

## SIXTH FRAMEWORK PROGRAMME

# MESOR

## Management and Exploitation of Solar Resource Knowledge



### D.4.5 – “Recommendations for future Actions”

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## Executive Summary

*The liaison between the stakeholders and the project was the main goal of WP4, of which the present deliverables represents the final outcome*

*It was a priority for the MESoR consortium both to involve its stakeholders' community in the various activities, and most importantly to integrate it within the project itself, in order to ensure a continuous bi-directional communication. The definition, establishment and management of the stakeholders' community have been a long process, which has accompanied all the project phases and has been managed by a dedicated team inside the consortium: the MESoR secretariat. Activity towards the solar radiation stakeholders' community included different means: individual contacts, users' meetings, the development of training material, the dissemination of the results of the project, the organisation of public international workshops addressing stakeholders from the decision making sphere, industry, research and also from other communities.*

*As a final result, the MESoR project can rely on a community composed by relevant stakeholders inside the consortium partner organisations, by other organisations connected with MESoR through relevant EU initiatives (MESoR WP3) and, most importantly, by customers and users from organisations that have interest in solar radiation knowledge, based in all European countries and overseas. The main benefits for the stakeholders, brought by MESoR have been identified in: value added with respect to the existing services, sustainability of the MESoR service over time, possibility to expand the service, usability, knowledge transfer, increased trust and spread of usage of solar radiation knowledge. To keep the MESoR impacts last after the project's end, the following recommendations have been issued: to include more services, both international and national data sources, to support and enhance the partnership among the consortium members, to keep exploiting the links with other initiative and with the solar radiation community in general, to communicate and support the MESoR benchmarking approach as a reference in the sector, to enhance communication and dissemination activities towards the stakeholders' community in order to enhance usage and loyalty. The primary recommendation is, therefore, to continue to maintain the service through the commitment of Mines ParisTech to sustain and improve the Community Portal ([www.webservice-energy.org](http://www.webservice-energy.org)) and to maintain the MESoR Portal ([project.mesor.net](http://project.mesor.net)).*

## 1 Introduction

The co-ordination action MESoR aims at removing the uncertainty and improving the management of the solar energy resource knowledge. The results of past and present large-scale initiatives in Europe, are integrated, standardised and disseminated in a harmonised way to facilitate their effective exploitation by stakeholders. This coordination action contributes to preparing the future roadmap for R&D and strengthening the European position in the international field.

The project includes activities in user guidance (benchmarking of models and data sets;

handbook; best practices), unification of access to information (use of advanced information technologies; offering one-stop-access to several databases), connecting to other initiatives (INSPIRE of the EU, POWER of the NASA, SHC and PVPS of the IEA, GMES/GEO) and to related scientific communities (energy, meteorology, geography, medicine, ecology), and dissemination (stakeholders involvement, future R&D, communication). Further, a roadmap to the future objectives and priorities is developed, describing requirements for measuring systems, including Earth observation systems, services for effective management and deployment of solar resource knowledge and better fulfilment of the demands of the stakeholders.

The present deliverable summarizes the activities carried out in WP4, the main outputs achieved and the benefits for the stakeholders, it also issues recommendations for future actions.

## 1.1 Objectives of WP4

Stakeholders' involvement is a major objective of MESoR and WP4 is dedicated to this activity. The specific goals of WP4 are:

- to collect stakeholders' feedback about service requirements
- to govern the MESoR stakeholders' community
- to run the "MESoR Secretariat"
- to issue final stakeholders evaluation and issue recommendations for future actions
- to spread the results of this project to the scientific community, end user i.e. decision makers in the energy market and energy politics, to international organizations and for training purpose

Milestones and expected results of WP4 had been identified in:

- to efficiently manage the stakeholders' community, to provide adequate and timely input to WP1 and to provide feedback and recommendations for future actions
- to define stakeholders' requirements and recommendations for future actions
- to design and implement an effective stakeholders' involvement strategy.

## 2 Activities and achievements of WP4

WP4 objectives have been achieved through a continuous activity towards the solar radiation stakeholders' community that included different means: surveys on the stakeholders' requirements, users' meetings, individual contacts, the development of training material, the dissemination of the results of the project, the organisation of public international workshops addressing stakeholders from the decision making sphere, industry, research and also from other communities.

These activities were run by the MESoR secretariat, managed by partner iCons, with the support of the whole consortium.

### 2.1 The stakeholders' community

A major goal of MESoR, and especially of WP4, has been the set up, development and management of the stakeholders' community: the entire project aims at putting the users of MESoR at the centre. Integration and standardisation of solar knowledge have been

driven by the guidance of the users, whom have been constantly consulted and informed during the project life.

