Comito

A 'Software Project Management' course product by:

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**Bibliography and relevant linking is contained inline.*

Comito's Concept:

The Idea:

Bringing people together, tourists and locals as one.
Creating real life experiences and forming cross cultural friendships. Enabling tourists to experience their destinations from a local point of view, while producing opportunities for locals. A mobile application that will learn the users via social networks and on tour, will offer them the most relevant local people to hang out with and explore the destination.

Uniqueness:

A profound competitors research led us to the conclusion that there is no competitor in the market who offers tailor made match, by an automatic machine learning algorithm for tourists.
There are a lot of products that offers to meet new people, but none of them offer the user to meet people with a large variety of shared interests. None of them is referring the tourism market.
There are few products that try to connect tourists and locals, but only on the base of location.
Unlike our competitors, Comito offers a unique experience of meeting new people, like you, in a new and exciting place.

Market Requirements Summary:

Target Audience:

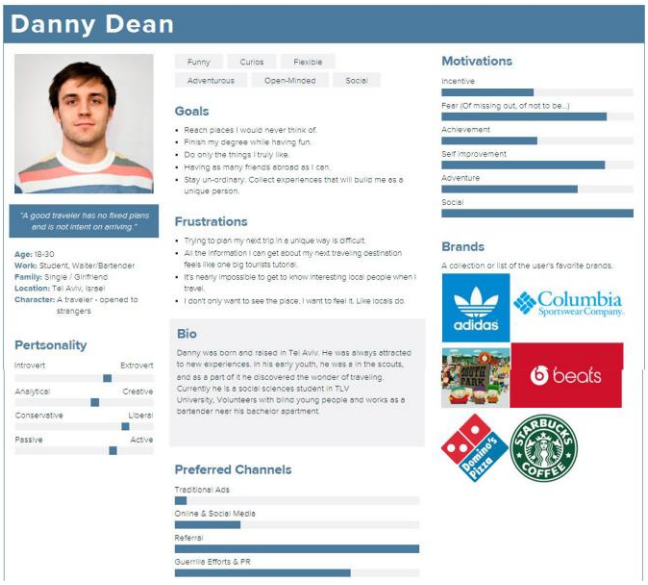
Comito's global market is the worldwide Tourism market. Within this global market, our main target market are the students & young travelers.
Students & Young travelers are early-adapters, fast learners and often technological.
In inclusion we might say that those potential users are rapidly escaping from their real-life and moving towards the online social networks. "Locked" in their screens, they miss the real world outside and the excitement it has to offer through real-life experiences. On their trips, they are looking for that excitement, yet they are not practiced at getting it.

Trends:

- Tourists are consuming more of their travel services online, mostly via mobile devices.
- Travelers (now more than ever) declare that while planning their trips they are looking to enrich themselves with cultural experiences and to meet local people.
- Young travelers are looking for local experiences with strangers, during their traveling.
- The world global tourism market is in constant growth. The young travelers share of that market is growing as well, regardless the global economy status.

User's Persona – The Tourists

(Picture file is attached)



User's Persona – The Locals:

(Picture file is attached)

Competition:

Hyperlinks on the competitor names

MeetMe – Meet, chat and have fun with new people. Bring people together, based on location. No specific segment. More into dating vibe.

Localyoo – Offer locals to become tourist guides. Offer tourist to explore the destination from a local point of view.

Funzing – Experiences marketplace. Offers everyone from everywhere to take part in experiences and activities guided by other users.

Trip4Real – Experience Europe like a local. Book tours and activities hosted by local insiders across Europe and experience a place like you live there.

Eatwith – book a seat at the chef's table. Every user can offer a meal cooked by himself at his home. Every othe user, locals and tourists as one, book it and dine at the chef's place.

There are several websites and technological solutions for 'finding locals online', mainly for travel guiding purposes. Yet, none of them offers smart matching between both sides. Moreover, nobody has established itself as a leader in the field.
The following table summarizes some details about Comito's main competitors:

Competitor + Link	City coverage	Mobile App	Web App	User segment focused	Charging money	Smart matching	Location based + Pre planning
Meeple	Everywhere - virtually	X	V	connecting tourists and locals all around the world for any joint activity	X	X	Pre planning only
Funzing	about 2 cities Tel Aviv, London	X	V	All	V	X	Pre planning only
Localyoo	about 15 cities such as: Tel Aviv, London, Amsterdam, Paris, Berlin, NY...	X	V	All	V	X	Pre planning only
Trip4real	about 60 cities such as: London, Amsterdam, Rome, Berlin, Dublin...	X	V	Passionate travellers and Spanish locals	V	X	Pre planning only
AirBnB experience	Only San Francisco	X	V	All	V	X	Pre planning only
Co-mito	**MVP-Berlin TLV**	**Hybrid**	**Hybrid**	Young tourists & students	**X**	**V**	**Both**

Alternative competitors that attempt to provide "fun experiences" for tourists are:

EatWith, Besomebody, Twoo, coolcousin, YapQ, MeetMe, Twoo, Who's Down (Google), so in fit, Trip advisor, Your Encounters, GadVentures, getyourguide

Another famous solution that should be mentioned is couch surfing. This solution connects between travelers and the local community that capable and wishes to offer free bed without any return (meaning, for free). The website was published in 2003 and has more than 3 million registered users. It was a real tourism technology breakthrough. Around this solution, a huge community of members has gathered, worldwide. This community is very active and powerful, as a community that keeps weekly hangouts between locals and tourists scheduled.

Some might say that Couch Surfing has prepared the worldwide tourism world for phenomena such as the profitable Airbnb service (which it's value is estimated with more than 20B USD).

