Bachelor Process Report

SportLook

A social network for sport events

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1. Project Plan

1.1 Aim

The aim of the project is to build an iOS Application and Web Server that allows users to create and join sport events, with a build in chat function that allow user to message each other, and a discover function that lets you find people near you that you can invite to events.

1.2 Objectives

- The client application will be developed for iOS devices, optimized for iPhones.
- The client application will be able to communicate with a Web Service.
- The client application will not communicate with the remote database directly.
- The Web Server will store data on PostgreSQL.
- The client application will be developed using Swift.
- The Web Server will be developed using Node.js with the Sails.js framework.
- The steps of developing the system will be described in the Project Report.
- The process of the system development will be described in the Process Report.

2. Time Estimates

The product was developed for the company *Move Sport*. The company wanted the application to be published in AppStore in spring (April 2015), therefore an initial planning took place on how can this be achieved. It was decided that the app will be split into 2 releases, therefore the client would benefit from a functional application by 1st of April. The first release would be a simple version of the app that is functional and the second release would contain more advanced features. Together with the client, the following four deadlines were agreed on:

1. **March 1st**
   The complete flow & design of the app would be delivered. The initial home screen would be implemented where a user can sign-up/login, both manually and with a Facebook account using the Facebook iOS SDK.

2. **April 1st**
   The first release of the app would be delivered. Following features would be ready:
   - Login/Sign up.
   - Show events on a map, and information when clicking on them.
   - Create/join/delete events.
   - Show “My Events” (events created and joined by the user).
   - My Profile page where the user can see favourite sports.
   - Edit profile and update favourite sports functionality.

3. **May 1st**
    - Chat function, ability for users to chat with participants for the same event.
    - Filter function to filter events on the map by category.
    - Discover function. Discover people within a radius selected by the user, then have the possibility to invite them to events created/joined.
    - Push notification for: Chat & when inviting user to event.

4. **June 1st**
   Project & Process Report. Minor bug fixes.

3. Group Members

The group consists of 3 developers: Alexandru Vasile, Ibrahim Yildirim and Juraj Petrik.

4. SWOT Analysis

4.1 Juraj Petrik

Strengths: Quick at learning new programming languages and frameworks. Experienced in JavaScript and Node.js.	**Weaknesses:** Bad at estimating how much time tasks will take. Postponing more difficult tasks.
Opportunities: Make a great project with clean code. Learn about Sails.js framework.	**Threats:** Missing deadlines. Not spending enough time on the project.

4.2 Alex Vasile

Strengths: Strong work ethic. Experience with iOS development. Drive to learn. Hard working.	**Weaknesses:** Time estimations for tasks. Does not handle stress well.
Opportunities: Learn Swift. Improve design skills. Learn about useful iOS libraries.	**Threats:** Spending too much time to make things perfect. Too heavy workload from external sources.

4.2 Ibrahim Yildirim

Strengths: Thinking out the box. Good with UI. Getting things done fast. Quick Learner. Great problem solving skills.	**Weaknesses:** Using long time on UI instead of functionality. Postponing tasks. Time management issues.
Opportunities: Building project from scratch. Will learn the new frameworks, languages and technologies quickly.	**Threats:** DiggitApp & other projects simultaneously Will postpone tasks and not complete tasks on deadline. Too much CC.

5. Group Policy

The group members worked together in their practical placements and various other projects, therefore they understand each other's work habits really well. All of them strive to create the best possible product and to finish it on time. Here we outline some of the main policies the members agreed upon:

- Meet at the agreed time.
- Commit code often and regularly for every new feature.
- Do not commit code that breaks the build.
- Document own work.
- Discuss technical choices with the group.
- Value the input of other group members.

6. Implementation Phase

6.1 Version Control

To start working on the implementation, it is essential to set up version control system. Version control is used to store and distribute files and source code for project development.

Since we had a lot of experience with it, we decided to use Git [1].

Our remote private repositories are hosted on github.com. We have divided our project into two separate repositories:

1. Swift application git@github.com:alexcosmin/SportLook.git
2. Node.js API Server git@github.com:alexcosmin/SportLookBackend.git

6.2 Time Management

For keeping track of the time and the work needed to be done within a given time in order to meet the client deadlines, the team decided to use an agile methodology. A small team of disciplined and highly skilled developers is likely to succeed regardless of which agile method they use, so with that in mind we used some artefacts of SCRUM. The main elements we used from SCRUM were the backlog, stories and sprints. We, however, decided to omit the burn-down chart to measure progress, in order to not spend too much time on the process itself but on the planning and implementation of the application. As for SCRUM roles the product owner is Ibrahim Yildirim and our SCRUM master is Juraj Petrik. We simply used enough elements from SCRUM, so that we knew which tasks needed to be done when, and if some were not completed on time, we would work nights and weekends to make sure they were before the deadlines.