The MESoR stakeholders' community<sup>1</sup> is composed by relevant stakeholders inside the consortium partner organisations and from other organisations connected with MESoR through relevant EU initiatives (MESoR WP3). The core of the community are the users- mainly customers of the consortium partners- that constituted the preferred target of the MESoR initiative. These users of existing services belong to various academic, scientific, industrial and business categories, from public and private sectors, the latter being more represented. The involved organisations are active in the fields of: architecture/building, PV, solar energy, engineering, education and research, and are located in various European countries, plus the USA.

Overall, MESoR built a "closer" community of about 150 people from about 140 organisations that have interest in solar radiation knowledge, based in all European countries and overseas. These people actively participated to the various MESoR events (webinar, training seminar) and activities (surveys and consultations), provided their input and feedback to the MESoR outputs and especially to the prototype, contributed to the development of the MESoR handbook. In addition to this "closer" community, MESoR reached an additional target of about 400 contacts that were informed about the project outputs and deployment. Moreover, MESoR disseminated and raised awareness in the scientific and industrial community at large, both directly and through multipliers. This audience can be estimated in a few thousands people.

## 2.2 Setting-up and running the MESoR secretariat

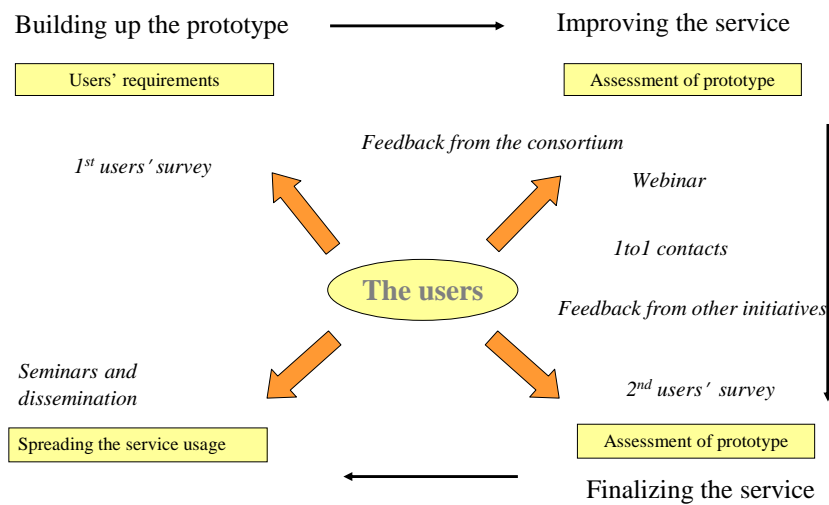
Since the beginning of the project, iCons has established contacts with the stakeholders and has centralised data collection and communication between the stakeholders and the consortium, as for the activities related to MESoR.

The definition, establishment and management of the stakeholders' community has been a long process, which has accompanied all the project phases and has been managed by a dedicated team inside the consortium: the MESoR secretariat, run by the partner iCons.

In building the stakeholders' community, MESoR relied on partners' experience and background. Since the very beginning, all partners contributed to develop and consolidate a list of organisations and people that constituted the preferred target of the MESoR initiative. This initial list continuously expanded, both for the partners' contribution and by spread-the-word of users. The continuous exchange with the MESoR stakeholders' community took place through a broad range of means of communications: interviews, one-to-one contacts, phone interviews, on-line surveys and e-mail messages, meetings and events. These instruments allowed implementing efficient bi-directional communication between stakeholders and the MESoR consortium. All these means were used both for collecting inputs and feedback (to be used for the design and development of the MESoR services), for dissemination and communication purposes (to raise awareness about MESoR and its progress over time) and, finally, for validating the results of MESoR, as illustrated in the following scheme.

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<sup>1</sup> A detailed description of the composition of the MESoR stakeholders' community is provided in D4-6, sections 3-3 and 4.



## 2.3 Collection of stakeholders' requirements

In the first months of the project, the MESoR consortium collected and analysed the stakeholders' requirements. A survey over the selected stakeholders was carried out. Detailed reporting about this activity is available in D4-1. The results from this exercise were made timely available to the other relevant partners in such a way to feed the activity of WP1 and to support the development of the MESoR prototype.

## 2.4 Testing the prototype

The stakeholders' evaluation of the prototype was collected through a variety of means and instruments.

