



CS577a 17Fall
Team 04

::: Outline

- Remote Team Member
- Operational Concept Description
- WinWin agreements
- Prototype/Product Demo
- Architecture
- Life Cycle Plan
- Feasibility Evidence
- Quality Focal Points

::: Remote Team Member

::: Operational View

Strong Point: Team cooperates very well and there is minimal appearance of major conflicts or single source of superiority among engineers.

Weak Point: Short Term nature of the project creates operational problems for the team through constraints and lack of peer programming.

:: Technical view

Strong Point: Prototyping has effectively allowed the team to associate with the necessary tools and concepts to prove the feasibility of development.

Weak Point: Developing with react native is a new experience for many of the team members and brings about many technical issues and problems unfamiliar to the team.

::: Operational Risk and Mitigations

- Risks
 - Risk through long-distance and inner group development.
 - Operational risk from clarification/communication among different branches of developers (Front/Backend)
 - Slight deficiencies in experience with certain technologies and methods of development
- Mitigations
 - Weekly meetings and reviews among members of the group and developing self explaining code.
 - Task assigning through Jira Tickets
 - Organize/refactor modules
 - Peer Programming to enable self-learning among the group.
Mitigate the risk so that lack of experience with a technology will not disrupt development or longate development

::: Technical Concerns/Solutions

- **Concerns**
 - COTS products usage and incorporation with the mobile application and adapting capabilities of applications to requirements of users
 - The method in which we handle user data and connections among different users also brings up concerns in terms of more at ease data storage and retrieval methods
- **Solutions**
 - Through developmental testing, the team can dissociate with technical concerns with COTS products
 - Discuss methods in which we still store our json data and how we can mitigate problems by testing different scenarios

:: Operational Concept Description

::: System Purpose

The purpose of the Populic is to allow people to conveniently check the surrounding communities. It also aims to help activity holders from schools, and other organizations (or event individuals) to promote their activities. Thus, our target customers are on campus students who are interested in attend the activities.

The proposed system provides:

1. A Pop screen that allow users access all functions relating to daily challenge
2. Post challenge photos/videos on communities and check surrounding communities.

∴ Shared Vision: Program Diagram

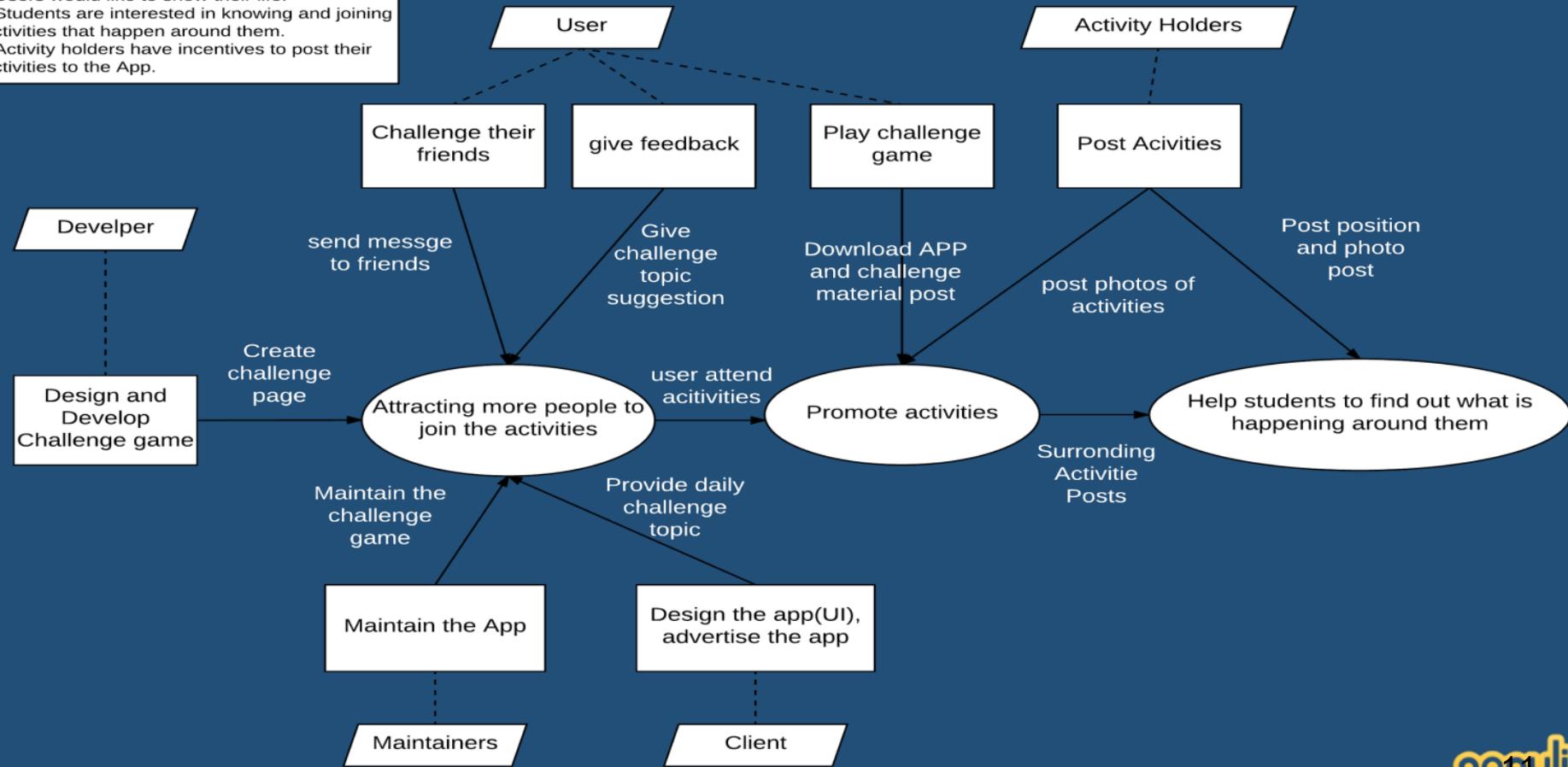
Assumptions:

- Users would like to show their life.
- Students are interested in knowing and joining activities that happen around them.
- Activity holders have incentives to post their activities to the App.

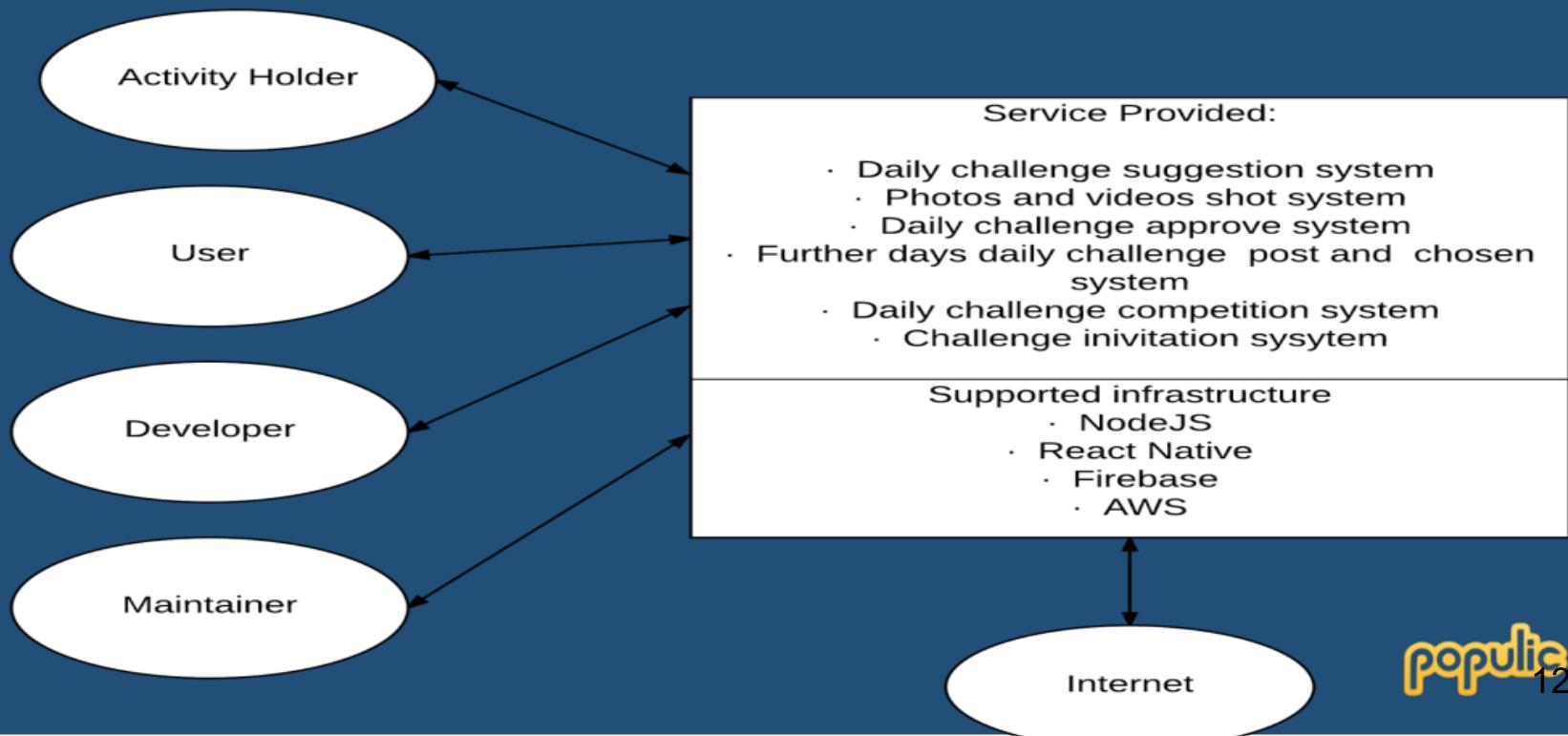
Stakeholders	Initiatives	Value Propositions	Beneficiaries
<ul style="list-style-type: none"> • Developers <ul style="list-style-type: none"> • Client • Maintainers • Users • Activity holders 	<ul style="list-style-type: none"> • Develop the challenge part of the app • Design the app(UI), advertise the app • Maintain the app • Keep using the app and give feedback • Post activities • Challenge their friends 	<ul style="list-style-type: none"> • Attracting more people to join the activities • To promote activities • To help students to find out what is happening around them and increase user's happiness 	<ul style="list-style-type: none"> • Users • Client • Activity Holders
<p>Cost:</p> <ul style="list-style-type: none"> • Maintenance costs • Development costs • Advertising/Marketing costs 		<p>Benefits:</p> <ul style="list-style-type: none"> • Enlarge user's happiness. • Raise interactions between different users. • Increase the amount of active users in Populic. • Inform students what is going on around the campus. 	

