Call Calendar

Final Report

Version 2.0

Title:
Call Calendar

Course:
Distributed Software Development

Document:
Final Report

Participants:

Biljana Stanić
Md. Abdur Razzaque
Hrvoje Pavlović
Marko Vuglec
Marko Veličković
Damian Marušić

Supervisors:
Federico Ciccozzi
Ivana Bosnić

Date:
17th January 2015

Revision History

Date	Version	Description	Author(s)
2015-01-16	0.1	Initial Draft	Biljana Stanić
2015-01-16	0.2	Initial Version	Damian Marušić
2015-01-16	0.3	Work on document	Marko Vuglec
2015-01-16	1.0	Transfer everything to word/pdf and publish	Biljana Stanić
2015-01-17	1.1	Improved version	Biljana Stanić
2015-01-17	1.2	Added experiences and scope	Hrvoje Pavlović
2015-01-17	1.3	Reorganized content and metrics	Damian Marušić
2015-01-17	2.0	Transfer everything to word/pdf and publish	Biljana Stanić

Table of Contents

1. Introduction

Purpose of this document

The purpose of this document is to have final overview of the Call calendar project. Project results, such as fulfilled requirements and delivered deliverables, alongside with team performance and metrics are included in this report. This document is defined at the final phase of the project work.

Document organization

The document is organized as follows:

- Section 1, *Introduction,* describes purpose and audience of this document, scope, definitions and acronyms.
- Section 2, *Background and Objectives*, contains customers, supervisors, project vision.
- Section 3, *Project results,* an overview of the results produced in the project
- Section 4, *Project work,* organization, metrics and experiences

Intended Audience

The intended audiences of this document are all Call calendar stakeholders including:

- Project team members
- Project supervisors (Ivana Bosnić and Federico Ciccozzi)
- Project customers (Irfan Šlijvo and Malin Rosqvist)

Scope

The scope of this document is to summarize the development process of the project 'Call Calendar', conducted as a part of the DSD course.
This document covers some differences between the initially planned and finally delivered functional requirements, there is also a summary of individual and team effort invested by each of the team members to finish the project.

Definitions and acronyms

In the following table will be present and explained abbreviations that will be used in the document.

Acronym or abbreviation	Definitions
MDH	Mälardalen University, Västerås, Sweden
FER	Faculty of Electrical Engineering and Computing, Zagreb, Croatia
DSD	Distributed Software Development
ES	Embedded Systems
RECO	Research Coordination

Table 1. Abbreviations with their explanations

Related documents

More information about the description of the system, requirements, design decisions and testing can be found in:

- *Project Plan Document.pdf;*
- *Requirements Definition Document.pdf;*
- *Design Description Document.pdf*
- *Acceptance Test Plan.pdf*
- *Test Report.pdf*

2. Background and Objectives

Within existing system, funding agencies can find information about researchers and research groups. There is also possibility of viewing ongoing projects and researches, as well as finished ones. However, there is no functionality of connecting agencies with researches, neither there is possibility for agencies to make funding calls.

As a support for all research groups, there is RECO, the division for Research Coordination. RECO constantly looks out for funding possibilities, helps the researchers with updated information about conditions, budget, consortia, and, also, helps putting the applications together. It is crucial to keep calls and deadlines in mind. RECO and the ES researchers would all benefit from a ”Call calendar” containing information about funding bodies, different calls and their respective deadlines.

Project vision

The goal of this project is to extend current functionalities of existing system at ES. Currently, there are researchers profiles/areas of interest, funding bodies and funding programs. System is divided into back and front office. Back office is used to manage researchers, projects and funding agencies. In front office researchers profiles/areas of interest and funding bodies/programs are shown.

System will be upgraded so it could support adding funding agencies calls, as well as researches’ applications to specific calls. It will also match calls with researchers profiles/research interests in order to ensure maximum user satisfaction. Moreover, it will contain information about different calls and their respective topics, deadlines and links to more information. Alongside viewing available calls list, in front office, functionality of sorting and filtering calls will be added. Users will be able to get various generated reports about calls and applications as well.

Customer

Mälardalen University consists of several departments, where one of them is the research center for Embedded Systems[1] (ES). ES is the most research-intensive profile at Mälardalen University and a national leader in Embedded Systems research. It has about 20% governmental funding for its projects. The rest, about 80 MSEK / 9 MEUR, needs to be attracted from external funding bodies, both national and international. All researchers have a responsibility to apply for external funding to support him/herself and colleagues in the research group. Research group leaders have a specific responsibility towards their groups.

