Customer Driven Project - Netlight

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Abstract

Imagine the old minimachine systems where the end user works in a domain specific application in a black-and-green terminal. She is super efficient, jumping between windows with short cuts and everything is "in her fingers".

This is then replaced with a web-frontend and a mouse. Everything is "wrong", the design makes the usage patterns locked and she gets "mouse sickness" from point-clicking every command.

The task is to modify a web-application and add a scripting-console where the end-user can enter commands into a DSL - similar to the older interface. When commands are run, the results are shown both in the console and the web-interface. The use can still use the mouse and navigate as usual.

The target is a simple proof-of-concept in order to research any changes to the API, the potential of the method as well as evaluate the usability of scripting languages/DSL and API.

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Contents

List of Figures

Chapter 1

Introduction

1.1 NTNU

1.2 Netlight

Netlight, our customer, is a Swedish IT- and consulting-firm. Their field of expertise is within IT-management, IT governance, IT-strategy, IT-organisation and IT-research. They deliver independent solutions based on the customers specs. With the broad field of knowledge they can handle whatever tasks presented by their customers. They reach this goal by focusing on competence, creativity and business sense. [1]

1.3 General information about project

The project is the making of the course TDT4290 Customer Driven Project. This is a mandatory subject for all 4th year students at IDI and aims to give all its students experience in a customer guided IT-project and the feel of managing a project in a group. The customer assign the group a task which makes the project close to normal working life situation.

This is a proof of concept project. The underlying task is to research and develop a system where power users can benefit from a console. The concept aims to ease the workload of a power user who is working with object editing, and to see how the efficiency of a console might prove to improve the work. The power user is usually a user who often works with the system over a longer time, and is in depth familiar with the system. We will research already existing systems of this kind, and look at the possibilities and advantages of such a system in a chosen domain.

1.4 Contact information

Person	**Email**	**Role**
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Peder Kongelf	peder.kongelf@gmail.com	The customer
Stig Lau	stig.lau@gmail.com	The customer
Meng Zhu	zhumeng@idi.ntnu.no	The advisor

1.5 Goals

1. Create a working prototype of a system where a scripting console is embedded into a modern web interface. The console should provide access to viewing and modifying the underlying data objects of the system's domain via a DSL.

2. Investigate the ramifications of the added functionality, in terms of usability and technical aspects.

3. Provide extensive documentation and a successful presentation of the end product.

[1] `http://www.netlight.com/en/`

1.6 Planned Effort

Role	Description	Assignee
Team leader	Is responsible for administrative tasks and makes the final decisions.	Ivo
Scrum Master	Shields the development team from external distractions and enforces the Scrum scheme.	Ivo
Customer Contact	Handles communication with the customer. The customer should contact this person regarding general requests, questions and reminders.	Ivo (backup Martin)
Advisor Contact	Handles communication with the advisor. The advisor should contact this person regarding general requests, questions and reminders.	Ivo (backup Martin)
System Architect	Is responsible for the system architecture including distinctions and relations between subsystems and general code design choices.	Martin
Code Master	Overall responsible for code management and structure. Managing branches in Git repository.	Oddvar
GUI Designer	Is responsible for the layout and design of graphical user interfaces.	Oddvar
Test Manager	Is responsible for testing including unit tests, integration tests and usability tests.	Øystein
Report Manager	Is responsible for delegating and overseeing work on the project report.	Martin
Customer Representative	Participates in regular meetings to discuss the progress, project status and future tasks. Represents the customer.	Peder Kongelf
Customer Technical Advisor	May be consulted about technical aspects of the project.	Stig Lau
Advisor	Serves as a one-man steering committee for the project.	Meng Zhu
Meeting Secretary	Is responsible for making sure notes get written and sent after each meeting with the advisor and customer.	Oddvar
Quality Assurance Manager		Øystein
Weekly Report Writer	Is responsible for finalizing the weekly report(s) for the advisor and customer, and getting these delivered for approval. Also responsible for meeting agendas and their delivery.	Øystein
Time Keeper	Responsible for making sure that everybody is logging their work, and logging team activities.	Oddvar