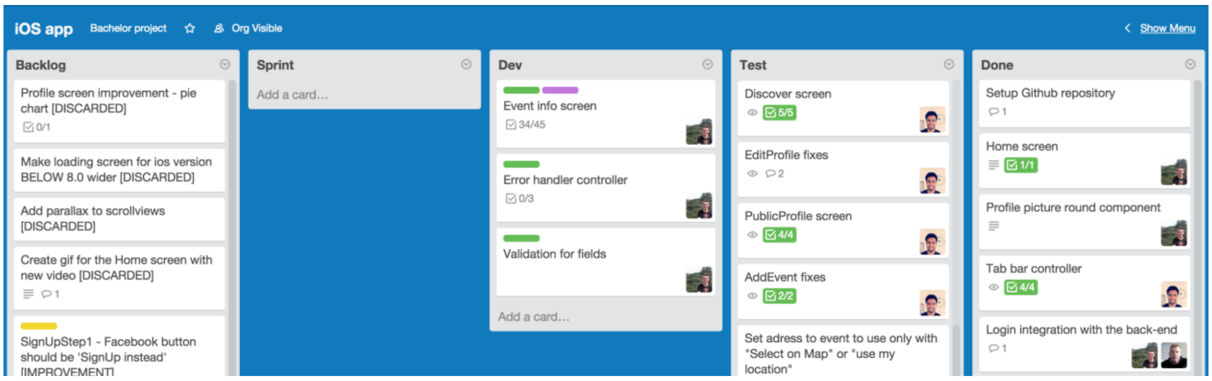
We decided to go make the first deadline (March 1st) in one 3-week sprint and then the next divide each release in two 2-week sprints, making a total of 5 sprints. By dividing the workload that needed to done in two sprints, the team would have an overview of how much there would be left, when half of the time was passed, and if it was on the right track for the release.

Before each sprint we follow these steps:

- If it's not the first sprint we spend one to two hours to do backlog grooming, hold a short sprint retrospective and write a summary of the retrospective in the process report.
- We take product backlog items and split them into smaller tasks, and add them to the sprint backlog.
- We take tasks from sprint backlog and decide which group member will be responsible for the task execution.

During a sprint we would perform the following tasks:

- We add the tasks to our board in https://trello.com/
- According to the task's status, the group member who is responsible for the task, moves them across five columns: Backlog, Sprint, Dev, Test and Done.


iOS app Bachelor project Org Visible Show Menu

Backlog
- Profile screen improvement - pie chart [DISCARDED] 0/1
- Make loading screen for ios version BELOW 8.0 wider [DISCARDED]
- Add parallax to scrollviews [DISCARDED]
- Create gif for the Home screen with new video [DISCARDED] 1
- SignUpStep1 - Facebook button should be 'SignUp instead' [IMPROVEMENT]

Sprint
- Add a card...

Dev
- Event info screen 34/45
- Error handler controller 0/3
- Validation for fields
- Add a card...

Test
- Discover screen 5/5
- EditProfile fixes 2
- PublicProfile screen 4/4
- AddEvent fixes 2/2
- Set adress to event to use only with "Select on Map" or "use my location"

Done
- Setup Github repository 1
- Home screen 1/1
- Profile picture round component
- Tab bar controller 4/4
- Login integration with the back-end 1

Figure 1. Managing tasks with Trello

The complete product backlog for the project can be seen below:
Priority 1 = Deadline March 1st
Priority 2 = Deadline April 1st
Priority 3 = Deadline May 1st