Both the tourism market and the "getting people together" market are crowded. There are a lot of competitor and each of them does his thing in his niche.

Pros:

- The huge competition on each user guarantee that this market won't die soon.
- It also hints that this is a market that offers much to businesses, otherwise, there wouldn't be so much of them in it.
- The amount of potential users is enormous.
- Even 0.5% of the market is enough to make a business worthy.

Cons:

- The battle on each user is extremely hard.
- Cost of equity is very high.
- Advertising in the tourism world is one of the most expensive markets to advertise in.
- The profit that a mobile app can gain from each user is low, due to overflow of services, apps and products, offered to each user.

User Requirements Summary

User stories:

1. As a young tourist who is traveling on his own, I want to be able to find cool people like me, so that we would have great experiences together.
2. As a young tourist who doesn't know the destination I'm in, I want to be able to discover the city so that I could see the events and people that will interest me the most.

3. As a young local in berlin, I want to be able to share my desires and host an event, so that people will see what a good chef I am.
4. As a user who found a person that I want to speak with, I want a chat feature, so that I could talk to him and get to know him before we meet.
5. As a tourist who hasn't got much time in the city, I want to see all my events In one place, so I could manage my time better.

MVP Features & Future "nice to haves"

The MVP will include the basic features as listed below.

1. At first stage, the machine learning algorithm will not take place and the matching algorithm will match according to dry details (location & activity type).
2. Only Facebook will be offered as an available social network to login with.
3. Events screen. Will show the user the events near him and events that he specified that he wants to hear about. In the future, the algorithm will match tailor-made events.
4. Matches screen. Will show the user other users near him. Future planning is the same as for events.
5. User profile.
6. Chat.
7. Navigation toolbar.

Prototype – mockup:

The MVP mockup is attached as a PDF file, created with Balsamiq tool. In order to enjoy the responsiveness and the dynamic application flow, please use Adobe acrobat reader.

Story Board:

The MVP mockup describes the whole user journey and storyboard

User Survey

We've performed a user survey and gathered the users' reaction to our idea and prototype. The google forms survey could be found here and the results could be found here in csv format.

System Requirements Summary

System Architecture:

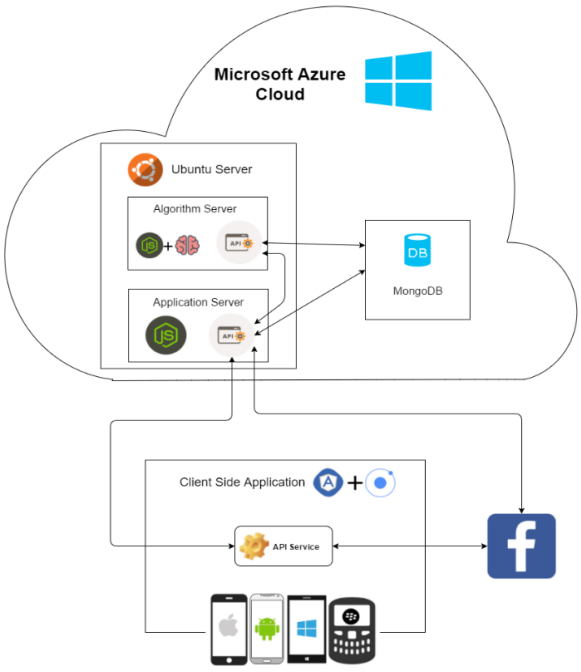
Comito's system is built in a client server architecture, where the server side is deployed on Microsoft's Azure cloud, and the client side's application that is compatible with all the mobile OS, is installed on the client's mobile device.

The server consists of two main components:

- The Data Base which is based on MongoDB technology and powered by MongoLab.
- An Ubuntu Linux server
  - Algorithm server. Based on NodeJS technology.
  - Application server. Based on NodeJS technology as well.

Both of the components which makes up the Ubuntu server, contains an API. Both speaks between them and with the MongoDB through their API's.
The application server's API, speaks with Facebook's graph-API as well.

The client side's application is built with AngularJS, and wrapped (compiled) with Ionic and Cordova frameworks that supply a working application for each and every mobile OS. The client side's application contains an API, that speaks directly with the application server's API and with Facebook's graph-API. ***Diagram image file is attached***



Created with draw.io

Technologies:

Comito was developed with several different technologies, using multiple tools.

General:

- The whole project was developed in Webstorm IDE.
- The development process and code collaboration through it, was managed in Atlassian's BitBucket git.
- The working process between the developers was managed and tracked by Trello.
- During A/B testing stages, Optimizely was used for user interaction measurements.
- In order to get user traffic for the A/B testing's described above, ActiveTrail was used for managing mailing lists and landing pages.
- The project's mockups were created using Balsamiq.

Server Side:

