

MID-TERM REVIEW MEETING

Wednesday, October 14, 2015

The Royal Astronomical Society, London, UK

REPLY TO THE REVIEWER'S QUESTIONS

1. Are the PU deliverables of the reporting period available in the project website?

The PU deliverables are listed below. Only those highlighted in yellow are to be accomplished at the moment of this review. They refer to the meetings, schools and workshops. The information has an open-access nature. The corresponding web-pages are listed in the WP10 presentation (slide 9)

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|-------|---------------------------|---|------|---|----|----|
| D10.4 | Report on public outreach | 1 | 1.00 | R | PU | 36 |
| D10.5 | Minutes of Board Meetings | 1 | 1.00 | R | PU | 48 |
| D10.6 | Report on public outreach | 1 | 1.00 | R | PU | 48 |

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| D20.3 | Final report on pipeline guidelines | 4 | 1.00 | R | PU | 36 |
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| D20.5 | Report on the VO tools prototype | 7 | 1.00 | R | PU | 48 |
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| D20.7 | Report on coordinated observations | 2 | 1.00 | R | PU | 48 |
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| D30.1 | On-line meeting proceedings | 3 | 1.00 | O | PU | 18 |
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| D30.3 | Training schools material | 3 | 1.00 | O | PU | 18 |
| D30.4 | On-line meeting proceedings | 3 | 1.00 | O | PU | 36 |

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| D30.4 | On-line meeting proceedings | 3 | 1.00 | O | PU | 36 |
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| D30.6 | Training schools material | 3 | 1.00 | O | PU | 36 |
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| D30.7 | On-line meeting proceedings | 3 | 1.00 | O | PU | 48 |
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| D30.9 | Training schools material | 3 | 1.00 | O | PU | 48 |
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| D40.1 | Report on workshops | 30 | 1.00 | R | PU | 18 |
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| D40.3 | Report on workshops | 30 | 1.00 | R | PU | 36 |
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| D40.4 | Report on workshops | 30 | 1.00 | R | PU | 48 |
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| D60.5 | Dual-beam polarization modulator | 6 | 1.00 | O | PU | 36 |
| D60.6 | Dual-beam polarization modulator: test report | 6 | 1.00 | R | PU | 48 |
| D60.12 | Microles-fed system prototype: tests report | 6 | 1.00 | R | PU | 48 |

2. Please provide more details on the outreach and dissemination of the project activities to the Industry and the engagement of external Industrial partners/customers, especially SMEs. Same request also for Policy makers.

- Dissemination to the industry of SOLARNET transferable technologies under WP40 was done by a number of Workshops, brochure elaboration and database of SOLARNET technologies presented through ESA broker Network, Sun knowledge transfer group, Eurofusion and International events ex. SPIE Canada.

- BtoB events has been also organized within potential receivers of SOLARNET technologies.

- SOLARNET was also promoted to space industry by publication on INFOESPACIO news, ESA TT Space Solutions,

- A more dedicated WP for outreach and dissemination of SOLARNET project is the WP10 (see Alberto Outreach list)

3. Do you foresee any major deviation for the forecoming period as far as the technical objectives of the project are concerned? If yes, please elaborate.

The most important deviations are those related with the fabrication of the image slicer (WP60.2, for which a delay of about one year has appeared due to an unexpected change in the optical design to meet the manufacturing tolerances), with the thermal control of FSP II (WP60.4, for which a delay of 6 months has been accumulated), and with the heat rejecter prototype for GREGOR (WP70.3.2, for which 10 additional months are required). In the three cases, this delay does not avoid accomplishing all the goals within the time frame of the project, although with a tighter schedule. The rest of the WPs are within expected schedule or small deviations.

4. To what extent do you have mature plans underway among the consortium partners for joint or individual exploitation of project results after project conclusion? Please elaborate.

The project partners form part of a broader community, represented by EAST (European Association for Solar Telescopes), that includes 15 European countries. All members share the same final goals, of which two most important ones are the improvement of the capabilities of present telescopes and the final construction of EST. Collaborations will continue in the future with them in mind. An example is the present EU project GRESt (2015-2018), aimed at developing tools for new generation instrumentation to be finally applied to EST.

5. Please elaborate on linkages with other projects, complementarities identified and possible future plans for joint activities.