Nr	Title	Description	Priority
1	Design application flow & wireframes.	Designing the main flow of the app.	1
2	Design system architecture.	Design domain system architecture.	1
3	Setup iOS development environment.	Setup Xcode IDE and create initial project with version control.	1
4	Set up Web Server's database.	Create database for web server with object relation mapping, populate tables with test data.	1
5	Design Graphical User Interface.	Design all the screens for the application.	1
6	Implement welcome screens.	Implement Home screens in iOS.	1
7	Implement API Functionality to support home screens.	Create models and controllers to support user CRUD functionality.	1
8	Implement Authentication.	Create controllers and Sails.js policies to properly implement authentication process.	1
9	Design and Create iOS Models.	Design and create the models in Xcode.	2
10	Design and Create API Services.	Design the initial data flow and communication with the Web Server.	2
11	My Profile Tab.	Implement the screen for User Profile, together with edit profile and update favourite sports.	2
12	My Events Tab.	Implement the screen for My Events, Add event & Event info.	2
14	Search Events Tab.	Implement MapKit integration and calls to the Web Server to get events	2
15	Add serialization/deserialization of JSON Objects.	Implement for API models JSON serialization and deserialization and test if correct values are retrieved and sent from web server.	2
16	Discover Tab.	Implement Discover screen, Public profile.	3
17	Invite user to event.	Implement functionality to get current events and invite a user to it.	3
18	Event Chat.	Chat functionality for users to chat with each other if they are participating in the same event.	3
19	Push Notification.	Create and implement Apple Push notification service in the project.	3

20	Filter.	Filtering function for in the “Search Events” Tab.	3
21	Release to AppStore.	Create App record in Member Centre & iTunes Connect.	1
22	Integrate Client App with Parse.	Integrate Client app with Parse.	3
23	Integrate Web Server with Parse.	Integrate Web Server with Parse.	3

Initial meeting with the client

First meeting with the client happened on February 9th. After the meeting we discussed and concluded that it would be best to release the app over two times in the AppStore. There could be a production ready version ready by April 1st and an upgrade with more features by May 1st. The client agreed and the team started making the product backlogs.

Sprint 1 (February 9th - March 1st)

In this sprint, the focus was on the UI design of the application. We would have to have some design mock-ups ready by the end of the sprint, so the Android development team would build an application that was similar to the iOS version.

Nr	Backlog Title	Description	Responsible	Estimated hours
1	Design application flow & wireframes.	Designing the main flow of the app.	I & A	30
2	Design system architecture.	Design domain system architecture.	I, A, J	10
3	Setup iOS development environment.	Setup Xcode IDE and create initial project with version control.	A	10
4	Set up and test Web Server’s database.	Create database for the Web Server with object relation mapping, populate tables with test data.	J	20
5	Design Graphical User Interface.	Design all the screens for the application.	I & A	80
6	Implement welcome screens with Facebook integration.	Implement Home screens in iOS.	I & A	10
7	Implement API Functionality to support home screens.	Create models and controllers to support user CRUD functionality.	A & J	20
8	Implement Authentication.	Create controllers and Sails.js policies to properly implement authentication process.	J	60

Sprint Retrospective

A lot of time during this sprint was spent on designing the layout. The client received the finished mock-ups a couple of days before the sprint ended and had some comments.

He wanted us to use a different colour palette but the overall design was approved.

For the Web Service, setting up the authentication properly took quite a lot of time. The project was set up on GitHub, and the team also got introduced to the programming language Swift, it was interesting and we were excited to work more with it.

Sprint 2 (March 1st - March 15th)

In this sprint we are going to start the initial screen of the application after the user has logged in such as: My Profile, Add Events and My Events. Also we will finish the login functionality so it's integrated with the Web Server.

Nr	Backlog Title	Description	Respon sible	Estimated hours
9	Design and Create iOS Models.	Design and create the models in Xcode.	A	30
10	Design and Create API Services.	Design the initial data flow and communication with the Web Server.	J	90
11	My Profile Tab.	Implement the screen for User Profile, together with Edit Profile.	I	70
12	My Events Tab.	Implement the screen for My Events, Add event.	A & I	90

Sprint Retrospective

A lot of time during this sprint was spent to dig deeper into Swift and Sails.js, and setting up the models of the application. It was a good start for the app, and we managed to make a big progress for this first sprint. We are on the right track, and looks like in the near future the app will be ready for the 1st release.

On the server side some problems were encountered because of the Waterline database adapter. The waterline adapter is still in constant development process and not all of its features are well developed and tested. For example our domain data models are working with a lot of relations between models and if we need to perform CRUD operations for the parent model which contains children in several levels, such a feature in Waterline is not yet available. To overcome those issues, Juraj had to find a workaround and later on he submitted a new feature request for Waterline. If Waterline will implement this feature in further releases, then we will have to update our server side code. Overall the sprint went well and the tasks were successfully implemented, tested and documented.

Sprint 3 (March 16th - March 31st)

In this sprint we will need to have a production-ready version of the app. Also we will have to make the app record in Apple's Member Centre and iTunes Connect. We will be working on the MapKit framework in order to add map functionality in the application, and the pin clustering component that will make it look good when there are a lot of locations.

