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2015 SEMESTER 2 | AUT UNIVERSITY

Mid-Project Status Report

UpStage

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# Project Overview

UpStage is an open source application for online performance that allows performers to use images, animations, audio, web cams or text to perform in real time for their online audience. It was launched in 2004 and introduced as a final year BCIS project in 2006. Since then, UpStage has been developed and extended by many AUT student developers. As it’s developed, the functionalities of UpStage have been improved, but on the other hand, it became difficult to understand the internal structure coded by the past developers as many student developers were involved in this project and the code lost consistency. Also there are a lot of bugs that are not fixed yet. It became almost impossible to restructure the code that has been extended for over ten years without any refactoring.

One of the issues we have is that UpStage does not work on mobile devices. That is because UpStage uses Flash and Flash does not work out on mobile devices. When UpStage was first created, the one of the advantages of UpStage was easy accessibility as it is a web-based application that does not require any downloads, but inability for user accessing to UpStage on mobile devices now means that it is not accessible anymore as many people use smartphone these days.

## Scope

These issues led the clients’ desire for a new UpStage that provides the same functionalities as the existing one has and also works on mobile. The main focus of this project is on developing a new UpStage, but the project team still work on maintaining the existing one by fixing errors. The new UpStage will be still web-based and have the same functionalities, but it will be much improved application using other technologies so that users will be able to enjoy UpStage on mobile.

## Objectives

* To investigate programming languages to choose appropriate language for the new UpStage.
* To maintain the current UpStage by fixing errors until the new UpStage is released.
* To start developing a new UpStage that works on mobile devices.
* To implement appropriate software architecture to the new UpStage so that the system can be easily maintain in the future.

## Approach

As this is an ongoing project, it has in place an existing set of Agile development practices. The project team will use a mixture of Agile methods during the development. We thought that Kanban is the most suitable method for our project that we can use a Kanban board with story cards. There is a limited number of cards on each column at any point of time to reduce work overloading. However, the one of Kanban’s nature is flexibility in terms of the period of time and we found that the flexibility might bring low productivity of our work. Therefore we decided to use Scrum method together with Kanban, so each iteration will be time-boxed and any outcome must be made at the end of each iteration.

## Major Milestones and Planned End Products

The project this semester is divided into two parts: the maintenance of the current UpStage and the development of the new UpStage. As we plan to develop a new UpStage, we will no longer improve or extend the existing UpStage. While we focus on the development of the new one, we will keep maintaining the existing one by fixing errors that have been found by users. The development of the new application is divided into two parts this semester: a plan and design phase and a development phase. In the plan and design phase, the team investigates about technologies that can be used and analyses those technologies to choose suitable programming languages and architectures for the new UpStage. In the development phase, the software will be developed based on the user requirements and testing will also be carried out. As the development of new UpStage is a long term project, the final product will not be introduced within this semester.

## Panel Recommendations about the Proposal

1. Review the requirements/product backlog and identify the one that the new system “MUST HAVE” versus those “NICE TO HAVE”. The “MUST HAVE” features should be the minimum set of features to change over to the new system and the client should approve those features.
2. Refine the plan. Allow some time to investigate available tools and technologies. Make sure that the plan reflects the chosen methodology.
3. Review the project deliverables, for example: there are huge gaps in terms of working hours, importance, types of work etc. between the production of the “New UpStage” and the production of a poster.
4. Add page numbers to the proposal document.
5. Add the team contact as an appendix to the proposal document.

# Project Status

## Completed Work

### Investigation of Programming Language

In order to develop a new UpStage, we should decide which language to use for the back-end. HTML5 and JavaScript was chosen to be used for the front-end by other existing members in the past. The use of HTML5 will resolve the problem of the current UpStage with Flash. Each member of team researched on a different programming language and found out its advantages and disadvantages. The researched languages are Python, Java, C# and Node.js. Node.js has been chosen to be used. We recorded the research evidences and the rationale for the choice of Node.js.