∴ Benefit Chain Diagram

- Users would like to show their life.
- Students are interested in knowing and joining activities that happen around them.
- Activity holders have incentives to post their activities to the App.



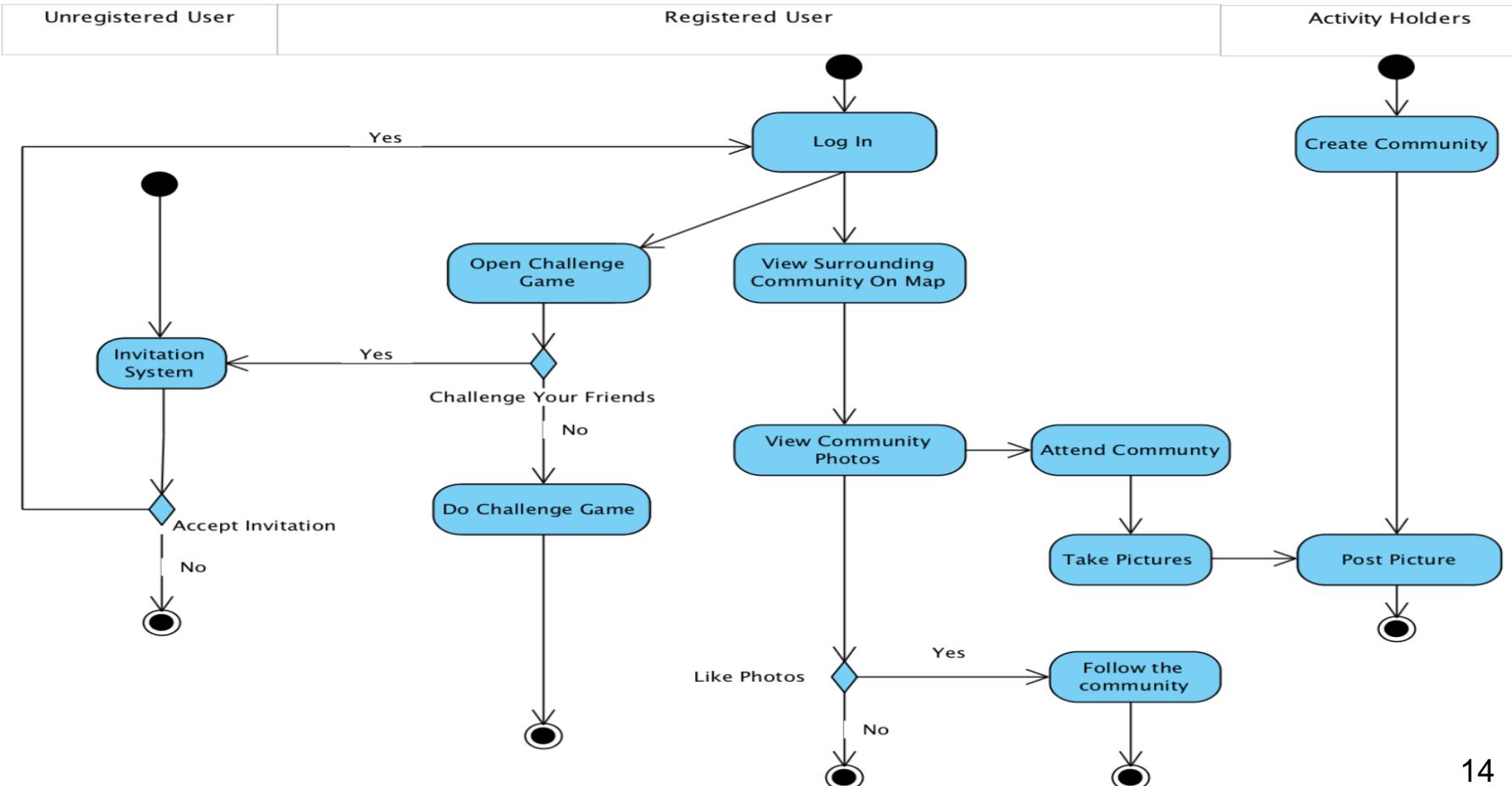
:: Boundary



Core Capabilities

Capability Goals	Priority Level
OC-1 Challenge Photos and Videos Post: The user can post challenge photos and videos on communities	MUST HAVE
OC-2 Challenge Complete Competition: The user can choose one friend to compete the time of finishing daily challenge	MUST HAVE
OC-3 Challenge Game Suggestion: The user can send their feedback and challenge ideas to client	MUST HAVE
OC-4 Further 5 Days Daily Challenge Post: The system will post further 5 days daily challenge.	MUST HAVE
OC-5 View, Approve or Decline Challenge: The users are capable of viewing, approve or decline their friends challenge post.	MUST HAVE
OC-6 Challenge Game Pop Screen: The user will touch the pop screen to get all daily challenge information	MUST HAVE
OC-7 Offline & Online Notification: The user will get notification from populic.	MUST HAVE
OC-8 Competition Reward: The user will get reward points from challenge competition	MUST HAVE

Business Workflow



:: Goals & Constraints

OG-1: Enlarge user's happiness.

OG-2: Raise interactions between different users.

OG-3: Increase the amount of active users in Populic

CO-1: iOS as an Operating Systems: The new system should work on iOS

CO-2: React Native as a Development Language: React Native will be used as a development language.

CO-3: AWS as an Operating System: the available back-end server is AWS

CO-4: Paid Database System: the paid database system is Firebase.

::: Win Win Agreement

::: Challenge Topic

Win Condition	Description
WC_4531	As a user, I can view the details of daily challenge topic with its detail description.
WC_4595	As a user, I can have a look of upcoming challenge topics so that I would have capability to prepare them in advance.
WC_4535	As a user, I can give some challenge topic suggestions inside the application.

::: Challenge Competition

Win Condition	Description
WC_4532	As a user, I can send challenge requests to my friends via contact list and text messages.
WC_4596	As a user, I can select a competitor from my challenger list and compete with him/her in challenge page.
WC_4533	As a competitor, I can see the remaining time to finish the challenge.
WC_4597	As a competitor, I can view my opponent posts from challenge page.
WC_4598	As a competitor, I can verify (decline/accept) opponent post so that the system would assign the corresponding score to him/her.
WC_4601	As a competitor, I can get the corresponding points based on my performance.
WC_4594	As a user, I can purchase some goods in the embedded online shop with my points gained from competitions.

::: Notification

Win Condition	Description
WC_4534	As a user, I can receive a text message when one of my friends challenges me in Populic.
WC_4599	As a user, I can receive a notification from Populic when I was picked as a competitor so that I am able to do the challenge task immediately.
WC_4536	As a competitor, I can be informed by the app when my competitor finished the challenge so that I can verify it soon.
WC_4600	As a competitor, I can be reminded when I nearly run out of time.

