

# General presentation of the Sophia Project

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- Motivation
- Description of the project
- The website, as the single entry point to the PV Research Infrastructures
- Conclusion

Current situation :

Many PV research infrastructures exist all over Europe:

- Some are unique
- Some are similar

An increased coordination brings several advantages:

1. to avoid unintended duplication
2. to avoid unnecessary investment. Why to invest into additional research infrastructures when some of them can be made available ?
3. to get more value out of the same budgets. « Working together to progress faster or to learn more » :
  - Comparison of characterisation methods, modelling software
  - Validation with an increased number of data, to increase the confidence level

 Better services for researchers from academia and industry

The FP7 Capacities program of the European Commission aims to optimise the use and development of research infrastructures, while enhancing the innovative capacities of SMEs to benefit from research.

Call open end of 2009 :

**INFRA-2010-1.1.22: Research Infrastructures for Solar Energy: Photovoltaic Power.** *A project under this topic should aim at integrating the key research infrastructures in Europe for all aspects of photovoltaic research: integration in buildings, in transport, new materials, grid connection, efficiency, etc. This topic would support the European Strategic Energy Technology Plan (SET-Plan, COM (2007)723).*

17 research organisations, 3 associations for information exchange



Working groups open to some additional experts from industry and academia

17 research organisations, 3 associations for information exchange



COORD

WPL



WPL



WPL



WPL



WPL



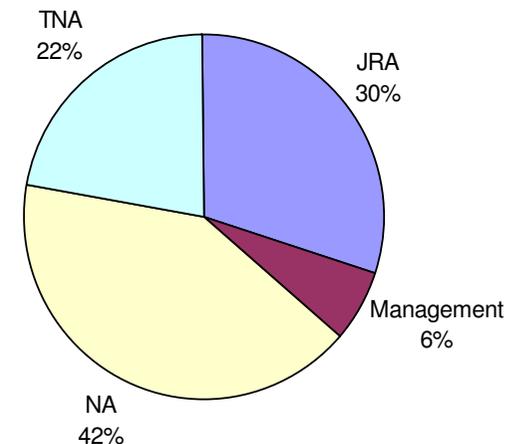
The Sophia objectives are:

1. to join forces of partners from academia and research institutes in order to address some specific challenges of solar photovoltaic energy
2. to give access to European researchers to a unique portfolio of laboratories and test facilities in the field of photovoltaics. This will ensure that a large number of scientists from the EU and the Associated States can benefit from expensive equipment.

Such a project includes three categories of activities :

- Networking activities
- TransNational Access activities
- Research activities

**Grant per activity**



The project focuses on 8 topics covering the whole value chain:

1. Silicon material
2. Thin films and TCOs
3. Organic PV
4. Modelling
5. CPV
6. BIPV
7. PV Module lifetime
8. PV module and system performance

A close link to the EERA PV Joint Programme is organised:

- Many common partners
- Four topics are also addressed within EERA



Funding scheme : Integrating Activities

EU financial contribution : 9 M€

Duration : 48 months

Starting date : February 2011

# 1. Networking activities

They aim at :

- Defining and sharing common objectives over the future of PV research (training, research and innovation, technology, market, standards),
- Organising expert committees to define common procedures for testing and characterising PV materials, modules and systems,
- Performing training and exchange activities for all European scientists (summer universities, exchanges between different research organisation).

