**. It should contain the proposal title and the proposal contact person's name and contact details. Possible questions in relation with the response to the AO may be attached. After reception of the Letter of Intent, ESA will invite the proposing parties to a briefing and clarification meeting that will be held on **27 August 2010** (TBC) at ESTEC. Submission of the Letter of Intent and attendance to the briefing meeting are compulsory.

The full timetable for the AO approval cycle is detailed in Table 1.

4.2 Evaluation Criteria

4.2.1 General Criteria

- Competence and experience of the Consortium in all relevant areas (e.g. scientific, space technology, hardware and software development and technology, numerical analysis etc.) to satisfy the scientific objectives of the mission,
- Adequacy of proposed management scheme (including organigramme, the PLATO Consortium Lead, the PLATO Instrument Project Manager and the PCM Data Processing Manager) to ensure a timely execution of instrument and data processing structure development, and associated tasks including post launch support,
- Adequacy of proposed personnel and availability of a skilled and trained team and institutional support to ensure a timely execution of instrument and data processing structure development, and associated tasks,
- Previous experience of key people in managing a space instrument development programme, in scientific operations and large data processing programmes,
- Credibility and compliance of costing of proposed programme,
- Compliance with applicable management, reporting and product assurance requirements and standards,
- Scope of and resources allocated for education and outreach activities, compliant with the ESA policy in regard to Outreach activities as defined in the SMP.

4.2.2 Instruments Provision

- Scientific compatibility of the instrument with the global mission objectives of PLATO,
- Ability of a proposed instrument to satisfy its scientific objectives,

- Technical feasibility of proposed instrument,
- Technical maturity of the proposed instrument,
- Reliability and space qualification of proposed instrument,
- Technical compatibility with available spacecraft resources and mission constraints,
- Operational constraints and complexity,
- Adequacy of resources specifically assigned to interfacing to the spacecraft,
- Financial impact on ESA procured elements of the instruments,
- Assurance of adequate funding for proposed instruments.

4.2.3 SGS Contribution

- Ability to structure and describe the required work for the definition phase in order to generate the expected outputs (draft SIP, SOCD, draft SIRD),
- Coherency and robustness of the Implementation Proposal, which describes the Consortium's understanding and planning for the implementation, operations and post-operations phases.

4.2.4 Members of the PLATO Science Team

- Competence and experience, in particular in the areas related to the profile applied for,
- General experience in space science projects, in scientific operations, and large data processing programmes,
- Level of commitment for PLATO related work by the candidate PST member,
- Relevant scientific background.

5 ACRONYMS

AEU	Ancillary Electronics Unit
AIT	Assembly, Integration and Test
AIV	Assembly, Integration and Verification
AO	Announcement of Opportunity
AWG	Astronomy Working Group
BDCR	Baseline Design Configuration Review
CCD	Charge Coupled Device
DPS	Data Processing System
DPU	Data Processing Unit
EAC	Estimate At Completion
EGSE	Electrical Ground Support Equipment
EID	Experiment Interface Document
EMC	Electro Magnetic Cleanliness/Compatibility
ESA	European Space Agency
ESAC	European Space Astronomy Centre
ESOC	European Space Operations Centre
ESTEC	European Space and Technology Centre
FEE	Front End Electronics
FoV	Field of View
FPA	Focal Plane Assembly
FTE	Full Time Equivalent
FWHM	Full Width at Half Maximum
ICU	Instrument Control Unit

IDCR	Instrument Design Consolidation Review
IP	Implementation Proposal
LoS	Line of Sight
MLA	Multi Lateral Agreement
MOC	Mission Operations Centre
OIRD	Operations Interface Requirements Document
PA	Product Assurance
PCDR	Preliminary Configuration Design Review
PDF	Portable Document Format
PDPM	PLATO Data Processing Manager
PIPM	PLATO Instrument Project Manager
PIRR	Preliminary Instrument Requirements Review
PLM	Payload Module
PMC	PLATO Mission Consortium
PRR	Preliminary Requirements Review
PST	PLATO Science Team
PSF	Point Spread Function
Sci-RD	Science Requirements Document
SEL2	2nd Sun-Earth Lagrange point
SGS	Science Ground Segment
SGSID	Science Ground Segment Interface Document
SIP	Science Implementation Plan
SIRD	Science Implementation Requirements Document
SMP	Science Management Plan
SOAD	Science Operations Assumption Document

SOC	Science Operations Centre
SOCD	Science Operations Concept Document
SPC	Science Programme Committee
SSAC	Space Science Advisory Committee
SVM	Service Module
TBD	To be decided
TBW	To be written
TRL	Technology Readiness Level
WBS	Work Breakdown Structure
WP	Work Package
WPD	Work Package Description