



Computer Sciences/Software Engineering

## **Agile Software Development**

### **Integration of interfaces for public payment services**

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## I. Introduction

Currently, we have a lot of online services, where citizens are able to check balances for taxes, for electricity, water, heating . For any public services payment, user is able to made in any commercial bank in Kosova, but always user should have document payment for the electricity, water, heating bill. In every payment document there are data about costumer, and public c services provider.

For some payment, we are able just to see balance, and to print payment document and then to go to bank and pay, which means that for some payments we are not able to pay online. For some services, user should be registered and will have username and password, for some services there is no, need for username and password, user can access to his/her balance with ID card number, and name and surname, which is not corrected, because another user can have access to another user, if he knows ID card number and name and surname.

Because of millions of transaction, there are a lot of payments received from banks with no valid tax payer data. For this category of payments it is problem to insert payment because automatic system will not be able to validate tax payer data in order to insert payment to specific tax payer and specific tax account. In this case public organization should contact bank and/or client to validate payment.

This is current process, but idea is to minimize number of payments with no validate data. We will initiate project that will Integrate public payment services and validate payment.

Our idea is all this services to standardized, integrate and to create unique interface with unique login page, which means that:

- User needs only one username and password to access all public services
- No access to any public services for payment, without username and password
- User will see on one screen all balances, separated by public services
- User will be able to pay for any public services using any online payment methods

Public organization, every day prints different payment documents. Clients use this payment document, to pay taxes or another obligation. For any payment done through bank or through any online services, it very important that payment as soon as possible to transfer to specific bank account selected by client.

## TASK 1: Logs, Requirements, Tasks

For working in this project, we needed to have a direct contact with the customer and with the requested requirements from the users that will be using this application.

Gathering all the information from the users and the customer was part of the process for creating and bringing the idea as a prototype and present the same to the customer, more details can be found in the Appendix of this report!

## TASK 2 : SCRUM

Each day, scrum meeting was held with team members: Naim, Florentina, Arijeta via Teams call. Every issue detected was documented and discussed in this meetings. We created a new group called SCRUM and added Scrum planning in order to track and trace the issue detected.

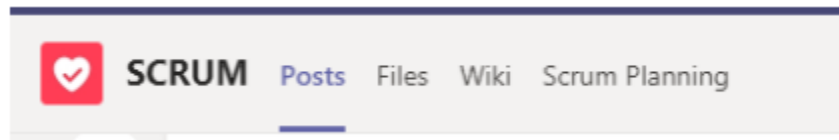


Figure 1. Scrum board

Naim got few remarks and requirements from the client. Issue was transferred to the team for which, few backlog issues were created in PivotalTracker.

There is an issue detected which will need to be changed. Scrum members decided to create an issue and to assign it to a developer.

Users did not find very practical the login form, which is very simple. They requested, for each login there to be sent an notification to the mobile phone of the user. Mobile phone should be added when the first time account is created for using this application.

Second issue: there is not an option which will allow user to change the password.

There were few scrum meetings held before giving the entire test scenarios that need to be developed. Developer assigned for this issue is Arijeta.

