

Integration of Demand Side Management, Distributed Generation, Renewable Energy Sources and Energy Storages

Task XVII content and status

Expert meeting

Washington, 11-12 March, 2008



Business from technology

Background

At the Executive Committee meeting in April 2006 in Copenhagen the executive committee members

- ❑ unanimously approved the initiation of the Task and nominated Seppo Kärkkäinen as the Operating Agent. The Task was given number XVII
- ❑ decided that the Task Definition Phase may include a negotiation procedure and
- ❑ decided that an Experts meeting (workshop) should be held in September 2006.

The negotiation phase has taken clearly more time than originally planned. At the EXCO meeting in Maastricht in October 2006 there were not yet enough countries to arrange expert meeting. The target for the meeting was November 2006 in Madrid, but also this was postponed. In Seoul EXCO 6 countries were willing to send experts to task definition meeting. Finally, the meeting was arranged in June 2007 in Finland.

Objectives of the Task

The main objective of the proposed Task is

- ❑ to study how to achieve the optimal integration of flexible demand with Distributed Generation, energy storages and Smart Grids, and thus increase the value of Demand Response, Demand Side Management and Distributed Generation and decrease problems caused by intermittent distributed generation (mainly based on RES) in the physical electricity systems and at the electricity market The Task deals with distributed energy resources both
 - at local (distribution network) level and
 - at transmission system level where large wind farms are connected.
- ❑ The Task will also provide the integration based solutions and examples on successful best practices to the problems defined above.

Approach

The first step in the Task is to carry out a scope study collecting information from the existing IEA Agreements, participating countries and other sources (research programmes, field experience, information collected through Cigre working groups, etc), analyse the information on the basis of the above mentioned objectives and synthesize the information to define the more detailed needs for the further work.

Especially information exchange and coordination with Wind and ENARD IAs is organised, and possibility to have common workshop is considered.

Subtasks

Four subtasks are planned

- ❑ Subtask 1: Information collection on the characteristics of different types of DER in the integrated solutions
- ❑ Subtask 2: Analysis of the information collected and preliminary conclusions (state of the art)
- ❑ Subtask 3: Feedback from the stakeholders: Workshop
- ❑ Subtask 4: Final conclusions and the detailed definition of the further work

Subtask 1: Information collection on the characteristics of different types of DER in the integrated solutions (1)

The information to be collected and analysed is dealing with integrated solutions where energy efficiency/demand response is combined (or seen possible to combine) with at least one of the following technologies: distributed generation, energy storage or smart grid technology aspects. The exact definition of DG will be defined, but it includes both low and medium voltage level generation as well as large aggregated generation of small units at transmission system level (like wind farms). The information is collected both by the OA and country experts based on research, pilot projects, demonstrations and other experiences.

OA prepares a list of projects/public sources on the available information and prepares a draft of questionnaire to country experts. This is discussed at the first expert meeting and agreed how country experts proceed with the information collection.

Subtask 1: Information collection on the characteristics of different types of DER in the integrated solutions (2)

The exact form of the information collection will be defined at the first expert meeting, but information to be collected include at least

- technical information on the integrated use of DER (minimum requirement is DR or DSM in combination with one of the following technologies: DG, storages, Smart Grid Technologies)
- penetration levels of technologies
- market conditions
- economy impacts on different voltage and system levels

Subtask 2: Analysis of the information collected and preliminary conclusions (state of the art)

On the basis of the collected information a draft synthesis report and preliminary conclusions are written down including

1. Status and technical and economical characteristics of DG, energy storage and demand response including the system effects of intermittent type DG
2. State of the art of integration of DER at customer, network, system and market level; pilot and research projects and actual applications
3. Preliminary conclusions on improvements needed to enhance the integration
4. Preparation of the workshop

The draft analysis and preparation of the workshop is done by OA with the assistance of country experts

Subtask 3: Feedback from the stakeholders: Workshop

An open workshop is arranged with stakeholders with the objectives

1. To collect additional information from the invited speakers
2. To get feedback on the preliminary conclusions
3. To get inputs for the future work

OA produces the workshop proceeding with the conclusions

Subtask 4: Final conclusions and the detailed definition of the further work

As a result of the previous subtask the final products of the scope study are produced including

1. The updated synthesis report with conclusions
2. Detailed work plan for the additional work

The first product is mainly produced by OA with the assistance of country experts. The workplan is produced by the expert group with OA

