



Project SOPHIA

## PhotoVoltaic European Research Infrastructure

GA N° 262533

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## D5.4 – Plan for dissemination and promotion activities - M24

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## 1 Introduction

SOPHIA is an outward-looking project aiming to integrate research infrastructures and create a single access point for Europe’s scientists to high quality research infrastructure. As such, activities to raise awareness of the project among the scientific community are of great importance. Another important task is to ensure that scientific results achieved with SOPHIA funding are shared with the scientific community.

In M24 the Coordinator invited the partners to provide details of completed and upcoming work on networking activities, including activities that involve contact with scientists and other stakeholders outside the consortium (‘external activities’). Their input was compiled into a set of tables within a spreadsheet ‘[SOPHIA Networking activities table V4.xlsx](#)’, available on the project intranet, Myndsphere. These tables now centralise all the activities which can be related to communication and dissemination of information.

After this introduction, Section 2 of this plan is essentially a forecast of work relevant to dissemination and promotion due to take place in the near future, mostly based on external activities extracted from the compiled spreadsheet.

Sections 3 and 4 look at the adequacy of the proposed measures and contain recommendations to improve dissemination and promotion.

## 2 Planned dissemination and promotion work

The dissemination and promotion work cover a whole range of activities: physical meetings and webinars on specific SOPHIA topics, general presentations of the whole SOPHIA project, publications, and the development of specific communication tools. All the actions or events within these categories of activities are described in the following sub-sections.

### 2.1 External activities

#### 2.1.1 Physical meetings

Physical meetings are an important means of promotion. They are usually well attended, mainly because they are focussed on issues that are critical to the scientific community.

They are generally planned 4 to 12 months in advance. Therefore, an accurate overview of the third year can be given, with more than ten meetings already scheduled. The planning of the fourth year is more preliminary, but a similar number (around ten) of meetings is anticipated.

<a href="#">CPV9 Conference Miyazaki, Japan</a> 15-17 April 2013 (and IEC meeting following on 18-19 April)
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The CPV module round robin that is performed within JRA2 has been presented to the CPV community during the panel discussion session “CPV International Standards” on April 17 2013.

Additionally devolution and procedures for the round robin were discussed during the power rating session of the IEC TC82 WG7 meeting on April 18. One main aim of the round robin is to test the power rating procedures under discussion within the WG7.

Tecnalia uses SOPHIA technical results (JRA2.5.3) to cooperate with IEC SC 82 WG 7 for CPV systems, focusing on the tracker issues, draft standard IEC 62817 Ed 1. It participates in expert groups meetings for the analysis of durability of electronic control in CPV systems and effect of tracking errors in the mismatching losses, providing measured data on several CPV trackers located in CPV outdoor test facilities in Zamudio (TECNALIA HQ). These works and other on-going activities in this field are presented in the frame of SOPHIA project.

PV-Module Reliability Workshop, 6-7 June 2013, Chambéry

Organised by ISE and INES, this workshop is the follow-up of the Lugano event organised last year and the Berlin event the year before. It should attract around 100 participants, interested in ageing mechanisms and lifetime studies ; the issues of JRA 1 on lifetime prediction will be extensively discussed.

SOPHIA information desk at the [EPIA Workshop: From PV Quality to Bankability](#) 19 June 2013

Focusing on photovoltaic (PV) modules, this workshop presented the state-of-the-art technology and discussed the challenges of the industry's ongoing commitment to improving quality and reliability. Given the importance of these topics within the SOPHIA project, EPIA organised an information desk for SOPHIA. EPIA actively communicated to the invited audience the content of the project and invited the participants to take part to the interim workshop the following day.

[Interim workshop: Coordinated European R&D - Keystone for the reinforcement of the PV industry](#)

20 June 2013

Occasion for the SOPHIA consortium to present significant results to an international audience during the industry exhibition 'Intersolar Europe' ( M28). The participation of industry and other R&D participants will be facilitated, as EPIA will organise the event during Intersolar Europe, close to the exhibition centre. Presentations will be made by representatives from both industry and the SOPHIA partners. The expected attendance includes participants coming from the whole PV community. The invited guests will comprise research experts, as well as companies' representatives active in various fields. The invited speakers will be experts in their respective fields and will bring the experience of their research centres, projects and companies. The sessions will focus on silicon, thin film and organic technologies, CPV and BIPV, as well as system performance and lifetime prediction. EPIA foresees 12 speakers for this workshop, divided into three panel sessions.

