title

Review Document: Real Time Mesh Utilities

Subtitle

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Review Document

The review document is divided into two parts. It contains the results of the planning as well as the outcomes of the design process. The result of the planning include development model, cost and risk estimation, milestones and organisation. Design process contains the outcomes of the current iterration, determinations for the next iteration and a list of tools.

1 Result of the Planning

A big part of the first phase of the project (i.e. Scheduling and Draft) is reflected on the functional specification document. The requirement analyses is registered, the objectives are declared, whereas the decisions and the product informations are written down.

1.1 Software Development Model

This section contains information about the software model chosen based on the requirements of the Project. The principals of the group, the customer requirement and knowledge about the Project play an important role in choosing the Development Model. Based on the Development Model, the development team decides its work flow.

Agile Development Model: SCRUM The Group chose Scrum because it is an iterative and incremental agile software development framework for managing product development. The duration of each Sprint would be two weeks. Each Phase of the Software Development would have two Sprints.

Each Sprint would end with a presentation by each Working Group about the developments and progress during the Sprint. The end of each phase of the Project would be marked by a working prototype and a presentation which would include a summary of the work done by the entire team.

Projects specific Adaptation to the Model: Every person in the team has multiple roles. Each group member would be working on both, the document and the code.

1.1.1 Software Development specific Content

Since the group decided for the Agile Development Project, the milestones need to be stated and agreed upon by the team. Milestones are the aim or the expected output of each development phase. The also give the outlook and perspective of the performance of the system. They help the team to specify what all should be completed by which deadline.

1.2 Effort estimate

The main purpose in the effort estimation section is the categorization of the different parts of the Project regarding their complexity and effort criteria. (see Abbildung 1)

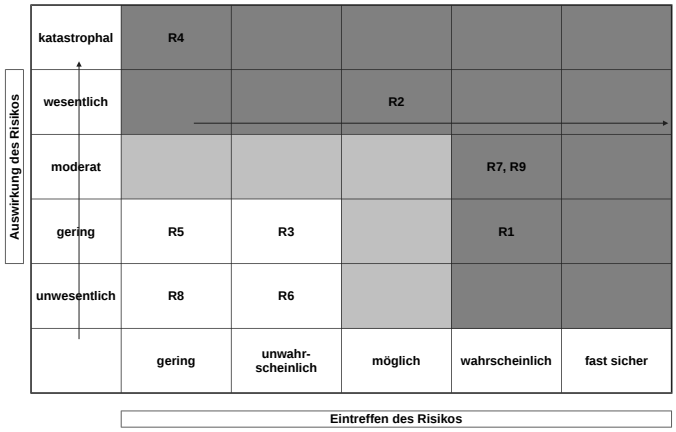

Figure 1: Aufwandsabschätzung

1.3 Risk Estimation RE

In this section, the probability of the different occurring risks involved in the Project is mentioned. If any risks take place, their effect helps determining how important it is for the team to take care of that risk and prevent it from happening again.

RE1: Communication problems in the team

RE2: Coverage is too extensive

RE3: Framework does not provide the needed functionality

RE4: Absence of the team members

RE5: Change of the requirements due to the miscommunication with the Product Owner PO