::: Prioritization Score

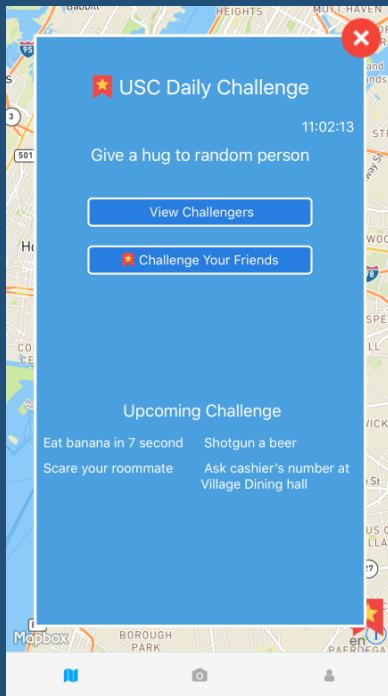
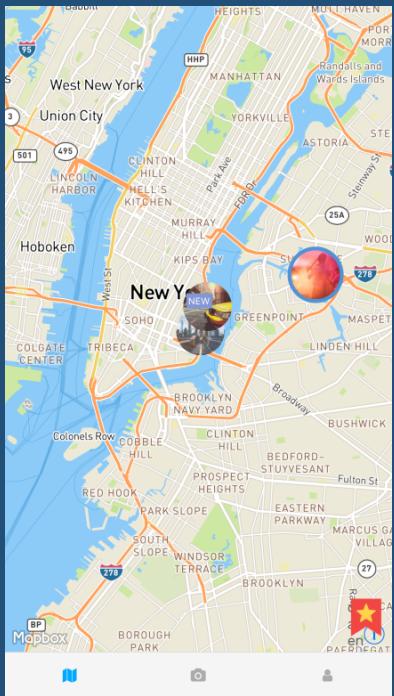
Four benefits:

1. Enlarge user's happiness. (42)
2. Raise interactions between different users. (72)
3. Increase the amount of active users in Populic. (87)
4. Inform students what is going on around the campus. (27)



:: Prototype/Product Demo

::: Challenge Page



OC-6 Challenge Game Pop Screen:
The user will touch the pop screen to get all daily challenge information

::: Challenge Your Friends

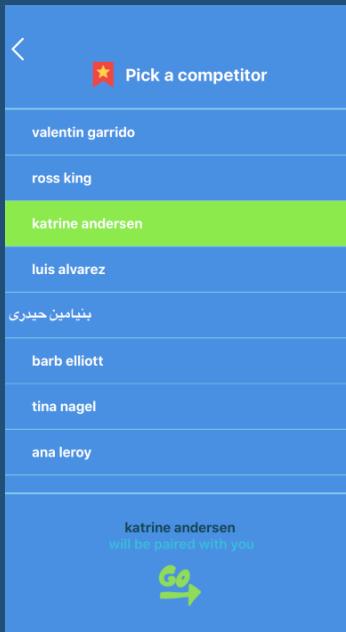
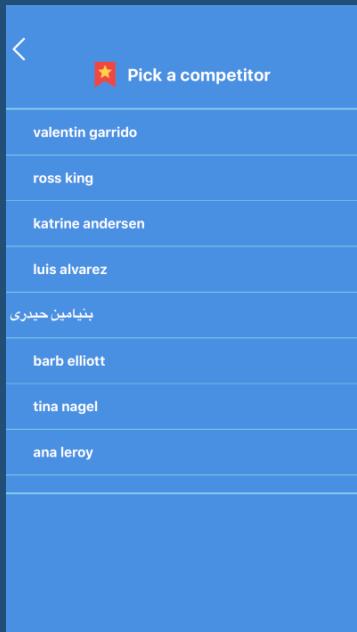
The screenshots show a challenge selection screen with two tabs: "Members" and "Friends".

- Screenshot 1:** Shows the "Members" tab selected. A list of members includes: valentin garrido, ross king, katrine andersen, luis alvarez, بنیامین حیدری, barb elliot, tina nagel, ana leroy, karen woods, and sara olsen. At the bottom, there is a "Send" button.
- Screenshot 2:** Shows the "Friends" tab selected. A list of friends includes: Anna Haro, Daniel Higgins, David Taylor, Hank Zakroff, John Appleseed, and Kate Bell. At the bottom, there is a "Send" button.
- Screenshot 3:** Shows the "Friends" tab selected. The same list of friends is shown, but each name has a blue circular icon next to it. At the bottom, there is a "Send" button.
- Screenshot 4:** Shows the "Friends" tab selected. The same list of friends is shown, with blue circular icons next to their names. A white callout box at the bottom right contains the text "4 Invitation Sent" and "OK". At the bottom, there is a "Send" button.

OC-2 Challenge Complete Competition:

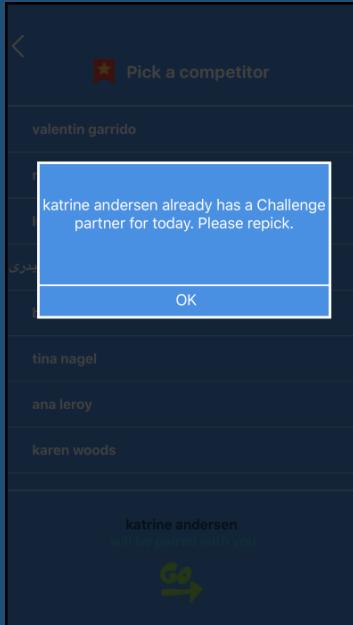
The user can choose one friend to compete the time of finishing daily challenge

::: Pick A Competitor

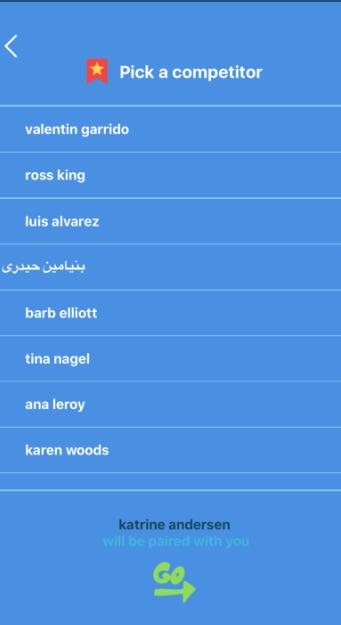


OC-2 Challenge Complete Competition:
The user can choose one friend to compete
the time of finishing daily challenge

::: Pick A Competitor



Fail

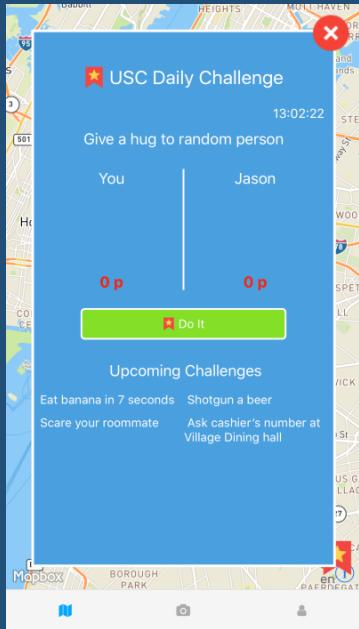


Repick

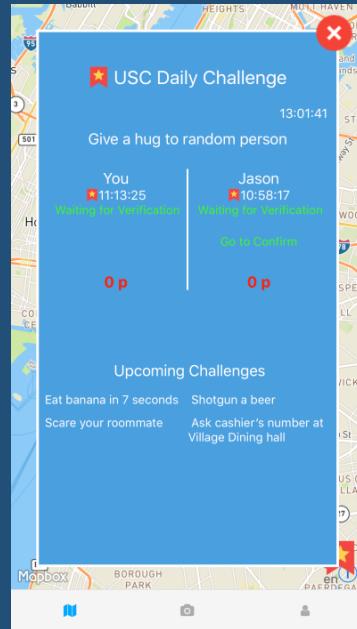


Success

::: Game is On



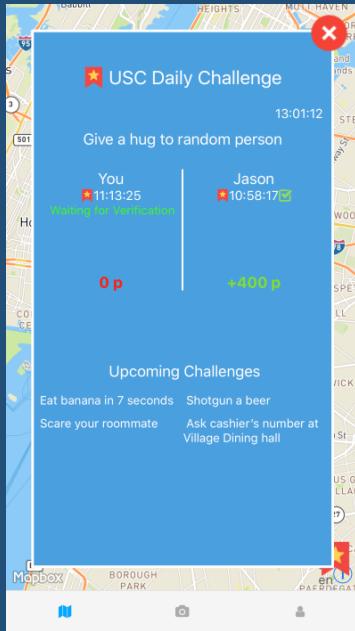
Initial GameOn Page



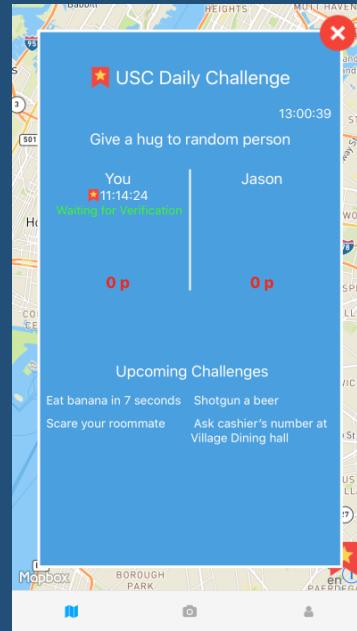
Waiting for Verification

OC-6 Challenge Game Pop Screen:
The user will touch the pop screen to get all daily challenge information