[Interactive Training Course en EL & DLIT characterisation of PV modules](#) 26-27 June 2013, Petten (The Netherlands)

Internal course (i.e. for SOPHIA partners only), but with the participation of two expert guest lecturers from the company Greateyes GmbH (of which Dr. Martin Regehly, Managing Director), whose travel costs will be covered by the SOPHIA budget. The Greateyes staff appreciated the opportunity, saying, “the talks inspired me, provided new ideas.”

[Euro-Regional workshop on Characterisation and Modeling](#) 16-19 September 2013, Monschau (Germany)

The workshop is organised by two SOPHIA participants from FZJ, and will broaden awareness of the work currently in progress within SOPHIA on optimising current material, cell, module and system models, the computing power available for external use through the TNA activities, as well as the development of the entire value-chain modelling infrastructure (JRA 04). The workshop participants are both internal and external to the SOPHIA.

Presentation of SOPHIA and IMEC’s work to Master students and academic staff in Northumbria University PV, 24 April 2013

Similarly to ECN’s visit year, IMEC plans to travel to Northumbria to spread knowledge of SOPHIA to students and academic staff at Northumbria University, which teaches the PV component of the [European Master in Renewable Energy](#).

[International Summer University ISU Energy 2013 Falera](#) 25 Aug-6 Sept 2013

The SOPHIA project will be the object of one group project, which will help raise awareness of SOPHIA in the group. Up to 65 Master or PhD students from different fields will participate.

[BIPV workshop](#), 29-30 August, 2013, Chambéry

The BIPV workshop will take place during the IBPSA World conference in Chambéry. Other workshops will be held in the remainder of this year and next. Potential topics are BIPV system performance measurement and modelling. The workshop shall address in detail the requirements of solar photovoltaic systems incorporated into building structures, with special attention given to BIPV as distinct from BAPV (PV panels on buildings). Its results will be disseminated via training sessions to architects, technicians and the industry.

[Challenges for Photovoltaic Silicon Materials](#), Rome 7-8 Oct 2013

The aim of this workshop (target size: 150) is to exchange results, views and opinions between research staff from universities, RTOs and industry on the new challenges in PV Si materials and to discuss a common Si roadmap for PV.

The International Summit on OPV Stability (ISOS), December 2013, Chambéry

A SOPHIA workshop will be organised as a session within the International Summit on OPV Stability, of which the title will be “Materials and processes for encapsulation of flexible PV”. More than 50 participants from all countries are awaited.

6<sup>th</sup> Thin Film Week (organised by HZB) April 2014<sup>1</sup>

In a lecture with the provisional title “Preconditioning of thin-film modules”, the topics covered will be similar to those covered in the internal training course from August (see above), but in addition experience from the round robin will be presented. The Thin Film Week is open to all.

Surface Sensitive Synchrotron Based Materials Analysis and Multi Resonance EPR/EDMR spring 2014

If HZB organises this, it will be HZB’s second hands-on workshop on these two different advanced analysis methods for characterising PV materials. These two methods are available for TNA within SOPHIA. The course could take up to 20 people.

### 2.1.2 Webinars

Initiator: The WP 4 leader (ENEA) plans to set up webinar technology to address researchers who are not available for travelling one or several days, but who can be interested in short duration discussions. Webinars will be recorded, ultimately with the aim of making them re-streamable by a visitor to the webinar portal, ‘Sophi@webinar’, hosted on ENEA’s servers. Details of registrants will be gathered.

Aim: Webinars will aim to provide information on, for example,

- The utilisation of PV research infrastructure/techniques and research protocols.
- Comparative advantages of different characterisation techniques
- Interesting research results obtained from using SOPHIA protocols

<sup>1</sup> Previous thin film week: [http://www.helmholtz-berlin.de/projects/pvcomb/events/tfw12/index\\_en.html](http://www.helmholtz-berlin.de/projects/pvcomb/events/tfw12/index_en.html)

Dissemination target: European PV research community, principally SOPHIA researchers. “Research community” shall be understood in a broad sense. Almost all presentation slides will be available to the participants.

Webinar flavours:

- “Course”: short talks on a theme concerning utilisation of SOPHIA RI.
- “Lecture”: one extended, in-depth talk on a PV topic relevant to SOPHIA

Application of focussed ion beam in advanced photovoltaics, 26 Mar 2013

Lecture organised by ENEA (Dr Vera La Ferrara, Dr. Giuseppe Nenna) on the suitability and potential for FIB in advanced sample preparation. It can be used, for example, for nanopatterning to improve light trapping and to obtain high-refractive-index anode directly on the substrate.