Customers for the “Call Calendar” project are from research center Embedded Systems:

- Malin Rosqvist, Research Coordinator, Web project manager at ES

Email: malin.rosqvist@mdh.se
Web page: http://www.es.mdh.se/staff/215-Malin_Rosqvist

- Irfan Šlijvo, Web master & PrestaShop developer at ES

Email: irfan.sljivo@mdh.se
Web page: http://www.es.mdh.se/staff/380-Irfan_Sljivo

[1] http://www.es.mdh.se/

Supervisors

The team has two supervisors, one local and one remote (based on the location of the team) situated in Sweden and Croatia. They are:

- Federico Ciccozzi

Email: federico.ciccozzi@mdh.se

- Ivana Bosnić

Email: ivana.bosnic@fer.hr

3. Project results

Deliverables

There are all deliverables of this project listed in the table below.

Deliverable Description	To	Finished week				Rem
		Plan	Forecast		Actual	
			Week	+/-		
Project Plan Document	Supervisors/ Team	44	44		44	
Project vision & Project Plan presentation	Supervisors/ Team	44	44		44	
Requirements Definition Document	Supervisors/ Team	45	46		46	
Design Description Document	Supervisors/ Team	45	46		46	
Requirement, Design, revised Project Plan presentation	Supervisors/ Team	46	46		46	
Status Report presentation	Supervisors/ Team	47	47		47	
Alpha prototype	Supervisors/ Team	47	48		48	
Alpha prototype presentation	Supervisors/ Team	49	49		49	
Beta prototype	Supervisors/ Team	50	51		51	
Beta prototype presentation	Supervisors/ Team	51	51		51	
Acceptance test plan	Supervisors/ Team	52	1		1	
Final project presentation	Supervisors /Customers/ Team	3	3		3	
Test report	Supervisors/ Team	1	3		3	
Final Project Report	Supervisors/ Customers/ Team	2	3		3	
Final versions of existing documents	Supervisors /Customers/ Team	2	3		3	
Final Product	Supervisors/ Customers/ Team	1	3		3	
Minutes of meeting	Supervisors/ Team					R1
Summary week reports	Supervisors/ Team					R2

Table 2. Project deliverables

Remarks

R1: Should be handed in after every team meeting.
R2: Should be handed in every Monday before 23:59 during the course.

Requirement implementation

In table below, there is list of all user requirements (functional, nonfunctional and documents) with their respected priorities (high, medium and low).

ID	Functional	Name	Description	Priority	Source
FR-01	Yes	Add new call	Add the call	High	Malin and Irfan
FR-02	Yes	View all calls	View all past/active calls	High	Malin and Irfan
FR-03	Yes	Filtering calls by agencies	Filter calls by funding agency’s name	Medium	Malin and Irfan
FR-04	Yes	Filtering calls by status	Filtering calls by status (past/active)	Medium	Malin and Irfan
FR-05	Yes	View specific call	Detail view of specific call	High	Malin and Irfan
FR-06	Yes	Send notification to researchers	Send email notification to all researchers who are interested in call	Medium	Malin and Irfan
FR-07	Yes	Adding application form to the call	Researcher’s application is added to the specific call	High	Malin and Irfan
FR-08	Yes	Storing application’s forms	All created applications are saved and stored	High	Malin and Irfan
FR-09	Yes	Viewing and generating reports about the call	Generate report with all important information about the specific call	Low	Malin and Irfan
FR-10	Yes	Generating reports about all applications for the call	Generate report about all applications for the specific call	Low	Malin and Irfan
FR-11	Yes	Custom filters and possibility to export results to excel	Filter calls and export retrieved data to excel file	Low	Malin and Irfan
FR-12	Yes	Custom filter - option to choose which fields to return	Filter calls using custom fields	Low	Malin and Irfan
FR-13	Yes	Create a project	The project should be created once the application is	High	Malin and Irfan

