



## AIM

### Deliverable 5.2.4

#### AIM system installed in three households

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#### *Abstract*

This document provides information about the installation of the AIM system in three real households. All households are located in Greece and have been offered free willingly by their users on the purpose of using the AIM system in their daily life under the supervision of partner BCT.

The document outlines system setup information only. Validation results have been documented in deliverable D.5.2.3: "Overall architecture final validation report".

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## **Executive summary**

This deliverable concludes the proceedings of the validation phase of the AIM system. This last validation step has been concerned with the installation of the AIM system in real households with the goal to measure in real conditions its performance in saving energy.

To this end this very last phase is highly important for the assessment of the overall architecture as it will yield results regarding system's efficiency to comply with the initial target of saving energy set out in deliverable D2.1. Furthermore system exploitation by ordinary users will reveal pragmatic evidence regarding system's usefulness in daily life.

For logistics organisation reasons it has been decided that system exploitation in households should be carried out in one country. Moreover, despite the initial plan, the system exploitation phase will last two months, instead of one that was contractually planned (namely until the review date), while the system will remain in operation in the households and after the end of the project.

**List of authors**

Company	Author	Contribution
KEL	Spyridon Tompros	TOC modification, Section 3.3
BCT	Dimitrios Tsaimos	Section 2.2

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# **1 Introduction**

This document provides information about the installation of the AIM system in three real households. All households are located in Greece and have been offered free willingly by their users on the purpose of using the AIM system in their daily life under the supervision of partner BCT.

The content of the document is split in three chapters. Chapter 2 gives details on system installation within the three households, Chapter 3 provides information about system use planning, while Chapter 4 outlines rough information about planned measurements acquisition and processing.

## 2 Description of the households

### 2.1 Layout

The figures below illustrate the internal plans of the three households selected for system installation. Two of them are apartments (Figure 1 and Figure 3), and one three-floor house (Figure 2) with an unoccupied attic (not shown in the plans).

Selection of the households has been based a particular process that was carried out by BCT in cooperation with its client network operators. Main parameters of the selection were:

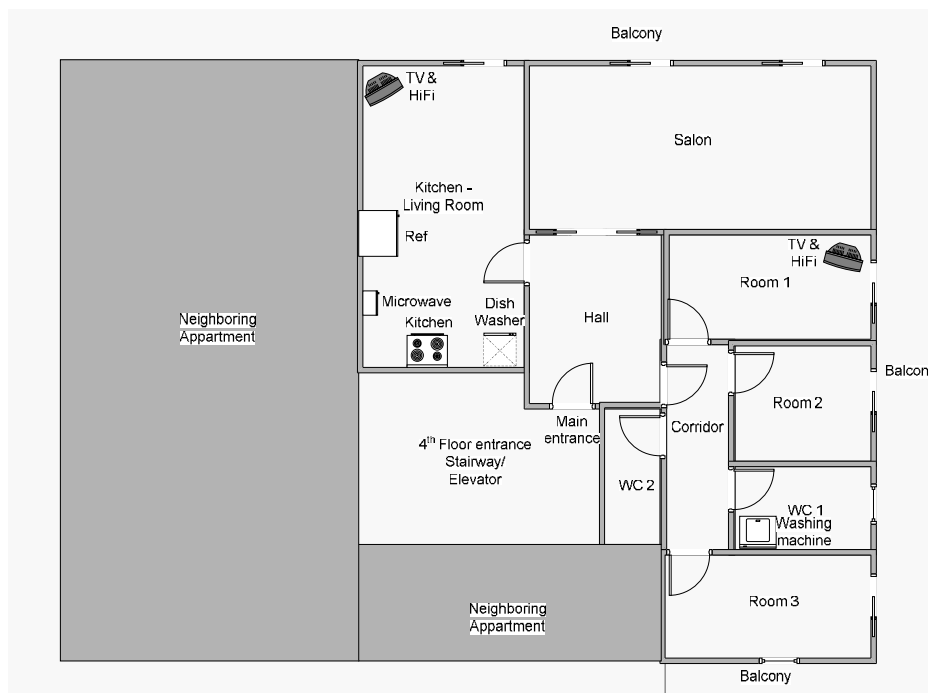
- Familiarity in utilising IT products.
- Interest in energy saving applications.
- Household age less than 30 years.
- Agreement with the terms imposed for trials realisation, that is, the testing period, the extra devices to be installed.
- Willingness to cooperate with BCT regarding system troubleshooting free-of-charge.
- Successful pass of the power line infrastructure testing.