Partners with experience as data vendors provided the consortium with feedback information coming from their closest users. Links with the GEOSS initiative were exploited to get valuable feedback, mainly on the technological and standardisation aspects. An on-line seminar (webinar) was organised to allow users to test the prototype on-line and to participate to a discussion forum about the prototype itself. A questionnaire for the prototype evaluation was also made available on the MESoR web-site. The results of this on-line survey have contributed to the finalisation of the prototype<sup>2</sup>. This activity allowed the consortium partners to establish the quality of the products and services of the prototype

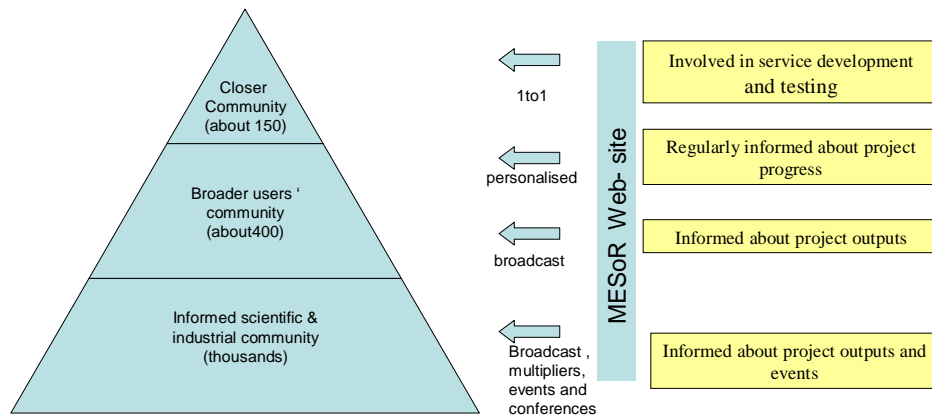
## 2.5 Dissemination activities

Through a combination of activities, means and channels, MESoR disseminated the results to a broad, qualified and representative audience.

The dissemination activities relied on a vast array of means, including: the project web site, written material, training material, the participation to conferences and events and the organisation of a webinar and a training seminar.

<sup>2</sup> Detailed reporting about the feedback from the stakeholders is provided in D4-2.

## MESoR dissemination: achievements and instruments



### 3 Benefits to the stakeholders and recommendations for future actions

Through the continuous involvement of the stakeholders in the MESoR activities throughout the various WPs, the consortium is fully in a position to assess the benefits, achieved and expected, and to issue the recommendations for further developments.

These conclusions and recommendations are based on:

- The results of the surveys carried out on the stakeholders' community and presented in D4-1 and D4-2
- The findings and conclusions from the users' meetings (presented in D4-4)
- Discussion internal to the consortium as regard the achievements in the main areas of activity of MESoR
- The outcomes of contacts carried out on an individual basis, via face-to-face meetings, telephone and e-mail, aimed at collecting stakeholders' inputs and feedback
- Contacts with people and organisations from relevant initiatives in the fields of earth observation, geo data and solar resource management
- The results of a SWOT (Strength/Weakness, Opportunity/Threads) analysis that the consortium carried out and that is presented in D4-2.

The achieved benefits mainly regard the current MESoR stakeholders' community, while the recommendations for future actions are aimed at broadening the target beneficiaries and the envisaged impacts on solar community at large.

#### Benefits for the stakeholders

The main point of strength of **MESoR web service** relies in the uniqueness of the concept, for which a unified access to several sources is made possible to ease access to data. MESoR is also innovative as it has established the concept of a “community portal” to host web services and it also provides tutorials for web services and portlet. Moreover it adopted free and open-source software with large development community and standard communication protocols. The quality of the service is also positively perceived: standardisation (including GUIs), the availability of various output formats and the possibility to cross-check the data from different services in a very user-friendly manner are points of strength of the service.

The relevance of the **benchmarking** achievements has also been fully appreciated by the stakeholders. The aim of the benchmarking exercise is to establish a coherent set of benchmarking rules and reference data sets to enable a transparent and comparable evaluation of the different solar radiation data sources. The developed benchmarking measures and rules do not give clear recommendations on which data set should be used for system design or selection of sites, but the project has developed clear rules how the measures have to be calculated and promotes new measures which indicate the quality of the distribution functions. With these standardised benchmarking results it will be easier for users to select a data base specific to the users needs in any specific case.

Within the activity of **User Guidance**, MESoR realized a guide of best practices in the application of solar resource data. The above described benchmarking is one chapter in this guide. The results give the users a better indication of the uncertainty of the available data sources and which data bases are suitable for different applications. Best practices in the application of solar resource information are demonstrated in use cases. The applications taken into account by the guide include: PV, solar thermal, solar concentrating and daylighting systems. As a basis it will cover requirements and examples for the design of these systems. Further it will cover solar forecasting applications.

