CALIFORNIA STATE UNIVERSITY
FULLERTON

CPSC 546 – MODERN SOFTWARE MANAGEMENT

COURSE PROJECT: **SOFTWARE DEVELOPMENT PLAN**

OUR PRODUCT NAME: **ACE-PLAYER**

TEAM NAME: **A-Team**

TEAM INFORMATION:

Number	Name	Email address	Contribution in %
1	Deepak Mayanattanmy (893338442)	dee7@csu.fullerton.edu	20%
2	Amanpreet Singh (893284422)	amanpreet@csu.fullerton.edu	20%
3	Abhishek (893468587)	mullickabhishek@csu.fullerton.edu	20%
4	Rishi Raj (893444596)	rishisonuraj@csu.fullerton.edu	20%
5	Chongbei Wang (893525725)	chongbeiwang@csu.fullerton.edu	20%

EXECUTIVE SUMMARY

Video streaming is recently trending across the globe. Video streaming services are captivating and it also promotes an individual's freedom of speech.

The goal of this project is to build a video streaming system called Ace player that allows users to watch and share videos in our system. Unlike traditional video streaming websites such as daily motion, YouTube, our Ace-player provides a highly interactive user experience. The proposed system includes many interesting user-engaging features such as making a friendzone with another user, chatting with the friends, recording a live event and telecasting. Our Ace-player will be fast and provides 24x7 non-stop video streaming service to all the users across the globe.

In this project, we intended to follow Agile Scrum methodology for high visibility and control over the project progress. We also planned to employ well experienced Project Manager, Product Manager, Scrum process manager (Scrum Master) and other teams with young – experienced team composition. The proposed budget of this project is approximately **3.05 Million**. We planned to complete this project within **10 months** including 10 Sprint cycles and **2 two release plans**. In addition to this, we also provided our risk mitigation plans to control the hazards which may affect the project progress.

We promise to deliver an adaptable and working product to the customer including all the specified features within the mentioned duration. We also assure to deliver the product with new features prioritized from the customer end.

TABLE OF CONTENTS:

1.0 INTRODUCTION

With the constant development of the Internet technology and network bandwidth, real-time streaming media transmission technology has become hot research in recent years. The popularity of Wi-Fi/4G technology and the rapid increase of mobile handheld device performance promote mobility of the real-time streaming transmission technology. The most significant growth area in Internet usage has been video streaming. There has been tremendous interest among consumers in watching movies-on-demand and viewing video content on every device: television, video players, desktops, laptops, tablets, & smartphones. People enjoy the ease of online video & the high-resolution & 3-D features that now are available. In the entertainment area, it is estimated that video streaming is responsible for 30 percent of overall Internet traffic. Companies such as Netflix, Time Warner, Comcast, Amazon, and Hulu, among others, are working to meet this demand.

The upsurge of video requires more of telecommunications networks regarding speed & network design. Internet providers are reengineering the network to accommodate the explosive growth of video & making it easier to share experiences online. Social Media are part of the customer experience because people enjoy commenting on their experiences & sharing recommendations with their friends & associates.

But Video streaming also is moving beyond the entertainment area into education & healthcare, among other areas. Educators see documentaries, movies, & instructional videos as a vital part of the learning process. Students love to learn through moving images as opposed to text alone and there have been tremendous advances in mobile learning.

Teachers are incorporating educational apps onto tablets and mobile phones and helping students take responsibility for their knowledge acquisition.

Health care providers have made significant advances in video usage. Physicians use video conferencing to confer with patients who have difficulty coming to medical offices. Numerous websites incorporate video and digital content into their offerings. Patients often research symptoms, diseases, & treatment before they talk to a doctor. The growth in information resources helps patients become more informed about their medical care & allows them to play an extra active role in maintaining their health.

The problem with other platforms is that they are unable to provide all the content users want to see in one place. This project aims to solve this problem. AcePlayer delivers all the content in one

place. The customers don’t need to spend their hard-earned money on multiple subscriptions. This platform guarantees a flawless viewing experience for the customers.

2.0 PROJECT VISION

'Ace – player' is an interactive Internet based application that provides the video streaming to users where they can upload, download, delete, and live stream videos online. Our vision is to develop an online web application which would give access to the end users to all the video streaming services. Below mentioned is the Vision statement for the project -

"*The project is about implementing the online video streaming video web application for the target users. The web application will be able to upload, download, delete, edit, and live stream videos online. The unique features that the web application will be providing is prime access to the users giving access to videos without advertisements. An exclusive access to a video editing tool will be provided to the customer who have registered in the application. The end users will be provided enhanced 3D user interface customer experience. The end users need to have a login credentials and access to web application to view, upload and edit videos. The application must include a tutorial to get the user started easily*."

2.1 PROJECT GOAL

Our Project goal is to grow our streaming subscription business domestically and globally. We will be providing enhanced customer experience, with a focus on expanding our streaming content, enhancing our user interface and extending our streaming service to even more Internet-connected devices, while staying within the parameters of our consolidated net income and operating segment contribution profit targets.

2.2 PROJECT SCOPE

The project is to develop an online video streaming application for the target users. The User will be able to upload, download, delete, edit, and live stream videos online. The unique features that the web application is providing is prime access to the users giving access to videos without ads and exclusive access to the user to download the videos as well. The end users will be able to watch the videos in enhanced video quality up to 1080p. The end users need to have a login credentials and access to web application to view, upload and delete videos. The application must include a tutorial to get the user started easily.

3.0MAJOR PROPOSED REQUIREMENTS

3.1 FUNCTIONAL REQUIREMENTS

FEATURE ID: F1 - EASY REGISTRATION/LOGIN

FR1 The user shall be able to login/Register with Ace Player by authorizing any one of the social media platforms – Google, Facebook, Twitter or by providing an email-id.