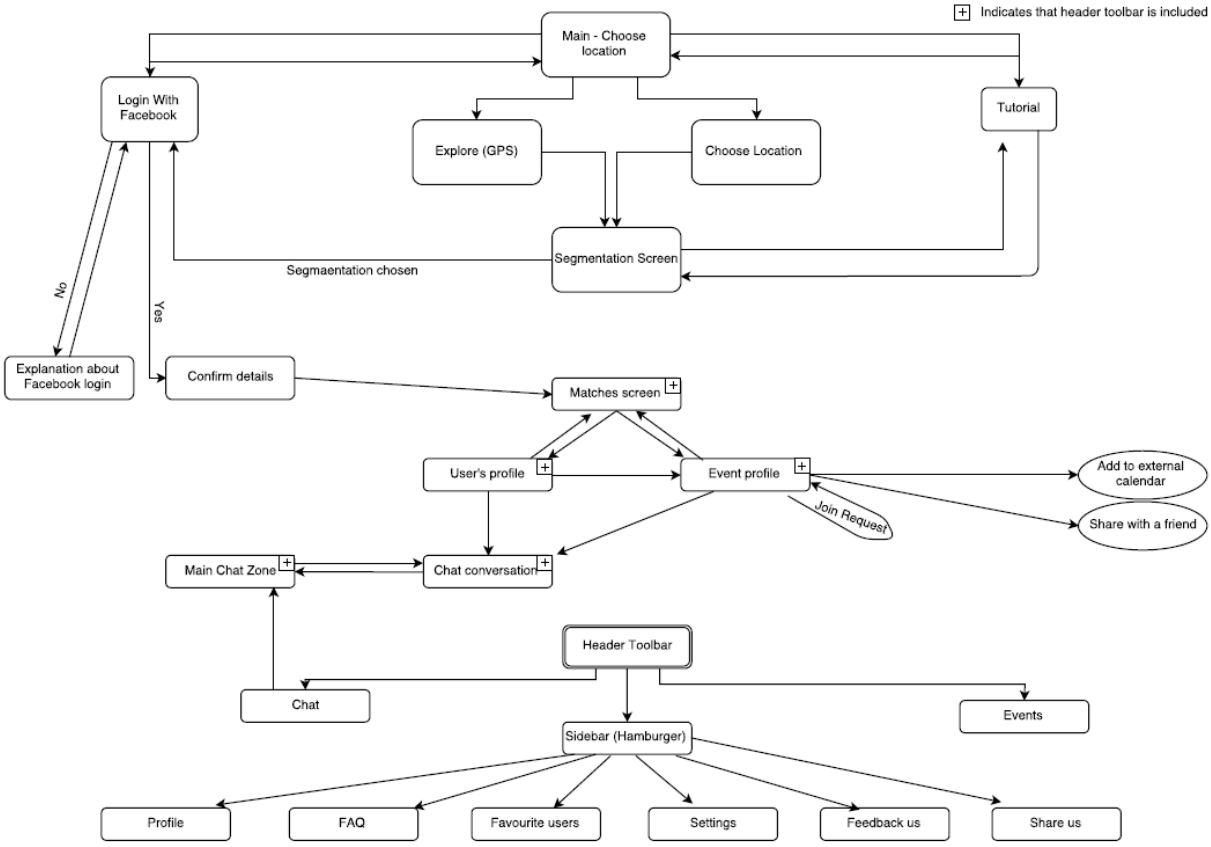
- Deployed on Microsoft Azure's cloud.
- Data base is based on MongoDB technology and powered by MongoLab.
- Running on an Ubuntu Server's virtual machine.
- Both the algorithm and application servers are built with NodeJS technology, wrapped by Express.js framework.
- Authentication was based on passport framework.
- Data base models were developed and managed with mongoose framework.
- All the communication and interaction with Facebook was made based on Facebook's graph API

Client Side:

- Developed with AngularJS.
- Assisted by HTML5 and CSS3.
- The UI was designed according to the 'material design' principles, and was implemented using angular-material library that supply ready CSS classes and angular directives to use.
- Features that used the native device's functions (GPS, share function etc.), used Cordova's plug-ins and framework.
- Wrapped (compiled) with ionic framework.
- The maps in the application was displayed by Google maps.
- Addresses was translated to points on the map (latitude and longitude) using Google maps API and Geolocation service.
- Authentication was based on passport framework.
- All the communication and interaction with Facebook was made based on facebook's graph API.

Flow:

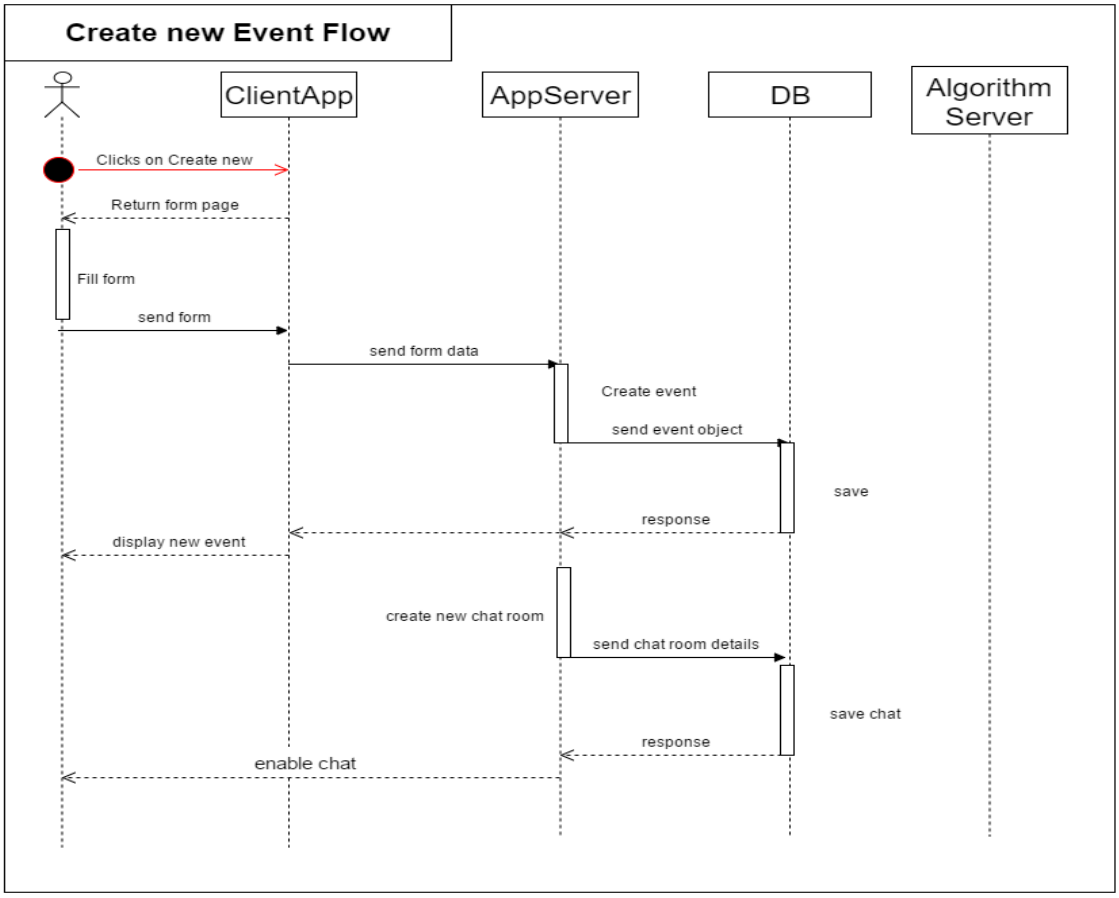
Comito supports many workflows. Here is the general user journey: *Created with draw.io*