::: Game is On -- Confirm/Decline



Approved



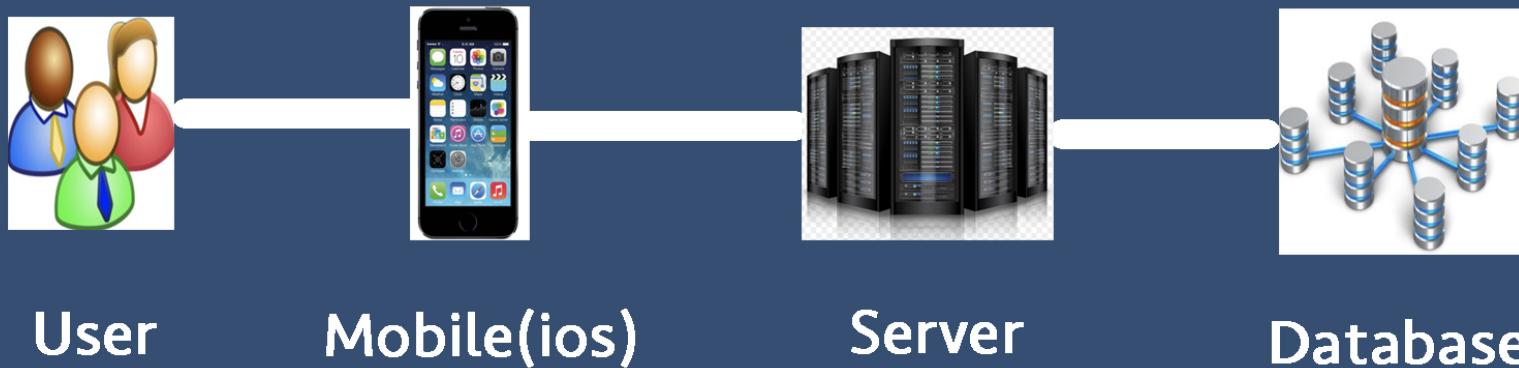
Declined

OC-5 View, Approve or Decline Challenge:
The users are capable of viewing, approve or decline their friends challenge post.

