MINUTES OF MEETING

№ 27-INASAN/2006

Project: WORLD SPACE OBSERVATORY/UV
Subject: FOCAL PLANE INSTRUMENTS, TIME SHARING POLICY, GROUND SEGMENT
Meeting venue: Institute of Astronomy RAS, Moscow Russia
Date: 27-30.06.2006

List of Participants: Appendix A
Agenda: Appendix B
Presentations: http://www.oact.inaf.it/wso/wic-jun06/wic-moscow-06.htm

The Meeting was held by initiative of Federal Space Agency of Russia. Main goals of the Meeting were declared as follows:

- To approve the list of science instruments and responsibilities
- To approve the document describing the time sharing policy

Section 1 (June 27, 2006): Technical meeting on field cameras (FC)

1. After the Roscosmos/ASI Interagency Meeting held in Rome on Dec the 21st 2005, the Italian Space Agency (ASI) has expressed interest in providing the imaging instruments to the WSO/UV telescope. As a consequence a Phase A/B1 study for the block of imagers defined as “Field Camera Unit” (FCU) is ready to start in Italy.

2. Following a preliminary study made in Russia, the FCU consists of a mechanical frame in which the imaging cameras will be hosted with electronic boxes hosted outside the instrumental compartment. The Phase A/B1 study planned in Italy will explore the allocation in the mechanical frame of: 1 SF-UV camera, 1 LF-UV camera and 1 Optical camera according to the specifications given by WSO-VIL-INST-CNF-0003 (21 Feb 2006).

3. Objectives of the Italian Phase A/B1 FCU study are: i) the technical project of FCU; ii) the definition of programmatic and cost of the FCU contribution; iii) the choice of the FCU imagers passbands; iv) a report on the key science objectives of the FCU instruments. Such a Phase A/B1 study will last 10 months. The Kick Off is foreseen in Sep. 2006.

Statements and action items about the imaging instruments (FCU):

a. Development and production of the Field Camera Unit (FCU) is responsibility of Italian side.

b. the feasibility study will be for 3 cameras: 2UV cameras and an optical one

c. the centre of the telescope FOV will be imaged by a central field camera;

d. the choice of the camera, if the SF-UV or the Optical one, and its actual layout, if it is allocated in the central well (see Appendix C, Figure 1), or if pick-up mirrors will be used, will be a result of the trade off processes occurring during the FCU Phase A study;

e. following item d, the final decision on the occupancy of the central well for part of the FCU instrumentation is expected for the end of 2006;

f. the need to reserve a slice of the space virtually devoted to the FCU to detectors of the LSS (see Appendix C, Figure 2) should be confirmed before September 2006.

g. Preliminary numbers for masses, power, volume of FCU have been given by Lavochkin

h. the FCU will be placed in the optical bench by means of 3 fixing points;

i. Field Cameras are equipped with autonomous calibration light sources, included into the FCU.

j. a technical document written in English language testifying the telescope and satellite performances (with input data for the scientific instrumentation and data on telescope interfaces) will be released by the Lavochkin Association to the participants of cooperation (deadline 15 September 2006).

k. Lavochkin suggests for the mechanical frame of the FCU to use the same material used for the optical bench (Aluminium or CeSiC)

l. Lavochkin requirements to minimize the power consumption inside the FCU
m. Lavochkin requires to minimize the heat transfer from FCU to the optical bench. This implies to dissipate heat toward external radiators.

n. Lavochkin will give to Italian team information on the volume available to PSU and DHU out of the instrument compartment, as well as specification for their mounting on the external panel (deadline: end of Jul 2006)

o. Lavochkin will release a document on the radiation environment (L2 or high eccentricity orbit)

p. Requirements about dithering if any. The WSO telescope should be able to allow dithering, being the required angular precision of the same magnitude required by the spectrographs to put targets in the slits.

q. Lavochkin needs information about the FCU operation modes to estimate the thermal budget: MCP on/off or always on, CCD with Peltier always ON, calibration mode requiring eventual lamp switching on/off, etc.

r. The procedures of imagers/telescope alignment should be discussed asap.

Section 2 (Jun 28, 2006): Status of the project: endorsements and funds

Russia (Nikolay Sanko, Roscosmos)
- Russian Federal Space Agency (Roscosmos) confirms its readiness to lead the WSO/UV project.
- The launch date for the project in the Federal Space Program of Russia 2006-2015 is the end of 2010.
- Roscosmos is ready to provide the WSO/UV project by launcher facilities.
- The NAVIGATOR platform passed the phase A/B study.