FR2 Users registered with Ace-Player shall be able to manage their nick-name, password, family-filter under the 'Account-Settings' tab

FEATURE ID: F2 - WATCH A VIDEO

FR3 The user shall be able to watch the videos in Ace Player

FR4 Ace-player shall support the video quality ranging from 240 pixels to 1440 pixels.

FR5 The users shall be able to create a customized video playlist in Ace-Player

FR6 All types of users shall be able to like or dislike a video in Ace-Player

FEATURE ID: F3 - BECOME A PREMIUM USER

FR7 The user shall be able to upgrade his profile to 'Premium-user' by paying $10 monthly fee.

FR8 Ace-Player shall mail the Premium-user registration receipt to the email ID provided by the user.

FR9 Premium users shall be able to download unlimited videos and music in Ace Player.

FR10 Premium users shall be able to watch ten movies from the official movie channels for free of cost in Ace-Player.

FEATURE ID: F4 - CREATE A FRIENDZONE WITH OTHER USERS

FR11 An existing user shall be able to send or accept friend request from another Ace-Player user.

FEATURE ID: F5- UPLOAD A VIDEO

FR12 All types of users registered with Ace-Player shall be able to upload a video in Ace-Player

FR13 All types of users registered with Ace-Player shall be able to host a live video event through Ace-Player

FR14 The user shall be able to record their own device screen and post as a video in Ace-Player.

FEATURE ID: F6 - CHAT WITH OTHER USERS ON ACE-PLAYER

FR15 An existing user shall be able to make a private chat with another Ace-Player user

FR16 The user shall be able to view the messages from other user on the 'Chats' tab.

FEATURE ID: F7 - SHARE A VIDEO WITH OTHER SOCIAL MEDIA

FR17 The users registered with Ace-Player shall be able to share a video to other social media by copying the URL (Uniform Resource Locator) of the video.

FEATURE ID: F8 – SECURE A VIDEO

FR18 All types of users registered with Ace-Player shall be able to change their video privacy options – Private, Public, Only to my friends.

FEATURE ID: F9 – COMMENT A VIDEO

FR19 An existing user shall be able to post a comment in the comment box related to the video.

FEATURE ID: F10 – SUBSCRIBE A CHANNEL

FR20 All types of users shall be able to subscribe a channel in Ace-Player.

FR21 The user shall be able to view the latest videos from their favorite channels on the 'Subscriptions' tab.

FR22 The user shall be able to sponsor a channel on Ace-Player

FEATURE ID: F11 – DISPLAY LATEST TRENDS

FR23 Ace-Player shall display the top 10 trending videos to the user on the 'Trends' tab.

3.2 NON-FUNCTIONAL REQUIREMENTS:

1. **Availability**

   Description:

   We need the Ace-player system to be available for 24x7.

2. **Performance**

   Description:

   The Ace-player shall render the video information from the server with a top performance

3. **Usability**

   Description:

   The user interface shall be catchy and easy for the user to understand

4. **Modifiability**

   Description:

   As we are adapting Agile-scrum methodology, we expect to change the Ace-player features with our subsequent releases, hence we find modifiability is an important factor

5. **Portability**

   Description:

   Ace-player runs on all platforms (android, IOS, windows, web browser) and all devices (smartphone, tablets, personal computers). Hence, we ensure that our Ace-player is portable to any device.

6. **Scalability**

   Description:

   In Ace-player, we expect the user to upload more than 500 High definition videos or more, hence our Ace-player shall be scalable with the storage capacity.

7. **Interoperability**

Description:

Ace-player interoperates with multiple other software such as Facebook, google and Twitter

8. **Security**

   Description:

   Ace-player assures security to the user's private videos and user's profile information.

9. **Marketability**

   Description:

   Ace-player hosts multiple advertisements between the videos, which enhances marketing for the other companies.

4.0 SOFTWARE DEVELOPMENT PROCESS MODEL

We chose Scrum as software development process model for our project as it is widely practiced in software industry. We selected specifically this framework as it helps in delighted customers by accepting the continuous changing requirement. Its better as it provides return on investments as it delivers smaller piece of functionality to stakeholders in each sprint. Scrum teams provides business value feature in every sprint which means faster results for customers.

Scrum benefits the organizational by:

- Early measurable return on investment
- High visibility and control over the project progress
- Early and continuous customer feedback
- Empowered product owner
- Incremental delivery
- Agile change management is adaptive to changing business needs
- Helps align information technology with the business
- Reduces product and process waste

Scrum is an agile framework for managing work in software development projects. It is most widely used in software industry. It is basically designed for smaller teams that range from three to nine developers who break their work in time boxed iterations. There are three crucial roles in the scrum framework. Scrum defines only these three:

Product Owner: Product owner is the voice of the customer and is one of the stakeholders in project.

Development Team: Team is responsible for delivering the shippable product in every sprint.

Scrum Master: Scrum is facilitated by Scrum Master. He ensures that scrum framework is followed and ensures that no team member doesn't get blocked on assigned task.

VARIOUS SCRUM EVENTS

Sprint:

A time-box of one month or 2 weeks during which a "Done", useable, and potentially releasable product Increment is created. During the sprint no changes were made that will endanger the sprint goals.

Sprint Planning:

In sprint planning work to be done in sprint is planned by entire scrum team. Each sprint is composed into multiple iteration cycle.

Daily Scrum:

Daily Scrum is 15-minute daily event for the development team to coordinate everything and plan work for next 24 hours.

Sprint-review:

During this, the Scrum team and product owner collaborate what was done in the sprint.

Sprint- retrospective:

This event occurs after sprint review. In this team discuss:

-What went well in sprint.

-What could be improved.

