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D7.4 European Household Energy Use Knowledge Base

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Dissemination Level		
PU	Public	✓
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission Services)	



European Commission
Information Society and Media

D7.4 European Household Energy Use Knowledge Base – detailed quantitative information on the day to day, energy decisions of European Citizens, on a service by service basis.

Document Control

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1. Executive Summary

The context of the Dehems programme is that Europe has a stated commitment to reduce CO2 emissions by 20% by 2020, and that households account for 25-30% of European carbon emissions, with 80%+ of household energy used on heating. However, in order to bring about the behaviour change required in order to achieve these reductions, further information is needed about the day to day energy decisions made by households.

The Dehems project contributes to existing knowledge base on domestic energy consumerism by collecting and analysing information obtained via the following methods:

1. Summarising the various data sources cited by existing state of the art studies on domestic energy consumerism so that it can be also used as a basis of comparison for our own results
2. Gathering and analysing data from the responses to Dehems household surveys and focus groups
3. Gathering and analysing data from the Dehems system, collected at the Dehems server

This report sets out how Dehems is planning to create a framework or knowledge base for these 3 activities and the type of information which will be included. At this stage, it simply sets out what this knowledge base will look like as there is no information yet available from living labs with which to populate the database.

2. Project and Cycle Objectives

Work Package Objectives

Although the lead is being undertaken by WP7, there are other work packages which are contributing to achieving this deliverable. Collecting data is largely being carried out as part of WP5 & WP7, designing and analysing data is part of WP2, whilst summarising and presenting it, forms part of WP8. The relationship between this deliverable and these work packages is shown below:

	WP Title	WP Objectives
WP2	User Requirements & System Architecture	Systematically define the user requirements for conservation of domestic energy through the use of heating/cooling plant, lighting and appliance use, for each of the three Cycles. This will identify a range of different household types, relevant across European Member States, in various settings. It will define patterns of energy usage, preferences for change, demand for functionality and specify the scope of potential savings based on user feedback. It will further define a taxonomy of appliances, energy usage and User Interface models. The result will be the first detailed empirical view of household preferences in domestic energy resource management services and views on resource management interfaces
WP5	Energy Measurement	Create a database of typical usage that shares statistics of similar households for use in setting best practices and the socialization of those best practices
WP7	Living Labs Behaviour	Establishment of a series of Living Labs across Europe, investigating usage impact of the Digital Environment Home Energy Management System through three iterative cycles User generated evidence base to inform system development
WP8	Evaluation and Dissemination	Disseminate key learning and results

Cycle Objectives

Results will be collected during three cycles. The use of repeated cycles enables the action research to progressively iterate and achieve the projects' objectives. However, in order that consistent results are produced across the three cycles, it

is important that the design of the detailed quantitative information to be gathered from living lab participants is done at an early stage. Accordingly, the household survey and the specification of information to be gathered from the Dehems energy sensing system, were completed prior to commencement of Cycle 1 and are shown in the following deliverables:

D2.1 captures household requirements for households and decision makers across Living Labs
D2.2 sets out the process for collecting information through focus groups
D7.3 includes the household questionnaire

3. Knowledge Base Content

It is intended that the knowledge base represents the following data, which are gathered and analysed from the:

- Average domestic energy consumption per household, per month/annum for each home in Living Labs
- Profile of major appliances found in the Living Labs including energy source, manufacturer, model, energy ratings, age, etc.
- Conscious energy saving techniques applied in the Living Lab homes.
- Profile of the homes in the Living Labs, such as number of people, income group, house configurations (number of rooms, type of house, etc), energy rating, monthly/yearly energy consumption etc.
- Rationale behind appliance purchases

Additionally, if the system, deployment and time to deliver are in order, we can try to optionally include this information:

- Energy consumed by appliances including space heating, washing machine, dishwasher, fridge/freezer, lighting
- Usage patterns for the major appliances, such as peak hours, peak seasons, typical everyday usage behaviours

4. Updated State of the Art

The main thrust of this deliverable is the gathering of data/evidence on the different households and appliances within the Living Labs, and how these

consumers use energy, so that comparisons can be made within and across Living Labs.

There are several organizations that do something similar, but in a wider EU-15 and EU-27 scale, such as ENERDATA, EUROSTAT and most importantly, the ODYSSEE Project. These include:

<http://www.odyssee-indicators.org>

<http://www.enerdata.fr/enerdatauk/publications/index.php>

Data on household consumption is summarized and reported here:

http://www.odyssee-indicators.org/publications/PDF/chapter_4.pdf

Other important reports based on the Odyssee database:

http://themes.eea.europa.eu/Sectors_and_activities/households/indicators/energy/hh06households.pdf

http://reports.eea.europa.eu/eea_report_2005_11/en/EEA_report_11_2005.pdf

Dehems' European Household Energy Use Knowledge Base will add to these sources of quantitative information on the day to day, energy decisions of European Citizens, on a service by service basis. As the Dehems project progresses, discussions may be held with the organisers of the above (particularly Odyssee) with a view to exploring the possibility of including Dehems data in existing knowledge bases. As a minimum, Dehems data will be made public through the Dehems web site.

It might also be important to gather data that is not already available in the various databases/reports indicated above. In which case, the energy saving techniques and usage patterns may become DEHEMS contributions.

5. Activities Implemented and Objectives Achieved

User requirements have already been specified through work package 2, and data from Cycle 1 participants is now being collected by the Dehems energy sensing system through WP5. A detailed household survey (see D7.3) was completed with each participating home as part of the equipment installation process. This survey was designed to provide the following information:

- Household profile - location, number/age of residents, number of rooms, household income, etc
- Energy profile – energy sources, existing consumption, internet, etc
- Energy Saving Views and Practices
- Household appliances and how they are used
- Online participation and social networking

6. Next Steps

The first focus groups have been scheduled for April 2009 and a coordinated process agreed with Living Labs for undertaking these.

Results for Cycle 1 from the Dehems system database, the household surveys and the focus groups will be analysed as part of the Project Cycle Analysis report for Cycle 1, which is due for completion at the end of June 2009.