1.7 Goals

1.8 Planned effort

1.9 Schedule of results(Milestones, deliverables, sprint deadlines, etc)

Chapter 2

Project management

2.1 Project plan

2.1.1 Sponsor/customer

2.1.2 Background

2.1.3 Gantt diagram

2.2 Team structure

2.2.1 Roles

2.3 Risks

2.4 Architecture

2.5 Scrum

2.6 Quality Assurance

Chapter 3

Preliminary Study

3.1 Concept

3.2 Constraints

3.2.1 Time

3.2.2 x

3.3 Feasibility study

3.4 Version control

3.4.1 git

3.5 Development language and technologies

3.5.1 Google Drive

3.6 Development Methodology

3.6.1 Scrum

3.6.2 The Waterfall Method

3.7 Software Testing

3.7.1 Testing Methods

The purpose of software testing is to uncover software bugs in the system and to document that the system meet the requirements and functionality that was agreed upon for the system. Testing can be implemented at any stage in the development process, traditionally it is performed after the requirements have been defined and the implementation is completed. In agile development processes however, the testing is an ongoing process. The chosen development methodology will in most cases govern the type of testing implemented in a given project.

Software testing methods are traditionally divided into white- and black- box testing. They differ mainly in how the test engineer derives test cases.

White- Box Testing

White- box testing focus on the internal structures of a system. It uses this internal perspective to derive test cases. White- box testing is usually done at unit level, testing specific parts or components of the code.

Black- Box Testing

Black- box testing handles the software as a black- box, meaning it observes the functionality the system exhibits and not the specifics on how it is implemented. The tester only needs to be aware of what the program is supposed to do, he doesn't need to know the specifics on how the functionality is implemented in the code. Black- box testing

checks to see if the functionality of the program is according to the agreed upon requirements, both functional and nonfunctional.

Test Driven Development

The principle behind TDD is to develop the code incrementally, along with test for that increment. You don't move on until the code passes its test. The tests are to be written before you actually implement the new functionality. The process helps programmers clarify their ideas of what a code segment is actually supposed to do. The process is often used in agile development methods. Benefits from TDD:

- Code coverage, every code segment should be covered at least one test.
- Regression testing, check to see if changes in the code have not introduced new bugs.
- Simplified debugging, when a test fails it should be obvious where the problem lies, no need for a debug tool.
- System documentation, the tests themselves act as a form of documentation that describe what the code should be doing.

Automated Tests

Automated offers the ability to automatically do regression tests, i.e. testing to uncover if any new code has broken a test that previously passed. If we opt for manual testing regression testing will be very time consuming as every test done so far has to be done over again. With an automated testing framework this job will be a lot easier as you can run a great number of tests in a matter of seconds. Most development languages offers libraries for automated testing.

3.7.2 Testing Levels

Testing can be done at many different levels and in different stages in the development process. Following is the most common partitioning of testing levels and a description on each of them.

Unit Testing

Unit testing aims to check specific components, such as methods and objects. Typically you will be testing objects, and you should provide test coverage of all the features of that object. Its important to choose effective unit test cases, that reflect normal operation and they should show that the specific component works. Abnormal inputs should also be included to check if these are processed correctly.

Component Testing

Tests bigger components of the system, and their interfaces(communication with other components). Made up of several interacting objects. Component testing is mainly a tool to check if component interfaces behaves according to its specification.

System Testing

In a given development project there may be several reusable components that have been developed separately and COTS systems, that has to be integrated with newly developed components. The complete system composing of the different parts is tested at this level. Components developed by different team members or groups may also be integrated and tested at this stage.

Release Testing

Release testing is the process of testing a particular release of the system that is intended for use outside of the development team. Often a separate team that has not been involved in the development perform this testing. These kind of tests should focus on finding bugs in the complete system. The objective is to prove to the customer that the product is good enough. This kind of testing could either be based on the requirements of the system or on user scenarios.

User Testing

This is a stage in the testing process in which users or customers provide feedback and advice. This could be an informal process where end- users experiment with a new system too see if they like it and that it conforms to their specific needs. Testing on end- users is essential for achieving success in a software process as replicating the exact working environment the system will be used in is difficult to achieve during development. The end users can help provide feedback on how specific functionality will work in an actual work environment.

Another form of user testing involves the customer and its called acceptance testing. Its a process where the customer formally tests a system to decide whether or not it should be accepted, where acceptance implies that payment for the system should be made. Acceptance testing is performed after the release testing phase.

3.8 Code conventions

3.9 Similar solutions

Chapter 4

Requirements

4.1 Usecases/user stories

4.1.1 Planning

4.2 Sequence Diagrams

4.3 Prioritization

4.4 Functional Requirements

4.5 Nonfunctional Requirements

4.6 Test Plan

Chapter 5

Overall System Design

5.1 Database

5.2 GUI

Chapter 6

Sprints

6.1 Design

6.2 Planning

6.3 Duration

6.4 Goals

6.5 Testing

Chapter 7

Testing

Chapter 8

Conclusion

Chapter 9

Evaluation