We will demonstrate two specific flows as examples:

1. Create new event flow:
   The user clicks on create new event button.
   The client's app returns the 'create new event' form page.
   The user fills up the form.
   The user clicks on 'send form'.
   The client's app sends the form data to the app server.
   The app server creates new event object.
   The app server sends the created object to the DB
   The DB saves the object.
   The DB sends response the app server.
   The app server sends the response to the clients app.
   The client's app displays the new event.
   The app server creates new chat room for the event.

The app server sends the chat room details.
The DB saves the chat room details.
The DB sends the response to the app server.
The app server enables the chat for the

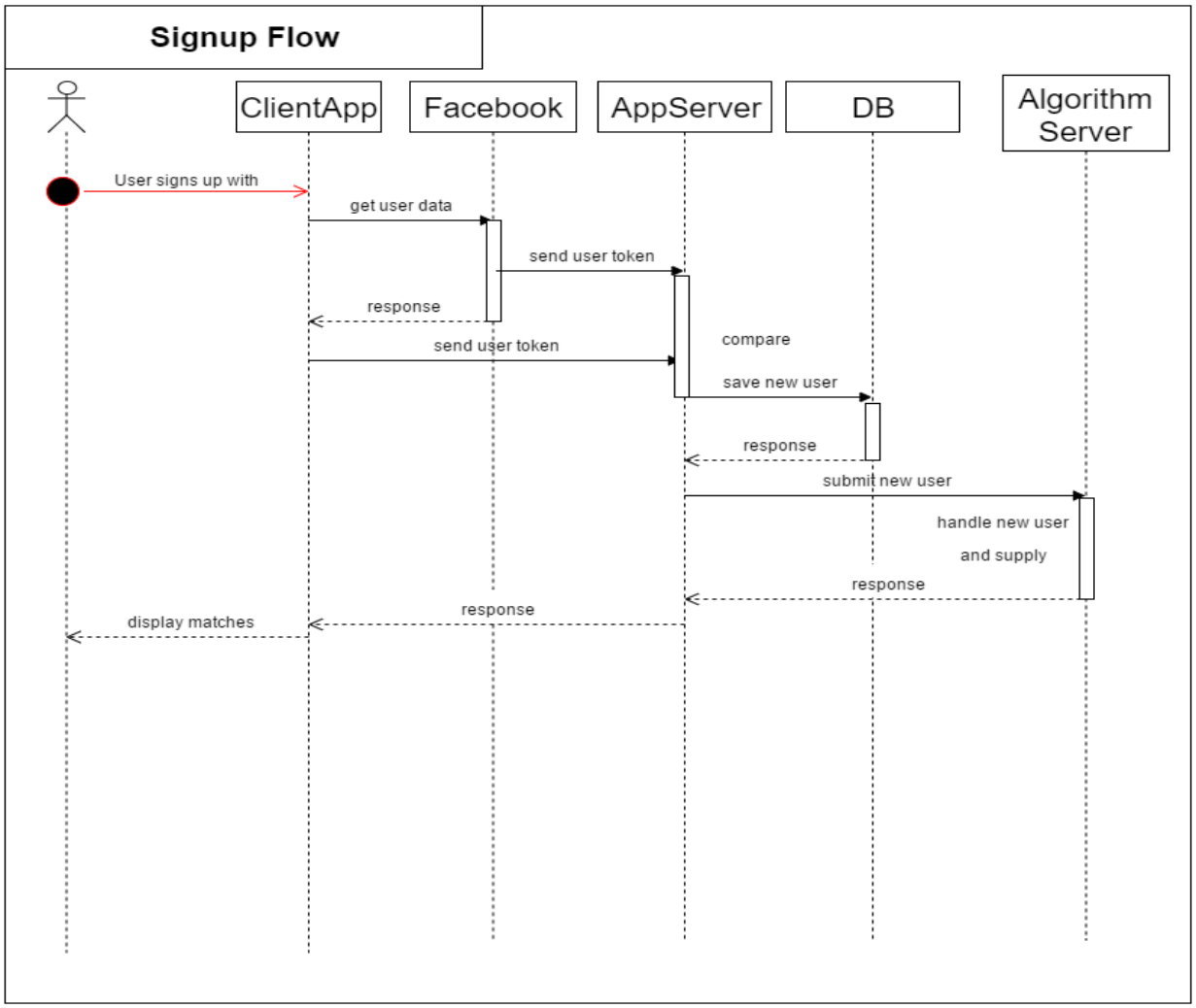


Created with draw.io

2. Sign up flow:

The user signs up with Facebook.
The client's app asks for the user's data from Facebooks.
Facebook's API sends a user token to the app server.
Facebook's API returns a user token as a response to the client app.
The client app sends the user token to the app server.
The app server compares between the two tokens it got.
The app server saves new user in the DB.
The DB returns a response to the app server.
The app server requests the algorithm server for submitting a new user.
The algorithm server handles the new user.
The algorithm server sends the user's matches as a response to the app server.