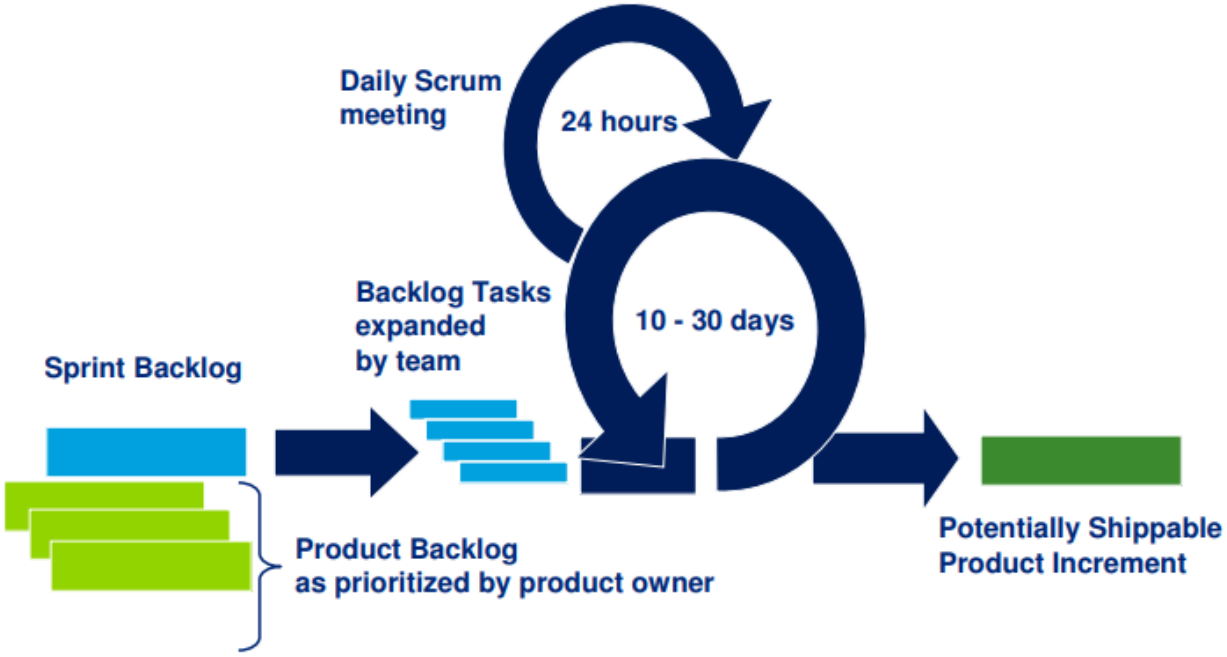
-What we will commit to improve the next sprint.

Scrum Artifacts:

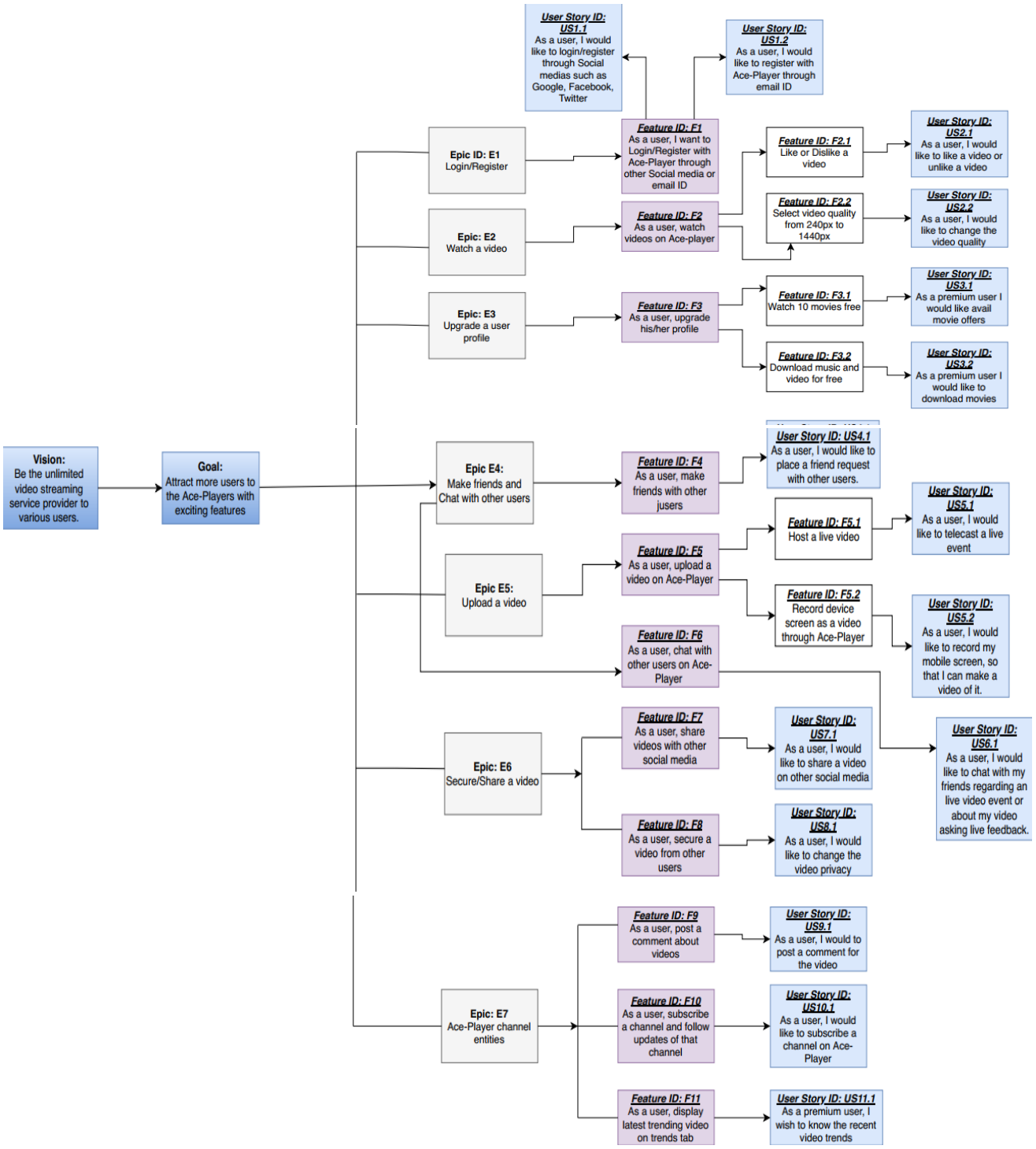
- ***Product Backlog:*** It is an orders list of everything that is needed in the project. Product backlog is maintained by product owner including its content, priority, and availability.