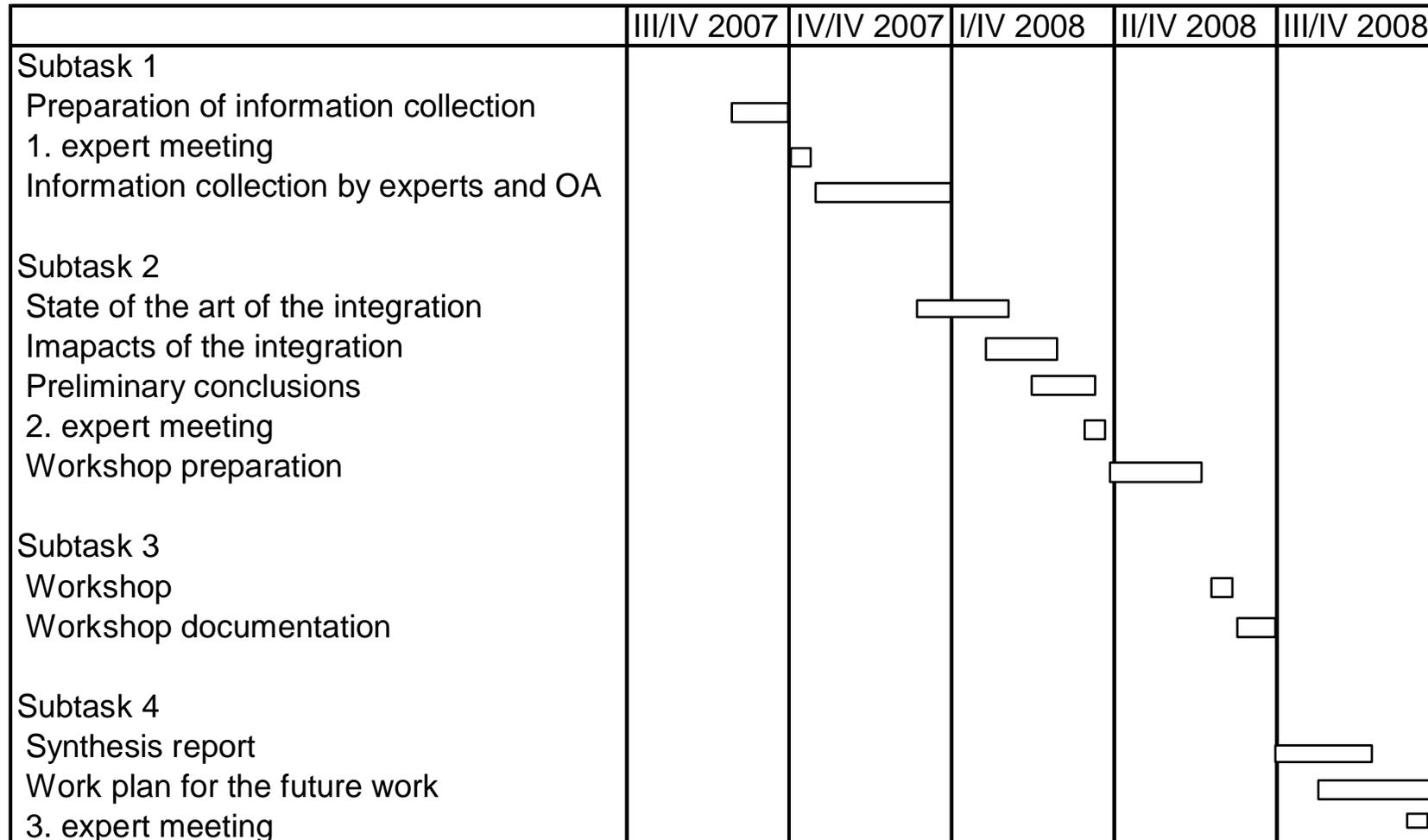
Expected results of the first stage

The main deliverables of the first stage are

- ❑ State-of-the art report on the integration with conclusions and first set of best practices
- ❑ Workshop proceedings
- ❑ Detailed plan for the further work

Time schedule

Duration of the first phase is one year



Estimated resources needed

Operating Agent:

Personnel costs (6 person-months)	75000 €
Travels	3000 €
Workshop	5000 €
Total	83000 €

Country experts: 6 person-weeks

PROGRESS SINCE OCTOBER 2007

- The first expert meeting was arranged in Madrid 1-2 November, 2007, with a premeeting workshop at 31 October in Red Eléctrica España. Besides the Operating Agent (2 persons) 9 experts from 5 countries participated (Finland, Korea, Netherlands, Spain and USA)
- The following work was agreed:
 - **Country expert work:** the experts will produce three kind of formal documents:
 - ❖ Questionnaire: Task XIII questionnaire is utilised. However it did not covered all aspects of Task XVII: DG or renewables or storage was not included. OA will add questions in these fields and send the questionnaire. Experts send back questionnaires end of January if possible.
 - ❖ Country document: document of each country as annex to state of the art report will be produced. Experts will also send these by the end of January if possible.
 - ❖ Case studies: Reporting of case studies by experts will take place in the end of February.
 - **Operating Agent** will collect literature references, information about ongoing activities and technologies related to integration.
 - **OA** sends the first draft of the content of the state-of-the art report in the beginning of February after receiving the questionnaires and country reports and first draft of the state of the art report will come before expert meeting.

Status at present

- ❑ Italy joined the Agreement in November: expert Giancarlo Scorsoni from GSE (Gerstore dei Servizi Elettrici). Now we have 6 countries. Austria has just informed that they very probably will join the Task (Arsenal Research: expert Matthias Stifter)

- ❑ There are some delays in information collection by experts:
 - The revised time schedule was discussed in the expert meeting (next slide)
This does not effect on the overall time schedule of the Task.

Workplan for the next 6 months

According to the project plan, the work plan for the next 6 months is as follows

- The draft of the state-of-the art report will be produced (probably in April) by OA for the comments to experts
- The second version will be produced by OA for the stakeholder workshop
- Stakeholder workshop will be arranged in May – July
- Final expert meeting will be arranged in the beginning of September
- Final report with the proposed new work will be produced in September 2008

Adjustments agreed in Washington expert meeting:

- All the expert inputs by the mid of March
- Next version of the table of content of the state-of-the art report mid March
- 1st version of the draft report by the end of May
- 2nd version to the stakeholder workshop
- Stakeholder workshop in Petten, Netherlands, 9.7.2008 followed by the expert meeting in 10.7.2008
- Final expert meeting in Korea 9-10.9. 2008