Germany (Klaus Werner, Institut für Astronomie und Astrophysik, Eberhard Karls Universität Tübingen)
- DLR’s policy for HIRDES has been a step-by-step commitment of funds based on overall progress of Spectrum-UV / WSO project. In 2000, after the positive results of WSO assessment studies performed by ESA and JPL/NASA, DLR has funded the HIRDES Phase-A study, completed in 2001. In 2002, after the Kick-off of Russian-led WSO Phase-A study, DLR has funded the HIRDES Phase-B1 study, completed in 2006.
- Before continuing with proposal for B2-phase for HIRDES, studies of WSO project and all instruments should be brought to a similar level.
- In the meantime, IAAT will make proposal for technical developments (detector electronics, optical bench material) to DLR this year.

Italy (Isabella Pagano, INAF, Catania Astrophysical Observatory, Italy)
- WSO/UV is included in Italian National Aero-Space Plan (PASN) for 2006-2008 released by ASI in Nov 2005.
- ASI is funding a Phase A/B1 study of the FCU (see Section 1 for details). The study will last 10 months. The Kick Off is foreseen in Sep. 2006.
- At the end of the Phase B1 study Italy will release the time programmatic of the FCU. At this moment we foresee that FCU cannot be ready for integration in the optical bench before the end of 2010.
- The possibility to have in Italy a science center devoted to WSO/UV data will be taken into account by ASI.
- The Italian National Institute for Astrophysics has recommended WSO/UV in its long-term plan, but warning to see a clear management plan and the progress of the international collaboration and schedule before further involvement of the Italian community.

United Kingdom (Martin Barstow, University of Leicester, UK)
- UK has a long-standing UV involvement, an active community, and specific relevant & unique expertise on high spatial resolution, large format UV detectors and pipeline data processing.
- In September 2005, WSO was part of the programme discussed by the UK scientific delegation to China.
- In February 2006 PPARC Astronomy Advisory Panel invited Prof. Barstow to present the WSO project.
- In April 2006, WSO was presented at National Astronomy Meeting.
• The UK community has to identify focus for UK proposal and develop the relevant science cases; most likely the UK contribution concerns some aspect of detector provision for the Long Slit Spectrograph and/or data processing
• Next step is to submit “Statement of Interest”, if successful, UK scientists will be invited to submit full proposal
• UK needs clearly defined time allocation rules, and to bid against a well defined role in an approved instrument
• The political organization for science is under revision in UK. There is a positive incentive in PPARC to “fully fund” existing programmes & approve new ones, and strong desire of UK government to engage with emerging powers.

Spain (Ana Ines Gomez de Castro, CSIC-UCM, Spain)
• WSO/UV has been funded by the Spain Space Plan since 2002.
• During this period a prospective study for the Ground Segment configuration has been run. Further funding requires a clear definition of partnership and technologies, especially the definition of the ground segment.
• Spain will go ahead event if ESA/ESAC does not get in. There is a funding line open through the high-level Russia-Spain bilateral agreement for collaboration in space.
• We are open to further collaboration in technological packages (filters, power supply technology).
• Information available in the Spanish web site in a month: www.mat.ucm.es/wso

China (Maohai Huang, National Astronomical Observatories, CAS, China)
• Areas of possible participation of China are:
  o Long Slit Spectrograph (LSS) (see also Section 3)
    • Proposal sent on March 15, 2006 by NIAOT
    • Investigated providers of gratings
    • International collaboration needed
    • CNSA expressed strong willingness to fund LSS
  o (Large) Ground Stations
    • A 50meter and a 40meter antenna with backend will be ready for operations in 2007
    • Built and operated by National Astronomical Obs., CAS
    • Can be used for WSO/UV as a major high-speed station
  o Science Operations Center
    • Based on experiences from participation to ESA’s Herschel Ground Segment and from implementation of the Science Ground Segment of Chinese lunar orbiter project.
    • WSO SOC in China will be capable of supporting observatory-type operations: proposal handling, operation planning, data calibration, archiving, and distribution, seamless transition between project phases, help the general astronomical community using WSO
  o Launcher and launch service
    • During the China-Russia meeting in Beijing (May 2006) CNSA made official statements:
      • At the moment CNSA cannot afford to launch WSO/UV all by itself;
      • It prefers providing commercial launch service, the cost of which is shared by all participating countries. It can provide the part of launch cost that is proportional to China’s share (excluding launch) in WSO/UV.
  o Tracking, and Mission Operation support
    • TT&C and mission operation support from China is largely connected to the provision of launch service
    • How much could China contribute WSO in this are is uncertain at the moment
    • Sharing long-term mission operation can still be considered
  o Science
    • CNSA ask to clarify China’s responsibilities and benefits in order to put WSO in the high level meeting between Chinese and Russian governments in September 2006.