- ***Sprint Backlog:*** Set of product backlog items selected for sprint is Sprint backlog. This backlog is with enough details that changes in progress can be understood in the daily scrum.

FIGURE 4.1 SCRUM PROCESS OVERVIEW



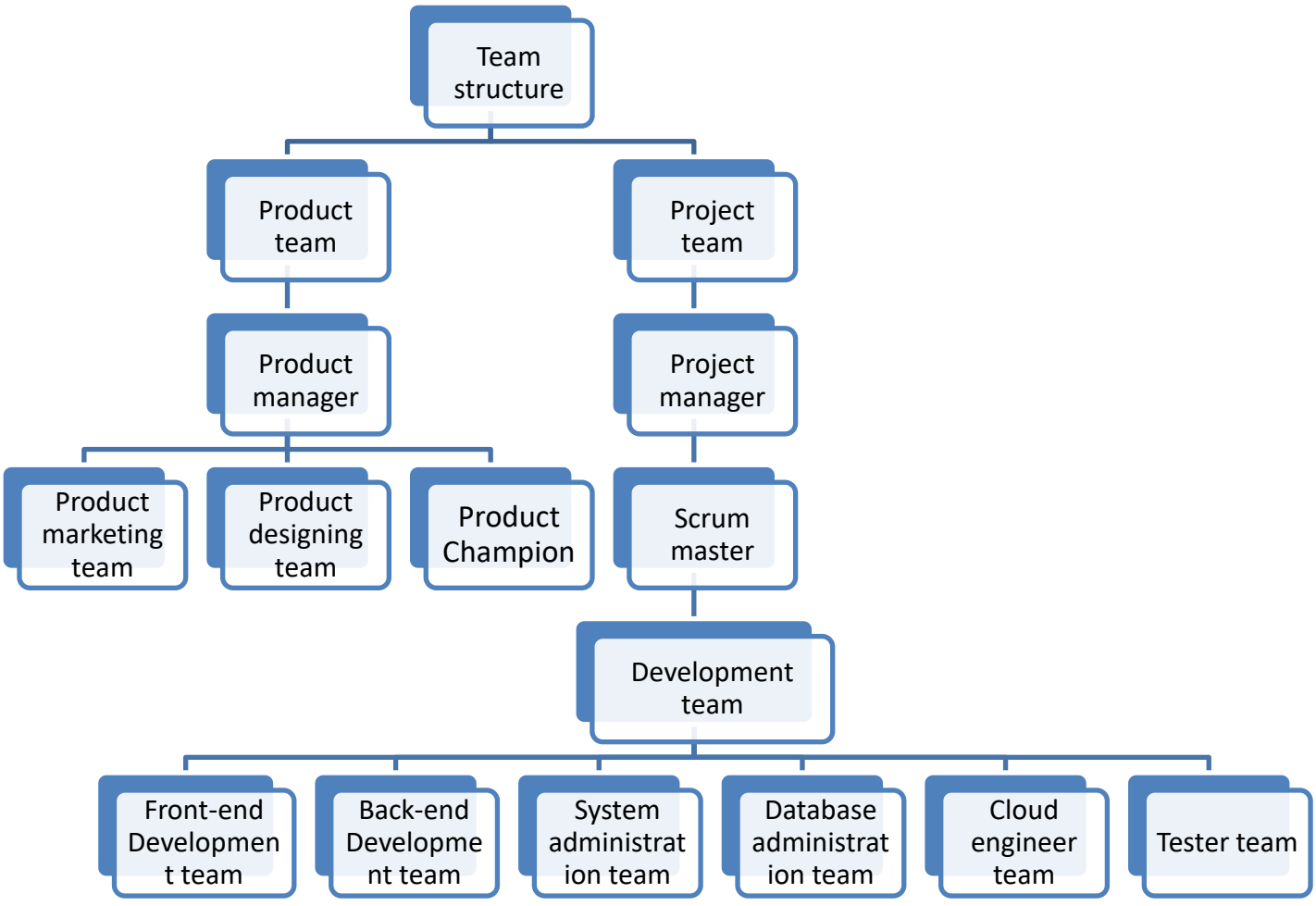
5.0 FEATURE BREAKDOWN STRUCTURE



6.0 TEAM ORGANIZATION AND CAPABILITY

In this section, we have discussed the various teams and individual roles involved in building the Ace-Player.

6.1 ORGANIZATIONAL STRUCTURE:



6.2 TEAM ORGANIZATIONAL STRATEGY:

We planned to implement the Cross functional collaboration between various teams involved in shaping the Ace-Player. Cross functional style is a group of people with different functional expertise coming together to work toward a common goal. We strongly believe that cross functional team composition has the potential to implement significant improvements throughout the organization, and thus is a powerful tool in a culture of continuous improvement.