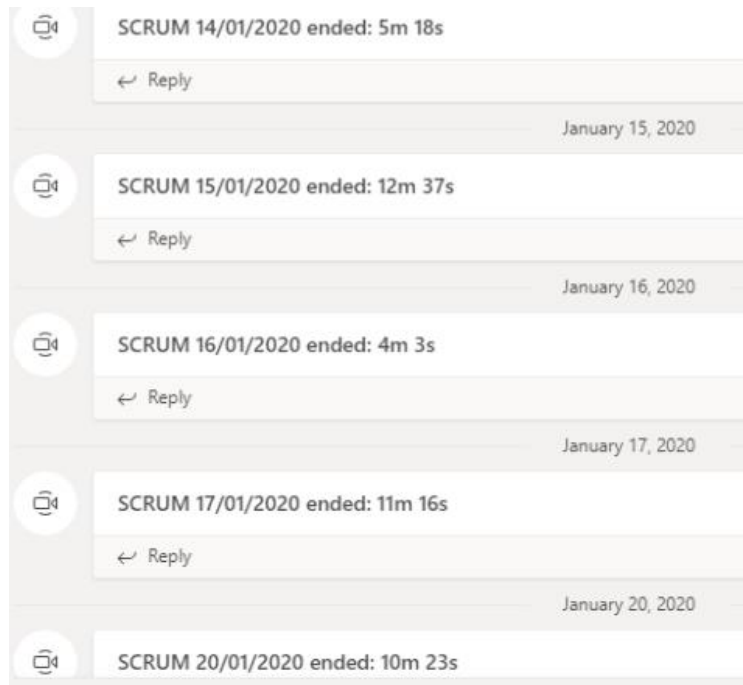


Figure 2. Scrum meetings

In the next meeting held 17/01/2020 a bug was detected, the issue was analyzed by Naim, and a task was assigned. In this meeting was decide a table with issues to be created in order work in pairs to be done. The main focus of the last assigned issues, was to fix the bugs, analyze the same and deliver to the customer the work done in order testing to be done.

QA Testing was done by Florentina, Figure 3. contains the details regarding how the work was divided. Naim during the entire process was the communication bridge with the customer, bugs, issues, found were reported during the Scrums and was decided for the next steps.

We have noticed that the application have some issues, and new features will need to be added in order customer and the users of the application to have better interaction with the same.

<u>Issue List</u>	<u>Product Backlog</u>	<u>Time</u>	<u>Assigned to</u>	<u>Tupe of the issue</u>
1.) Change login form , give opportunity to	project_20200111_2102 project_20200111_2108	3 hours 1.5 hours	Arijeta	Add in , new feature

change password and add mobile phone				
2.) Validation of email address	project_20200116_2107 project_20200121_2122 project_20200125_0836	1 hour analysis, 2hours development	Florentina, Arijeta , Naim	Bug
3.) Identity the problem within balances - In the balance screen, should be highlight in red balances with not completed payments.	project_20200120_1928	3 hours In progress	Arijeta , Naim	Chore/Performance improvement
4.) Report Show Transactions between Start Date and End Date	<b>project_20200120_1935</b>	5 hours In progress	Florentina, Naim	Bug

Figure 3. Assigned issues and task table

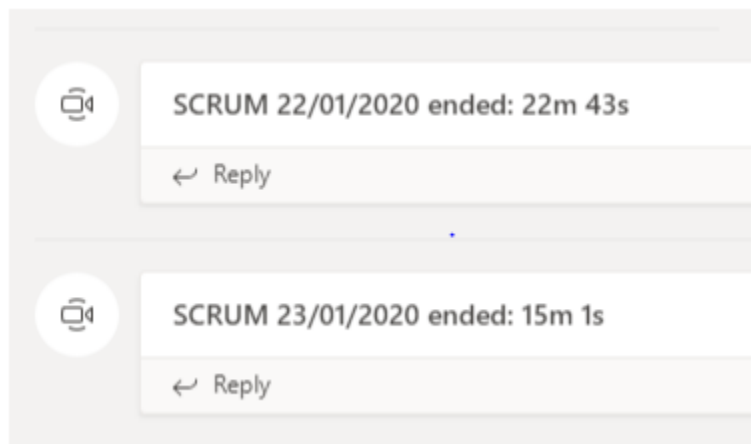


Figure 4. Scrum meetings, last requirements before closing the Sprint

Customer was updated with all decisions taken in this meetings, as well for each created task and progress customer was able to keep track an trace via , version control repository created in GIT.

In the last Scrum meeting held on 24/01/2020, members: Arijeta, Florentina, Naim, was mostly about closing the Sprint and discussing about what was done, and what remained for the next Sprint, what difficulties we have encountered and what will need to be improved. We have closed two tasks, one bug and one new feature, plus additional changes in the system. With this we closed the sprint for January. For the new Sprint we have still two opened tasks from the previous Sprint, one is a bug and another performance improvement task. We have discussed in details each issue and the time that we will need to finish the previous tasks, in this meeting was discussed as well for the new requirements of the customer/client which will need to be planned for the Sprint in February.