			labeled as "granted"		
FR-14	Yes	Create a news feed	For every granted application should be created a news feed on the web page	Medium	Malin and Irfan
FR-15	Yes	Add new call type	Add the call type that will be attached to the call	High	Malin and Irfan
FR-16	Yes	Add new call status	Add the call status that will be attached to the call	High	Malin and Irfan
FR-17	Yes	Add attachment to the call	Add the attachment (documentation) to the call	High	Malin and Irfan
FR-18	Yes	Add deadline for the call	Add the deadline (internal/external) for the specific call	High	Malin and Irfan
FR-19	Yes	View all attachments for the call	View all added attachments for the specific call	Medium	Malin and Irfan
FR-20	Yes	Download attachment from the call	Download a specific attachment from the chosen call	Medium	Malin and Irfan
FR-21	Yes	Add new application status	Add the application status that will be attached to the application	High	Malin and Irfan
FR-22	Yes	Add attachment to the application	Add the attachment (documentation) to the application	High	Malin and Irfan
FR-23	Yes	View all attachments for the application	View all attachments for the application	High	Malin and Irfan
FR-24	Yes	Add funding program	Add funding program	Medium	Malin and Irfan
FR-25	Yes	Remove existing call	Remove existing call	High	Malin and Irfan
FR-26	Yes	Edit existing call	Edit data about the existing call	High	Malin and Irfan
FR-27	Yes	Deny a certain application	Deny a certain application that is not valuable	Medium	Malin and Irfan
FR-28	Yes	Edit existing application	Edit data about the existing application	High	Malin and Irfan
FR-29	Yes	Remove existing application	Remove existing application	High	Malin and Irfan
FR-30	Yes	Edit existing call type	Edit data about the existing call type	High	Malin and Irfan

FR-31	Yes	Remove existing call type	Remove existing call type	High	Malin and Irfan
FR-32	Yes	Edit existing call status	Edit data about the existing call status	High	Malin and Irfan
FR-33	Yes	Remove existing call status	Remove existing call status	High	Malin and Irfan
FR-34	Yes	Edit existing application status	Edit data about the existing application status	High	Malin and Irfan
FR-35	Yes	Remove existing application status	Remove existing application status	High	Malin and Irfan
FR-36	Yes	Edit existing attachment of the call	Edit data about the existing attachment of the call	High	Malin and Irfan
FR-37	Yes	Remove existing attachment of the call	Remove existing attachment of the call	High	Malin and Irfan
FR-38	Yes	Edit existing deadline for the call	Edit data about the existing deadline for the call	High	Malin and Irfan
FR-39	Yes	Remove existing deadline for the call	Remove existing deadline for the call	High	Malin and Irfan
FR-40	Yes	Edit existing attachment of the application	Edit data about the existing attachment of the application	High	Malin and Irfan
FR-41	Yes	Remove existing attachment of the application	Remove existing attachment of the application	High	Malin and Irfan
FR-42	Yes	Remove existing funding program	Remove existing funding program	Medium	Malin and Irfan
FR-43	Yes	Edit existing funding program	Edit data about the existing funding program	Medium	Malin and Irfan
FR-44	Yes	View all applications	View all past/active applications	High	Malin and Irfan
FR-45	Yes	View specific application	Detail view of specific application	High	Malin and Irfan
FR-46	Yes	View all call types	View all call types	High	Malin and Irfan
FR-47	Yes	View specific call type	Detail view of the specific call type	High	Malin and Irfan
FR-48	Yes	View all call statuses	View all call statuses	High	Malin and Irfan
FR-49	Yes	View specific call status	Detail view of the specific call status	High	Malin and Irfan

FR-50	Yes	View all deadlines for the call	View all deadlines for the call	High	Malin and Irfan
FR-51	Yes	View specific deadline for the call	Detail view of the specific deadline for the call	High	Malin and Irfan
FR-52	Yes	View all application statuses	View all application statuses	High	Malin and Irfan
FR-53	Yes	View specific application status	Detail view of the specific application status	High	Malin and Irfan
FR-54	Yes	View all funding programs	View all funding programs	High	Malin and Irfan
FR-55	Yes	View specific funding program	Detail view of the specific funding program	High	Malin and Irfan
NF-01	No	Performance (SQL optimization)	Faster query at runtime	High	Project group
NF-02	No	User experience	Quick response of the given function	Medium	Project group
D-01	No	MoM	Minutes of meeting, document that contains information about the meetings that were held in the past week	High	Supervisors
D-02	No	Weekly reports	Document that contains information about team activities of the past week	High	Supervisors
D-03	No	Project plan	Document that contains details about the team, project vision and goals to be achieved	High	Supervisors
D-04	No	Requirements definition	Document that contains what is supposed to develop	High	Supervisors
D-05	No	Design Description	Document that contains design decisions of the project	High	Supervisors
D-06	No	Acceptance test report	Document that contains acceptance test cases	High	Supervisors
D-07	No	Test report	The test report captures and summarizes the test results	High	Supervisors