Ukraine (Roald Gershberg, Crimean Astrophysical Observatory, Crimea)
• The flight set of the T-170M telescope optics - the main mirror of 1715 mm in diameter and the secondary mirror of 400 mm in diameter - manufactured by the Lytkarino optical glass firm
LZOS), will be coated by two-component (Al+MgF2) reflecting layer in the vacuum chamber VUAZ-2.6 in the Crimean astrophysical observatory.

- If it is found that the T-170M optics is not quite good for operate in UV, it will be improved in CrAO in cooperation with LZOS persons by the ion beam figuring method in the special vacuum chamber using the Crimean technology. The 1m ion chamber to improve the secondary mirror is manufactured and tested and has shown a high quality in figuring a complex optical surface up to \(\lambda/50\) for 632 nm. Crimean Obs. has the vacuum chamber for the primary mirror, and its inner equipment is under manufacturing.

- If necessary, CrAO can participate in testing and certification of the LSS.

- Ukraine is studying the possibility of participation it the Ground Segment.

**Israel and India** (Noah Brosch, Tel Aviv University, Israel)

- Israel was one of the first groups to participate in this project and has consistently allocated budgets through the Israel Space Agency (ISA) to ensure this participation.

- In the last year two notable events took place in Israel, which may affect the involvement in the WSO/UV project:
  - The founder and Chairman of ISA, Prof. Yuval Ne'eman, passed away on 26 April 2006. The new Chairman of ISA is Prof. Isaac Ben Israel. There will likely be a change of emphasis in the long-term ISA programs.
  - The government of Israel was formed only in mid-June, when the 2006 budget was approved. Only after this event are research contracts with government ministries likely to be signed.

- It is likely, but not assuredly, that the same level of low-level funding by ISA will be maintained in the near future. This will allow some form of participation at conceptual design studies, but unfortunately not at hardware design or procurement phases.

- Given the level of maturity of the WSO/UV project, and the timetable presented by the Lavochkin Industries, Noah Brosch's personal evaluation is that Israel would not be able to contribute instruments or subsystems to this mission for a launch in the 2010-2012 time frame.

- Prof. Jayant Murthy (JM) from the Indian Institute of Astrophysics (IIA) asked N.Brosch to describe to the WIC the possible Indian contributions to the WSO/UV project:
  - India has a well-developed space program that has important scientific research aspects. The topic of space research is included in India-Russia agreements and collaboration on the WSO/UV project is specifically mentioned. This agreement will allow JM future visits to Russia for furthering any collaboration to be initiated.
  - India is collaborating with Israel on launching the TAUVEX telescope complex on-board the Indian GSAT-4 technology demonstrator satellite.
  - India is preparing the AstroSat mission for a 2008 launch. AstroSat contains two 40-cm diameter telescopes for the UV (UVIT). The proposal for possible contributions to the WSO/UV project relies partly on heritage from the collaboration based on TAUVEX (to be launched in 2007) and from the AstroSat project.
  - The possible Indian contributions to WSO/UV pertain to the following fields:
    - Mechanical and thermal design and fabrication. This would require the development of a proposal including a strong science case that has to be submitted by JM to the Indian Department of Science and Technology (DST). If approved, DST would fund JM who then will ensure the Indian participation through IIA and external subcontracting.
    - Optical design. This would rely on in-house capabilities at the IIA. The necessary support from DST would therefore be reduced.
    - Electronics fabrication. This would rely on external contractors from among the high-technology Indian firms and would require support from DST, as explained in point (i) above.
    - Software. IIA is responsible for the reduction pipeline of TAUVEX. This is done using mainly in-house programming capabilities and the pipeline will also serve the needs of UVIT. It is conceivable that some of the software could be modified for WSO/UV and other s/w items could be specifically developed.
    - Calibrations and testing. In the context of the UVIT on AstroSat project, IIA has developed extensive facilities located in Bangalore. These include a Class 1000 clean room (approximate surface area 36m²) equipped with Class 100 laminar flow tables. The clean room has a vacuum chamber that is a cylinder of 2-m diameter and 6-m length. The chamber can reach a vacuum of dex(-6) torr, has Al+MgF_2 coated mirrors for excellent UV work, and the payload housed in the chamber can be illuminated by an 18-cm collimator. The calibration facility is equipped with spectral lamps, with an Ebert-Fastie monochromator, and with NIST-traceable calibration
Section 3 (Jun 28, 2006): Status of the project: time schedule, platform, payloads