Nr	Backlog Title	Description	Respon sible	Estimated hours
11.3	My Profile Tab.	Function to update Favourite Sports.	I	20
10.4	Design and Create API Services.	Integrate AWS for image upload.	J	90
12.2	Event Info.	Implement the screen for showing event info.	A	35
14	Search Events Tab.	Implement MapKit integration and calls to the Web Server to get events.	I	40
15	Add serialization/deserialization of JSON Objects.	Implement for API models JSON serialization and deserialization and test if correct values are retrieved and sent from the Web Server.	A	40
21	Release to AppStore.	Create App record in Apple's Member Centre & iTunes Connect.	I	20

Sprint Retrospective

During the 3rd sprint we focused on having an AppStore ready application. A lot of the time went with testing the UI and making sure it was stable, without crashing.

On the client application we encountered some problems with the UIScrollView because of Auto-layout, and making it adjust for each of the different screen sizes.

On the server side some minor problems were encountered because of the Waterline database adapter. Overall the sprint went well and the tasks were successfully implemented, tested and documented.

The Sprint ended with a meeting with the client, to showcase the app functionality to the client. The first release was sent to review in the AppStore.

Sprint 4 (April 1st - April 14th)

In this sprint we need to start working on the upgrade for the next deadline which is in one month. During this sprint we will make proof of concept with a couple of open source libraries and try to have a look at Parse.

Nr	Backlog Title	Description	Respon sible	Estimated hours
16	Discover Tab.	Implement Discover screen, Public profile.	I	20
17	Invite user to event.	Implement functionality to get current events and invite a user to it.	I	30
19	Push Notifications.	Create and implement Apple Push notification service in the project.	A & J	40

20	Filter.	Filtering function for use inside the “Search Events” Tab.	I	15
22	Integrate Client App with Parse.	Integrate Client app with Parse.	A	60
23	Integrate Web Server with Parse.	Integrate Web Server with Parse.	J	20

Sprint Retrospective

During the sprint we managed to get a connection between our system and Parse. We created a push notification development certificate in Apple’s Member Centre, and set it up, so we are now able to send notifications to the app from the backend. It is not fully implemented and we still need to handle what happens when the user presses on the different notification, in order for the right screen to show up.

From the back-end point of view there were a lot of issues with the Amazon Web Services which we used for the image upload. We kept encountering different errors, so there was a lot of time spent on fixing those issues.

Sprint 5 (April 15th - 1st May)

In this last sprint we will have to finish the app completely. In the beginning of the sprint it looks very feasible, and we have managed to make a really scalable app, that we can keep adding functionality to, without big issues.

Nr	Backlog Title	Description	Respon sible	Estimated hours
18	Event Chat.	Chat functionality for users to chat with each other if they are participating in the same event.	A & J	80
19.2	Push Notifications.	Making Push notifications work with the chat.	A & J	40
21.1	Update the app in AppStore.	Create the required certificates for the update and update the record in iTunes Connect.	I	5
22.1	Integrate Client App with Parse.	Setting the users to the corresponding channels in order for the chat to work.	A	20

Sprint Retrospective

During the sprint we finally achieved the full flow of the app as the client initially wanted. The data flows without problems between the Web API and the client, and the features are very well tested.

Some problems we encountered were coordinating the chat and push notifications functionality with the Android development team. It was crucial for the iOS and Android applications to send out and handle chat messages in the same way so the chat works regardless of the devices used. The Android developers had a lot of problems understanding the flow of the functionality but with a lot of help and support from us he overcame the difficulties in the end.

We have developed our project to satisfy the objectives of the project and client requirements.

7. Personal Reflections

The overall outcome of the project has been very satisfactory. We spent a lot of time and effort to make it right.

One big problem that surfaced was the need to support and communicate with the team that was developing the Android version of our application. The client *Move Sport* hired a Danish company to develop the Android version. This Danish company decided to outsource this development to a single developer in India. Now when this Indian developer encountered a problem, usually with our Web Service, he would contact the Danish company, who would contact the client, who would in turn contact us. Obviously this was a very unproductive communication workflow that made our job more frustrating. Unfortunately, we didn't have any influence over this decision of the client.

8. Literature

[1] Git Visual Guide
https://docs.google.com/document/d/1HjMsr9hNIZLyuwQzS25oskyN30_sb5j2VOogCr7tI7M/edit?usp=sharing