

REPORT ON THE STATUS OF SOLARNET WORK PACKAGES

(January, 2014)

The SOLARNET Project Office has prepared, in interaction with the Work Packages (WP) leaders and with the technical manager, a brief report which aim is to update the status of the tasks and activities involved in each WP.

WP10. PROJECT COORDINATION AND MANAGEMENT

- Accession of partners to the Grant Agreement. All related documents were sent to the European Commission. The GA includes partners involved, start and end dates of each WP, person-month in WPs per partners, etc. Finally, 32 beneficiary's institutions accessed to GA.
- Transfer of EC advanced payment to the SOLARNET partners, according to the budget and EC distribution per partners, and taking into account the agreement of Kick-off Meeting (April 2013) to keep 145 000,00 € (5%) at the IAC for future transfers to partners that have run out of money before the next release of funds.
- Recruitment of the project manager. There was recruited a project manager. His name is Alberto Escobar and he joined to the Project Office on the second half of October 2013. He is taking care of all matters related to the day-to-day of the project.
- Interaction face to face with SOLARNET partners and WP leaders, and via email, phone, Skype-conference, etc. to provide them support on management issues and EC guidelines for the fulfillment of the Grant Agreement.
- Milestones and deliverables. According to the GA, two milestones were achieved in 2013:

MS1 - Project kick-off Meeting (M1). The kick-off meeting was held in Brussels on April 8-10, 2013. All related documents –presentations and minutes– can be found at the private area of SOLARNET Webpage (Board Documents).

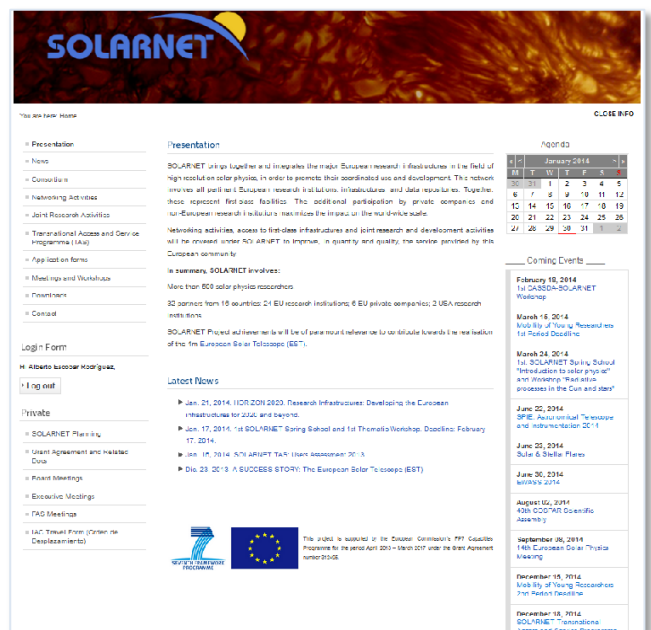
MS2 - Project Webpage (M3).

The SOLARNET website was developed and improved (www.solarnet-east.eu).

The webpage has public and private sections, and different access levels. Both sections were organized and improved. There are documents and other pieces of information for downloading in the public section as well as in a private one.

It was included a calendar or agenda, information about coming events, related with SOLARNET and with solar physics in general, a section with presentations at workshops and meetings, a section about latest news, etc.

The updating of the webpage is going good but it requires the contribution of all SOLARNET related people to keep the website fresh and updated.



SOLARNET Website (Homepage)

In the table below can be seen the deliverables and milestones to achieve in 2014.

Month	D – Deliverables M – Milestones	WP	Nature
M12 - March	MS7 Analysis of MFBD and Speckle image restoration strategies	WP50	-
M18-September <i>1st Project Reporting Period</i>	D10.1 Minutes of Board meetings	WP10	Report
	D10.2 Report on public outreach	WP10	Report
	D20.1 Reports on the TAC tasks and the TAS Programme	WP20	Report
	D20.2 Survey document –State of the art of existing pipelines and procedures– Preliminary report on pipelines guidelines	WP20	Report
	D20.3 Document on standards for data archiving and VO	WP20	Report
	D20.6 Report on the facilities for coordination	WP20	Report
	D30.1 On-line meeting proceedings	WP30	Other
	D30.2 Progress and final reports issued by host institution concerning short stays	WP30	Report
	D30.6 Training schools material	WP30	Other
	D40.1 Report on workshops	WP40	Report
	D50.1 Status requirements and development of the instruments pipelines	WP50	Report
	D60.1 Preliminary report of FEA of large FPI	WP60	Report
	D60.2 Image slicer design	WP60	Other
	D60.3 Microlens-fed system design	WP60	Other
	D60.5 1k x 1k pnCCD conceptual design	WP60	Other
	D70.1 Results of MCAO correction simulations	WP70	Report
	D70.2 AO prototype for THEMIS and test report	WP70	Report
	D70.3 Results of site-testing campaign at ORM and OT	WP70	Report
	D70.4 Results of the optimization of EST design base on CFD analysis	WP70	Report
	D70.5 GREGOR heat rejecter prototype and test report	WP70	Report
D90.1 Access to ground-based telescopes. Amount of access	WP90	Report	
D100.1 Assessment on access to databases	WP100	Report	
MS9 PnCCD conceptual study	WP60	-	