System installation has been contacted by BCT in cooperation with KEL in what concerned software setup on the gateway.

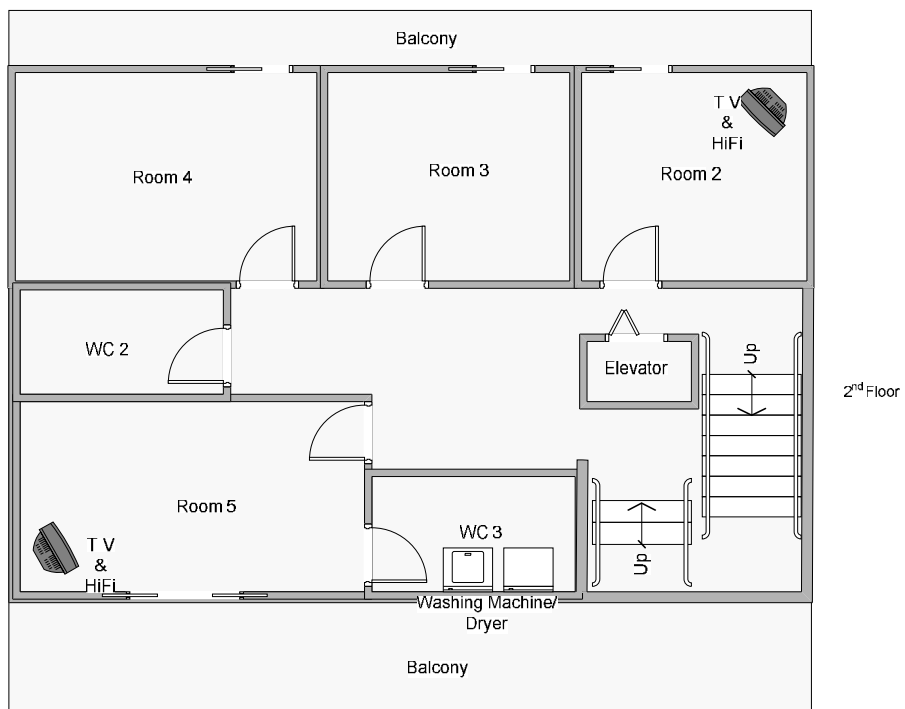
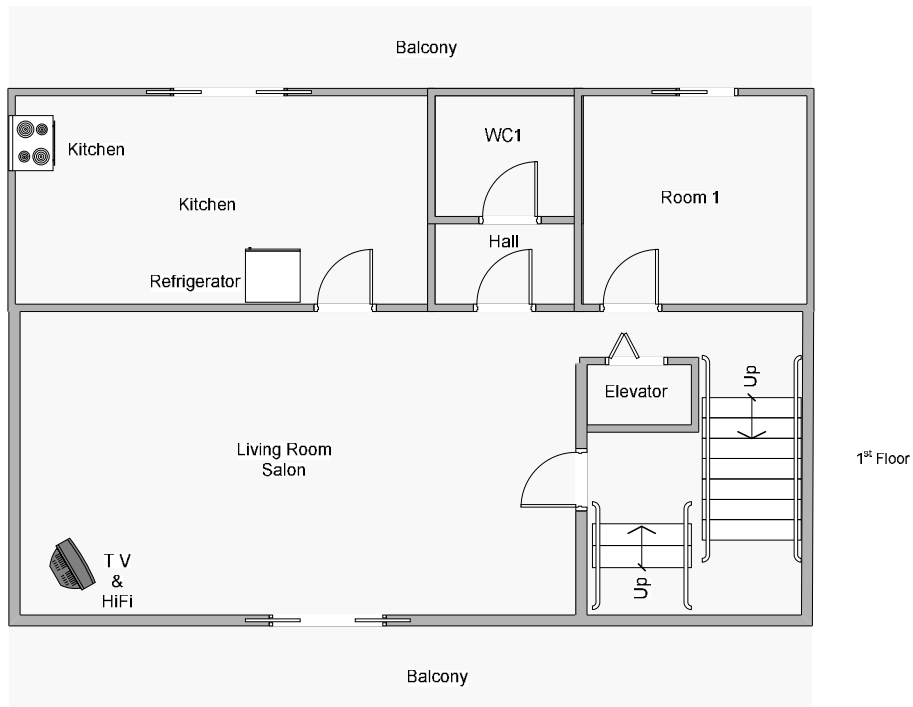
For anonymity preservation reasons and due to the restrictions imposed by the national rules for handling of sensitive personal data, it has been decided that the system will not be accessible from the outdoor network so that user statistics are not disseminated to third parties.