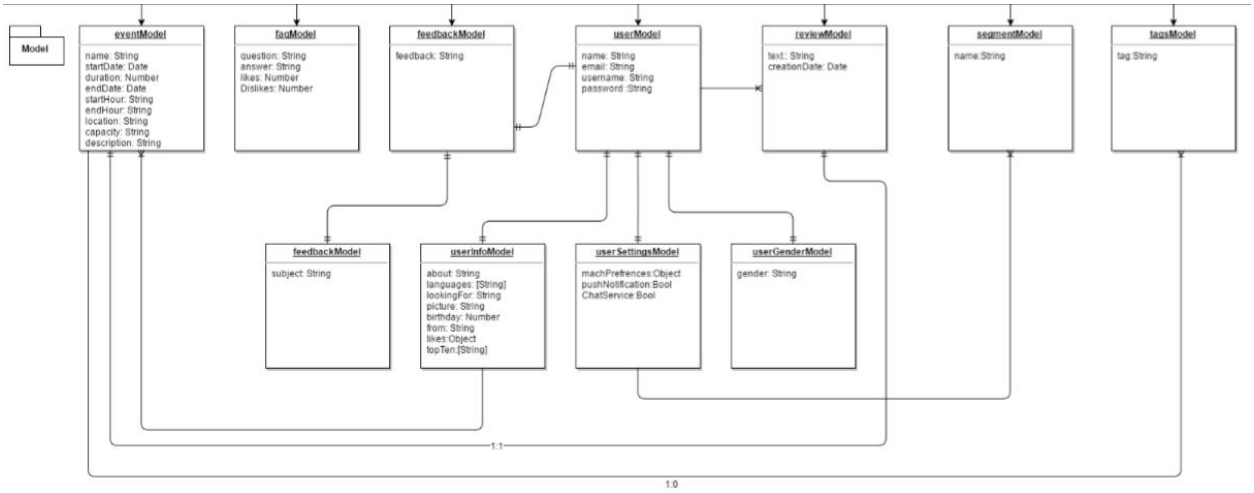
The app server response to the client app with the user's matches.
The client app displays the user's matches.



Created with draw.io

Data tables:

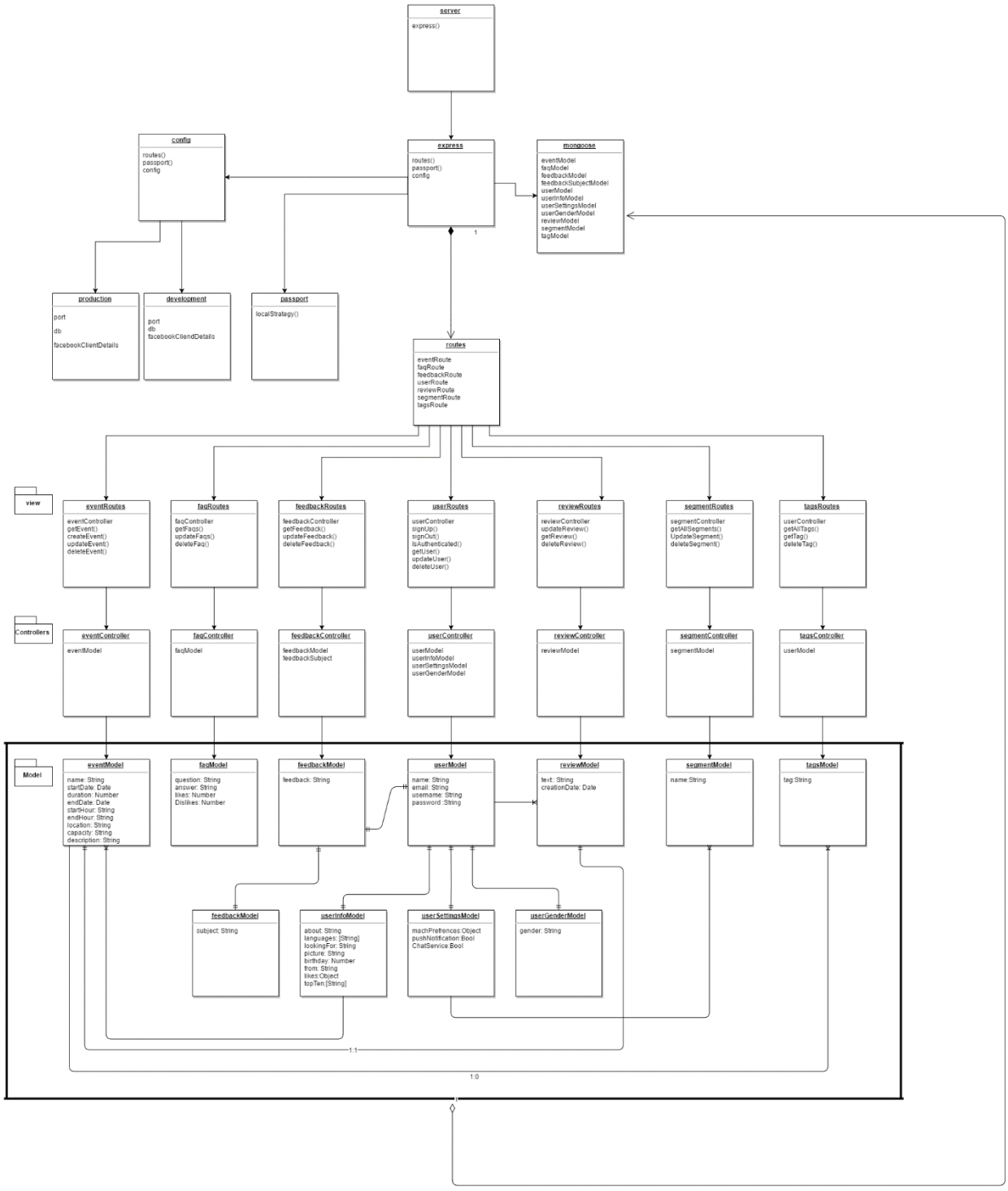
Here is a scheme describing the data tables (part of the class diagram that appears at the end of this sheet):