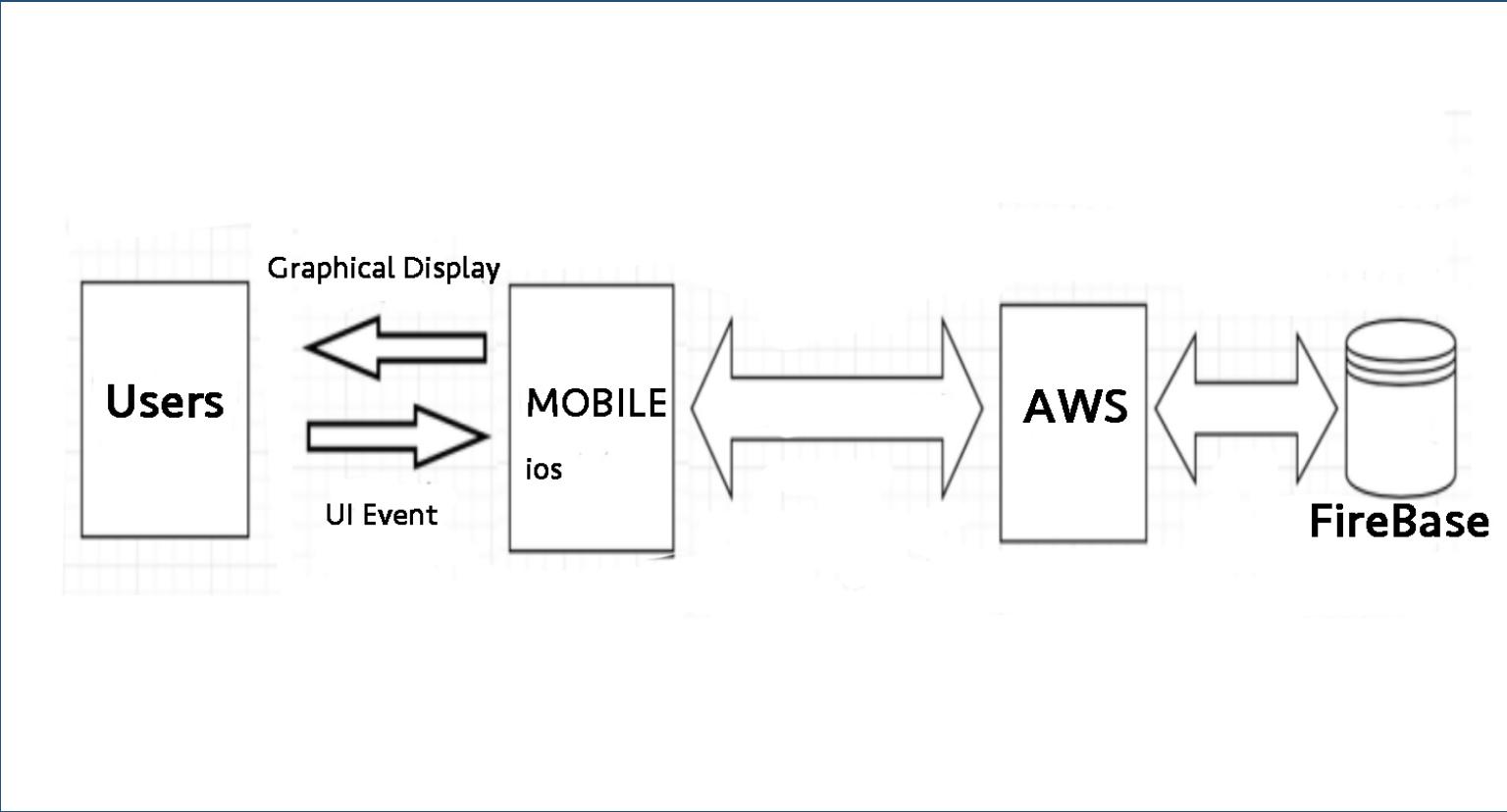
::: Architecture

::: Top level physical

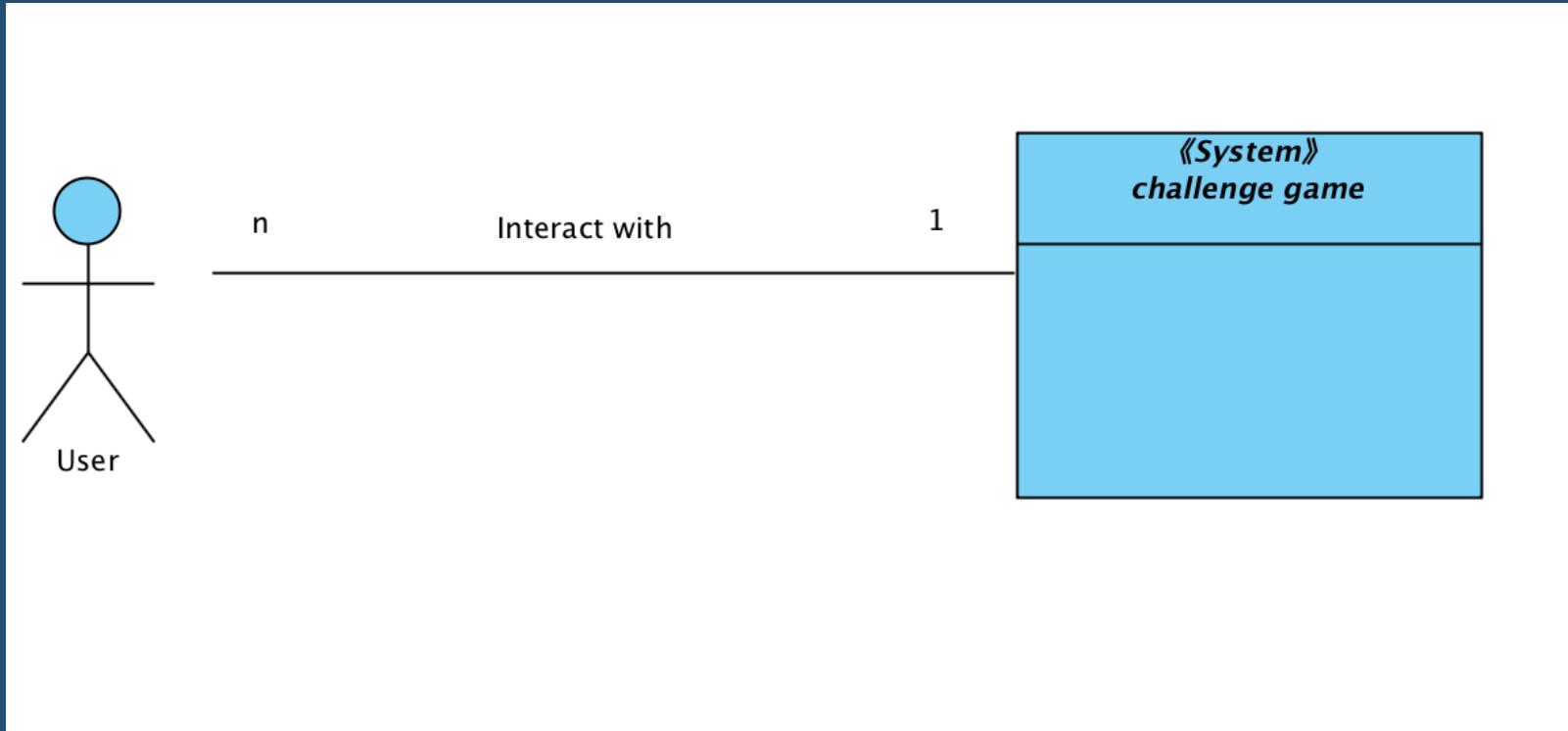
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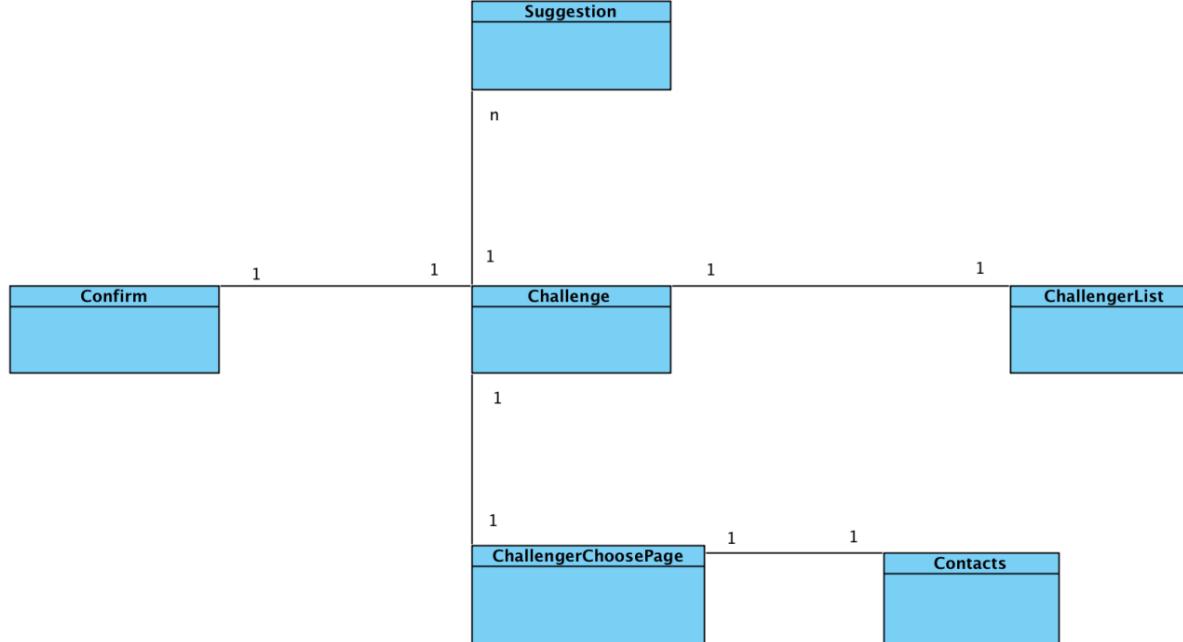
:: Top level logical



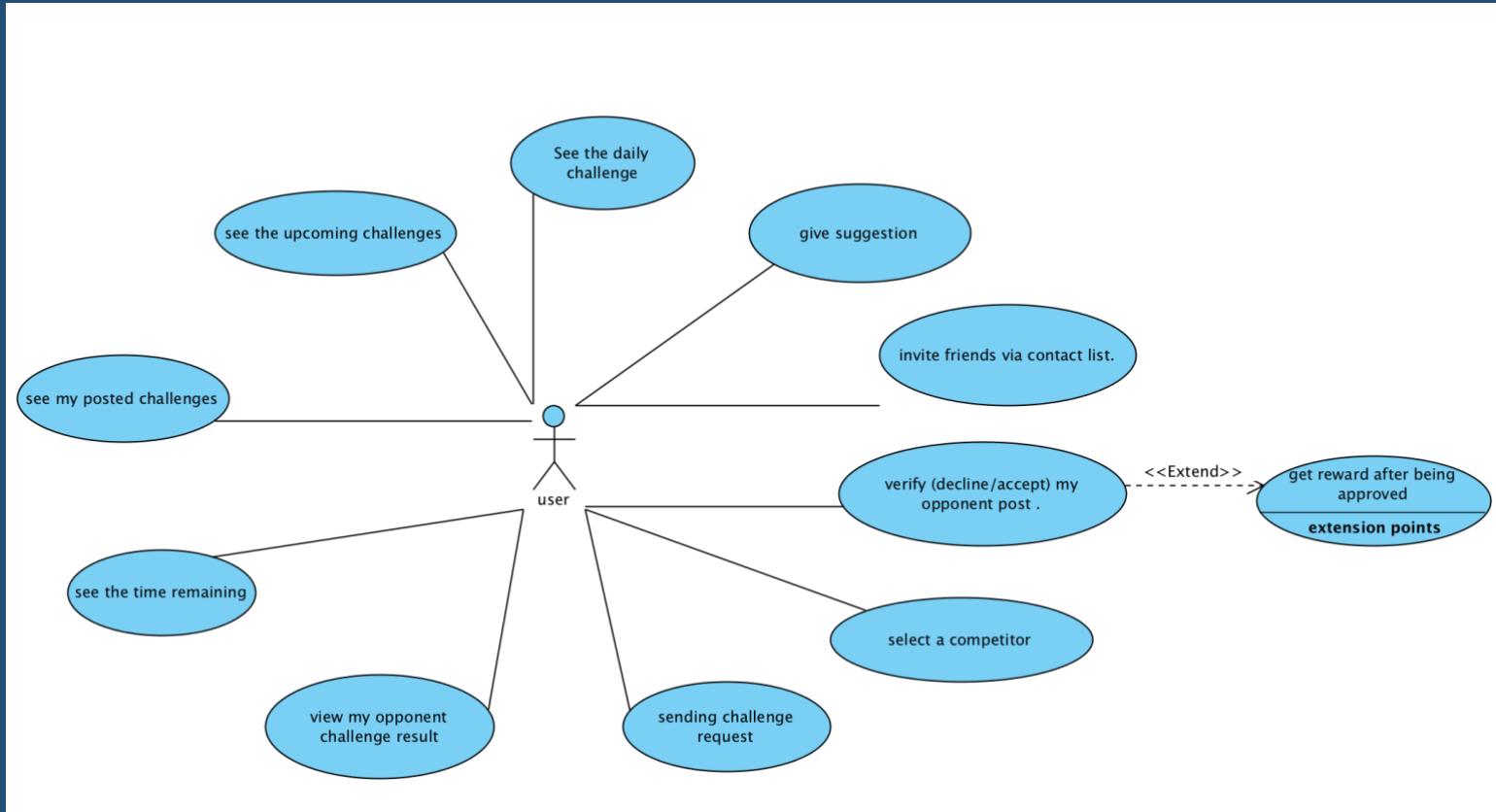
:: System Context



∴ Artifacts and information diagram



::: Use Case Diagram



::: Challenge Competition

Use case	Description
UC - 1 seeing daily challenge	seeing the daily challenge current on the challenge page.
UC - 2 seeing upcoming challenge	seeing the upcoming challenge of next five days on the challenge page.
UC - 3 seeing the time remaining	seeing the time remaining of the challenge of current daily challenge.
UC - 4 seeing own result	seeing own post challenge result after users have post their result.
UC - 5 seeing opponent result	seeing opponent challenge result after opponent have post their result.
UC - 6 send challenge request	send challenge request to the friend who the user want to challenge.
UC - 7 select a competitor	select a competitor from the challenger list to compete with for today's challenge
UC - 8 verify competitor result	verify competitor challenger result after the opponent have posted the result.
UC - 9 invite friend	invite friend from contact list who have not download this app.
UC - 10 give suggestion	give suggestion of new challenge idea and submit the idea.
UC - 11 get reward	get reward after being approved by user's opponent.

::: Life Cycle Plan

:: Life Cycle Plan

Purpose

- Plan each phase of project
- Monitor and manage resources, track deliverables and risks.