- **General Time Plan** of the Project (Alexander Moisheev, Lavochkin Association, Moscow, Russia)
  See presentations of A. Moisheev (*Moisheev.ppt*), who presented a time schedule for the Project with launch date end of 2010.
  General comments and questions about the time schedule were related to possibility to keep along this plan with provision of science instruments.

- **Navigator Platform** (Vladimir Babyshkin and Alexander Moisheev, Lavochkin Association, Moscow, Russia)
  The Navigator Platform is being designed and models are under testing according to the time schedule. See presentation *NV platform rus.ppt* (unfortunately in Russian) for technical details.

Roscosmos and Lavochkin Company inform that though a standard option for the WSO/UV is an orbit around Lagrangian point L2 there is an option of the highly eccentric orbit (HEO) with apogee about 300 000 km. Major advantages and disadvantages of the HEO are as follows:

__Advantages:__
- The existing design of the NAVIGATOR platform is fully fitted to the HEO. This is the quickest and cheapest way to have a completed platform in time. The unified NAVIGATOR platform has been designed for series of the projects on circum Earth orbits. For L2 orbit some important subsystems (first of all a radio link subsystem) should be totally changed. This will require more time and money.
- A limited number of ground stations can be used. Even one station option is quite possible.

__Disadvantages:__
- Frequent passages through the radiation belts as well as thermal shocks because of occultations (especially during the first 10-12 months of the mission when perigee distance is less than 50 000 km). This will pose special requirements for the science instruments and will decrease efficiency of the mission (i.e. total time for observation will be somewhat smaller).

Roscosmos and Lavochkin Company do not insist on this option but suggest to the partners to discuss this item once more.

- **HIRDES Spectrographs**, Phase B1 Study (Norbert Kappelmann, Institut für Astronomie und Astrophysik, Eberhard Karls Universität Tübingen, Germany)
  N. Kappelmann has presented main results of Phase B1 study performed in Kayser-Threde Co. and IAAT. See presentation *HIR-KT-HO-009 issue 1 Final Presentation.pdf*. Work was performed properly and now it is to be continued. This depends on the general progress of the project (see SECTION 2 – statements of German side).

- **A Proposal of Long Slit Spectrograph** for WSO/UV (Zhongwen Hu, Nanjing Institute of Astronomical Optics and Technology, National Astronomical Observatory of China, CAS)
  - The following variants of the LSS Optical Design are presented for the consideration
    - variant 1 – version of Dr. Terebizh;
    - variant 2 – version of Dr. Terebizh, equipped with movable mirrors and redundant detectors;
    - variant 3 – version of Prof. Panchuk – Echelle layout, equipped with fixed elements;
    - variant 4 – version of Dr. Hu – spectrograph equipped with holographic gratings.
  - All the variants should be considered to account for the following initial data:
    - spectral resolution from 500 up to 2500;
    - spectral band from 115 up to 320 nm
  - Chinese side performs calculation of the 4 variants of LSS Optical Design (deadline: October 1, 2006)
  - After the basic variants of LSS Optical Layout selection Chinese side decides which variant to use for LSS;
• Chinese side develops the LSS arrangement and preliminary size drawing corresponding to selected basic variant (Deadline: 50 days after the variant is determined or by follow-up email).

• The Field Camera Unit (Salvatore Scuderi, INAF, Catania Astrophysical Observatory)
  o A report on the results from the technical meeting on the FCU is given to the whole WIC. See Section 1 of this minute.