Uncertainty Estimations of PV Outdoor Measurements, 14 Jun 2013

Course offering comprehensive information on different aspects of uncertainty estimations of PV outdoor measurements organised and chaired by Vincent Helmbrecht DERlab supported and co-chaired by Franco Roca, ENEA.

. Topics to cover

- uncertainties arising from characterisation tools like irradiance sensors and I-V-curve measurement systems
- calculation methods
- the importance of the experimental design.

The proposed topics are closely related to the use of SOPHIA outdoor characterisation Infrastructure for PV modules and systems.

Transparent ZnO contacts for silicon thin film solar cells, 18 Jun 2013

Lecture by Jürgen Hüpkes of FZJ introducing the device structure of thin film solar cells/modules and general opto-electronic properties of transparent conductive materials (TCMs). The lecture will then look at the unique properties of doped ZnO and relate them to device performance.

From nanoscale to gigawatt: nanopatterned thin crystalline silicon solar cells, 24 Jun 2013

Lecture proposed by Ounsi El Daif of IMEC to illustrate the application of c Si and thin film technology to direct cell-on-module engineering of very thin cSi.

Defects in Crystalline and multi-crystalline Silicon Solar Cells, 5 Jul 2013
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Course organised by ENEA, SINTEF, ECN, ISE and chaired by Eivind Johannes Øvrelid, SINTEF, and Franco Roca, ENEA, offering a comprehensive understanding on the origin of defects in crystalline and multicrystalline silicon cells and with a focus on characterisation via photoluminescence imaging. The proposed topics are closely related to use of SOPHIA Infrastructure on Si material characterisation.

The webinars will be recorded, so that people who miss the live event have another chance to see the presentations and discussions. ENEA's registration process will track who tunes in to the webinars or restreams and request details about the viewer's background. Participants and streamers will be added to EUREC / EPIA / INES's SOPHIA contact database.

## 2.2 Publications

Some results of the Joint Research Activities already deserve a publication within some conference proceedings or periodical review. More will come with the final results of these activities:

- DERlab will draw attention to its work in SOPHIA in its Activity Report 2012/2013 in an article called "Verifying the Models for PV Performance". The Activity Report is sent in print or electronically to hundreds of DERlab contacts and stakeholders.
- Abstract accepted for 28<sup>th</sup> EU PVSEC (European PV conference and exhibition) 30 Sept - 04 Oct. 2013: 'Modeling Infrastructure Along the Value Chain: from Materials to system Performance'. The poster will 'raise awareness of the activity of modeling along the chain'.
- Abstract accepted for an oral presentation at the 28<sup>th</sup> EU PVSEC (European PV conference and exhibition): 'Round Robins of solar cells to evaluate measurement systems of different European research institutes'
- Thin films topic is considering publications on:
  - preconditioning of thin film modules
  - measurement of the spectral response of thin film tandem cells.

## 2.3 SOPHIA representation at non-technical congresses or other gatherings

- SOPHIA will be represented at the EERA Annual Congress, 18-19 April 2013, Brussels by Coordinator, EUREC and other partners.
- SOPHIA will be represented at this event, probably by the Coordinator: "[Workshop 'Progress in Photovoltaics and Nanotechnology: from FP7 to Horizon 2020'](#)", 26-28 Nov 2013, Barcelona.

- SOPHIA will be presented to [DTU's International Energy Conference 10-12 Sept 2013](#) (by EUREC).
- SOPHIA's status will be presented to the Steering Committee of the PV Technology Platform at its meeting 17 Sept 2013 in Munich (by EUREC).

## **2.4 Communication tools**

### *2.4.1 Website*

The website will continue to be maintained. Any information about SOPHIA that can be made public will be published on the website. The partners will conscientiously send information about external events to the website-content responsible (EUREC). EUREC will put the information online.

In particular it is planned that from M24 it will be possible to post much more information about past TNA actions and their results.

### *2.4.2 Newsletter*

EUREC and EPIA flag the SOPHIA project frequently in their newsletters. Other partners should play more of a role here. They should aim, in their newsletter to mention the next cut-off for TNA proposals in a few lines and give details of how to apply and the apparatus available at their facility/ies. The newsletter should be forwarded to EUREC when this happens.

In the period M24 to M36 a newsletter will be produced by EUREC using input from the partners. It will be disseminated to the list of relevant contacts (same list as for advertising the TNA calls). The newsletter might cover:

- Past and future SOPHIA events
- Results of TNA projects
- Announcements of next TNA deadline

The ExCom will commit to providing content for the newsletter before significant work on the newsletter will begin.