System installation regarded installation and setup of one EMD per appliance and a home gateway to host the service logic. Under this scheme EMD-gateway communication has been realized over the power line network using the KNX protocol, hence avoiding any intervention on households' infrastructure.

For the whole lifecycle of trials, measurements and user programming have been maintained in the database embedded in the home gateway, and data retrieval has been possible only by local connection setup.



**Figure 1: Apartment\_1**



**Figure 2: House\_1**

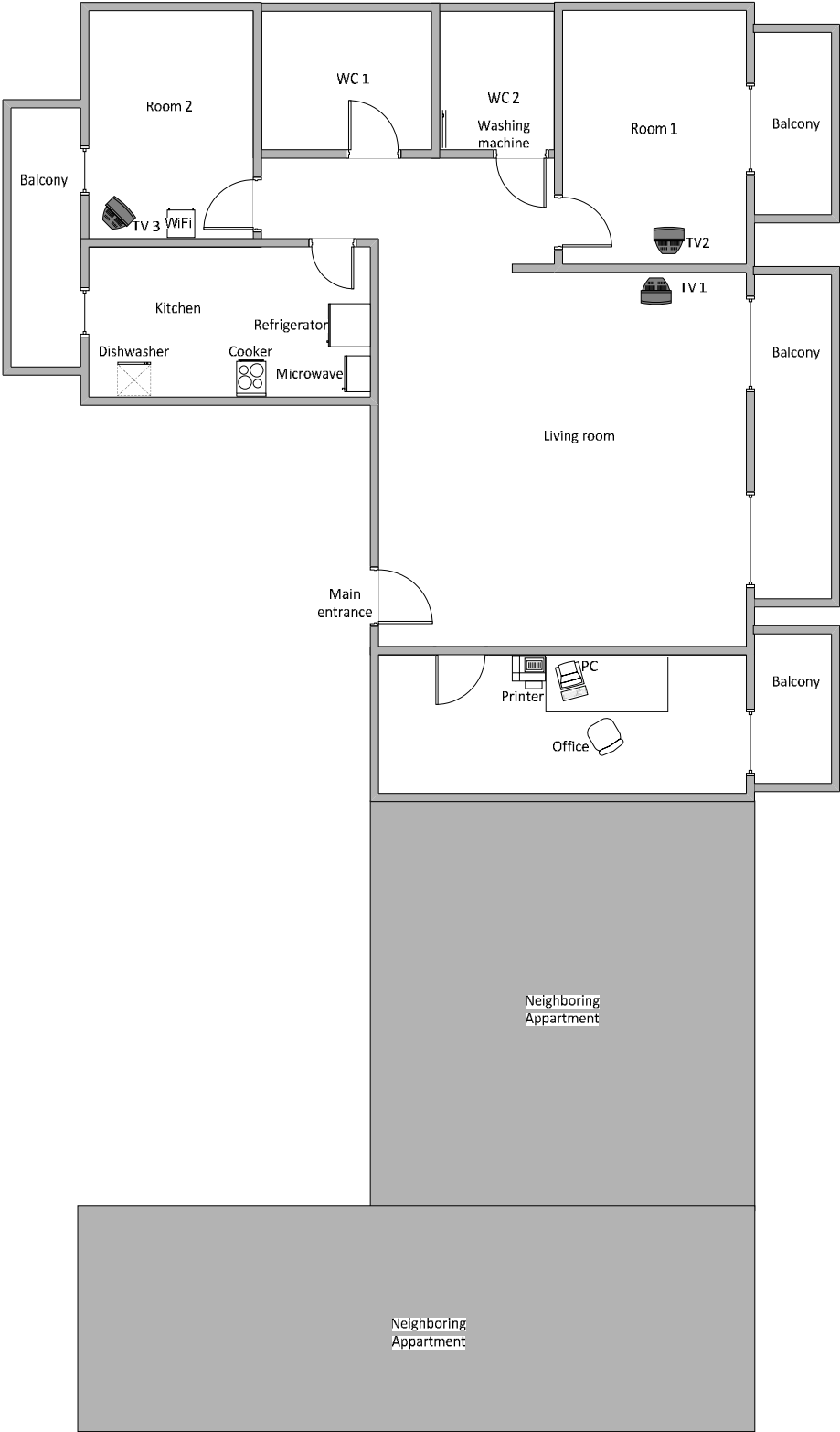


Figure 3: Appartment\_2

## 2.2 Contained Appliances

The appliances included in system operation were those depicted in the three household plans. All of them are existent appliances of conventional technology and not the new ones developed in the frame of the project by the three appliance manufacturers. The reason for resorting to the decision of applying AIM technology on conventional technology appliance has been two fold:

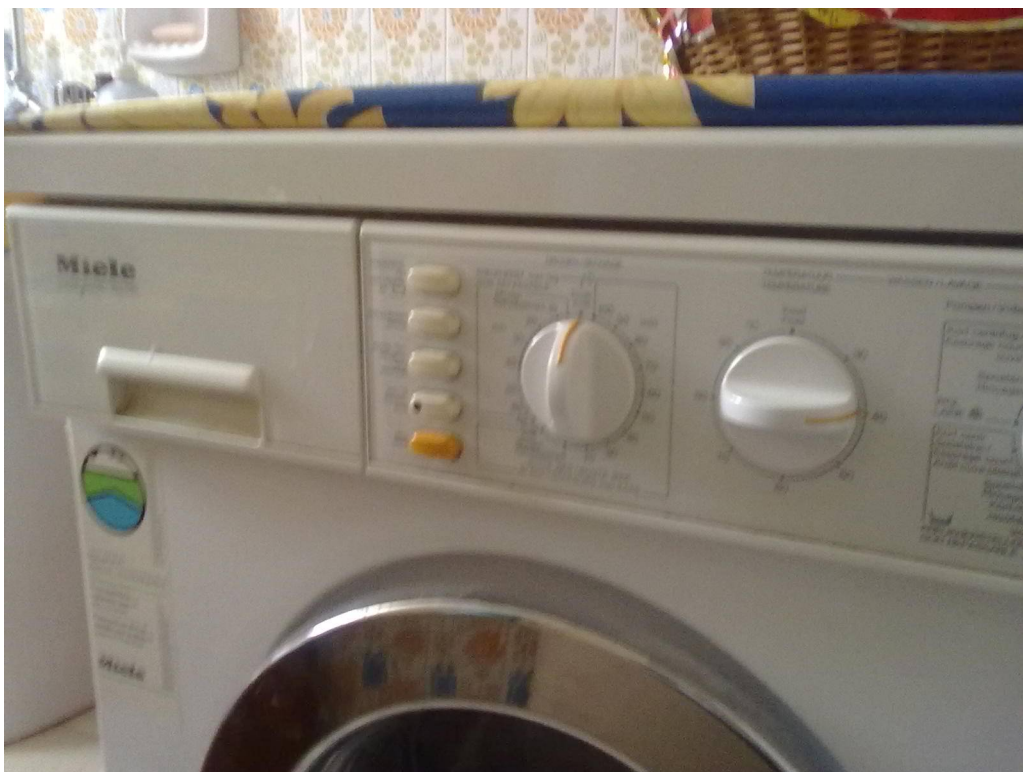