Created with draw.io

Link to our Tableau's public story:
https://public.tableau.com/profile/eliran.shem.tov#!/vizhome/Book222222_0/Dashboard1

Classes:



Created with draw.io

Testing and QA summary

Testing process description:

Preface:

The testing process will be mainly automatic. Since our product is an end to end JavaScript product, we can design a testing framework that will run tests on demand and by a schedule using node.js and phantom.js frameworks, thus save time, efforts and team moral. Also, due to the nature of the product, the tests would be able to follow the flow of each feature in each level (Data, Server, User).

Additionally, each supported platforms will be tested manually for GUI testing, checking that the application meets the requirements as mentioned in the GUI mockups and detailed design documents.

Test Plan:

Each feature will be tested with the following test types -

Unit Testing – Each individual programmer will test his feature artifacts separately, and will make sure that the artifact is functioning as described for all types of input.

API testing - Similar to unit testing, each of the application APIs will be tested as per API specification by the programmer who wrote it.

End to end functional testing – Each feature that will be tested by the automation team will have to have an end to end functional test, the test will focus on end to end flows and will stick to the design documents, e.g. right from user creation till information retrieval from the third party till user matches returns from the algorithm server etc.

Regression Testing – After each deployment of a new feature, the automation team will run regression tests to check that the functionality of other features wasn't damaged. This should be done automatically by the testing framework running all of the other features tests, as well as manually, for GUI testing.

GUI Testing – The automation team will perform a manual GUI testing after each new feature deployment, the test will ensure GUI elements of the application are as per approved GUI mockups, detailed design documents, and functional requirements. The tests will cover all of the supported OS's (All mobile operating systems are virtually supported due to the nature of Ionic however the app currently supports Android, IOS & Windows mobile).

Testing framework and hardware description:

Testing framework:

The automation framework will be an in-house application, using node.js Angular.js and Phantom.js.

Web Interface - The idea is to create a web interface where the tester could run individual tests or set a scheduled job for multiple tests to run, the web interface will also support creating scheduled jobs with hooks to each developer commit and will allow the tester to upload new test modules.

Backend - A node server will manage all the scheduled jobs and will run the uploaded tests using phantom.js which is a very efficient testing framework that uses a headless browser and reduces test running time while keeping all browser functionality, including video and screenshots capturing.

Testing hardware:

The testing hardware will be a distributed EC2 slave servers to run tests and another EC2 master instance for the node server and the scheduling logic. It is required to hold two instances of testing environment, for stage and for QA.

Main flows scripts, test steps, and expected results:

The following scripts defines a step by step description and expected results of the end to end functional testing.

Login script:

New user scenario -

Script Step	Expected Results
Open app and try login with Facebook	Expect to get segmentation page
Check chosen segmentations	Validate exactly 3 segments, no more, no less
Check access token arrival to server	Check access token validity
Check user was created successfully	Validate all the relevant information about the user arrived from Facebook
Check Algorithm server got the new user	Validate that algorithm server returns the matching users
Check Server got the correct response from algorithm server	Validate that the response is relevant for the requested user.
Check user got the matches	Validate the GUI was updated with the matches.

Existing user scenario -

Script Step	Expected Results
Open app and try login with Facebook	Validate redirect to matches page
Check user got segments saved at the server	Since user is already exist, he should hold segments, validate that he got those.
Check Algorithm server got the new user	Validate that algorithm server returns the matching users

Check Server got the correct response from algorithm server	Validate that the response is relevant for the requested user.
Check user got the matches	Validate the GUI was updated with the matches.

Chat script:

Script Step	Expected Results
Join to a new event	Check a new room is opened
Check all participants are in the chat room	Check that all the relevant users joined the chat
Choose a random user and open a private chat	Check that the correct chat room was opened
Check chat functionality	Expect messages to pass from end to end and logged at the server

User setting script:

Script Step	Expected Results
Add new user	Check default settings are correct
Change settings and check publish to the server	Server should hold the expected results
Change age range	Check new matches follow the change
Change segments	Check new matches follow the change
Revert Facebook permissions	Check the user is no longer a valid user

New event script:

Script Step	Expected Results
Create a new event	Check the event added at the server and in the client
Check event details are true	Should be identical to what the user added
Invite a new user to the event	Check user got the invitation
Accept invitation	Expect the user to show in the new event participants and in chat
Leave event	Expect user to be removed from chat and from event.