SOLARNET: Deliverables and Milestones 2014

- Activities related to the TAS Programme: The Project Office continued supporting tasks within TAS, in particular, the management of travel and accommodation of the astronomer awarded with observing time at the telescopes located at the Canary Islands. There were prepared two reports on this issue: a preliminary report with statistics on access to THEMIS, SST and VTT (see further information on WP20), and a brief report with the main results obtained from an user assessment questionnaire sent to the astronomers taking part in the 2013 TAS campaign, and answered by the majority of them. Both reports can be seen at the SOLARNET webpage.

WP20. INTEGRATED OPERATION AND EXPLOITATION OF SOLAR PHYSICS FACILITIES

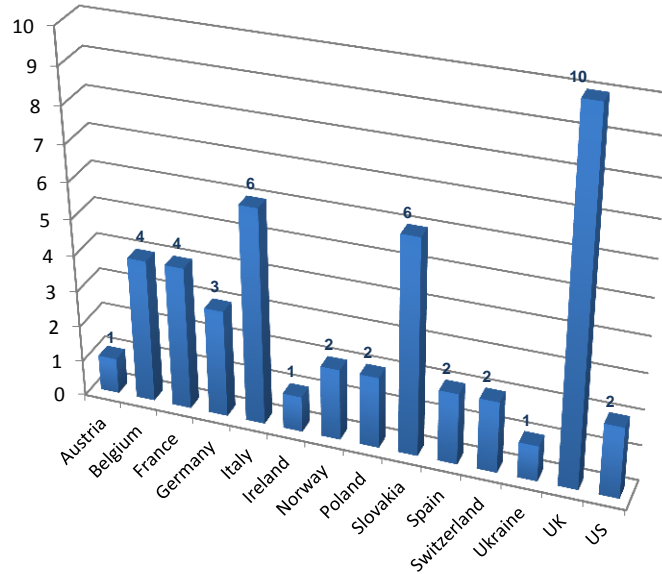
- WP20.1. WP20.1a (PI mode) and WP20.1b (Servicing mode).

WP20.1a: ACCESS program for THEMIS, SST, VTT, and GREGOR (PI mode)

A preliminary report with statistics on the amount of access provided during 2013 at THEMIS, SST, and VTT has been produced. This report is available at the website.

During 2013 a total of 82 observing-days have been supported to THEMIS, SST, and VTT telescopes, i.e. 30, 40 and 12 days respectively. That represents 26,18% of the expected amount of access for the SOLARNET four-year grant agreement.

A total of 46 astronomers from 14 countries benefited from this access to the aforementioned telescopes. 15 users received travel and subsistence grants to be on-site during the observations (around 20 k€); 60% were new users. Eight groups (projects) were involved.



TAS 2013: Nr. of users/country of home institution

GREGOR: There is no possibility to start science observations in 2014 (the plan was to provide SOLARNET access time by Q3 & Q4). Anyway, it is under discussion to include, or not, two additional requirements for the provision of the access to GREGOR:

- (a) An instrument scientist of the used instrument should be Co-I in the proposal.
- (b) Scientific publications with data should have people from the GREGOR consortium as coauthors.

- WP20.1b: ACCESS program with IBIS and ROSA at DST (Servicing mode)

The Call for proposals was launched on April 15, 2013. A total of 17 days were offered (21,25 % of 80 total promised over the 4 years contract). 8 teams/projects were received and 6 of them were performed. Some statistics summarizing the 2013 service mode campaign can be seen in the table below.