Development Strategy

- NDI/NCS Intensive Process

Assumptions

- Project will be completed within one semester(12 weeks)

Currently in Foundation

:::Team member role

Name	Role
Chengyu Shen	Project Manager, Operational Concept Enginner
Shiji Zhou	Prototyper, Software Architect
Yufei Hong	Feasibility Analyst, Project Manager
Guanghe Cao	Software Architect, Life Cycle Planner
Yang Wei	Operational Concept Engineer, Prototyper
Lin Xia	Life Cycle Planner, Feasibility Analyst
William Goishi	IIV & V, Quality Focal Point, Tester

:: Stakeholder responsibilities

Team Member / Role	Exploration	Valuation	Foundations	Development- Construction Iteration	Development- Transition Iteration
Name: Villi Vaananen (Client)	Primary Responsibility Give the overview and description of the application	Primary Responsibility Negotiate the requirements and team responsibility with team members	Primary Responsibility Review the project progress	Primary Responsibility Check the prototype and project schedule and support the feedback	Primary Responsibility Negotiate with the all team member for transition of the project
Name: chengyu Shen (Product Manager)	Primary Responsibility Learn the project and negotiate with client. Finish the project reports. Organize the team meeting Secondary Responsibility Develop Website	Primary Responsibility Negotiate with client to decide the requirement Secondary Responsibility Maintain the website	Primary Responsibility Design application prototype Organize the team meeting. Report the project schedule Secondary Responsibility Develop Website	Primary Responsibility Finish the development assignment Keep a track of the progress schedule	Primary Responsibility Help client finish transition job.
Name: Shiji Zhou (Designer/Prototypewriter)	Primary Responsibility Learn the project. Participate in win-win negotiation	Primary Responsibility Analysis the COTS and risk, identify the high risk part of project. Reports	Primary Responsibility Finish the prototype design and live demo Secondary Responsibility Create OCD document	Primary Responsibility Develop the challenge display function.	Primary Responsibility Submit relative document and help with transition of the project

Stakeholder responsibilities

Yufei Hong (Requirements Engineer)	Responsibility Learn the project. Participate in win-win negotiation	Responsibility Negotiate with client identify the accurate requirements better	Responsibility Finish related documents.	Responsibility Develop the daily challenge part of the application.	Responsibility Submit relative document and help with transition of the project
Name: Guanghe Cao (Software Architecture)	Primary Responsibility Learn the project. Participate in win-win negotiation	Primary Responsibility Analysis the COTS and design the software architecture	Primary Responsibility Work on SSAD document and development	Primary Responsibility Develop camera function of the application	Primary Responsibility Submit relative document and help with transition of the project
Name: Yang Wei (Software Developer)	Primary Responsibility Learn the project. Participate in win-win negotiation	Primary Responsibility Analysis the potential COTS and divide the whole system into sub part according to functionality	Primary Responsibility Work on OCD document and set up system integration	Primary Responsibility Develop the contact list page and invite function	Primary Responsibility Submit relative document and help with transition of the project
Name: Lin Xia (Software Developer)	Primary Responsibility Learn the project. Participate in win-win negotiation Secondary Responsibility Develop team Website	Primary Responsibility Analysis the potential COTS and divide the whole system into sub part according to functionality	Primary Responsibility Work on LCP document and set up system integration	Primary Responsibility Develop the daily challenge UI page and design API to get data from the server.	Primary Responsibility Submit relative document and help with transition of the project
Name: William Goishi (Quality Focal Point)	Primary Responsibility Learn the project. Participate in win-win negotiation	Primary Responsibility Analyze risk and rationality of requirement and offer some solutions mitigate the risk	Primary Responsibility Work on FED document	Primary Responsibility Design the usage case and test cases for testing	Primary Responsibility Submit relative document and help with transition of the project

:: Exploration phase

Duration: 09/12/2017-09/22/2017

Activities

- Identify initial scope of the product
- Understand the application architecture and product plan
- Decide the team roles

Deliverables: Valuation Report and Team Website, Client Interaction Report, Project Plan, Progress Report.

Milestone: Valuation Commitment Review

:: Valuation phase

Duration: 09/22/2017-10/2/2017

Activities:

- Plan the final function and requirement.
- Seek the potential COTS
- Identify all the risks and rank them.
- Attempt to implement the high risk prototype

Deliverables: Win-Condition Report, High Risk Prototype, Project Plan, Progress Report.

Milestone: Foundation Commitment Review

:: Foundation phase

Duration: 10/02/2017- 10/18/2017

Activities:

- Finish the whole risks function prototype.
- Mitigate the risks.
- Finish the architecture.

Deliverables: Development Commitment Package, Risk and Defect Report, Project Plan, Progress Report.

Milestone: Development Commitment Review

Construction Iteration

Duration: 10/19/2017- 11/10/2017

Activities:

- Finish front-end and back-end part of the project
- Peer Reviews for features and code quality
- Client feedback on various functionalities

Deliverables: Core Capability Drive-Through Report, Risk and Defect Report, Progress Report, Technical Debt Report

Milestone: Transition Readiness Review, Core Capability Drive-Through

Transition Iteration

Duration: 11/11/2017 - 12/09/2017

Activities:

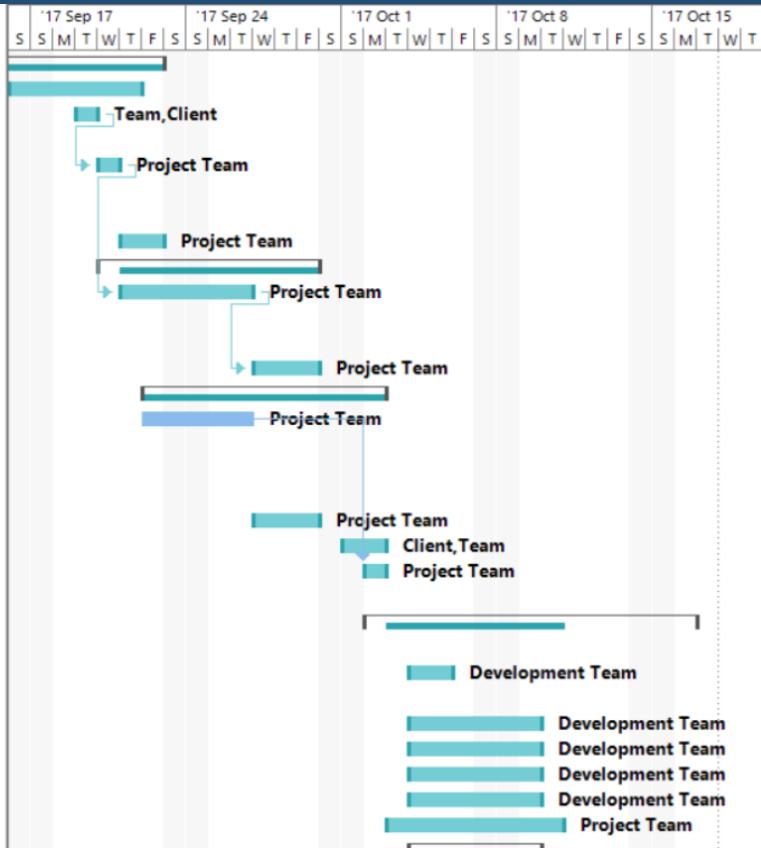
- transition of the project
- Test the whole functionalities
- train client and their developer

Deliverables: Progress Report, Technical Debt Report

Milestone: Core Capability Drive-Through, Transition Readiness Review

Project Plan

	Task Name	Duration	Start	Finish	Resource Names
1	Exploration Phase	6 days	17/9/15	17/9/22	
2	Explore Current System	4 days	17/9/16	17/9/21	
3	Discuss with client about which features are more	1 day	17/9/19	17/9/19	Team,Client
4	Discuss amongst team of the feasability of developing certain Win	1 day	17/9/20	17/9/20	Project Team
5	Study possible Technologies	2 days	17/9/21	17/9/22	Project Team
6	Prototype Presentation	8 days	17/9/20	17/9/29	
7	Develop Prototype based on the functionalities associated with the	4 days	17/9/21	17/9/26	Project Team
8	Create PowerPoint	3 days	17/9/27	17/9/29	Project Team
9	Valuation Phase	7 days	17/9/22	17/10/2	
10	Analyzing risk based on Prototype and analyzing risk of other features associated with the win conditions	3 days	17/9/22	17/9/26	Project Team
11	Study possible Technologies	3 days	17/9/27	17/9/29	Project Team
12	Win-Win Negotiation	1 day	17/10/1	17/10/2	Client,Team
13	Start Develop Operational Concept	1 day	17/10/2	17/10/2	Project Team
14	Foundation Phase	11 days	17/10/2	17/10/16	
15	Develop UI Interface of User Page	2 days	17/10/4	17/10/5	Development Team
16	Challenger Selection Page	4 days	17/10/4	17/10/9	Development Team
17	Challenger List	4 days	17/10/4	17/10/9	Development Team
18	Challenge Page	4 days	17/10/4	17/10/9	Development Team
19	Fetching Contacts from List	4 days	17/10/4	17/10/9	Development Team
20	Study possible Technologies	6 days	17/10/3	17/10/10	Project Team
21	APP Presentation	4 days	17/10/4	17/10/8	



::: Scale Factors

Scale Driver	Value	Rationale
Precedentedness (PREC)	LOW	All team members were new to React Native, Only one has experience with the node.js.
Flexibility (FLEX)	HIGH	The client is flexible about the requirements and willing to give us the suggestion regarding the UI and UX.
Risk Resolutions (RESL)	NOM	Prototyp high risk functionality Buy information from client.
Team Cohesion (TEAM)	HIGH	We have weekly team meetings. That help each team members understand the project schedule. Peer review ensure we don't have much technical debt.
Process Maturity (PMAT)	NOM	Team follow the ICSM guidelines which is consistent with CMM.