Methodology and Tools

The development process of Comito focused on Scrum-Agile methodology. The whole project was built in steps, sprints, where in each sprint new tasks and goals were set. Those aimed to refine and stack on top of the earlier tasks.

In order to maintain that chosen methodology, Comito was developed with several different technologies, using multiple management and collaboration tools (as mentioned above):

- As mentioned above, the whole project was developed using Webstorm IDE.
- The development and code collaboration process within it, was conducted using Atlassian's BitBucket git.
- The cooperated work between the developers was managed and tracked with Trello.
- The application mockups were created with Balsamiq.

Creating a mobile application for end users is an extremely hard task. The market's and user's need is unstable and changing constantly. Therefore, a quick and iterative approach had to be taken. As mentioned, Scrum-Agile was chosen:

- In order to keep relevant and aim correctly to the user's need, an ongoing research and planning has to be made.
- The goals and milestones should be adjustable and not fixed ahead.
- Comito's team is small and conducted by friends who communicate on a daily basis. Thus the daily scrum meeting was easy to schedule and maintain.
- The importance of documentation during the development process was low, especially due to time restrictions. Scrum answered the need to document the code in retrospective.

In case that our project was physics related, technology dependent or required to supply real time functionality, we might have chosen a linear approach such as waterfall. In that kind of project, it is clear that ability to react to changes is not needed, and not suitable for Comito.

Scope

As a first cycle of the application development process, we defined the MVP version. It will follow the described goals, and key features:

Goals:

1. Supply a working, physical product that can provide a decent UX.
2. Enable the fundamental application features.
3. Start running the service and gain users.
4. Give us a clue about our user's usage habits.
5. Get feedbacks and enable learning towards next versions.

MVP Features & Future "nice to have" (as mentioned above)

The MVP will include the basic features as listed below.

1. At first stage, the machine learning algorithm will not take place and the matching algorithm will match according to dry details (location & activity type).
2. Only Facebook will be offered as an available social network to login with.
3. Events screen. Will show the user the events near him and events that he specified that he wants to hear about. In the future, the algorithm will match tailor-made events.
4. Matches screen. Will show the user other users near him. Future planning is the same as for events.
5. User profile.
6. Chat.
7. Navigation toolbar.

Time, Scope and resources:

Roadmap												
Roadmap for First Three Years (following investment)												
Year	Y1				Y2				Y3			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Milestones (# of cities covered)		0	1	1	1	1	2	2	2	2	3	3
Founding	Pre-Seed		Seed		Round A							
Development		Pilot	prepare for major launch	Launch Algorithm dev start	Expand and fixtures Alg dev done	Alg improvement	"	Different Social network login	tailored events by alg			
Coverage (cities/segments)		Berlin - TLV					London				Barcelona	

Estimations regarding the market size and Cost of acuity are detailed here.
According to those estimations, which aims to 38,500 active users by the CAC of $5,
the advertising cost is:

	Year 1	Year 2
Direct Marketing	$ 73,620	$ 73,620
Online Paid Advertising	$ 22,320	$ 22,320
PR + Advertising Activities	$ 97,500	$ 97,500
Toal Marketing Cost	$ 193,440	$ 193,440

General & administration

General & Administration					
G&A Monthly Expenses	Monthly Cost ($)	Total Yearly		Travel Expenses	
Rent	$ 750	$ 9,000		Number of people per trip	2
Office Insurance	$ 500	$ 6,000		Number of trips per year	6
Office supplies	$ 500	$ 6,000		Cost Per trip	$ 1,500
Communication	$ 200	$ 2,400		G&A Travel Expense	$ 9,000
Utilities (elec., Water) per month	$ 700	$ 8,400			
New Employee Expenses		$ -			
IT and ERP per person	$ 50	$ 600			
Computer Equipment Per Person	$ 350	$ 4,200			
Misc. G & A Expenses	$ 100	$ 1,200			
Legal	$ 500	$ 6,000			
Bookkeeping & Accounting	$ 300	$ 3,600			
Credit Card processingg	3%	3%			
Total Monthly	$ 3,950	$ 47,400			

Salary

Just for simplification reasons, we'll estimate the salaries for $2300, equal for all roles. We'll include minimal staff of 5 persons for the first period of time, which will be concluded with approximately $140,000 per year.

Overall resources

Summarizing the General & Administration, advertising and salary estimations, for one year, will end up with 360,000 USD.

GitHub new features

GitHub's latest Universe conference (September 2016) introduced major upgrades to the product that improved the usage of GitHub as a service. Three of the most important features introduced by GitHub are project management tool, new code sharing and code review features. We will discuss each feature in details.

Project management – GitHub introduced a new feature called "Projects", which allows users to manage work directly from their GitHub repository. With "Projects" you can open columns to manage tasks and add cards to that column, each column can represent a group of tasks in the project e.g. Blocking, Ready, In-Progress etc. cards can be moved from column to column, and can be customized to the user needs. In essence "Projects" allows you to manage a code project very easily without using a different project management tool.

Code review – GitHub introduced a new feature called "Reviews" which allows users to add comments to changed code, e.g. when using pull request. In addition to commenting on specific lines of code, Reviews let you formally “approve” or “request changes” to pull requests. You can also leave a review summary and delete, edit, or bundle comments before you submit them.

Code sharing – GitHub introduced a new community forum which allows developers to chat, learn and share knowledge.