Number of Principal Investigators (PI)	6
PIs Nationalities	2 UK, 2 DU, 1 SP, 1 CZ
Number of users, including PIs	21
Users Nationalities	6 UK, 3 CZ, 2 USA, 1 IT, 5 SP, 4 DE
New users (IBIS)	15 (3 PIs + 12 Cols.)
New user (ROSA)	17 (5 PIs + 12 Cols.)
INAF effort	≈ 3 p-m, equivalent to about 14 k€
QUB effort	≈ 4 p-m, equivalent to about 19 k€

- WP20.2 Guidelines for pipeline development

At the FAS Meeting held in Stockholm on November 8 was presented the outcome of a survey about all existing data pipelines. The survey included 12 instruments:

Imagers: 8 (6 double or triple FPi NB imagers; 1 SDP spectroimager; 1 mul2channel BB imager)

LS(s): 4 (2 vis/IR spectropolarimeters, 1 IR polarimeter, 1 high precision radial velocity device)

Polarimetry (9) / No Polar (3)

The presentation with main results and comment can be found at 1st FAS Meeting (private area of SOLARNET website). Other complementary information about pipelines can be found later in WP50.

- WP20.3 Data archives and Solar Virtual Observatory

There was established Google Doc working document that will evolve into report(s).

VSO requirements: meeting @ MSSL November 26, follow-up of a teleconference discussion.

Usability requirements: schedule similar meeting.

There are two data archives' deliverables expected, one by September 2014 and another by October 2015.

Data format will be defined for instrument developers.

- WP20.4 Coordination with other infrastructures

No status report yet. This issue will be address in the next FAS Meeting.

- WP20.5 Novel queue observing mode in solar physics.

No status report yet. The plan is to discuss and study the problem of queue mode observing, aiming for a test run on one of the Canary Island telescopes in the observing season of 2016.

WP30. SOLAR PHYSICS NETWORK

- The WP30 has three sWPs: 30.1 Meetings, 30.2 Mobility, 30.3 Training (Schools)

The 1st SOLARNET - 3rd EAST/ATST Meeting on “*Synergies between ground and space based solar research*”, was held in Oslo 5-8 August 2013, organized by UiO. Presentations available at <http://folk.uio.no/matsc/oslo-13/program.html>

The 2nd SOLARNET - 4th EAST/ATST Meeting on “*Solar and stellar magnetic activity*” will be held in Palermo, Italy (November-December 2014, TBD). INAF is responsible for the organization.

It was necessary to postpone the dates of the Schools and other Meetings because the partner institution (UWRO - Poland) in charge to organize the first one could not do it on the expected date because other commitments. The first School is now scheduled by March 24th - April 4th. The announcement was launched on 17th January 2014 (<http://school.astro.uni.wroc.pl/>).

A document containing some useful information for the organizers of Meetings/Schools has been prepared by the Project Office and WP30 leader, and distributed.

Concerning the WP on Mobility, successful applicants for the first two calls have been selected. Information on these mobility grants is provided below.

For the first period (July 2013-December 2013) two proposals were received. Given that four positions were available, and that these two proposals fulfilled the requirements, the SOLARNET Mobility Evaluation Committee decided to approve them.

Both astronomers completed their training stay at host institutions:

Name	Nationality	University PhD	Host Institution	Topic	Duration
Christopher Nelson	United Kingdom	University of Sheffield	National Solar Observatory	Ellerman bombs	4 weeks
Eamon Scullion	United Kingdom	University of Sheffield	Queen's University of Belfast	Alignment DST-ROSA	10 weeks

For the second period (January 2014-June 2014) six proposals were received. Although four positions were available for this period, the SOLARNET Mobility Evaluation Committee decided to approve five because they absorbed one available position from the last call that is still pending of some remaining budget to cover it. In the table below can be seen the details of the five selected proposals; three of them started in January.

Name	Nationality	University PhD	Host Institution	Topic	Duration/Expected starting date
Iker Sánchez	Spain	Instituto de Astrofísica de	Instituto de Astrofísica de	Inversions with SRI	8 weeks 19/01/2014
Ivan Milic	Serbia	Astronomical Observatory	Centre National de la Recherche	2D/3D radiative transfer	8 weeks 06/01/2014
Petros Syntelis	Greece	Academy of Athens – University of	University of St. Andrews	MHD models of flux emergence	14 weeks 15/01/2014
Rebecca Hewitt	United Kingdom	Queen's University of Belfast	Università degli Studi di Roma Tor Vergata	Magnetic bright points	8 weeks 24/03/2014
Mariachiara Falco	Italy	Università degli Studi di Catania	Kiepenheuer-Institut fuer Sonnenphysik	Magneto-convection in sunspots	14 weeks 01/04/2014