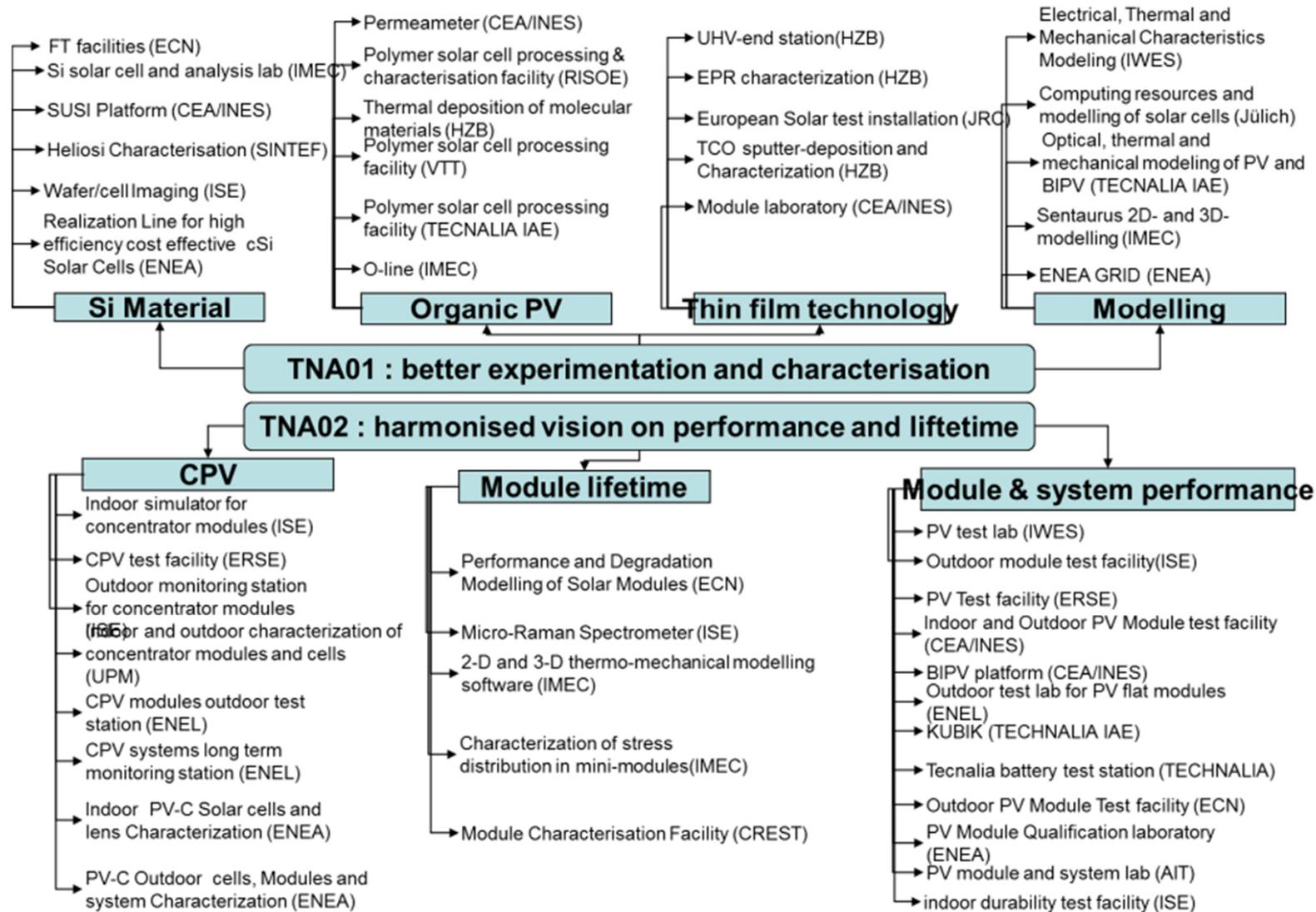
They are organised in order to improve and optimise the services provided by the research infrastructures.

Our work is focused on four topics:

- JRA 1: Quicker lifetime prediction of PV modules through accelerated ageing tests and improved failure analysis procedures
- JRA 2: Greater accuracy of rated power and energy output prediction of PV modules & systems
- JRA 3: Improved Material characterisation procedures dedicated to:
  - silicon material,
  - thin films and TCOs,
  - and organic solar cells
- JRA 4: Improvement and validation of software infrastructure for material, cell, module and system modelling

These activities aim to provide free of charge and open access to 48 research infrastructures, dealing with:

- Better experimentation and characterisation of materials and innovative technologies,
- The development of an harmonised vision on performance and lifetime prediction of PV modules and systems.