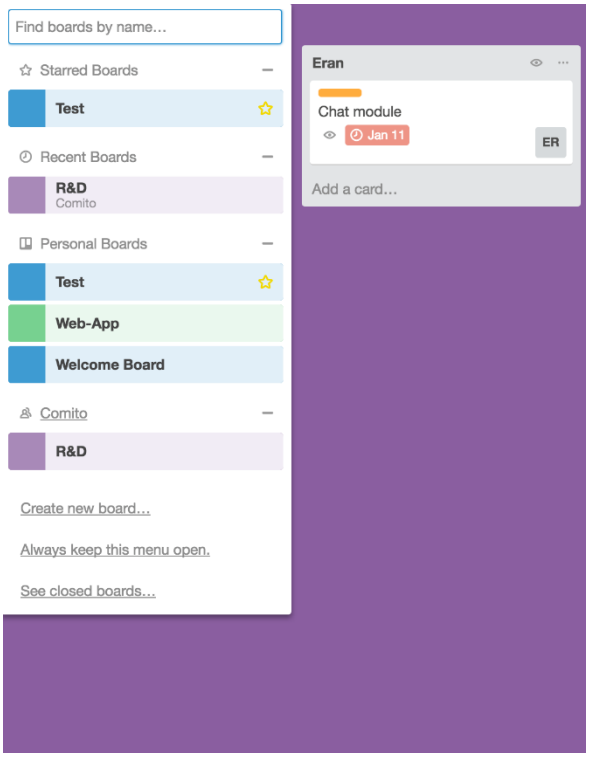
Trello VS GitHub

Main features	Trello	GitHub	Comments
Supported platforms	IOS android and web	IOS Android and Web	
Developer API	Yes	Yes	
Data is private	Yes	Partially	GitHub free version expose your code and data to the world
Real-time collaboration	Yes	No	
Customization	Yes	Partially	GitHub allows editing columns and cards but not their appearance
Task assignment	Yes	No	
Code hosting	No	Yes	
Issue tracking	No	Yes	
Code review	No	Yes	

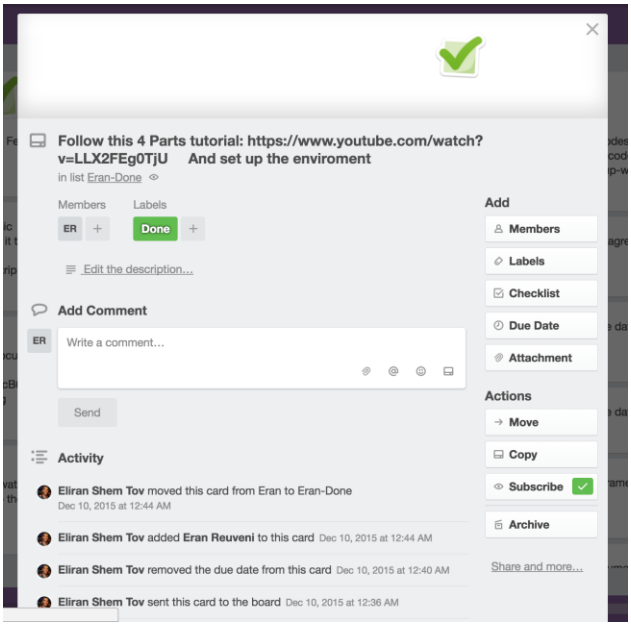
In essence GitHub and Trello are trying to solve different problems, GitHub was created to share and store code while Trello is more of a project management tool. GitHub latest update brought them closer to be a project management app however it is clear that not with a full capability like Trello offer. Using

GitHub, the user profits by minimizing tools usage for his project management and by that save valuable time for learning new tools and integrates them. However, GitHub's project management tool seems to be lacking of core features for project management comparing to Trello. With Trello, the project management is more intuitive easy and provide a lot more features comparing to GitHub.

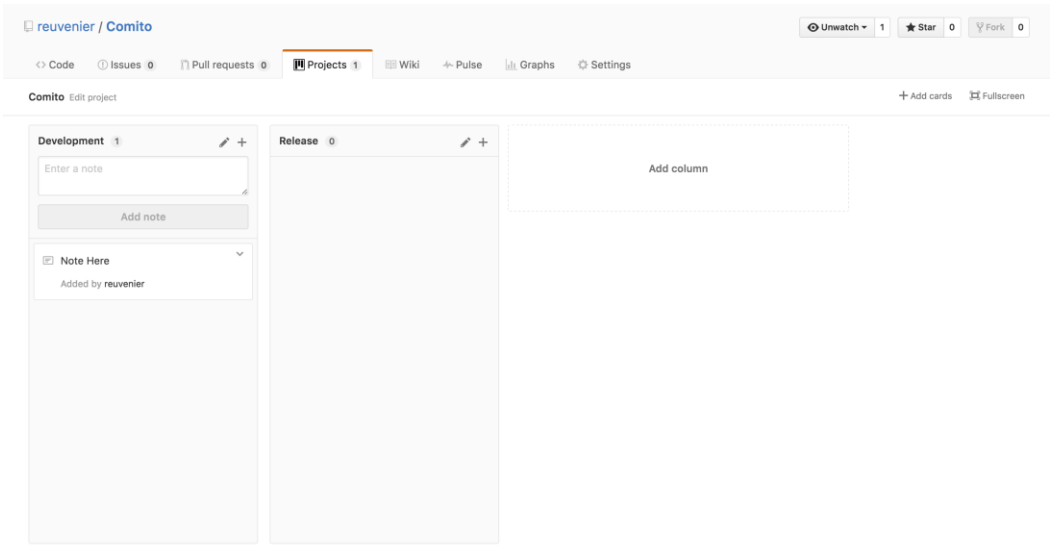
Trello's Storyboard:



Trello's Task view



GitHub's "Projects" new feature



GitHub's core "Code" feature