Justification for choosing Cross Functional Team Strategy:

- The size of the team composition for building the Ace-player is fairly big, which involves an average of 40 employees in strength.
- Create a culture of continuous improvement in which employees take ownership of problems and work together to bring about solutions
- Cross functional strategy Increases teamwork, leading to greater levels of commitment to continuous improvement from everyone
- Improve communication between diverse, dispersed groups of people

6.3 PRODUCT TEAM STRUCTURE

ROLE	RESPONSIBILITY	TEAM COMPOSITION
Product manager	• Manages product team • Communicates with product champion for delivering the requirements to the project team	• 1 stakeholder • 11+ Experience in product management
Product marketing team	• Develops products by identifying potential products; • Conducting market research; • Generating product requirements; • Determining specifications,	• 2 stakeholders • Includes two senior product managers and one Product marketing intern

	production timetables, pricing, and time-integrated plans for product introduction; • Developing marketing strategies.	
Product designing team	• Leads and coordinates the prototyping and design of the user interface. • Identifies the feature set for the Ace player and translates that to a user experience for the developers.	• 2 stakeholders • Includes two senior product designers
Product Champion	• Collects feedbacks from various focus groups • Elicit various user groups regarding the product • Documents user stories • Communicates with the Project Manager regarding the new requirements from the users	• 1 person • 5+ Marketing expertise

6.4 PROJECT TEAM STRUCTURE

ROLE	RESPONSIBILITY	TEAM COMPOSITION
Scrum Master	• Manages the Scrum Process and Removes impediments. • Controls and co-ordinates the development team tasks • Owns the process, communicates, and teaches the product owner and the team (maintains the process as the coach). • Helps product owner select the most valuable product backlog and the team to turn the backlog into functionality.	• 1 person • 9+ Experience in Agile Scrum Methodology
Project manager	• Manage project team • Organizes Staffing in various development team • Primary Source of Communication for product team	• 1 stakeholder • 12+ Experience in project management
Cloud engineer team	• Support the ongoing development and maintenance of continuous integration. • Delivery and deployment systems and pipelines within our Development Operations function	• 4 Stakeholders • 2 Senior Cloud Engineers of 8+ experience • 2 Junior Cloud Engineers of associate level
Front-end Development team	• Writes highly efficient, testable, quality code written with modern web development technologies • Creates world class user interface.	• 2 software architects (one of them will be front end development team leader) • 2 junior developers • 2 interns
Back-end	• Implements the business logic for	• 2 software architects (one of

Development team	Ace player. • Uses CDN (Content delivery network) to serve videos to end-users with high availability and high performance.	them will be team leader) • 2 junior developers • 2 interns
Database administration team	• Maintains relational database like MySQL. • Designs the data schema	• 2 senior database administrators of 10+ experience
System administration team	• Works with developers on production needs and help support the application in production. • Automates processes otherwise performed by humans.	• 2 senior system administrators of 10+ experience
Testing team	• Finds the edge cases and other bugs the developers didn't think of. • Responsible for the core activities of the test effort, which involves conducting the necessary tests and logging the outcomes of that testing.	• 2 Senior Testers (one of them will be the team leader) • 2 junior testers • 2 interns

6.5 ADDITIONAL ORGANIZATION STRUCTURE DETAILS

- Our project estimates 39 stakeholders.
- Our project is categorized into two teams, Product Team, Project Team
- The project team will be led by the project manager
- The product team will be led by the product manager
- The product team includes product designing team, product marketing team
- The project team includes development team
- The development team and the scrum process will be coordinated by the Scrum Master
- The development team includes Front End development team, Back end development team, Cloud engineering team, System Administration Team and Database administration team.
- All the stakeholders are expected to work 9 hours a day and 45 hours in a week.
- On an average all the stakeholders work 45 hours in a week and 195 hours in a month.

- The salary package for each stakeholder were decided based on their experience.

TABLE 6.3: STAKEHOLDER PROFILE INFORMATION

ROLE	NUMBER OF HOURS/WEEK	NUMBER OF HOURS/DAY	HEAD COUNT	EXPERIENCE
Project Manager	45	9	1	12+
Product Manager	45	9	1	11+
Scrum Master	45	9	1	9+
Product Marketing Manager	45	9	1	9+
Front-End Developer Lead	45	9	1	9+
Back-End Developer Lead	45	9	1	9+
Cloud Engineer Lead	45	9	1	9+
Test Engineer Lead	45	9	1	9+
Database Administrator - Lead	45	9	1	9+
System Administrator Lead	45	9	1	9+
Product Designer Lead	45	9	1	9+
Senior Developer	45	9	2	7+
Senior Administrator	45	9	2	7+
Senior Cloud Engineer	45	9	2	7+
Senior Test Engineer	45	9	2	7+
Senior Product Designer	45	9	2	7+
Junior Developer	45	9	6	3+
Junior Administrator	45	9	2	3+
Junior Cloud Engineer	45	9	2	3+
Junior Test Engineer	45	9	2	3+
Developer Intern	45	9	2	Current Graduate Student
Tester Intern	45	9	2	Current Graduate Student

Product Marketing Intern	45	9	2	Current Graduate Student
Total			**Total Members: 39**	

7.0 TIME, EFFORT AND COST ESTIMATION

In this section we calculated and estimated the duration, cost and efforts for the various items in our project plan.

7.1 PRODUCT BACKLOG

Scrum Product Backlog is simply a list of all things that needs to be done within the project. It replaces the traditional requirements specification artifacts. In general, the items in product backlog have a technical nature or can be user-centric e.g. in the form of user stories.

We created product backlog with the user stories and the priority set by the customer. The priority factor in product backlog mainly describes the business value for the customer.

The product backlog has been sorted based on the priority value set by the customer.