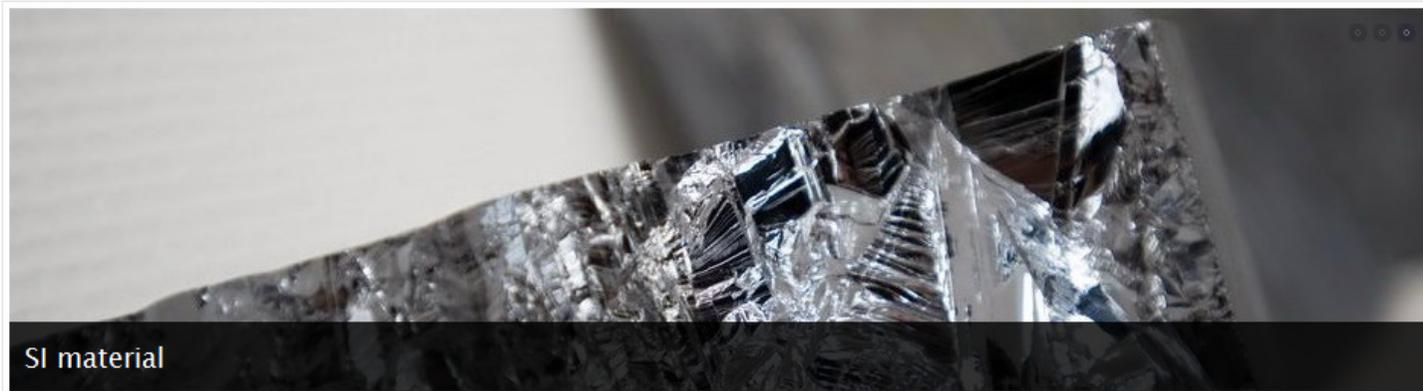


Project applications proposing the use of the Sophia Research Infrastructures will be selected by a Selection Committee through a transparent process based on defined merit criteria.

The free-of-charge access will include transport, accommodation, RI access and access assistance - to be agreed on and specified between the parties.

The main Eligibility provisions of the Users Groups according with the EC Rules for Transnational Access apply:

- The User Group leader and the majority of the Users must work in an institution established in an EU Member State or Associated State;
- The User Group leader and the majority of the Users must work in a country other than the country(ies) where the legal entity(ies) operating the infrastructure is(are) established.
- Only User Groups that are entitled to disseminate the foreground they have generated under the Sophia access are eligible to benefit from access free of charge to the infrastructure



SI material

## SoPhia RI: Your unique entry point to many European PV research facilities

● SoPhia RI is your gateway to the state of the art of PV technologies and applications. By combining scientific expertise with technological capabilities, Sophia RI provides you with innovative and efficient solutions to your challenges in the area of photovoltaics.

Free ccess to 48 Research Infrastructures : see "User access"

● **This website is under development.** We are doing our best to finalise all sections.

### Latest News

- > July 15–16th: First meeting of the IPVQA Forum
- > August 15th, Organic PV meeting

### Next Events

- > 08.09.11  
Environment-Specific Durability Testing Module

### Technologies

- > Si Material
- > Organic PV
- > Thin Films

### Links





**SOPHiA**  
European Research Infrastructure

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Si Material

Organic PV

Thin Films

Modelling

CPV

BIPV

Module lifetime

Module and system performance

YOU ARE HERE : [TECHNOLOGIES](#) > [MODULE LIFETIME](#)

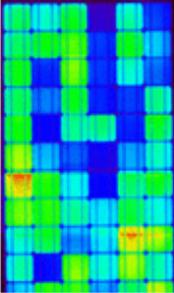
PV module lifetime prediction is a very important issue for industrial companies, developers and especially end-users. The well-known IEC qualification tests set minimum design criteria, but do not provide comparative information about the durability of PV modules. No scale exists so far to sort out between modules lasting 20 years or 40 years within specific climates.

In order to improve the accuracy of PV module lifetime predictions, several research infrastructures work together on the following issues :

- failure analysis : characterisation methods
- definition and benchmarking of accelerated ageing tests

Several research infrastructures are available for research work on this topic:

Partner	Research Infrastructures	Main Characteristics
CEA-INES	PV module laboratory	PV module lamination (1,3x1,7m), IV curves, EL characterisation, climatic chambers, failure analysis
ECN	Performance and degradation modeling of PV modules	Software platform based on multiphysics simulation, in conjunction with experimental work
ENEA	PV module laboratory	Climatic chambers, including DH, UV and salt spray corrosion test
Fraunhofer ISE	Outdoor PV module test facility	5 locations in various extreme climates (temperate, mountain, desert, marine, tropical)



An on-line proposal submission system is under preparation:



The screenshot shows the SOPHiA website interface. At the top, there is a navigation bar with links: HOME, ABOUT, USER ACCESS, TECHNOLOGIES, NETWORKING ACTIVITIES, RESEARCH ACTIVITIES, and NEWS & EVENTS. Below the navigation bar, there is a 'login' button and a search bar. The main content area is titled 'Sophia Application Form' and contains the following text:

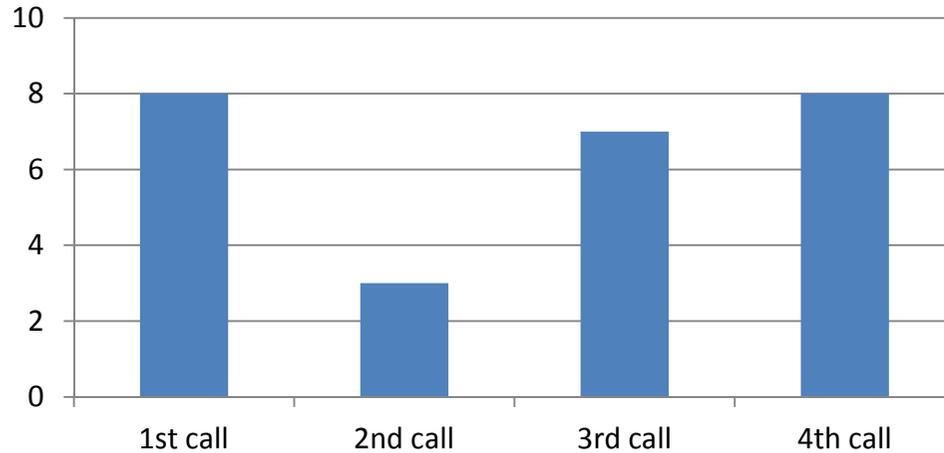
Please use this form to make an application for transnational access to Sophia. You should give sufficient details in the project summary to enable a feasibility check and the assessment of the proposal by the User Selection Committee. Details as to the required content can be found in the User Guidelines. You are also encouraged to discuss your proposed work with our contact persons before completing the proposal.

Below the text, there is a 'Sophia Application Form' section with a grid of tabs. The 'Submission' tab is selected. The form fields include:

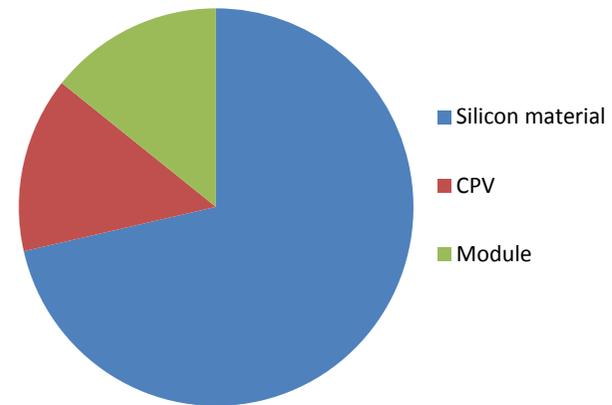
- User-Project Acronym\*
- User-Project Title\*
- Main-Topic of interest\*
- More detailed scientific field\*
- Date of submission\*
- Re-submission\* (Yes/No)
- Proposed Host TA Facility\*
- Starting date proposed\*

- Call opening : Permanent
- Next Deadline : 25 October 2013
- Evaluation process starting afterwards by the user selection committee.

