Diploma paperwork resume

By Gallin Grozdev
Speciality: Informatics – software technologies, faculty number № M21-640
Scientific reference: Asst. Professor Dr Sylvia Illieva, Informatics technologies, FMI.
Diploma paperwork theme: Software process in adapting open source software (AOSS). Bittorrent client (extended BitTorrent Client)

Diploma paperwork purpose :
1) Proposing a proper software process abiding to principles of flexible methodologies for developing projects with an open software source (OSS).
2) Demonstration of the methodology utilization by choosing the most suitable OSS for the application being developed and applying of the proposed software process.
3) Drawing some conclusions and recommendations for future projects applying this methodology.

Tasks, deriving from the purposes described:
1) Comparative analysis of the existing agile methodologies.
2) Offering an innovatory agile methodology for open source software adaptation .
3) Choosing the right OSS (research) and application of the software process.
4) Describing the implemented features, the necessity of them, and the path to be reached:
      - internal peer to peer firewall
      - error handling and logging
      - enhancing the frontend backend communication protocol
      - other minor features and fixes
5) Analysis of the obtained results and recommendations.

       The tendency of integrating the OSS in software companies is becoming more and more popular due to its profitableness. Making and modifying of "working decisions" do not only save resources, but help globally for the improvement of the software quality. The complete life cycle of developing an OSS, from its examination to its integration demands also a particular software process to be defined. In this diploma work, such a newly defined software process shall be applied in developing of a network project (peer-to-peer), based on a low-level language - C++. The software process is applied for the OSS eXtended BitTorent Client.
       A new agile methodology – AOSS (Adaptation of Open Source Software)- is proposed in this diploma paperwork. The student considers the project "SuperSeeder", developed by a team of software engineers (the student is a part of this team) using the AOSS. In the theme, the role of the student in analyzing, modifying and integrating of the used OSS XBTC is exposed in details.
       The more popular methodologies and those we borrowed to create AOSS have been chosen for the execution of the first task*" Comparative analysis of the existing agile methodologies"* . The conclusions from the first task could be a base knowledge for the invention of other agile methodologies. This knowledge is used by the student to execute the second task *"Offer an innovator agile methodology for adaptation of OSS".*
       For the execution of the second task the student defines and classifies the newly proposed methodology, and differentiates it from the other methodologies. Relying on

the existing methodologies, the student describes AOSS in the way he describes the other methodologies, using a meta-language. The methodology is presented as an idea, a software process, defined practices, used applying programs (for project planning, bug tracking, client requirement analysis, and project history and source control), roles and responsibilities of the participants in the examined project. The software process in AOSS could be described as searching, identifying, analyzing and adapting the OSS to the business needs of the main project developed, using the AOSS methodology. The aim of the methodology is also to take into account both: the business needs of our main project, and the business needs of the used OSS, stimulating its progress. Our modified OSS must be distinguished from the open source community project as late as possible. The software process of developing OSS is also examined in detail in the theme. The methodology presents a group of traditional practices in developing OSS, identifies popular practices necessary for the implementation of other agile methodologies, and defines the specific ones. When developing a certain project, in our case "Superseeder" project, the used practices and applied programs define the model used for developing a project based on the AOSS methodology. The "dotProject" project management system defines a range of rules for compiling the "non-final" project plan. The usage of the "Bugzilla" system helps us to classify the bugs and to trace the theme's "vital cycle". One of the roles which AOSS defines is the one of the "Software engineer". Performing this role, the student initiates procedures for visual structuring of the client's requirements, and procedures for functional analysis in the"tikiwiki - wiki system". The software engineer also creates a source control branching policy using the "SVN – subversion control system".

At the execution of the third task *"Choosing the right OSS (examination) and application of the software process,* the student chooses XBTC, following the AOSS methodology step by step (He uses the described practices, and considering the restrictions imposed , he distributes the roles between the participants in the project). The main premise for the successful execution of the task was the student's good knowledge in the bittorent subject area. The other subtask which the student successfully completes was to integrate himself into „the SourceForge community". The student presented one successful model of applying the AOSS methodology. Each time the AOSS is used in the future, the maturity of the methodology and the presented model could be enhanced, or an alternative one could be offered. The student also suggests a possible development of the methodology outside the OSS community. He compares the software process used by Google company to the one, used in the development of "SuperSeeder" project (using AOSS methodology).

The good knowledge of the XBT Client's subject area and the cooperation of the OSS community were the main premises for the successful realization of the fourth point, "Description of the implemented features". The student also suggests a path for future advance of the XBT Client (Idea for architectural change described and justified in the point "XBT Client's future progress").

As a conclusion of the diploma paperwork the student provides analysis of the obtained results. The student specifies the place of the AOSS in the world of the agile methodologies. He proposes alternative usage of the AOSS and describes the perspectives for enhancement standing in front of this newly defined methodology. The best way to enhance the AOSS methodology is to use it.