::: COCOMO II Estimate

Project Name: populic							Scale Factor: 18.97	Sched			
Project Notes											
X	Module Name	Module Size	LABOR Rate (\$/month)	EAF	Language	NOM Effort DEV	EST Effort DEV	PROD	COST	INST COST	Staff
	Challenge	F:1450	0.00	0.89	Object-Orient	4.8	4.3	338.9	0.00	0.0	0
	Score	F:957	0.00	0.61	Object-Orient	3.2	1.9	496.6	0.00	0.0	0
	Invitation	F:812	0.00	0.91	Object-Orient	2.7	2.4	333.2	0.00	0.0	0

Total Lines of Code:	3215	Estimated Effort	Sched	PROD	COST	INST	Staff
Hours/PM:	152.00	Optimistic	6.9	6.8	465.6	0.00	0.0
		Most Likely	8.6	7.3	372.5	0.00	0.0
		Pessimistic	10.8	7.8	298.0	0.00	0.0

Total Lines of Code:	3215	Estimated Effort	Sched	PROD	COST	INST	Staff
Hours/PM:	152.00	Optimistic	6.9	6.8	465.6	0.00	0.0
		Most Likely	8.6	7.3	372.5	0.00	0.0
		Pessimistic	10.8	7.8	298.0	0.00	0.0

... COCOMO II Estimate

Incr % = rating

TA	DOCU	CPLX	RUSE
I	LO	HI	LO
%	0%	0%	0%

OR	PVOL
M	LO
%	0%

AP	PCON	APEX	LTEX	PLEX
M	LO	LO	LO	NOM
%	0%	0%	0%	0%

TE				
M				
%				

affected by Schedule

0.89

Cancel Help

EAF - Socre

base + Incr % = rating

Product:	RELY	DATA	DOCU	CPLX	RUSE
base	NOM	LO	LO	NOM	LO
Incr%	0%	0%	0%	0%	0%

Platform:	TIME	STOR	PVOL
base	NOM	NOM	NOM
Incr%	0%	0%	0%

Personnel:	ACAP	PCAP	PCON	APEX	LTEX	PLEX
base	HI	HI	LO	LO	LO	NOM
Incr%	0%	0%	0%	0%	0%	0%

Project:	TOOL	SITE
base	VHI	NOM
Incr%	0%	0%

User:	USR1	USR2
base	NOM	NOM
Incr%	0%	0%

EAF is also affected by Schedule

EAF: 0.61

OK Cancel Help

EAF - Invitation

base + Incr %

Product:	RELY	DATA	DO
base	NOM	HI	LO
Incr%	0%	0%	0%

Platform:	TIME	STOR	PV
base	NOM	NOM	NOM
Incr%	0%	0%	0%

Personnel:	ACAP	PCAP	PO
base	NOM	HI	LO
Incr%	0%	0%	0%

Project:	TOOL	SITE
base	VHI	NOM
Incr%	0%	0%

User:	USR1	USR2
base	NOM	NOM
Incr%	0%	0%

EAF is also affect

EAF: 0.91

:: Project Estimation

Number of SLOC: 3,219

Effort needed (Most Likely): 8.6 Person-Month

Each Member Works: 15 hrs/week for 12 weeks

Time Spent by Members:

Monthly Efforts: 15 hrs/week × 7 members × 4 weeks = 420 hrs/month

Total Efforts: 15 hrs/week × 7 members × 12 weeks = 1,260 total hours

Time Needed:

Monthly Efforts: (10.3 person-month × 152 hrs/person-month) ÷ 560 = 3.11 months

Total Efforts: (10.3 person-month × 152 hrs/person-month) = 1,307.2 total hours

Result: According to the above estimation, the project will take 3.1 months to complete. The team has 12 weeks which is within the estimated time to complete the project

::: Feasibility Evidence

∴ Major Risks

Risk Description	Risk Mitigation	Risk Exposure		
<p>Inaccurate understanding of software requirements: The client asked that user can challenge his/her app friends, however there is no friend system in the app and user can only join in community and follow other people and currently, even the client cannot give a specific explain about what is “friend”. Also, there is no friend list in the app and it is impossible for user to challenge friends via friend list.</p>	<p>Verify win condition with clients, currently, we assume that if people followed each other, then, they will be considered as friends. Incremental development the highest priority features and functions first, negotiate with the client to see if we should add a friend system or use the above concept to define friend.</p>	5	6	30

:: Major Risks

Risk Description	Risk Mitigation	Risk Exposure		
<p>Requirement Changes: For the score system, the initial idea is to give a rank list to show people who has the highest score on it. However, the later requirement changed from the rank list to user can use the score to buy some fancy stickers from inner app. For now, client changes his mind again and there is no specific requirement for this score system and the client is still thinking and evaluating about this part. Then, the source code of this part has been changed again and again.</p>	<p>Follow the incremental development strategy, to develop the important part first to make sure that the main functions of the challenge game are working fine. Leaving the unsure parts away and give a suitable connector source code for it. To negotiate with the client and also give some possible choices for the unsure parts to client to think about.</p>	5	7	35

:: Major Risks

Risk Description	Risk Mitigation	Risk Exposure		
<p>Personnel shortfalls: Since React-Native is a new technology for us, many team members have no experience on it. Besides these, this is a new team and we don't know each other very well, sometimes there is a communication problem between members of diverse background.</p>	<p>Doing researching and self-learning for the new technology and to understand how to use the React-Native framework to build app. To schedule team meetings as more as possible and have more communications and negotiations with the members to better understand their backgrounds and skills.</p>	3	8	24

:: Major Risks

Risk Description	Risk Mitigation	Risk Exposure		
Software interface mismatch: During the development, the client changes the idea of UIs, fonts, colors and layout design again and again and never has a final version of the layout.	Making several prototypes of the interface layout and negotiate with client to figure out which version will have satisfied with him. And also negotiate with client to suggest him to hire people who are good at UI design instead of designing UI by himself and change it again and again later. And also, based on our knowledge, give client some suggestions about the choice of background color and font.	6	7	42

:: Business Case Analysis

Personnel Costs (12 weeks in total)	
Exploration, Valuation and Foundation phases	
Activities	Time Spent (Hours)
Win Win negotiation session 1	2.0
Win Win negotiation session 2	2.0
Client meeting via email, slack.	5.0
Architecture review boards	6.0

:: Business Case Analysis

Personnel Costs (12 weeks in total)	
Development and Operation Phases	
Activities	Time Spent (Hours)
Development (2hrs/week * 12 * 1person)	24
Project process meeting with client (1hr/2 weeks * 12 weeks)	6
Total	79
Maintenance Period (1 year)	
Maintenance	1/week
Total	52

:: Business Case Analysis

Hardware and Software Costs		
Type	Cost	Rational
Mac	Free	Development OS
React-Native	Free	API dependence
Xcode/WebStorm	Free	Development tools
AWS	\$200/month	Server
Firebase	Free	DBMS

:: Business Case Analysis

Benefit Analysis		
Current activities & resources used	%Reduce	Time Saved (Hours/Year)
Number of users		
Increase the user base for client(currently is 50)	100%	50
Number of posts		
Increase the number of posts fro client (currently is 50)	100%	50
Total	100	

:: Architecture Feasibility

Level of Service Feasibility	
LOS-1: The layout of challenge game should be responsive and at least support all size of iPhone	Product strategies: Xcode, React-Native API package
	Process strategies: Set proper size based on the window size, and React-Native stylesheet will judge the size of layout
	Analysis: We will use Xcode simulator to test the visibility of the challenge game to see if the challenge in different iPhone device has the same performance
LOS-2: The challenge game should be able to load data less than 2 seconds	Product strategies: Xcode, React-Native API package
	Process strategies: Instead of fetching all data in one time, only fetch the data user needed. When user jump to a specific pop up page, the page will atomically download data user currently needed but not all data of all pages. So that the load time has been decreased.
	Analysis: We installed the app in our own phones, and test the loading time of all pop up pages in different Internet environment. With this new strategy, the load time for pop up page was less than 1 second.

::: Architecture Feasibility

Capability Feasibility	
Challenge Photos and Videos Post	Software/Technology used: Xcode/WebStorm, React-Native libraries.
	Feasibility Evidence: Develop a prototype to implement challenge function
Challenge Game Pop Screen	Software/Technology used: Xcode/WebStorm, React-Native libraries.
	Feasibility Evidence: Develop a prototype to implement a popup page which is a main page of the challenge game.
Time Complete	Software/Technology used: Xcode/WebStorm, React-Native libraries.
	Feasibility Evidence: Develop a prototype to display the remaining time of the challenge and counting how long the user has spent on his/her challenge game.
View, Approve or Cancel Challenge	Software/Technology used: Xcode/WebStorm, React-Native libraries.
	Feasibility Evidence: Develop a prototype to implement a function which user check if his/her friend has finished their challenge.