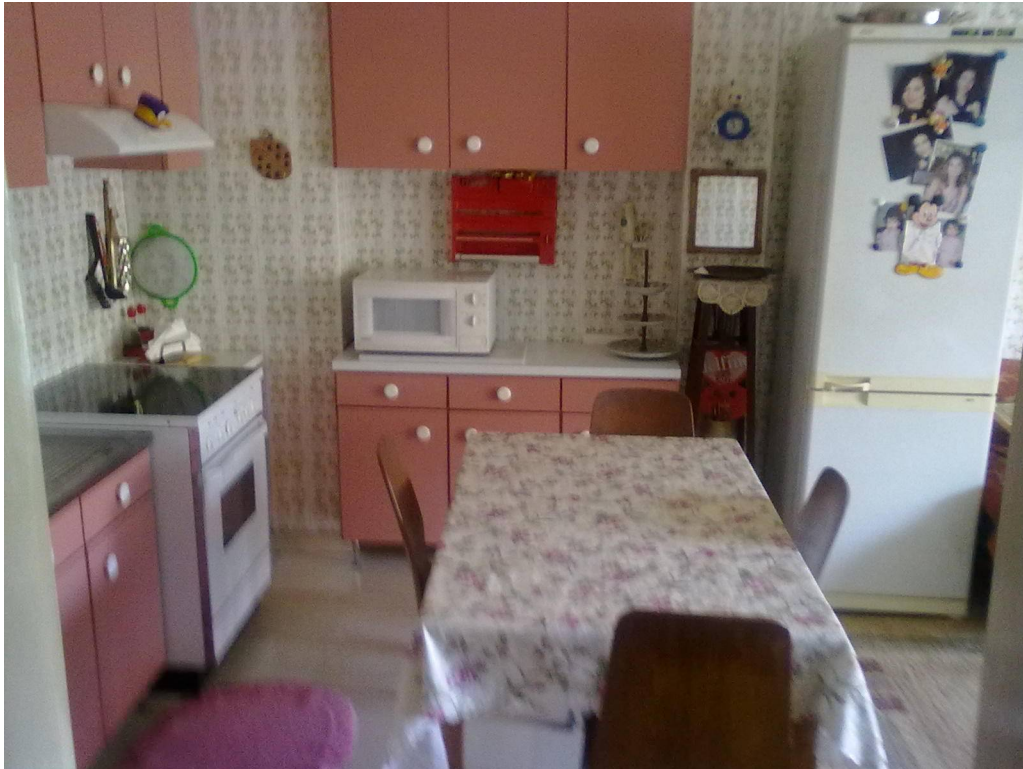
- **Increase user acceptance concerning system installation:** During the households selection process it was made clear that users don't agree with the concept of having their appliances replaced with new ones for a period of one month and then get back the old stuff. The possibility of leaving the new appliances developed in the project installed, even after the end of trials, has been also discussed but appliance manufacturers suggested that the appliances are of prototype state and therefore are not 100% compliant to the commercial rules conveying consumer products.
- **Make system installation permanent:** This requirement has been expressed by all users as most of them are very energetic regarding the prospect of energy saving. Thus, it has been decided that the EMDs and the gateway will be left over after the end of the project.
- **Show that the system is seamlessly applicable to every household:** This has been a major goal for the project that alone proves system usefulness and market viability.