Table 3. User requirements

Remarks

Out of 55 functional requirements, we have completed and implemented 51 of them. There are 4 requirements left unimplemented, all of which have low priority (FR-09, FR-10, FR-11, FR-12). However there are some remarks regarding to the some of implemented functionalities:

- FR-17 Add attachment to the call - attachment can be connected to call via separated form, not in the call form as requested by customers;
- FR-18 Add deadline to the call - deadline can be connected to call via separated form, not in the call form as requested by customers;
- FR-20 Download attachment from the call - is downloadable only from front office;
- FR-22 Add attachment to the application - attachment can be connected to application via separated form, not in the application form as requested by customers and it cannot be download;
- FR-24 Add funding program - not implemented in call form.

On the other hand, all non-functional and document requirements were successfully implemented.

4. Organization and Communication

People involved on the project can be divided into several groups, such as project supervisors, project customers and members of the team that will cooperate with each other from two distributed locations, in Sweden and Croatia. The organization of team members along with stakeholders is shown in the following figure.

Figure 1. Organization of the team

Project supervisors and customers were in a direct communication in order to have a certain feedback about the project. One team member acted as a link, in this case SCRUM master, and she was responsible for the good cooperation of supervisors and customers, on the one side, and teams from Sweden and Croatia, on the other side.

Project group

As it was mentioned, team members that worked on this project were located in Sweden (Mälardalen University) and Croatia (Faculty of Electrical Engineering and Computing). Each team member is enrolled in Master's program in Computer Science.

We have assigned additional responsibilities to each team member in order to better complete tasks for the project.

Document manager
One person was in charge for finalizing all major revisions of documents before uploading. She corrected documents (applies templates, creates automatic TOC, converts them into .pdf and etc.).

Design Manager
Took care of diagrams and other graphical elements in documents.

Development team leader:
Led the development team and knew the architecture the best.

Server maintenance
People in charge for maintaining server.

Quality assurance and risk management:
Person responsible for quality assurance and risk management took care and warned team if team got off the course. In addition, this person knew potential risks of project and he could warn the team if any of this risks is happening. This person closely worked with SCRUM master and Product owner.

Responsibility	**Team member(s)**
Document manager	Biljana Stanić
Design manager	Marko Veličković and Hrvoje Pavlović
Development team leader(s)	Damian Marušić and Biljana Stanić
Server maintenance	Marko Vuglec and Hrvoje Pavlović
Quality assurance and risk management	Abdur Razzaque and Marko Veličković

Table 4. Team members' responsibilities

Meetings

Team did not have pre-scheduled time for meetings. Most of them were done when team felt it was necessary and in form of video call. Each decision from the meetings was documented and it can be found in “Minutes of Meeting” reports. Each team member had to write for at least one “Minutes of Meeting” document, so we could have the proper allocation of work. The document has to be checked by each team member.
However, there were a lot of meetings done by some of the members, not all, in order to discuss or clarify something. Such meetings were not officially documented or tracked but they were happening on daily basis.

Weekly reports
In weekly reports, the team summarized what was done during the week. Each team member had to write for at least one “Weekly reports” document, so we could have the proper allocation of work. The document had to be checked by each team member.

Communication

The communication between team members was carried out in several ways, according to the demand of the situation. In the following figure will be shown all types of communication within the team.