TABLE 7.1.1: PRODUCT BACKLOG (WITHOUT ESTIMATION)

User Story ID	User Story	Sprint	Priority
Feature F1: Easy User registration			
US 1.1	User would like to login/register through Social medias such as Google, Facebook, Twitter.	Sprint 1	High
US 1.2	User would like to register with Ace-Player through email ID.	Sprint 7	Medium
Feature F2: Watch a video			
US 2.1	User would like to like a video or unlike a video.	Sprint 10	Low
US 2.2	User would like to change the video quality.	Sprint 2	High
Feature F3: Become a premium user			
US 3.1	Premium User would like avail movie offers.	Sprint 3	High
US 3.2	Premium user would like to download movies.	Sprint 6	Medium
Feature F4: Create a friendzone with other users			

US 4.1	User would like to place a friend request with other users.	Sprint 3	High
Feature – 5 Upload a video			
US 5.1	User would able to upload a video or telecast a live event on Ace-Player	Sprint 4	High
US 5.2	User would like to record the mobile screen and upload the same on Ace-Player	Sprint 10	Low
Feature F6 Chat with other users on Ace-Player			
US 6.1	User would like to chat with friends regarding an live video event or about my video asking live feedback.	Sprint 5	High
Feature - F7 share a video with other social media			
US 7.1	User would like to share a video on other social media	Sprint 8	Medium
Feature F8 – Secure a video			
US 8.1	User would like to change the video privacy	Sprint 8	Medium
Feature F9 – Comment a video			
US 9.1	User would to post a comment for the video	Sprint 9	Medium
Feature – F10 Subscribe/Sponsor a channel on Ace-Player			
US 10.1	User would like to sponsor a channel on Ace- Player	Sprint 6	High
Feature F11 – Display latest trends			
US 11.1	User wish to know the recent video trends	Sprint 9	Medium
Total number of user stories: 15		**Total number of Sprints: 10**	

7.2 EFFORT ESTIMATION

To estimate the efforts, we chose ‘Planning poker’ technique to figure out the effort estimation or the complexity estimation for each user story.

7.2.1 PLANNING POKER

Various Ace-Player stakeholders involved in planning poker are as follows,

TABLE 7.2.1 STAKEHOLDER PROFILE

Number	Name	Role
1	Amanpreet Singh	Business Owner
2	Deepak Mayanattanmy	Scrum Master
3	Abhishek Mullick	Product Owner
4	Chongbei Wang	Product Designer
5	Rishi Raj	Senior Developer

RATING SYSTEM:

We have chosen modified Fibonacci Sequence values ranging from 1 to 100.

Our modified Fibonacci Sequence Values are,

Modified Fibonacci Sequence = {1,2,3,5,8,13,20,40,100}

PROCESS:

1. In planning poker, the business owner presented the various user stories.
2. Each stakeholder holds a set of cards including all the rating points starting from 1 to 100.
3. Once the item is presented, each stakeholder privately chooses a card representing his estimate.
4. When everyone is ready, we revealed our cards at the same time
5. Each stakeholder was given a chance to explain his estimate.
6. If we got different estimates, we re-repeated the item.
7. We continued the steps from 1 to 6, for all the items.
8. We successfully calculated all the estimates for all the user stories in our queue.

The artifact obtained from Planning poker is the updated product backlog including the estimation for each user story.

The product backlog is updated based on the priority value set by the customer.

TABLE 7.2.2 UPDATED PRODUCT BACKLOG

Feature	User Story ID	User Story	Sprint	User Story points	Priority
Feature ID: F1	US 1.1	User would like to login/register through Social medias such as Google, Facebook, Twitter.	Sprint 1	100	**High**
Feature ID: F2	US 2.2	User would like to change the video quality.	Sprint 2	60	High
Feature ID: F3	US 3.1	Premium User would like avail movie offers.	Sprint 3	60	High
Feature ID: F4	US 4.1	User would like to place a friend request with other users.		20	High
Feature ID: F5	US 5.1	User would able to upload a video or telecast a live event on Ace-Player	Sprint 4	60	High
Feature ID: F6	US 6.1	User would like to chat with friends regarding an live video event or about my video asking live feedback.	Sprint 5	60	High
Feature ID: F7	US 10.1	User would like to sponsor a channel on Ace-Player	Sprint 6	60	High
Feature ID: F1	US 1.2	User would like to register with Ace-Player through email ID.	Sprint 7	13	Medium
Feature ID: F3	US 3.2	Premium user would like to download movies.		60	Medium
Feature ID: F7	US 7.1	User would	Sprint 8	20	Medium

		like to share a video on other social media			
Feature ID: F8	US 8.1	User would like to change the video privacy		40	Medium
Feature ID: F9	US 9.1	User would to post a comment for the video	Sprint 9	20	Medium
Feature ID: F11	US 11.1	User wish to know the recent video trends		60	Medium
Feature ID: F2	US 2.1	User would like to like a video or unlike a video.	Sprint 10	20	Low
Feature ID: F5	US 5.2	User would like to record the mobile screen and upload the same on Ace-Player		20	Low

7.3 RELEASE PLAN

Total duration: 10 months

Total number of sprints to be performed: 10

TABLE 7.3.1 PROJECT RELEASE PLAN

Release type	Sprints	From	End	Duration
Release 1	Sprint 1	August 18	September 18	1 month
	Sprint 2	September 18	October 18	1 month
	Sprint 3	October 18	November 18	1 month
	Sprint 4	November 18	December 18	1 month
	Sprint 5	December 18	January 19	1 month
	Sprint 6	January 19	February 19	1 month
	Sprint 7	February 19	March 19	1 month
	Sprint 8	March 19	April 19	1 month
Release 2	Sprint 9	April 19	May 19	1 month
	Sprint 10	May 19	June 19	1 month

7.4 TIME ESTIMATION

We decided to implement ten Sprints for our project,

- The five sprint cycles are explained in detail in table 7.5

- The estimated duration for our project development: 10 months.
- Number of Sprint cycles involved: 10 Sprints
- Number of Releases: 2 Releases

TABLE 7.4.1 TIME ESTIMATION TABLE

Release type	Sprints	Duration	Total hours allocated
Release 1	Sprint 1	1 month	198
	Sprint 2	1 month	198
	Sprint 3	1 month	198
	Sprint 4	1 month	198
	Sprint 5	1 month	198
	Sprint 6	1 month	198
	Sprint 7	1 month	198
	Sprint 8	1 month	198
Release 2	Sprint 9	1 month	198
	Sprint 10	1 month	198
Total Release cycles: 2	Total Sprint Cycle: 10	Total duration: 10 months	Total hours: 1980 hours