Meeting was closed with satisfying results for this month.

## II. Description of the tasks

### 1. Which processes and practices did you use in your project? Show all the steps in time, describe what they constituted.

For this project we have used **Scrum** as a good **process model** for follow up, every process for realization of this projects.

Practices used for realization of this project were:

- a. **Daily Scrum meetings:** in this meetings were discussed all the issues encountered during the testing and the development, customer/ client remarks ect.. For the daily scrum meetings was used MS Teams as a tool for communication, and for keeping track and trace to the backlog products created. Each Scrum meeting took time for roughly 15 minutes per day, we have roughly 120 min for 10 days(2 hours).
- b. **Scrum Board:** inside the MS Teams was created a planner in which all the participants(members) can be updated for the ongoing tasks and their progress. To keep things simple a new page named “SCRUM Planning” was created in order all the issues to be posted and assigned in there. Each new task created, had status “To Do”, and after a Developer or QA Tester was assigned the status of the task was changed “In progress” by the scrum master, for wich later on, was created and a task in PivotalTracker.
- c. **Sprint Demo:** Keep customer/client updated with each task which was done, prepare a testing and a demo.
- d. **Keep all tasks visualized:** table with the all assigned tasks was created in order, pairing development to be done. In scrum meetings was discussed for the issues which need more attention and development in pairs.

**2. Based on the process description from question 1 and the detailed logging information you should summarize how much time was spent (in total and by each group member) on the steps/activities involved as well as for the project as a whole?**

- a. **Scrum Meetings:** 2 hours per each member
- b. **Scrum Board Organization:** 1 hour Arijeta
- c. **Sprint Demo:** 2 hours, 2 demos, 1 hour per demo, Naim
- d. **Keep all tasks visualized:** 1 hour Florentina
- e. **Assigned tasks:**

Scrum Members	Assigned hours/ dedicated hours(development, testing)	Project overall
Arijeta Izeiri	11,5 hours	15 hours
Florentina Syla	10 hours	14 hours
Naim Ahmetaj	14 hours	15 hours

Figure5. Worked hours

For each task there were assigned hours, for instance expected time the task to be finished and tested. Results saved in PivotalTracker for each activity:

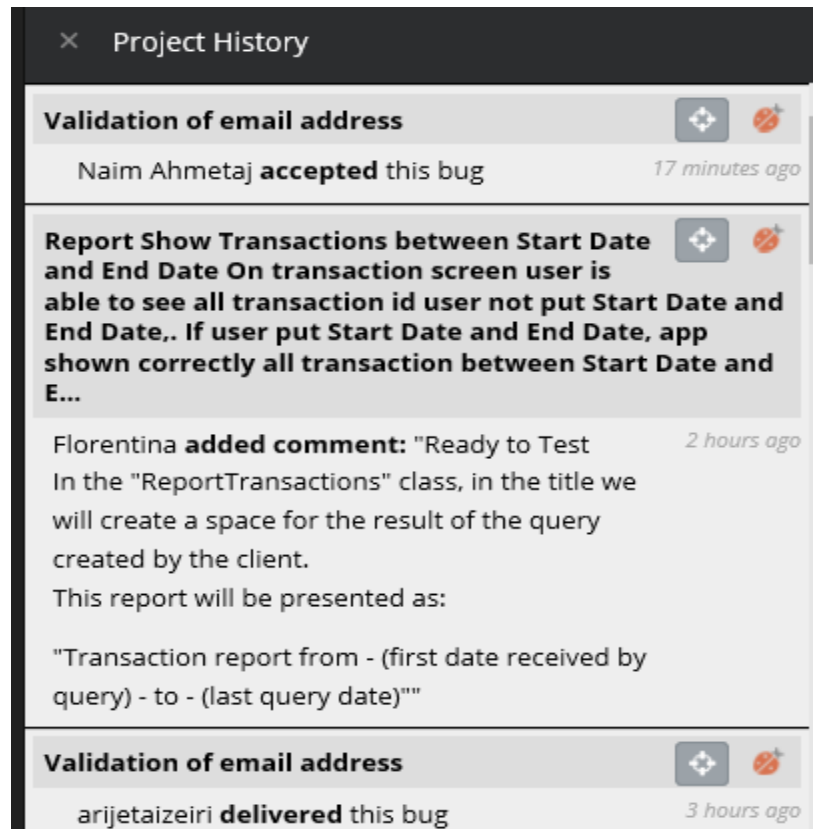


Figure6. PivotalTracker, track and trace tasks.