WP40. INNOVATION TOWARDS INDUSTRY

- TECNALIA sent out an email to all SOLARNET partners describing the outline of the work to be done in WP40 and a request for their technology description inputs. The email included two templates for the partners to use.
 - The first one was a template to describe a technology need, so that if any SOLARNET partner requires a technology that is currently unavailable to them, TECNALIA can use the description to approach other industries for potential “spin-in” solutions.
 - The second was a technology description template (based on the format used for the Enterprise Europe Network and ESA Technology Transfer Network databases) in which the partners could complete full details of existing technologies that have potential for spin-out to other industrial areas.
- To date TECNALIA has received the following technology responses, both from the Department of Physics, Università degli Studi di Roma Tor Vergata:
 - FORS: a prediction-based servo loop control algorithm for adaptive optics systems
 - Fabry-Perot Interferometer Prototype
- TECNALIA has requested that all partners who have previously expressed an interest to promote existing technologies as well as those under development within SOLARNET to contact the IAC for any help they need with filling out the templates.

It is clear that it is needed to approach all the partners to help them with the completion of these forms. It needed technology descriptions to be able to further promote them at selected workshops and as well as at SOLARNET events. WP40 will benefit from the inputs of the partners – initially with regards to their existing technologies but also to those developed within SOLARNET and so it will be contacted them again to help with the forms and it will be also arrange individual meetings to further discuss their requirements.

- Jesús Marcos presented “Technology transfer in Astrophysics instruments: a way of innovation towards industry” at the “Encuentros Astrofísica-Empresa” (Bilbao, 15 July 2013), which described several examples of successful transfers from Astrophysics to terrestrial applications. He then described the goals and objectives of the SOLARNET project before focusing on the work related to development and transfer of technologies developed within the project.

A significant improvement in the development and achievement of this WP is expected in order to fulfill our commitments with the European Commission.

WP50. TOOLS FOR INNOVATIVE DATA HANDLING

- WP50.1 Reduction pipelines (RP): General pipelines. Work on the pipelines has started but the common work will wait until the respective committees (WP20.2, WP20.3) start producing directives. WP50 and WP20 are strongly linked, and a special effort for coordination needs to be made. Currently, the situation of the project setup appears strange in the sense that RSAS is supposed to lead this WP50 on paper but in reality the "brain" is in WP20. Furthermore, there are many further activities going on in developing pipelines for ground-based instrumentation. One workshop which is of interest for WP50 and WP20 is the CASSDA workshop, taking place February 18-20, 2014 in Freiburg. This workshop will serve as one of the workshops mentioned in the WP.
- WP50.1.2 RP: Data compression. No status report. The only information we have is that this sub-work package is on schedule.
- WP50.1.3. RP: Image restoration. So far this activity has not started.
- WP50.2 SVO. Work will start once the planning (WP20.3) is done.

WP60. ADVANCED INSTRUMENTATION DEVELOPMENT

- WP60.1 Large diameter Etalon Development

At the beginning of October UTOV started a contract with ADS International to complete the work on the final FEM model for a large Etalon. First results of the simulation of the present FEM model of the large Etalon were analyzed. This model was created during a first collaboration between INAF-OA and ADS in the framework of the ATST project. The simulation has been performed on the basis of a pure mechanical (i.e., without capacitance-stabilisation) Large Etalon FEM model simulating a rapid modulation (30Hz) between two very distant spectral points. The spectral positions correspond to a modulation of 1.8 μm of the cavity distance. These simulated conditions are very demanding. However, they are a good test for the structure of the Large Etalon. The results pointed out that there is a need of mechanically strengthen the present structure in order to reduce the vibrations of the central part of the Etalon. The team at ADS will create a new design in a few weeks for a new series of simulations.

- WP60.2 Image slicer for 2D spectroscopy

Designing slicer for GREGOR: The GREGOR optical laboratory offers only limited space. Work is currently going in finding alternatives for the scanning system that will be coupled in. Once this problem is solved a scanning system will be manufactured. There is regular interaction between the researchers and the respective workshop. Furthermore internal documentation is available.