### *2.4.3 Contacts database*

Following the 28<sup>th</sup> European PVSEC in M32 (Paris), EUREC will again swell the EPIA/INES/EUREC database of contacts potentially interested in the SOPHIA project. EPIA will add contacts, too. After the 27<sup>th</sup> European PVSEC in M19, the list was grown by 800 names, reaching 1400.

### *2.4.4 SOPHIA flyer*

The SOPHIA flyer will be updated and reprinted in 200 copies for the 28<sup>th</sup> European PVSEC and, as at the same conference last year in Frankfurt, taken to the booths of SOPHIA partners for them to disseminate from there. The flyer will express the eligibility criteria for TNA user groups more clearly than the previous one.

## 2.5 SOPHIA Final Forum

A two-day 'Final Forum' will be organised by the end of the project (month 48), most probably in month 44 during the 29<sup>th</sup> European PVSEC taking place in Amsterdam (22-26 Sept 2014). EUREC, leading the work around the Forum, will aim to attract 30 external participants to it to listen to presentations of the results of the project from SOPHIA partners. It is expected that among the results to be discussed will be the NA2.9 report on a Strategic Research Infrastructure Agenda.

## 3 Adequacy of the proposed dissemination and promotion work

The tasks seem adequate in that they maintain dissemination and promotion effort at a level comparable to that achieved in year 2, when the project reached cruising altitude. Recommendations for improvements are given below:

- Information about SOPHIA should be disseminated in the newsletters of SOPHIA partners and the future SOPHIA newsletter (see 2.4.2, above).
- The Coordinator and hosts of TNA will insist to the entities that are offered TNA access that they will acknowledge SOPHIA in any awareness-raising activity connected with their TNA work (e.g. conference papers reporting results).
- EUREC will make contact with Dr. Stanisław Pietruszko, animator the network PV-NMS-NET. The network was born out of a [European project by the same name](#), which brought together scientists working on PV in the 'New Member States'. These scientists are suitable candidates for participating in TNA. We hope he can provide us with their contact details or pass on electronic mailings.
- To aid dissemination of SOPHIA results arising from NA or JRA work to the scientific community, the consortium will try harder to put information in the public domain. So far (as at M24), only the database of TCO materials and facilities in Europe was approved for publication<sup>2</sup>. SOPHIA researchers acknowledge that there are some results they could share that would be particularly effective at helping them build bridges with non-SOPHIA scientists. This is the case of
  - the silicon materials topic, which has produced a report (D11.1) discussing different imaging techniques for characterising silicon wafers and cells. The D6.4 M18 Interim Report contains the line, "A public report of the overview is considered which would enable research institutes as well as solar companies to assess potential future collaboration in the field of silicon material and solar cell characterisation". The decision should be to publish the overview.
  - The infrastructure database (D1.1 in NA Task 1.2) should, after M18, be updated by inserting partners beyond the SOPHIA consortium (notably from EERA's Joint Programme on PV). This was stated in the slideshow for WP1 in the M24 SOPHIA General Assembly.

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<sup>2</sup> <http://www.sophia-ri.eu/technologies/thin-films/>

In general, there should be greater sharing of interesting NA or JRA results with EERA. A policy for routinely sharing SOPHIA deliverables with EERA should be created.

- Partners will try harder to advertise the TNA opportunity when they are in front of relevant communities. In particular, staff of SOPHIA partners with presentations at scientific conferences related to PV technology will be encouraged, even if they have no direct connection to SOPHIA themselves, to make short reference to the TNA opportunity offered in SOPHIA and to display the logo and URL.
- Partners will try harder to populate the Networking Activities table with precise details of the nature of the efforts to disseminate information about SOPHIA: did they present SOPHIA (with or without slides?) at the event they attended, have they emailed contacts about the SOPHIA, have they created a webpage on their institution's website about the project, have they distributed flyers? All this information needs to be tracked.
- To raise the profile of WP5 work with SOPHIA's leadership an agenda point on the results that the project expects to generate by the end of the project and a strategy for disseminating these results will be put on the agenda for the September ExCom phone conference.

## 4 Conclusion

The dissemination seems to have gone well for now. Common channels of communication must be used to inform all the stakeholders (international conferences, training, information brochures, articles in technical journals and the non-technical press, webinars...). The crucial things to disseminate are information about the TNA, including the results of completed TNA projects and results generated in the project's JRA work. The NA2.9 report will be a significant SOPHIA document, offering guidance to policy makers on development of PV Research Infrastructures.