**3. For each of the techniques and practices used in your project you should answer all the questions:**

- a. What was the advantage of this technique based on your experience in this assignment?

Advantage of the **Scrum** is that you can be updated with any interaction and progress done from the team members

**Scrum Board** came as an idea, to maintain all the members updated with the progress done, including and the customer/client

**Keeping tasks visualized**, visualization can be done in different ways it was decided that to be done via a simple table, from which latter on we can generate a chart for the work done and compare results for different Sprints.

**Using PivotalTracker**: this tool helped us to make real assignment of the issue and fix them.

- b. What was the disadvantage of this technique based on your experience in this assignment?

Like a team we did not had detected any disadvantage of Scrum Process, the flexibility offered and the tools used, allowed us to work in different ways and with different tools.

- c. How efficient was the technique given the time it took to use?

Scrum as a process was not a process that we are using for the first time, but experience gained is definitely different than usually, communication that we needed to maintain in order to solve issues and fix them in assigned time. Each meeting was beneficial for understanding things and hear different story from the client/customer.

PivotalTracker was a new tool for all the Scrum members, it took us roughly 30 min to understand how the tool is working.

- d. In which situations would you use this technique in a future project?

We will definitely use this techniques for different projects in work or in upcoming projects.

- e. In which situations would you not use this technique in a future project?

All the mentioned above techniques have advantages, but there are things that always can be improved, for instance, we will have removed the tables and the visualization and the same would have added in the MS Teams Planner.

- f. If you had the practice/technique in a part of the project and not the entire project, how was using it compared to not using it?

**4. For your next project which set of techniques (that you used here or that you have not used here but know from theory or other projects) would you use? Why? Clearly motivate your selected set of techniques and discuss how they complement each other. How much time is needed to effectively use the technique?**

For the next upcoming project I would have had definitely used MS Teams Planner, for having an overview for all the activities, for instance how many tasks are “In progress”, “To Do”, “Review”, “Removed” or Done.

Like a version control system I would have used Git, like we did in this project.

For task assignment would have used Jira or TFS, or DevOps.

Using DevOps can be very useful for the team, it gives entire overview not only for the task assigned, also for other project, installations done, members in a department, application in which the task is developed, changed object(table, form, codeunit) etc.

**5. Compared to other projects using a more waterfall process what were the benefits and drawbacks with the process used in this project?**

Compared with other projects the main idea of agile is fixing things in time, and the flexibility that is offered. Like a benefit we consider that creating Sprints and having a goal to finish the same in the assigned time, or proceed to work on some tasks in the next Sprint. Nevertheless we can mention a few of advantages that we have used in this project:

- a. Flexibility,
- b. Assign issue, fix, test, review during the development process

Like a disadvantage we can mention:

- a. Regular collaboration, and regular communication with the team members.
- b. Complete commitment can be hard to be handled if in question is bigger project and the team member working in different locations.

**6. What worked well in how you worked in this project?**

This project was fully dedicated team project, each task and issue was discussed during the scrum meeting, and in dependence of which member felt that had more time to be dedicated for a task, was assigned for the same. We worked very well in organizing the scrums by giving all benefits.

**7. What did not work well in how you worked in this project?**

As a team we experience some issues with Git repository, some of the members were not quite familiar how this version control works, it took time to learn a bit how the version control works.

Sometimes there were tasks assigned for which we did not had clear overview, so we needed to request extra information from the customer, this is time consuming and did not worked well for us as a team.

As a team as well it was difficult for us to have all scrum meeting in time, because of the distance and different team agendas.