::: Architecture Feasibility

Capability Feasibility	
Challenge Game Suggestion	Software/Technology used: Xcode/WebStorm, React-Native libraries, Firebase. Feasibility Evidence: Develop a prototype to implement challenge game suggestion.
Further 5 Days Daily Challenge Content Post	Software/Technology used: Xcode/WebStorm, React-Native libraries, Firebase. Feasibility Evidence: Develop a prototype to implement Further 5 Days Daily Challenge Content Post
Notification	Software/Technology used: Xcode/WebStorm, React-Native libraries. Feasibility Evidence: Develop a prototype to implement Notification system

:: Personna



- Name: Annie
- Age: 22
- gender : Female
- Location: near USC campus
- Motivation/User scenario: Annie is a 22 years old senior and she has a lot of friends. She wants to maintain her friendship with her friends through challenge game.
- Computer literacy/technical lifestyles: Annie uses her iPhone everyday for texting, calling and sending emails.

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:: Persona



- Name: Jason
- Age: 18
- Gender: Male
- Location: near USC campus
- Motivation/user scenario: Jason is a 18 years old freshman who wants to get involved in his college life. He wants to get familiar with his new friends through challenge game.
- Computer literacy/technical lifestyle: Jason uses iPhone to play games everyday and he also he is a Apple fan.

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:: Personna



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- Name: Jessica
- Age: 19
- gender : Female
- Location: near USC campus
- Motivation/User scenario: Jessica is a 19 years old sophomore. She is a good student and she has a busy college life. She wants to have some fun with her friends through the challenge game.
- Computer literacy/technical lifestyles: Jessica uses her iPhone everyday for social apps.

:: ROI Analysis

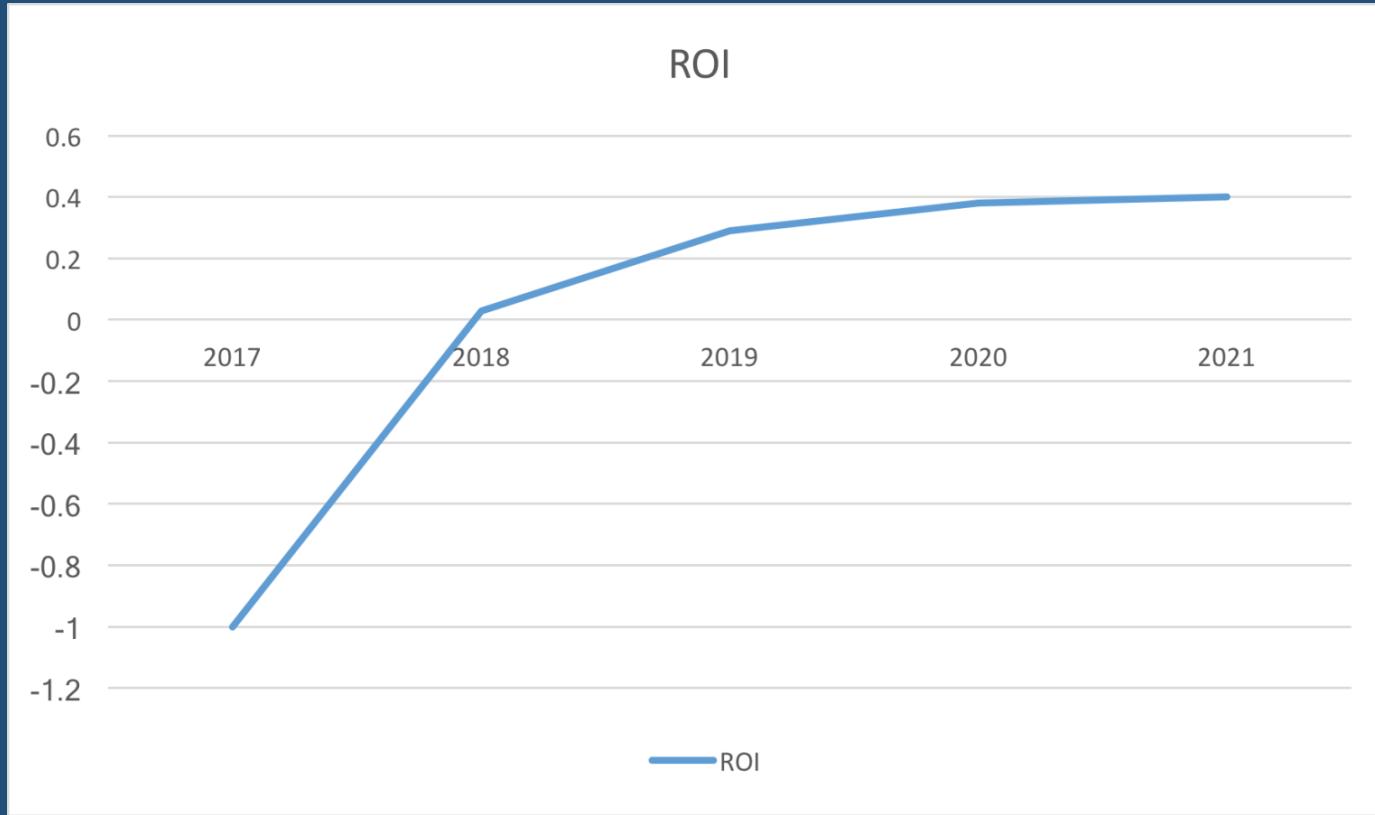
Year	Cost (hours) [#]	Benefit (hours) ⁺	Cumulative e cost	Cumulative e benefit	ROI*
2017	45	0	45	0	-1
2018	52	100	97	100	0.03
2019	57.2	100	154.2	200	0.29
2020	62.92	100	217.12	300	0.38
2021	69.212	100	286.332	400	0.40

: Assuming 10% per year increase in cost. Rounded up

+ : Benefits rounded up to nearest integer

* : $\text{ROI} = (\text{Cumulative Benefit} - \text{Cumulative Cost}) / (\text{Cumulative Cost})$

:: ROI Analysis Graph



:: NDI/NCS Evaluation & Analysis

Introduction:

The NDI used in the development of the website are suggested by the client to redesign the existing system without having any interoperability issue. We are using the Xcode/WebStorm to implement the app layout, UI and buttons. React-Native library is used to incorporate MVC architecture.

:: NDI/NCS Evaluation & Analysis

NDI/NCS Products	Description	Benefit (hours)+	Cumulative e cost	Cumulative e benefit
Firebase	DBMS	<ul style="list-style-type: none"> •High performance •Open source •Easy to manage Json data •High availability 	Free	Open source
React-Native	A framework for building native app	<ul style="list-style-type: none"> •Easy to learn and use •Open source •Support both iOS and Android platform development 	Free	Open source
AWS	Server	<ul style="list-style-type: none"> •High performance •Easy to manage •High availability 	\$200/month	High performance server

::: Quality Focal Point

::: Traceability Matrix

OCD	Requirement	Use Case
OC-1 Challenge Photos and Videos Post	WC_4601	EC-6
OC-2 Challenge Complete Competition	WC_4532 WC_4596 WC_4597 WC_4598	EC-7
OC-3 Challenge Game Suggestion	WC_4535	EC-10
OC-4 Further 5 Days Daily Challenge Post	WC_4595	EC-2

::: Traceability Matrix

OCD	Requirement	Use Case
OC-5 View, Approve or Cancel Challenge	WC_4600	EC-8
OC-6 Challenge Game Pop Screen	WC_4531	EC-1 EC-2 EC-3 EC-4 EC-5
OC-7 Offline&Online Notification	WC_4534 WC_4546 WC_4599 WC_4600	TBD
OC-8 Competition Reward	WC_4538 WC_4537	TBD

::: Defect identification

Review identification type

Peer Review

Client Feedback

Instructors (Prof. & TA) suggestions

ARB

Test identification type

Unit Test

Integration Test

End-to-End

::: Defect Prevention

Strategy	Priority	Level	Description
Win-win negotiation	High	Team, client	Discuss and negotiate with client and obtain feedback from client respect of application functionality.
Version Control	High	Team	Use Github to manage our source codes for codes backup, merging and change tracking.
Jira	High	Team	Track what every team member have done and what he is going to do.
Peer review	Medium	Team	Review team members' achievements and help each other by promoting feedback and suggestions.
Weekly Team meeting	High	Team	Have team meetings at least twice a week, check process and make sure we are in the same pace.

:: Current Defect

Concern	Proposed Solution
<p>The reward system is not sophisticated. We didn't think about it in detail and the reason for our inclusion of this functionality is that we wanted to entice users to participant in the challenge feature.</p>	<p>Before starting to implementing, we are ought to gain more information from client and users, and try to prototype the entire reward system.</p>

::: Technical Debt

Description	Mitigation Plan
The current version did not follow the responsive mobile design and it only works for iPhone 7Plus screen resolution.	Incremental test, prototyping and gaining more knowledge about how to implement a responsive mobile app in React Native.

:: Q & A

https://drive.google.com/open?id=1Bg70vQ0_nb4XqvDhcqx0wlrh9gMATkYdaTKLLcRdDk8