**Statements and action items:**
  o All participants of cooperation on WSO/UV project shall coordinate with INASAN the work schedules before October, 30, 2006
  o INASAN is responsible to investigate benefits and drawbacks of a highly-eccentric orbit for the WSO/UV mission in place of operation from the Lagrangian point L2. A final decision on the operational orbit is due before September 15, 2006. The orbit has an apogee 300000 km.
  o To improve the Fine Guiding Sensors performance Russian side offers German party to consider a possibility of increase of the Guide Sensor heat dissipation from 0.6 W up to 5 W.
  o INASAN transfers the T-170M Telescope Optical Design to Chinese side for performance of the additional optical layout calculation.
  o Lavochkin Association gives Initial Data on the LSS and Telescope interfaces that are necessary for the LSS development (deadline: Sep 15 2006).

### Section 4 (Jun 29, 2006): Status of the project: science management plan

• A Proposal for a Science Management Plan (Isabella Pagano, INAF, Catania Astrophysical Observatory, Italy)
  o The time sharing policy and draft of the science management plan as elaborated by Willem Wamsteker have been discussed.
  o The draft document (Appendix D) has been adopted.

### Section 5 (Jun 30, 2006): Status of the project: Ground Segment

The attendants to the Ground Segment Meeting in Moscow, June 2006 agree in:

• The mission will have a prime MOC that will be in Russia run by ROSCOSMOS. The MOC technology will be open to be defined by partners in the WSO/UV project. The official language of the project is English.

• A backup MOC it is necessary. This backup MOC may be located in Spain or China (and supported by the respective country). This backup MOC may become prime MOC, under ROSCOSMOS responsibility, if the functionalities and performance of the back-up MOC allows it.

• The primary SOC of the project will be in INASAN. This SOC should guarantee the connection between the national science groups and the WSO/UV.

• There will be National Science Centers with different functionalities depending on the country. These functionalities may go from control and calibration of data from a given instrument by the instrument developers to just facilitate the access to observation with the WSO/UV and data processing. It is the responsibility of each participant country to develop its own SOC and implement the facilities required.

• The primary SOC will act as a quality control and "security valve" for the project with the collaboration of all the participant countries.

The participants agree in the following actions:

1. China, Russia and Spain agreed to set up Working Group for WSO Ground Segment Assessment Study implementation. List of working group members will be prepared by Yu. Zaiko (Russia), A. Gomez de Castro (Spain), Maohai Huang (China) (15.07.2006).
2. Spain will provide a list of documents and the table of contents of every document for the Phase A (31.07.2006).
3. Russia will prepare the draft of documents (15.09.2006).
4. Russia and Spain will organize special meeting involving all instruments team representatives to consider draft of the GS Assessment Study documents and to prepare time schedule and task distribution for Phase A (Mid-October)
List of Participants of the WSO/UV WIC Meeting
Moscow, June 27-30, 2006

1. Noah Brosch (Israel)
2. Alessandro Gherardi (Italy)
3. Isabella Pagano (Italy)
4. Salvo Scuderi (Italy)
5. Klaus Werner (Germany)
6. Norbert Kappelmann (Germany)
7. Ana Ines Gomez de Castro (Spain)
8. Martin Barstow (UK)
9. Juan Carlos Vallejo (Spain)
10. Rafael Vazquez (Spain)
11. Francisco Barreiro (Spain)
12. Suijian Xue (China)
13. Zhongwen Hu (China)
14. Maohai Huang (China)
15. Xiaowei Liu (China)
16. Sergey Voronkov (Russia)
17. Roald Gershberg (Ukraine)
18. Yuri Zaiko (Russia)
19. Aleksander Isupov (Russia)
20. Vyacheslav Makarov (Russia)
21. Aleksander Moisheev (Russia)
22. Vladimir Panchuk (Russia)
23. Aleksander Pinchuk (Russia)
24. Nikolay Sanko (Russia)
25. Evgeny Skripunov (Russia)
26. Aleksander Tkachenko (Russia)
27. Boris Shustov (Russia)
28. Mikhail Sachkov (Russia)
29. Sergey Volkov (Russia)
30. Elena Kilpio (Russia)
31. Andrey Shugarov (Russia)
32. Valery Melnikov (Russia)
33. Aleksander Yaskovich (Russia)
34. Roman Arkhangelskij (Russia)
### Plan of the meeting