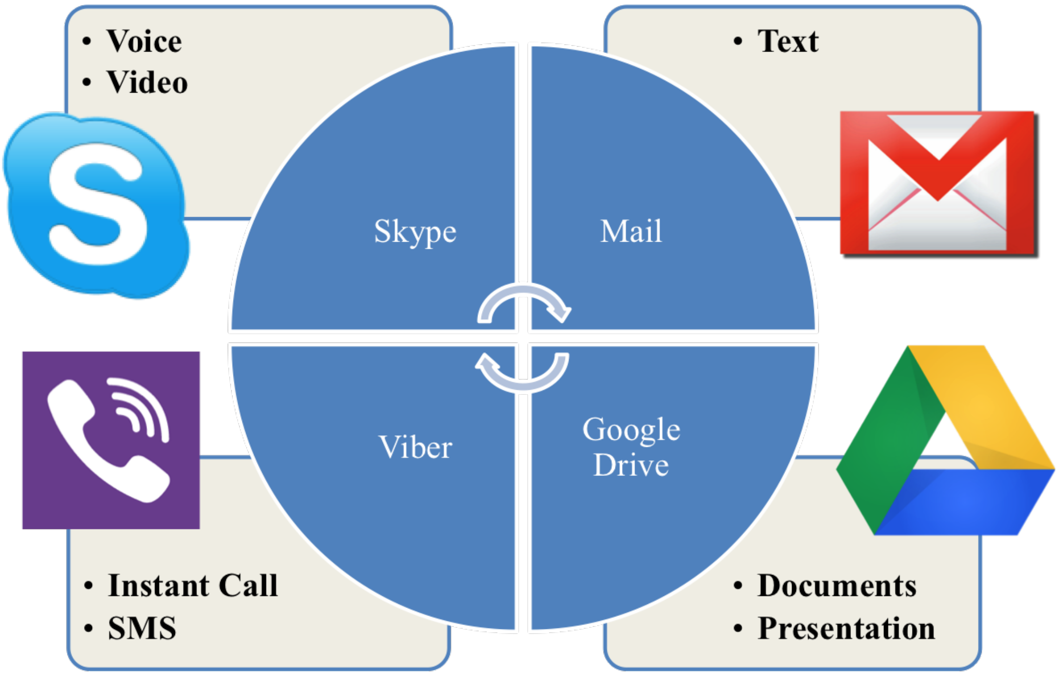

Figure 2. Types of communication

Skype[2] was be mainly used for the detailed group discussion and also for the communication with the local and remote supervisors. This seemingly created an impression that teams were not that far away from each other and this was the best way to clear up all doubts within the team.

Emails were used for the communication with the customer and supervisors and for sharing certain files among team members.

Viber[3] served as an alternative for the Skype, when some team member was not able to be online on the Skype.

Google Drive[4] was used for storing and sharing documents and presentations that have to be produced during project development.

Code from the implementation, that was accessible for both team members and supervisors, was stored on the Github[5] repository. Marko Vuglec was the Github administrator.

---

2 http://www.skype.com/en/

3 http://www.viber.com/

4 https://drive.google.com/#my-drive

5 https://github.com/

5. Development process

The team agreed to use SCRUM[6] as the development process. There were a few reasons for this decision. First, with SCRUM team is be able to deliver quickly the most important features, based on their priority. It is agile, with more relaxed organization, which brings benefits of defining only a few roles in the team. In that kind of environment each team member was able to help to solve someone else's problem, without justifying that he/she is not in charge for that part of the implementation. In each iteration, in the case of SCRUM, sprint, was delivered either part of the product (application) or some document/presentation.

Team roles

There are three main roles that can be recognized in the SCRUM development process.

SCRUM Master
SCRUM Master is responsible for removing all obstacles within group members in order to deliver products or to simply finish some task on time. He/she has to be sure that the SCRUM process is used on the right way.

Product Owner
This is the key stakeholder what knows the best what has to be developed. Product owner has to ensure that the team will deliver good part of/whole product after each sprint, writes priorities for user stories.

Developers
Development team members are responsible for delivering parts of the whole product. Complete team is responsible of delivering the whole product that satisfies requirements identified from customers.

Name	Initial	Primary Role	Contact	University
Biljana Stanić	BS	SCRUM Master/ Developer	bsc13002@student.mdh.se	MDH
Abdur Razzaque	AR	Developer	r4razzaque@gmail.com	MDH
Hrvoje Pavlović	HP	Developer	hrvoje.pavlovic@fer.hr	FER
Marko Vuglec	MV	Product Owner /Developer	marko.vuglec@gmail.com	FER
Marko Veličković	MVe	Developer	velickovicma@gmail.com	MDH
Damian Marušić	DM	Developer	dmc14001@student.mdh.se	MDH/FER[7]

Table 5. Team member's roles according to SCRUM

[6] http://en.wikipedia.org/wiki/Scrum_(software_development)

[7] Damian is a student at FER, but currently he is enrolled at MDH as an exchange student

Changes to original plan

Even though team used SCRUM as planned, we adopted process a bit and make it more suitable to our needs. Regarding our project plan document, there were a few changes in whole process. First of all, team did not use fixed two-week sprints. We adjust them to match deadlines for deliverables for DSD course, such as presentations and alpha/beta/final products. Thus some of sprints lasted for three weeks and some for one week only.