TABLE 7.4.2 UPDATED PRODUCT BACKLOG INCLUDING THE TIME ESTIMATION

Feature	User Story ID	User Story	Sprint	Total duration	User Story points	Priority
Feature ID: F1	US 1.1	User would like to login/register through Social medias such as Google, Facebook, Twitter.	Sprint 1	198	100	**High**
Feature ID: F2	US 2.2	User would like to change the video quality.	Sprint 2	198	60	High
Feature ID: F3	US 3.1	Premium User would like avail movie offers.	Sprint 3	130	60	High
Feature ID: F4	US 4.1	User would like to place a friend request with other users.		68	20	High
Feature ID: F5	US 5.1	User would able to upload a video or telecast a live event on Ace-Player	Sprint 4	198	60	High

Feature ID: F6	US 6.1	User would like to chat with friends regarding an live video event or about my video asking live feedback.	Sprint 5	198	60	High
Feature ID: F7	US 10.1	User would like to sponsor a channel on Ace-Player	Sprint 6	198	60	High
Feature ID: F1	US 1.2	User would like to register with Ace-Player through email ID.	Sprint 7	48	13	Medium
Feature ID: F3	US 3.2	Premium user would like to download movies.		150	60	Medium
Feature ID: F7	US 7.1	User would like to share a video on other social media	Sprint 8	40	20	Medium
Feature ID: F8	US 8.1	User would like to change the video privacy		158	40	Medium
Feature ID: F9	US 9.1	User would to post a comment for the video	Sprint 9	60	20	Medium
Feature ID: F11	US 11.1	User wish to know the recent video trends		138	60	Medium
Feature ID: F2	US 2.1	User would like to like a video or unlike a video.	Sprint 10	78	20	Low
Feature ID: F5	US 5.2	User would like to record the mobile screen and upload the same on Ace-Player		120	20	Low

7.5 COST ESTIMATION

In this project, we followed Top-Down approach for estimating the overall cost value.

We have divided the cost estimation into two categories,

1. Direct cost listing
   Direct cost estimation includes cost value for all the user stories. Direct cost listing also includes the amenities cost such as the training cost for various stakeholders, network and infrastructure cost and the software license cost.

2. Indirect cost listing
   Indirect cost estimation provides a detailed report on the stakeholder salary cost and the amenity cost.

Note: The direct cost listing covers the overall cost estimation of this project.

7.5.1 DIRECT COST ESTIMATION

In direct cost estimation, we have calculated the cost based on the complexity of the user story.

Fixed cost:

The fixed cost denotes the mandatory cost for each user story. The fixed cost is calculated based on the complexity of the user story. Laptop expenses, storage devices, office stationery products will be covered under fixed cost. We have a set a default fixed cost of 5000 dollars for each Sprint.

Total Labor:

The total labor section denotes labor cost for each user story. In this project, we would be recruiting 39 stakeholders. Average Labor cost per month is calculated around $260,800. Detailed labor calculation is covered in Indirect cost listing (section 7.5.2)

Amenities:

The supplies section denotes the training cost for various stakeholders, network and infrastructure support cost, and the License cost for various software used by the development team. Detailed amenity cost calculation is covered in Indirect cost listing (section 7.5.2)

TABLE 7.5.1 COST ESTIMATION TABLE

*The following currencies are estimated in US dollars

User Story ID	User Story	Sprint	Fixed cost	Total labor	Amenities	Hours	Total cost	User Story points
US 1.1	User would like to login/register through Social medias such as Google, Facebook, Twitter.	Sprint 1	5,000	260,800	41,500	198	307,300	100
US 2.2	User would like to change the video quality.	Sprint 2	5,000	260,800	41,500	198	307,300	60
US 3.1	Premium User would like avail movie offers.	Sprint 3	5,000	171,340	27,300	130	203,640	60
US 4.1	User would like to place a friend request with other users.		2,500	89,624	14,280	68	103,904	20
US 5.1	User would able to upload a video or telecast a live event on Ace-Player	Sprint 4	5000	260,800	41,500	198	307,300	60
US 6.1	User would like to chat with friends regarding an live video event or about my video	Sprint 5	5000	260,800	41,500	198	307,300	60

	asking live feedback.							
US 10.1	User would like to sponsor a channel on Ace- Player	Sprint 6	5000	260,800	41,500	198	307,300	60
US 1.2	User would like to register with Ace-Player through email ID.	Sprint 7	1500	63,264	10,080	48	75,344	13
US 3.2	Premium user would like to download movies.		3500	197,700	31,500	150	232,700	60
US 7.1	User would like to share a video on other social media	Sprint 8	1000	52,400	8,400	40	61,840	20
US 8.1	User would like to change the video privacy		4000	206,980	33,180	158	244,160	40
US 9.1	User would to post a comment for the video	Sprint 9	1500	78,600	12,600	60	92,700	20
US 11.1	User wish to know the recent video trends		3500	180,780	28,980	138	213,260	60
US 2.1	User would like to like a video or unlike a video.	Sprint 10	2000	102,180	16,380	78	120,560	20
US 5.2	User would like to record the mobile screen and upload the same on Ace-Player		3000	157,200	25,200	120	162,700	20
Total		**Total**					**Total**	

user stories: 15		**Sprint cycles: 10**					**Cost: 3,047,308**	

7.5.2 INDIRECT COST LISTING

The indirect cost estimation provides a detailed calculation report on salary estimation of various stakeholders and the amenities includes the training cost for various stakeholders, network and infrastructure support cost, and the License cost for various software used in this project.