The appliance types taken into consideration were:

- White goods (refrigerators, washing machines, kitchens, microwave ovens and dishwashers).
- Audiovisual equipment (TVs, DVD/Cassette players, Hi-Fi systems).
- Communication equipment (xDSL modems and WiFi hotspots).

Following there are some pictures taken in the household depicted in Figure 1, illustrating the technology of the appliances being addressed.





### 3 Trials planning

Trials realisation is planned to take place in months May and June.

## **4 Results**

Results concerning system exploitation will be consisted of real time energy consumption figures that will be aggregated at the gateway with the help of the EMDs connected to each appliance. Characterisation of appliance program will be done on basis of profiles defined experimentally per each appliance.

Such profiles have been defined by applying the power line version of the EMD on the power socket where each appliance is connected. By doing so, the EMD produces real time measurements recorded on the gateway. This process has been repeated for each appliance and for each supported program. Once all appliances are measured, the obtained profiles are fed into the database of the AIM gateway so that they can be exploited in the implementation of the energy control and monitoring functions.

Trial results are reported in deliverable D.5.2.3 (“Overall architecture final validation report”).

## **5 Conclusion**

This deliverable summarizes information about the realisation of trials in real households with the objective of measuring AIM system’s performance in saving energy.

This trial phase is the last technological activity with respect to the overall project execution. Its planned duration has been exceeded by one month after the end of the project, due to the interest of users in the technology and the need for retaining a more accurate account about system’s performance.