Element of SCRUM we did not use were daily meetings because we did not find is necessary nor useful to have it. We preferred unofficial and unscheduled communication between team members. Another SCRUM element we omitted was sprint burndown chart and release burndown chart. Reason for that is again that we did not find it useful or helpful in any way.

We used simplified version of product backlog. That means that we did not have real backlog with tasks in there but rather we used user stories as our version of backlog and tasks that needed to be completed. As we all in the team were aware what needed to be done and how, we did not need to have simpler tasks assigned to each one of us. Another reason for not having proper backlog is the fact that we have not defined tasks for each functional requirement.

Milestones and division of work

The team, as planned, after each sprint delivered either product or document/presentation.
Furthermore are presented tasks and final products after every sprint.

Division of work:

- **task to do : responsible members**
  - **activities related to task**
    - **deliverable**

- **Server maintenance (including setup, adding/removing files, maintaining database) : Marko Vuglec and Hrvoje Pavlović**
  - Mirror server configuration
    - Configured server ready for work
  - Mirror server security
    - Secured server
  - Database maintenance
    - Database filled with test data
  - PrestaShop setup
    - Configured front and back office for testing purposes

- **Communication to customer (clarifying customer requests, presenting current work, our ideas): Marko Vuglec in cooperation with Biljana and other team members optionally**
  - Initial appointment
    - Initial user requirements
  - First follow up -
    - Clarified user requirements, presented idea of solution to customer
  - Second follow up -
    - Verified user requirements, presented possible working solution to customer
  - Alpha stage
    - Present alpha stage to customer
  - Beta stage
    - Present beta stage to customer

- **Document editing**
  - Add content to documents (every member writes about his/her part of job)
    - Working on versions of documents on Google Drive
- **Final document editing and preparing -** Biljana Stanić and Marko Vuglec
  - Final document's versions edit before publishing
    - published versions of documents
- **Programming** - all team members
  - Development of solution
    - Alpha version of product
    - Beta version of product
    - Final product

- 1st Sprint (27.10. - 9.11.)
  - Basic documentation
  - Meeting with customers
  - Project plan presentation

- 2nd Sprint (10.11 - 16.11.)
  - Detailed documentation
  - Server setup
  - Second meeting with customers
  - Requirements and design presentation

- 3rd Sprint (17.11 - 30.11.)
  - Online meeting with one customer
  - Detailed DB design
  - DB deploy
  - Alpha product
  - Status presentation

- 4th Sprint (01.12. - 14.12.)
  - Full database deployment and link local to server
  - Documentation
  - Presentations
  - Communication with customer
  - Finish Call implementation
  - Implement Application part
  - Prepare live beta product demo

- 5th Sprint (15.12. - 28.12.)
  - Acceptance test plan
  - New documentation revisions

- 6th sprint (29.12. - 11.01.)
  - Generating reports
  - Create news feed
  - Published new major document revisions
  - Final product

6. Metrics

Working hours

In the following table are shown working hours of each team member for each week.

Member	W 43	W 44	W 45	W 46	W 47	W 48	W 49	W 50	W51	W 52	W1	W2	W3	Total
Biljana Stanić	4	5	4	21	5	30	12	26.5	14.5	8	25	24		179
Abdur Razzaque	5	5	4	7	5	14	7	11.5	10.5	0	19	36		124
Damian Marušić	5	5	4	15	6	30	9	30.5	15.5	1	0	27		148
Marko Vuglec	4	5	4	19	6	20	12	24.5	5.5	11	15	18		144
Hrvoje Pavlović	4	5	4	13	8	12	9	18.5	5.5	0	0	14		93
Marko Veličković	5	5	4	7	5	29	7	20.5	5.5	0	0	25		113
Total	27	30	24	82	35	135	56	132	57	20	59	144		801

Table 6. Working hours

In overall, team has spent 801 hours working on this project, which is 133.5 hours average per person. Calculated in person-days, team has spent 100 person-days working on project (8 hours per day per person).