- WP60.3 Microlens-fed spectrograph

Basic progress has mostly been negative, in particular that none of the standard optical design packages tried work out of the box. As a consequence the coding is done by the researcher team themselves. This is slow but at least it works. The design of the microlens assembly has been narrowed down to a concept based on a double MLA design. The design that appears to be needed consists of two lenslet arrays, with a pinhole array in the focal plane of each of them. The beam properties were calculated and acceptable beam exit properties with a 70% transmission @ F15 exit beam speed can be realized with acceptable tolerances. Still, further work on the design needs to be carried out. They have been able to narrow down

the design of the microlens assembly of the spectrograph to a double MLA design and were able to calculate that acceptable exit beam properties (70% transmission @ F15 exit beam speed) can be realized with acceptable tolerances. Much design work still needs to be done.

- WP60.4 Fast Imaging Polarimeter

Currently, two prototypes are planned. A small prototype 256kx256k was tested already in the VTT spectrograph. The design of a large detector with 1kx1k camera is already quite advanced.

WP70. WAVEFRONT CONTROL

- WP70.1 Adaptive Optics

WP70.1.1 Adaptive optics prototype for THEMIS

The AO system for THEMIS has already been designed. At this moment, its implications on the present opto-mechanics of the telescope are being studied. A final decision will be taken during 2014.

WP70.1.2 MCAO simulations

The group at the IAC has been performing during 2013 a number of numerical simulations to obtain the behavior of the EST MCAO system with the final goal of improving it. Some results have already been presented at an international conference (O4ELT3, Firenze, May 2013).

- WP70.2 Atmospheric seeing

Seeing data have been collected continuously at the OT and ORM during 2013 with the SHABAR instruments located at both observatories. During the first months of 2014 the instruments are under maintenance and will start again operation in spring 2014. The data analysis will be started within a few months.

- WP70.3 Local seeing

CFD simulations of the local seeing around the EST building and telescope are under way. These simulations complement those performed during the Conceptual Design of EST for a better definition of the turbulence around the telescope.

Innovative Heat Rejecter for GREGOR: A preliminary design of the Heat Rejecter has already been done and discussed among the partners involved in this task. Presently, the design is being modified to account for the required changes.

WP80. SYNOPTIC OBSERVATIONS

Concerning WP80, the first synoptic network workshop was held in Boulder to discuss the scientific requirements for SPRING. Another workshop to continue the work on the scientific requirements document for SPRING was held on November 26-28 in Titisee, near Freiburg. As a result 4 working groups have been formed to define the scientific requirements for synoptic magnetic fields (chaired by Alexei Pevtsov), solar seismology (chaired by Rekha Jain), transient events (chaired by Michal Sobotka), and solar awareness (chaired by Ilaria Ermolli). Each team consists of approximately 10 team members. The plan is to define the science requirements within the teams until March 2014.

There is an intention of hiring Sanjay Gosain from NSO to work on the design of SPRING. Currently this work package has spent approximately 12 kEuros.

WP90. TRANSNATIONAL ACCESS PROGRAMME

- See above the WP20.1. For more details see the TAS Preliminary Report 2013:

http://solarnet-east.eu/images/TALKS/1st_FAS_MEETING/Prel_Report_ACCESS_08Nov2013.pdf

WP100. ACCESS TO SCIENCE DATA CENTRES. SPACE MISSIONS

All databases in the WP 100 are now available to the full community. Announcements of the availability are regularly made at scientific meetings, through web-pages and newsletters. Specific details:

- WP101 HINODE/IRIS

Access is provided through the European Hinode Science Data Centre in Oslo. IRIS data was made available to the world community starting November 1st and the European Science Data Centre in Oslo has offered full access from the very beginning through its popular search engine. Secondary data-products are continuously being developed - right now thumbnail images displaying the data and derived quantities like Doppler shifts and total intensities from the spectra have been added. The web-pages have been updated and now also include the 7th framework and EU logos (<http://sdc.uio.no/search/form>).

- WP102 BE-WISSDOM

Data from the Solar Dynamics Observatory (SDO) satellite, in particular from the Atmospheric Imaging Assembly (AIA), are available through a copy of the data at the Royal Observatory of Belgium. The early focus has been on user surveys and informal user feedback to improve the usefulness for the community and on improving the infrastructure.

- WP103 GSC-SDO

Data from the Solar Dynamics Observatory (SDO) satellite, in particular from the HMI instrument, are available via the German Science Center for the Solar Dynamics Observatory (GSC-SDO). Through requests it is also possible to setup automatic delivery of specific data series to downstream sites (this is done today to the Kiepenheuer Institut fuer Sonnenphysik in Freiburg).

SOLARNET Project Office
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