**8. How did you work together as a group in the project? What worked and not in your interaction(s)?**

Our group is constructed from members from different countries and places, we needed constantly to stay in touch in order to have scrum meetings in the appointed time. Taking in consideration that few of the members had busy agenda during the day, scrum meetings were held usually around 20:00 o'clock during evening and this was not very good for the interaction. Is worth mentioning that our strength for good interaction was, dedication and the responsibility of all the members during the entire project, we were agile 😊.

**9. What would you do differently in a future but similar project?**

To start working in a project, the root of how much progress and success will be gained is depended from the entire team members. We consider that as a team, we maintained good communication, by doing pair programming few times and making improvements in our project.

If in future we have similar project, we will definitely increase the group of members especially for development and testing, this will result in more efficient and quick work. Sometimes different mindset can help achieving better results, and solve things more efficiently.

### III.APPENDIX

#### TEAM MEMEBERS tasks:

**Naim Ahmetaj-** took care for interviewing and gathering all the information from the Administration Fee department members of Kosovo which will bring users needs in the same time for using the application. It will be an ease for having a complete overview how the app should look like and which requirements are ample for satisfying users needs as Naim is one of IT Administrators of this department .

This task took Naim 2 hours per day for one week in total 10 hours

**Florentina Sylja-** took care for analyses, questions and remarks of the users. Previous experience with such application, what should be different, relation and other requests from the users. How the database should be linked in order to gain correct dataset of linked entities. In correlation with Naim which will be direct communication bridge with the customers and the users.

This task took Florentina 1,5 hours per day for 3 days in total 4,5 hours

**Arijeta Izeiri-ScrumMaster-** took care for brining the idea as a prototype (low fidelity) with all previous requirements from the users gathered from the team members. In coordination with the team first low fidelity prototype will look like as described in the pictures.

This task took Arijeta 1,5 hours per day for 3 days in total 4,5

**Note:** This is first faze of prototyping the application as a low fidelity prototype which will be part of the Appendix !

## SKETCH 1

ANA LOGIN TO  
THE SYSTEM

THE IPS ALERTS  
FOR BILLS NEAR  
OR AFTER DUE DATE

ANA TAP TO  
"UNPAID BILLS"  
TO COMPLETE PAYMENTS

## SKETCH 2

ANA TAPS  
BILLS BY  
PUBLIC SERVICE

A PAGE WITH  
ALL BILLS  
BALANCE SHOWN

ANA TAP TO  
PUBLIC SERVICE BILL  
AND IPS SHOWN  
ANOTHER SCREEN

## SKETCH 1 SCENARIO-BASED: Balances and payments

## PAYMENT DOCUMENT

### HEADER

ID : ABC14321

NAME

SURNAME

ADDRESS

### PAYMENT DETAILS

MONTH	YEAR	TAX TO PAY	TAX PAID	PAY BAL.
11	2019	100	0/00	100
12	2019	100	0/00	100
TOTAL		200	0	200

### FOOTER

### LOGIN PAGE

LOGO DATE/TIME

PUBLIC SERVICE

WATER
ELECTRIC
TAX

PASSWORD

RESET
LOGIN

### HOME PAGE

LOGO DATE/TIME

WELCOME NAME

BILLS
0

TAX .....

ELECTRIC .....

WATER .....

TAX .....

ELECTRIC .....

WATER .....

SEARCH BY 
SEARCH

TOTAL

**SKETCH 2 - MORE DETAIL**  
CORE FEATURE INTERFACE SKETCHING

IPS

ISP  
LOGO

User name

Password

RESET

LOGIN

IPS

HOME

BALANCE

BALANCES

NAME	BILLS	
WATER	10/3	DETAILS
ELECTRICITY	10/2	DETAILS
TAX	10/4	DETAILS
TERMOHOSYS	10/5	DETAILS

IPS

SIGNED

HOME

TAX

LAST BILL

PAYMENT DUE DATE

TOTAL DEBTS

TRANSACTIONS

TRANSFERS

LOGIN PAGE

BALANCES  
FOR EACH PUBLIC SERVICE

DETAILS FOR  
ONE PUBLIC SERVICE

## LOW FIDELITY PROTOTYPE 1