* Block diagram

The Smart Home diagram contains three main blocks: Hardware, Software and Security. The Hardware block is described by four parts: LightTube, Thermostat, Sensors and Audio System. The Software block contains a FrontEnd part – the Client-Side of the application – where the customer can interact with the system, and a BackEnd part – the Server-Side of the application – connected to a database is order to receive and store data from sensors, and to keep the history of the system states. The last block, but not the least important, is the Security one, where the user can use the application only with authorization (login) and within a range.

* Internal Block Diagram

Our application is based on the connection between the hardware part and the software part. In this case, we have the Internal Block Diagram for the Sensor block. The Sensor block has two main properties: to get data from external sources and send it to the backend.

* Use Case Diagram

The Smart Home system has four types of actors: user, administrator, provider and maintainer. The user must authenticate in order to use the application. From the application, the user can manage the system, access the list of devices and check their status. Some functionalities of the system are the following: turn ON/OFF the thermostat, tubelight or the audiosystem, set lighting mood and enable/disable the sensors. The administrator can manage the list of devices, and also use the functionalities. The role of the provider is to sell hardware parts, when the administrator wants to buy hardware parts. The maintainer should offer maintenance everytime an administrator requests maintenance.

* Requirements Diagram

As we can see from the name of the system, Smart Home, we will implement an intelligent solution for homes and that means we need to get accurate data, to manage it and keep the performance of our Smart Home system at a high level. In order to have all of these at a time, we must use the latest technologies and equipment. Also, we need to make sure that our system is secure, so our customer won’t face any problems. Our application should have an optimal implementation, so we can provide updates and maintenance.

* Sequence Diagram

One facility of our system is controlling the thermostat. You can choose from displaying the current status of the thermostat, turning ON/OFF and changing the temperature. In this way, you will be able to control your thermostat remotely, but within the range we agree with the customer.

* WBS & Gantt

The first thing we did when we decided to implement a Smart Home System was to make a project management plan, in order to have a well-defined idea for our project. We used the Project Control concept to set milestones in order to control the project process better.

The purpose of research component in our project was to help us accomplish our goal: to create an intelligent, innovative solution for homes, based on what people need and want. As we said earlier, we must use the latest technologies and equipment for our solution, so we had to find the ones that fit our project. The Research Report (Milestone 1) will contain data from the research phase, like surveys responses, competition analysis and technical research.

In the next phase we established the requirements of our projects and divided them into basic and advanced, by the order of implementation. This means that even if we set the basic requirements along with the research phase, we should wait for the research report to be done in order to set the advanced requirements.

The design component is an important step, and we divided it into three small phases: functionality, software and hardware. It is important for a smart system to have a practical design, in order to receive the most accurate data, and the application should be user-friendly so the customer would use it easily.

For the development phase, we have two different sides: software and hardware. The software implementation consists in three phases: backend, frontend and UI integration. The hardware implementation is composed by equipment assembly. At the end of this phase, we will get the Project Documentation Deliverable, so the Milestone 4.

Our developers and potential customers will test the application, because it is important to have a perfectly functional application and to resolve the bugs in time.

The last step before the release is to prepare the market for our application using marketing & advertising. Once the product is released, we will continue to check its performance, considering the customers’ opinions.