Based on the feedback from the stakeholders and the benchmarking results **Roadmap** documents were compiled within the MESoR project. They cover future research objectives in the field of solar resources, new solar radiation services to faster deploy the market for solar energy applications and optimize grid integration and recommendations for an improved Earth Observation system to better support solar energy. These roadmap documents are expected to, respectively, develop an agenda for future RTD priorities, derive requirements for new services and check their feasibility, define mission requirements for future earth observing systems and, eventually provide guidance to decision makers.

From the considerations above, it can be concluded that even though MESoR is still a young service, its relevance is recognised by the users and its impacts on the solar radiation community may be relevant. **The benefits for the community of the stakeholders** can be summarised in:

#### **The value added with respect to the existing services**

The unified access provides value added to the users with respect to the usage of the single services. The one-stop-access to several databases allows fast access, standardized information and data exchange protocols allow reliable and fast end-user access. The common information structure offers a global coverage for high-quality solar resource products and this coverage is expected to broaden.

#### **Sustainability of the MESoR service over time**

The MESoR portal builds upon open source software with a larger development community and standard web services. This will make the new portal more sustainable in terms of software development and the connection to the portal easier and open as only widely accepted standards have to be followed. This will allow the solar resource community to keep relying on the MESoR service.

### **The MESoR service can be expanded**

MESoR adopts a Service Oriented Approach (SOA) through the extensive use of Web services, it connects remotely located databases and is linked to other initiatives (INSPIRE of the EU, POWER of the NASA, SHC and PVPS of the IEA, GMES/GEO) and to related scientific communities (energy, meteorology, geography, medicine, ecology). Due to these features, MESoR is likely to be able to expand by attracting other providers and enhancing partnerships.

### **Usability**

The efforts to develop the MESoR service in line and responding to the stakeholders' requirements have resulted in a service that is appreciated by the users, as witnessed by the result of the users' survey and of the webinar. Standardisation (including GUIs), the availability of various output formats and the possibility to cross-check the data from different services in a very user-friendly manner are points of strength of the service as for usability.

### **Knowledge transfer**

Another benefit of MESoR for the stakeholders lies in the knowledge transfer that has already taken place and that is likely to continue in the future. All the activities carried out in MESoR contributed to knowledge transfer towards the stakeholders' community

The results of the **benchmarking exercise** and the definition of a benchmarking procedure are very relevant, as the rules have been developed in conjunction with the IEA Task 36 on "Solar Resource Management" of the Solar Heating and Cooling Implementing Agreement and shall serve as a standard for benchmarking to make results comparable. Users have been provided with a set of rules that can guide the selection of the most suitable database for given needs.

The availability of a **user's guide of best practice** also fosters knowledge transfer as it includes presentation of solar radiation data resources, presentation of benchmarking results -which give the users a better indication of the uncertainty of the available data sources and which data bases are suitable for different applications- examples of use in various application fields that illustrate the take-up of various solutions.

Useless to say, knowledge transfer has been widely supported by the MESoR website (it provides the stakeholders' community and the general public with results and presentations, information on current events and, most importantly, provides access to the MESoR prototype) and by the organisations of the **MESor events**, such as the webinar and the training seminar.

Finally the **Roadmap**, after the project end, will provide guidance to decision makers in research, energy related bodies, space agencies, weather services for planning future programmes.

### **Increased trust and spread of usage of solar radiation knowledge**

By establishing a coherent set of benchmarking rules and reference data sets to enable a transparent and comparable evaluation of the different solar radiation data sources,

MESoR contributed to increase trust in solar radiation knowledge. It also contributed to the spread of usage of solar radiation information in the current activity in the users sectors by promoting training activities among potential users.

## Recommendations for future actions

MESoR reached relevant results and its success and impacts may last for the long after the project's end if some challenges are met. At a general level, these are:

- To include more services, both international and national data sources. There is consensus that more data and services should be needed in order to spread the usage of MESoR and establish it as a common practice in the sector.
- To support and enhance the partnership among the consortium members. There is a thread that partnership weakens after the project end and data policies preventing providers from making data available might be put in place. Moreover, competition is high in the sector and this implies that continuous effort should be made to foster the MESoR service.
- To keep exploiting the links with other initiative and with the solar radiation community in general, in such a way that MESoR service becomes a "community facility".
- To communicate and support the MESoR benchmarking approach as a reference in the sector
- To enhance communication and dissemination activities towards the stakeholders' community in order to enhance usage and loyalty.

The primary recommendation is, therefore, to continue to maintain the service through the commitment of Mines ParisTech to sustain and improve the Community Portal ([www.webservice-energy.org](http://www.webservice-energy.org)) and to maintain the MESoR Portal ([project.mesor.net](http://project.mesor.net)).