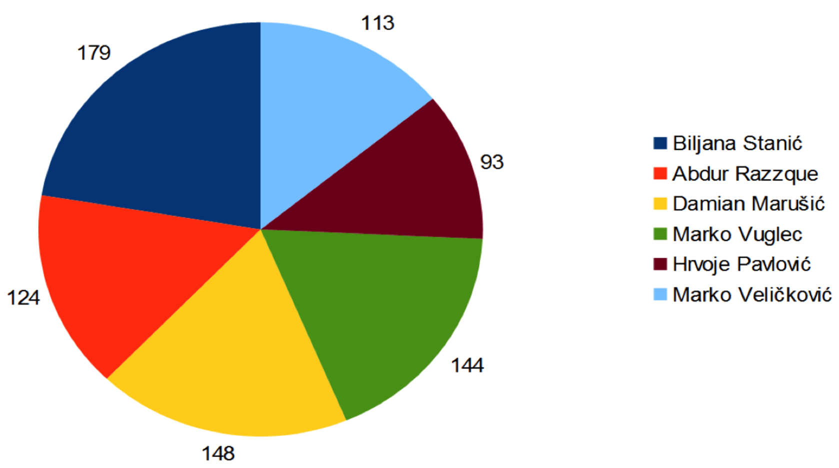

Figure 3. Working hours of each member

Milestones

Id	Milestone Description	Responsible Dept./Initials	Finished week				M etr	Rem
			Plan	Forecast		Actual		
				Week	+/-			
M-001	Project Plan Document	ALL	44	44		44		

M-002	Requirements Definition Document	ALL	45	46		46		
M-003	Design Description Document	ALL	45	46		46		
M-004	Alpha prototype	ALL	47	48		48		
M-005	Beta prototype	ALL	50	51		51		
M-006	Acceptance test plan	ALL	52	1		1		
M-007	Test report	ALL	1	3		3		
M-008	Final Project Report, final versions of existing documents, other project-related documentation (as negotiated with the customer)	ALL	2	3		3		
M-009	Final Product	ALL	1	3		3		

Table 7. Milestones

Meetings

Team had 13 official meetings among themselves and 17.5 hours on that. There were a lot of meeting involving 2-4 members that were not included in official ones.

We spent 5.5 hours on 5 meeting with our supervisors and 6.5 hours on also 5 meetings with our customers.

7. Experiences

Overall experiences in this project were good. The feeling of working with international team and working on real project that will be used and not just stored in some directory is awesome.

One of the good experiences that are related to the project is communication. At the beginning, we established good communication between members and generally had no problems inside team. We used applications, such as Viber for 24/7 communications. If something was needed outside working hours or if someone was unavailable through normal channels, Viber was the answer.

Skype was chosen as official communication channel. Group meetings and meeting with customers were conducted through Skype. Some unofficial meeting and getting to know each other were also conducted through Skype.

Members were generally able to do what they were supposed to do. Coordination of team members was done precisely. If someone could done something because of outside interference or did not know how to do it some other member would take over task and complete it.

Another interesting experience was to have product owner in different location from customers. Fortunately, that brought only positive experiences and there was no problem in communication between them.

Project was not without problems of course. Biggest problem concerning implementation was PrestaShop framework. Since our assignment was to upgrade already existing application, we had to use PrestaShop, and framework is not documented properly. Most of time loss was incurred with "digging" through code because code was not documented and nothing could be found online on official and unofficial forums.

Another problem was, since we did not have access to live application, is that we had created our own test server and application, but we did not get entire application nor the original full database. This incurred some problems with implementation, since some functionalities were supposed to be delivered to us by supervisor. Some functionalities were never deliver and some did not work because some other part of application was missing.

Our greatest mistake was not to document properly some things in the beginning. If we were to start over, one of the priorities would be to split functional requirements into tasks before beginning with the implementation. Another thing would be to clearly define functional requirements at the very beginning of the project, and more work on official documents and less on unofficial. Since we in fact did have everything from documentation, but it was scattered through few unofficial documents.

Another thing that should have been strictly defined were meetings. Most of meetings were ad-hoc or agreed few days before. Having strictly defined meetings would make our communication even better and make us more productive.

If we could do it all over again we would use complete product backlog. Most of backlog was in different documents and everybody knew what there part of implementation was. We did not use strict Scrum backlog. This is connected to the tack and requirements not being defined in the beginning of project.
And we should have started working on presentations earlier. With most presentations we were always in the nick of time.