Our project is facing developments that certainly are of interest for other astronomical projects. Night-time astronomy is starting to use Fabry-Perot interferometers for narrow-band imaging and this is a field where solar physics has a long tradition. The development of accurate large etalons (as those developed in SOLARNET, needed for large telescopes) can be useful for night-time astronomy. The same can be said of the high-resolution slicers or the MCAO developments we are addressing. But, certainly, even if potentially there is room here for possible synergies and collaborations with other projects, this is an aspect that we need to improve.

6. Do you foresee a major social impact and/or a major social challenge being addressed thanks to the project?

Probably the largest impact will be produced in the Canary Islands environment in terms of outreach. The Canarian society is very friend of astronomy and regards positively all developments related to Astronomy. In particular, we can mention the SolarLab experiment which consisted of distributing small telescopes at schools over the seven island. The telescopes are equipped with an H-alpha filter and have stayed one week at each school. During that week, students had the opportunity to take pictures of the sun and observe the evolution of solar structures. A prize was given to the school that best described this activity in video produced by the students. This activity was very successful: 171 centres participated in this initiative, with around 80,000 students.

7. Have the tentative recommendations of Deliverable D.20.2 (Prel. Report on Pipelines Guidelines) been addressed and to what extent?

In some cases: No. ("get an agreement")

In the other cases: Not clear, they might have in some places.

(see presentation)

8. Please provide more details on plans and results so far in pursuing improved coordination with US & Middle / Far East ground based solar physics (WP 20.4 "Coordination with Other Infrastructures")

The main facilities for coordinating a world-wide campaign in 2016 are the BBSO NST (1.6m) and the Yunnan Observatory NVST (1.0m) at Fuxian Lake, together with GREGOR (1.5m) in the Canaries. We would like to add the DST and the SST. THEMIS will be unavailable in 2016.

KIS has an MoU with NJIT/BBSO for collaboration on development of 1.5m class solar telescopes, joint science campaigns and development of related techniques. We have also an informal agreement to carry out a joint campaign. We are in contact with Yunnan Observatory to include the NVST. Formal letters to this effect will go out this fall. A proposal for observing time will go to the German TAC this fall as well.

The goal is to carry out a coordinated campaign during the summer of 2014 for 14 days (half a solar rotation), where an agreed region of interest is observed as continuously as possible with as many instruments as possible. We will make use of space observatories as available. We will also inform other solar observatories about the campaign and invite them to support. All data will be shared by all participants.

9. Has the proposed characterization of the gluing between the lugs and the plates in D60.1 (Prel. Report of FEA of Large FPI) taken place?

The characterization of the glue thickness between lugs and plates has been performed by analysing the modal response of the cavity under different glue layer thickness. The main result is that the first resonant mode (most important because involves the plate distance) places at about 573 Hz, for a thickness of glue of 0.2mm, and at about 2131 Hz when the glue layer thickness tends to zero. The expected operative conditions of the plates require a setting frequency of few Hz (10-20Hz).

Regarding the characterization of the gluing between the lugs and the plates, in order to better understand the typical mechanical characteristics, we decided to follow the ICOS usual construction procedure. The prototype under construction has an optical contact between plates and lugs (i.e., null thickness of the glue) with a final behaviour close to the stiffer one.

Furthermore, to what extent does the footnote of D60.1 "All information contained in this document is property of ADS International S.r.l. All rights reserved" reflects foreground knowledge of the project?

This is part of the template ADS documents. ADS will remove this note from SOLARNET documents. The signed SOLARNET Consortium Agreement sets out the relationship between the Parties and the organisation of the work.

10. Is the work related to the remaining design work and manufacturing supervision of the FSP II camera housing and the dual-beam polarization modulator (D60.5, D60.6) materialized as planned?

The design of the housing of the FSP II camera had to undergo a revision to solve problems with the sensor cooling that we had identified during thermal tests with a sensor dummy. The thermal problems are now under control. A manufacturing slot with an industrial company (Astro Feinwerktechnik Adlershof GmbH) has been reserved and the delivery of the housing is expected by the first half of January 2016, which will then allow us to meet the delivery schedule of the whole FSP II system by March 2016. The manufacturing will be supervised by the mechanical engineer in our institute (MPS) who has been responsible for the design.

The dual-beam polarization modulator (D60.5, D60.6) will be implemented as an upgrade of the already existing single-beam modulator, which has been developed for the FSP I prototype and which has shown an excellent performance during the FSP I test campaigns at the VTT solar observatory. Work on this upgrade (manufacturing of a polarizing beam splitter device) will start in January 2016 and will be completed for the first-light science observations in mid-2016. In the meantime, until completion of this upgrade, all verification tests on the new FSP II camera will be done with the current single-beam modulator version.