

4. Requirements

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Requirement analysis and requirement specification are important parts of the software development process. A successful implementation of a software system depends on a good comprehension of the problem area. A precise definition of the requirements prevents system errors and costs caused by this errors. The requirements are identified according to the interests of stakeholders and indicate the functionality of the software product.

The purpose of this chapter is to identify stakeholders (see chapter 4.1) and to define requirements (see chapter 4.2, 4.3) for the rule-based initialization tool of the project dashboard. The dashboard initialization tool extends the functionality of the dashboard described in [9]. Therefore, the additional stakeholders of this initialization function and their interests are defined and annotated by **New** and the *italic script*. A complete overview of the stakeholders of the Project Management Cockpit can be found in [9].

4.1. Stakeholder List

There are two groups of stakeholders, which can be identified for the approach to initialize dashboards using predefined templates: the dashboard user and the dashboard template expert. Common dashboard users can be divided into users without experience and experienced users. The stakeholders and their expectations are explained below.

- **Dashboard User**

The dashboard user is a person who uses the Project Management Cockpit to visualize information for further data analysis and data exploration. The dashboard users can be either without experience with the Project Management Cockpit or experienced users. The following list includes the interests and expectations of the Project Management Cockpit users.

- The dashboard user intends to find answers to her questions using the dashboard. The dashboard user expects the dashboard to provide appropriate metrics, which are based on information needs of the user. The user can select the dashboard items (metric visualization types, types of diagrams and graphs). The selected dashboard items provide reasonable and complete illustrations of the data.
- The dashboard users intend to analyze their information needs using the project dashboard, therefore only appropriate informations should be displayed on the dashboard.
- *New: The dashboard user would like to spend as little time as possible with the setup of her dashboard, which can be generated according to her information of the project environment.*
- *New: The dashboard user wants to edit the initialization of the dashboard template on the setup page by deletion or addition of items in the information need (question) field or dashboard item (answer) field.*

- **Dashboard User Without Experience**

The dashboard user without experience needs particular support of the system at the dashboard creation.

- The user without experience intends to understand the metric relations to each other.
- *New: The inexperienced user needs the system support for the creation and composition of dashboards. Therefore the system provides the necessary information in order to answer the user's question. The inexperienced user needs system support for the interpretation and evaluation of the visualized information.*

- **Experienced user**

Experienced users are users that have already used the Project Management Cockpit and know to operate the dashboard functionality. An experienced user should be able to create a dashboard according to her information needs. The experienced dashboard users should be able to share their knowledge and experience with other dashboard users.

- *New: Dashboard Template Expert*

The dashboard template expert is a specialist who understands metrics, metric visualizations and information needs of users. The dashboard template expert uses the rule-based dashboard initialization tool in order to generate rules to create dashboard templates. The dashboard template expert can generate template rules according to her own experience and knowl-

edge or extend it with the collected experiences and knowledge reported by other experienced users. The dashboard template expert's expectations of the functionality of the dashboard initialization tool are listed below:

- The dashboard template expert expects simple and quick generation of the dashboard initialization rules with minimal effort. This process includes the creation of the different *Information Need-Dashboard Item* pairs according to the different dimensions.
- The dashboard template expert wants to collect as much information as possible about dashboard templates, for instance:
 - * How often was a dashboard template used for the creation of a dashboard?
 - * What modifications were performed on a dashboard template in order to create a dashboard?
 - * An overview of the dimensions selected in a dashboard template.

4.2. The functional Requirements derived from the Stakeholder List

In Addition to the requirements described in [9], the following functional requirements for the rule-based initialization tool of the Project Management Cockpit can be defined corresponding to the stakeholder expectations listed below:

- The visual design of the dashboard initialization tool should facilitate a good orientation in the rule-based dashboard initialization tool. The tool should provide only components that are required for the generation of template rules.
- The initialization rules should define, which *Information Need-Dashboard Item* pairs correspond to which combination of dimensions (role, project size).
- A dashboard template should be created from the rules, which are generated by the dashboard initialization tool. From the created dashboard template the final dashboard can be instantiated, which corresponds to the user's information needs and helps to answer the user's questions.
- The dashboard template expert has access to all information needed to create a new dashboard initialization rule. The dashboard template expert should be able to access an overview of all available dimensions, dimension characteristics, dashboard items and information needs within a few steps.

- The dashboard template expert should be able to perform actions like insertion, creation, editing or deletion of dimensions, dimension characteristics, dashboard items and informations needs.
- It should be possible to import a new dashboard item image and add it to an initialization rule.
- It should be possible to select between three options for the representation of dimension characteristics: check box, combo box or radio button.

4.3. The non functional Requirements

As already mentioned, the tool implemented in this bachelor thesis is an extension of the project dashboard, which enables the dashboard creation support for users. As a consequence, an important non functional requirement of the tool is the compatibility with the Project Management Cockpit implemented in [9]. Furthermore, the tool developed in this bachelor thesis uses the Gargoyle Code-generator, which implies that the tool architecture should correspond to the target architecture of the Gargoyle Codegenerator presented in chapter 2.3. From these two necessary conditions, the following non functional sub-requirements can be derived:

- The tool architecture should be divided into three layers: the client layer, the business layer and the data layer.
- The client layer should be implement by using the JavaServer Faces technology, described in chapter 2.2.
- The business layer should be implemented by using the EJB technology, described in chapter 2.1.
- For realization of the data layer a MySQL database should be used.
- The GlassFish application server has to be used for development and deployment.
- The total amount of time needed to create a dashboard template inclusive dashboard initialization rules must not exceed twenty minutes.
- The total amount of time necessary to find a component, which is needed to create a rule, must not exceed two minutes.