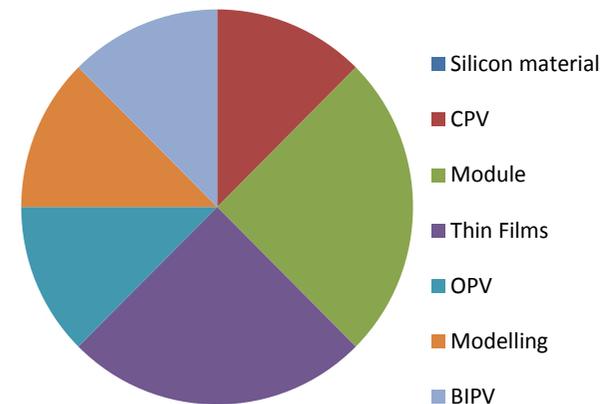
**Number of applications per call**



**3rd call**

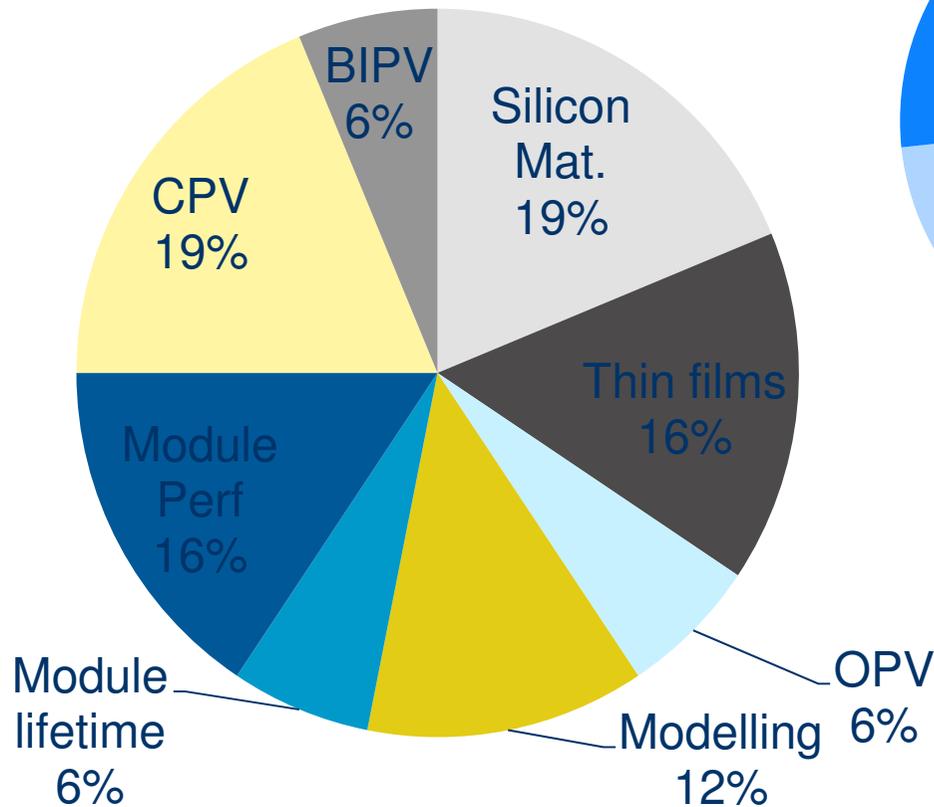


**4th call**

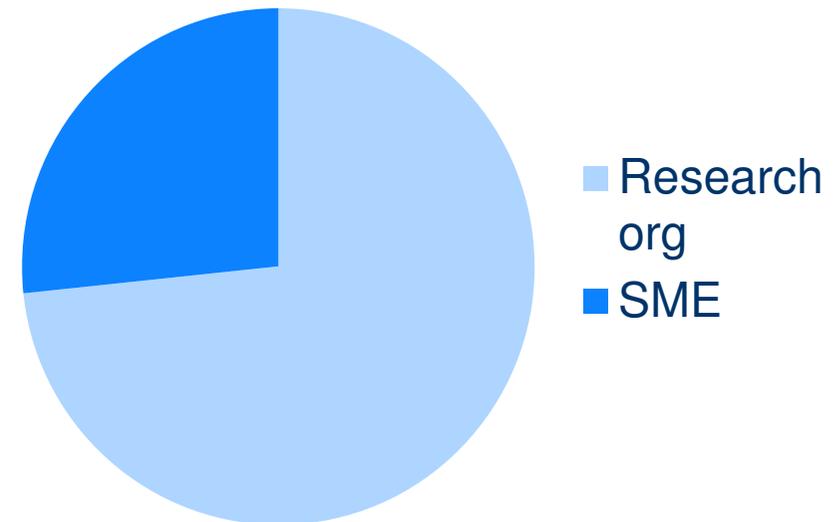


Increasing number of eligible research proposals  
Diversification in the topic addressed

## Fields of interest



## Types of applicants



a Research Infrastructure project :

- includes important activities such as networking, exchange, and common vision
- Performs focused R&D on common issues

• It clearly supports a three step approach towards improved coordination :

1. Listing RIs, by identifying current facilities and equipment and surveying characterisation procedures
2. Increasing the coordination, by organising Round Robin tests and validating characterisation methods
3. Developing joint strategies through elaboration of roadmaps and knowledge transfer

10 databases

5 Round Robins +  
1 large test plan

15 Workshops + 5  
webinars

- Focus given to 8 topics
- 3 types of activities :
  - **Networking Activities** for coordination and joint development of the RIs
  - **Joint Research Activities:** Upgrade and improvement of the services of PV RIs
  - **Transnational Access Activities:** Free-of-charge transnational access for researchers, through a single entry point to the partner RIs.

This first-of-its-kind project is clearly gaining momentum (webinars, TNAs, ..)  
The main results are accessible through periodic public events and the website.

This project is funded by the European Commission under the grant agreement n°262533 and all the partners

For more details,  
Or to download this presentation,  
refer to the Sophia Website at  
**[www.sophia-ri.eu](http://www.sophia-ri.eu)**