### Product Backlog

There was a list of product backlogs written in the past for the current UpStage. The functionalities of the new UpStage will be the same as the current one has, so we decided to reuse that product backlog list. As recommended by the panel after the proposal, we identified each backlog whether it is a feature that the new system must have or nice to have. After identification, we have sent the product backlogs to the clients to find out if they think the same way. They wanted to add/remove some product backlogs into/from the list and make some changes to the priority of the existing backlogs. The new UpStage will be developed based on the edited product backlog list.

### Communication with Client

We communicate actively via Email with clients. We share any issues or questions together and they response quite quickly. Also, we had a couple of meetings with the clients. As our clients are not in Auckland, we used to meet them through UpStage. It was such a good chance to find bugs together by using UpStage during the meeting. Two other past developers also joined the meetings: Paul Rohrlach and Daniel Han. As Paul has been joining the development since he was an AUT student and Daniel had contributed a lot of things in 2012, they have a lot of knowledge of UpStage. Also, they are now working as software developers in the real world, they are very helpful for me to understand and have a concept of UpStage. They suggested several options to choose for a programming language or software architectures. As we start from scratch for the new UpStage, their suggestions are great help.

### Current Issues

I am not sure whether other team members think the same way as me, but I think that the team is lacking in communication. Everyone has a different timetable for their classes and only few hours a week are available for gathering everyone together. As we cannot physically meet up often, we tried to communicate online. Everyone has a Facebook account so we made a group chat on Facebook and also the group page to share ideas or arrange for a meeting, but not everyone checks Facebook often although they know that we try to communicate often through Facebook, so they have missed several meetings with us. It required for them to take another time to catch up what the team discussed in the meetings.

Another issue I want to address is that the progress of this project is too slow. As it is a team work, working hard by myself alone did not work. There is someone in our team whose role is a team leader who gives tasks to the team members and tracks their progresses, but since he is busy with his other assignments and he does not do his job, I feel that only a few of us works for this project and it is difficult for me to make sure everyone to contribute on this project.

### Current Status

As we have decided Node.js as a programming language to use for the back-end, the next task is to design the architecture of this system. At the client meeting, other developers suggested to implement the microservices architecture. One of our team members made a document that explains about microservices architecture. The team once had a meeting to share some idea about it and tried to start designing architecture. First of all, we tried to identify services that UpStage has. However, though we understand the concept of microservices and the UpStage, we are not familiar with it and we have not experience it before, so it was really difficult to implement this pattern to our project for us. Therefore, we decided to ask Paul for his help because he is the one who first recommended it to us and we are still waiting for his response.

# Individual Work and Learning Achieved

## My Work

|  |  |
| --- | --- |
| Work | Hours |
| Team Meetings | 14.5 |
| Client Meetings | 4 |
| Supervisor Meetings | 3.5 |
| Individual Work | 46 |
| TOTAL | 68 |

### Contributions

* Project Proposal
  + Rationale for the project – explained about the existing system and why this project is needed.
  + Skills and knowledge involved – Identified personal, professional and technical capabilities that needs to be involved in this project.
  + Estimate all costs incurred – Calculated total costs for this project including student costs, university costs and client costs.
  + Team contract – Identified several rules for the project team.
  + Edited the product backlog in the appendix section and the schedule section as the panel requested.
* Research
  + C# – Figured out what C# is and identified its advantages and disadvantages.
  + Node.js – Figured out what Node.js is and identified its advantages and disadvantages.
  + Rationale for using Node.js – Wrote few paragraphs about comparison between Node.js and other programming languages based on the research the team has done, and why we chose to use it for our project.

## Learning Achieved

* Increased my understanding about the mixture of project methodologies.
* Increased the basic knowledge of several programming languages.
* Increased my understanding about team working.
* Increased the communication skills through suggesting other members on my opinions and making them understand my ideas.