**"World Space Observatory/UV Implementation Committee Meeting"**  
Moscow 27 June – 30 June 2006

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<th>Issues and Subject of presentations</th>
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| **Tuesday 27 June**  
INASAN | SECTION 1 | Technical meeting on field cameras (FC) | Participants of the FC Meeting  
I. Pagano  
S. Scuderi  
A. Gherardi  
N. Brosh  
B. Shustov  
A. Moisheev  
M. Sachkov  
E. Skripunov  
V. Makarov  
A. Tkachenko  
A. Shugarov  
A. Yasovich  
A. Isupov  
S. Voronkov  
V. Panchuk  
………. | - "The Science case for the UV and optical cameras: instrument requirements" - Isabella Pagano (20 min)  
- "The Field Camera Unit (italian contribution to WSO): Project definition, organization, planning" - Salvatore Scuderi (20 min)  
- "Interface of the Telescope and scientific instruments" - E. Skripunov (40 min)  
- Experience with the design of camera unit – A. Isupov (20 min)  
- Discussion |
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<td>10.00 – 11:30</td>
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<td>Status of the project: endorsements and funds</td>
<td>B.Shustov, N.Sanko, B.Shustov, K.Werner, I.Pagano, A.I.Gomez de Castro, M.Barstow, N.Brosh, S.Xue, R.E.Gershberg</td>
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<td>How to approach the rest of the world?</td>
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<td>11:45 – 13:00</td>
<td>SECTION 3</td>
<td>Status of the project: time schedule, platform, payloads</td>
<td>A.Moisheev, A.Moisheev, N.Kappelmann</td>
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<td>General time plan of the project</td>
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<td>Long Slit Spectrorgraph</td>
<td>Hu Zhongwen, R.Gersberg, M.Barstow, N.Kappelmann</td>
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<td>The Field Camera Unit</td>
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<td><strong>Status of the project: science management plan</strong></td>
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<td>Ground segment (GS) technical meeting</td>
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<td>10.00 – 11:30</td>
<td>Overall aspects concerning the Ground Segment definition</td>
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<td>Structure of GS</td>
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<td>Technical requirements for the ground segment tracking stations</td>
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<td>The MOC and SOC technical definition. Decisions to be made</td>
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<td>Planned speakers:</td>
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<td></td>
<td>Ana I. Gomez de Castro</td>
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<td></td>
<td>Yu.Zaiko</td>
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<td>F. Barreiros</td>
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<td>Juan C. Vallejo</td>
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<td>11:30 – 11:45</td>
<td>Coffee break</td>
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<td>11:45 – 13:00</td>
<td>Discussion on GS and Science Management Plan</td>
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<td>Representatives of all participating countries are invited</td>
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<td>13:00 – 14:30</td>
<td>Lunch</td>
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<td>14:30 – 16:30</td>
<td>General Discussion</td>
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<td>16:30 - 16:45</td>
<td>Coffee break</td>
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Figure 1. Instrument compartment.

Figure 2 – A view from the top of the FCU space in the optical bench

Central well

Area of the Imager Unit allocation

LSG detectors

(TBC)
1. The partners agree to develop the time sharing policy for the first 3 years of the project. This policy will be reviewed for the next years.

2. The telescope time available for astronomical observations will be divided in:
   - Guaranteed time:
     i. for the free use of the funding bodies (FBP)
     ii. for the core or observatory program (CP)
   - Open program to the whole astronomical community worldwide (OP)

3. The distribution of time for astronomical observations during the first year after the performance verification phase will be:
   - 10% OP
   - 45% CP
   - 45% FBP

4. FBP will be assigned proportionally to the financial contribution to the project.

5. The core programme is defined and participated by all the funding bodies.

6. The distribution of time for astronomical observations for the second and the third years will be:
   - 30% OP
   - 30% CP
   - 40% FBP
   *To be settled. No agreement reached*

7. A general policy for targets of opportunity will be defined.

8. The open time will be allocated by an International Committee including participants from the funding bodies and chaired by Russia.

9. Data rights:
   - Proprietary period for OP and FBP data is 1 yr after the processing and delivery of the data.
   - The proprietary period for the CP data is defined in the proposal and approved at the time the CP proposal is approved.
   - There is not proprietary period for serendipitous observations (either obtained with FCU, LSS or HIRDES).

Targets of Opportunity (ToOs) data rights will be defined.