Università degli Studi dell'Aquila

Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica

Homework Report

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Chapter 1

Who we are?

We are Gaetano Fichera and Giovanni Lezzi, two students who are attending the course of Master Degree in Computer Engineering. In this homework we have applied our knowledge of Model Driven Engineering in order to model a Water Distribution, Leakage And Quality Control System (WCS). We spent three weeks and half in this homework, with an average of ten hours of work per week.

Chapter 2

Our Homework

The task is to profiling and modeling a Water Distribution, Leakage And Quality Control System. In this area you are required to model a WCS through UML, using the extension mechanism called profiling. First we have designed the Profile of this kind of systems and then we have modeled it through the use of these UML diagrams:

- Use Case Diagram;
- Component Diagrams;
- Sequence Diagrams.

Since the extension of the domain, the task left many decision points to be analyzed. So we have limited to model only a part of the whole system.

Chapter 3

Work Plannig

The first step of our work was to plan the various stages of the work. We have never managed such application domain so our first care was to study it consulting some domain expert and reading some documents online in order to understand how to design our model and imaging future possible stakeholders of the systems. After that we restricted our software model to a single portion of the system: the Water Quality Control System, in particular the inlet water pipes and the outgoing water pipes building the corresponding profile. On the basis of the concerns of the stakeholders we have made the Use Cases Diagram and their detailed versions. Then we designed the Component Diagram driven by the Use Cases Diagram and for each Use Cases we have made a Sequence Diagram. In the end we have done the Deployment Diagram.

Chapter 4

Study Of The Domain

We started our work collecting informations about the WCS through the Web but it was to bare for us, for this reason we have get in touch with a Master's Degree Chemical Engineering. Thanks to his help we have satisfied our doubts.

Chapter 5

Our Vision Of The Domain

To make the Homework funnier we have decide to introduce some technologies we are not sure exist like:

- SeaweedPicking: particular "mechanical algae" placed at precise points of the water pipes. They are equipped with advanced water samplers that draw small amounts of water to be sent to the analysis center, each SeaweedPicking is connected to an internal network that will head the Control Center;
- Magikarp: In the event of contamination detection in inlet water pipes, "mechanical fish" is sent to search for the possible cause inside the pipelines, it will automatically look for the cause of the problem and send the data to the Control Center. They are equipped with advanced water sampler and analyzer in order to speed up the recovery process.

Activities in the our system can be attribute into three macro areas: The Sampling Aspect, with all the activities dedicated to the sampling water; The Quality Control Aspect, with the activities dedicated to the water quality monitoring and discovering of possible problems and their causes; The Water Retrieving Information

Aspect, the services provided to the Company to retrieve information about the water quality.

Chapter 6

Stakeholders