RE6: Hidden complexity

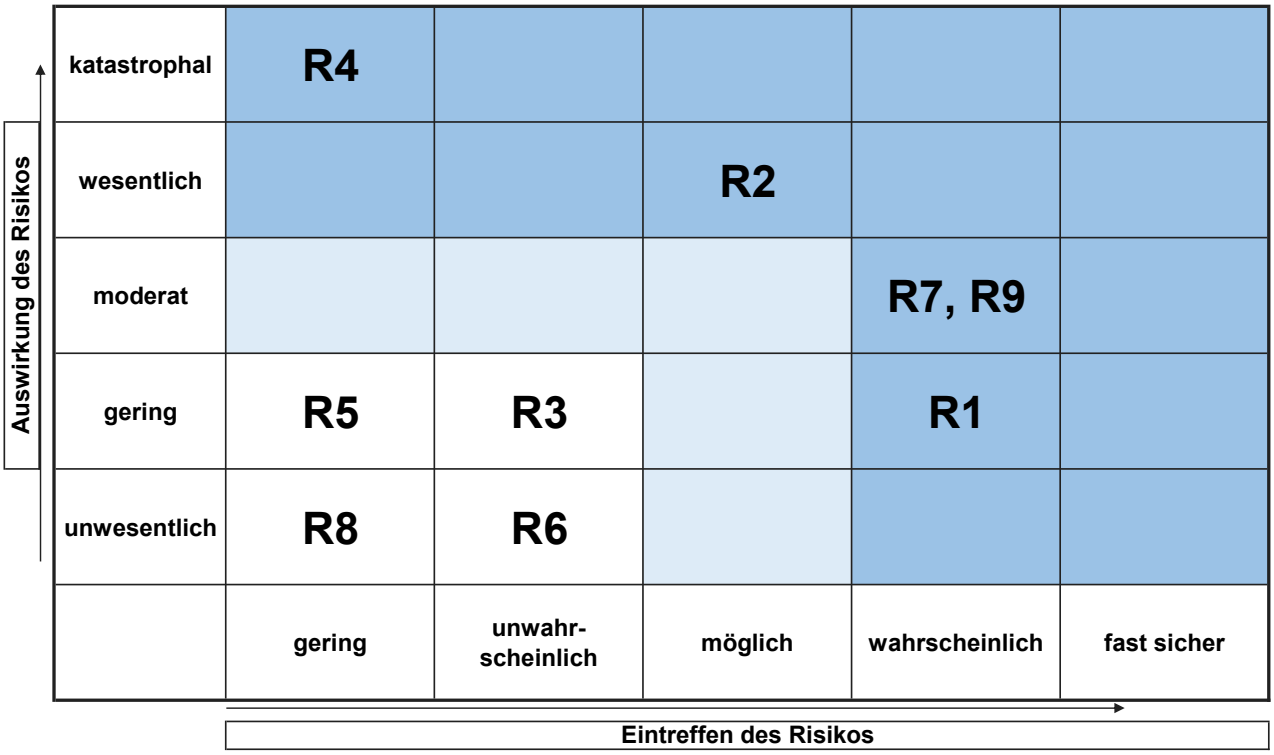

Figure 2: Risk Estimation RE

1.4 Milestones

First Milestone: functional specification, preliminary design, Reviewdocument, executable inputprocessing, Presentation

Second Milestone: SCDC (running), Projecting (running), Interpolation (running), Intergration display 3D, Reviewdocument, Presentation, detailed design

Third Milenstone: Portation to MNE Scan, SCDC (tested and operating), Projecting (tested and operating), Interpolation (tested and operating), Reviewdocment, Presentation

1.5 Organization

This section concerns to the rules, agreements and the partitioning regarding the teamwork in the Project, so the work itself will at it best be efficient and organized.

1.5.1 Ways of communication

Telegram: Used for quicker and direct team communication so that the possible misunderstandings will be solved in no time.

e-mail distribution list: Used for scheduling the team meetings and the communications with the extended team, including the POs.

Team meetings: Used for the review and direct discussion of the encountered problems.

Skype: Used in the cases of the absence of a team member.

Jira: Used for scheduling tasks and keeping track of the progress done by each member of the team.

Dropbox: Used for exchanging documents and file sharing.

1.5.2 Additional agreements

- Internal team meetings (without the POs) : (every week) Tuesdays and Thursdays at 19:00
- External team meeting (with the POs) : (every week) Wednesdays at 17:00
- Meeting of the subgroups : upon consultation and demand

1.5.3 Role assignment in Scrum

Produkt Owner: Thomas Jochmann, Lorenz Esch

Scrum Master: Simon Heinke

Development team: Blerta Hamzallari, Felix Griesau, Julius Lerm, Lars Debor, Marco Klamke, Simon Heinke, Sugandha Sachdeva, Petros Simidyan

Client, User: Participants of the MNE CPP Project of Boston Child Hospital

1.5.4 Role assignment organization

Adviser: Thomas Jochmann, Lorenz Esch

Team leader: Simon Heinke

Code: Lars Debor

Version Management : Felix Griesau

2 Results of the design

The results of the design are outlined in the documentation of design. There the connections between the different packages, components and classes are explained and visualized via UML-diagrams.

2.1 Tools

The used tools are software solutions which enable or at least facilitate the different aspects of the organization and development.

2.1.1 Organization tools

Sourcecodemanagement: The source code will be managed via *GitHUB* to ensure a uniform basis of work with the files.

LaTeX: *LaTeX* is a language for describing text. It is possible to create many different types of documents which afterwards are available in multiple formats. In particular it will be used to create the functional specification, the review documents and the design document.

Doxygen: With the program the comments will be dragged from the already created code to produce a documentation of the implementation.

Visual Paradigm: Creating of UML-Diagrams, for the graphically representation of the actions, constructions and functions of system.

2.1.2 Developing tools

Development environment: Here will be *QtCreator*, for clean code used.

Program language Here will be program language*C++* used, because C++ meets all requirements of this project.

Operating systems: The software can be used on Linux, Microsoft Windows and Mac OS.

Libraries: In this project will C++11 STL and the from employer provided libraries used. We also use QT Libraries with OpenGL, Eingen. With there enormous collection of classes give this libraries the basis for this System.

2.2 Results of the first iteration design:

The results of the first iteration appear in the actual milestone.

Functional specification document FSD: The product requirement document PRD is entirely transfered to the FSD together with other points after discussing them with the client/user.

Preliminary design: The preliminary design includes a first overview of the work ways and functionality of the system.

Implementation: A first executable implementation was converted and involves the function of a easy forwarding without encryption.

Planning: There are made determinations for the other iterations. Hereby are particularly determined which are the milestones to the upcoming iteration and discussed about the following procedures in the team.

2.3 Determinations for the next iteration

Refining of preliminary design : The preliminary design is extended with special diagrams and descriptions to detailed design. This occurs each time parallel to Milestones, because each change will automatically held.

Further implementation: Here will the 4 Features implemented and tested.