Salary cost estimation for all the stakeholders:

- Our project estimates 39 stakeholders.
- Our project is categorized into two teams, Product Team, Project Team
- The project team will be led by the project manager
- The product team will be led by the product manager
- The product team includes product designing team, product marketing team
- The project team includes development team
- The development team and the scrum process will be coordinated by the Scrum Master
- The development team includes Front End development team, Back end development team, Cloud engineering team, System Administration Team and Database administration team.
- All the stakeholders are expected to work 9 hours a day and 45 hours in a week.
- On an average all the stakeholders work 45 hours in a week and 195 hours in a month.
- The salary package for each stakeholder were decided based on their experience.

TABLE 7.5.2: COST ESTIMATION FOR THE EMPLOYEES INVOLVED IN THE PROJECT:

*The following currencies are estimated in US dollars

Role	Number of hours/week	Salary/week in USD	Salary/month in USD	Head Count
Project Manager	45	2,925	12,675	1
Product Manager	45	2,590	11,200	1
Scrum Master	45	2,385	10,335	1
Product Marketing Manager	45	2,025	8,775	1
Front-End Developer Lead	45	2,025	8,775	1
Back-End Developer Lead	45	2,025	8,775	1
Cloud Engineer Lead	45	2,025	8,775	1
Test Engineer Lead	45	2,025	8,775	1

Database Administrator - Lead	45	2,025	8,775	1
System Administrator Lead	45	2,025	8,775	1
Product Designer Lead	45	2,025	8,775	1
Senior Developer	45	1,800	7,800	2
Senior Administrator	45	1,800	7,800	2
Senior Cloud Engineer	45	1,800	7,800	2
Senior Test Engineer	45	1,800	7,800	2
Senior Product Designer	45	1,800	7,800	2
Junior Developer	45	1,350	5,850	6
Junior Administrator	45	1,350	5,850	2
Junior Cloud Engineer	45	1,350	5,850	2
Junior Test Engineer	45	1,350	5,850	2
Developer Intern	45	765	3,315	2
Tester Intern	45	765	3,315	2
Product Marketing Intern	45	765	3,315	2
Total			**Total Salary Cost: 260,800/month**	**Total Members: 39**

TABLE 7.5.3 AMENITIES COST ESTIMATION:

*The following currencies are estimated in US dollars

Amenities	Cost estimation per month	Count
General Training cost	500 dollars per head	9
Network and Server Infrastructure	12,000	N/A
Software License cost	25,000	N/A
Total	Total amenity cost/month: 41,500	

7.5 OVERALL COST, TIME, EFFORT ESTIMATION:

Prominent Overall estimation data:

- On an average our total cost estimation will be: 3,047,308 $ (USD)
- On an average our estimated duration will be: 1980 hours
- On an average the estimated effort will be: 673

TABLE 7.5 TIME, COST, EFFORT ESTIMATION MATRIX

*The following currencies are estimated in US dollars

Release type	Sprints	Total hours allocated	Cost Estimation	Effort Estimation
Release 1	Sprint 1	198	307,300	100
	Sprint 2	198	307,300	60
	Sprint 3	198	307,544	80
	Sprint 4	198	307,300	60
	Sprint 5	198	307,300	60
	Sprint 6	198	307,300	60
	Sprint 7	198	307,544	73
	Sprint 8	198	307,544	60
Release 2	Sprint 9	198	307,544	80
	Sprint 10	198	307,544	40
Total Release cycles: 2	**Total Sprint Cycle: 10**	**Total hours: 1980 hours**	**Total cost: 3,047,308 $ (USD)**	**Total Efforts: 673**

8.0 RISK MANAGEMENT

The risk is defined as an event that could affect the goals of the project, and it can contribute to the success or failure. Risk can have a positive impact on the project (Opportunities) and have a negative result which poses a threat and impact the project negatively. Thus, for our project, we focus on managing the risk proactively and in an iterative process such that it starts from project planning to the end of the project. The risk management involves identification, assessment, prioritization, mitigation and effective communication.

8.1 RISK MANAGEMENT STEPS

The five steps to Risk Management are described as follows:

1. Risk identification: Identify the potential risks.

2. Risk assessment: Evaluate and estimate the risks identified.

3. Risk prioritization: Prioritizing risk to be included in the Prioritized Product Backlog.

4. Risk mitigation: Developing an approach to deal with the risk.

5. Risk communication: Communicating the risk to the stakeholders

During risk identification, our Scrum team members attempted to identify the risks that would impact the project. The risk identified:

- Pair programming of developers for crucial web development activities
- Lack of essential skills in the team
- Estimating and completing the tasks as per schedule
- Effective communication within the team
- Budget constraints

Risk assessment was done to understand the potential impact of a risk. The effect of the risk on the business value was estimated, and if the impact was very significant, then a decision as to continue the

project is made. In addition to probability, risk assessment also evaluates the potential net effect of risks on the project or organization.

For risk prioritization, the identified risks are captured and give the priority based on the analysis and discussion with the customer, team, product owner, etc. It is the Prioritized Product Backlog. The below table under risk mitigation consists of the risk prioritization for our project. In the risk mitigation, we have been proactive and reactive. Following are the risk prioritized and corresponding mitigation plan provided:

TABLE 8.1 RISK MANAGEMENT PLAN

IMPACT	RISK PRIORITY	RISK DESCRIPTION	RISK MITIGATION
High	1	Pair programming of developers for Software development	Include extra programmers in the team
High	2	Lack of essential skills in the team	• Technical session conducted for the team •Provide Cross training • Regular meeting to test the skills
Medium	3	Estimating and completing the tasks as per schedule	• Efficient Product Backlog to be prepared • Efficient utilization of daily Scrum meeting
Medium	4	Effective communication within the team	• Efficient utilization of daily Scrum meeting
Low	5	Budget constraints	• Monitor the budget on a regular basis • Provide feedback to the customer early

Risk communication is necessary because stakeholders need to know the limitations of the project. In our project, the risk mentioned above and the potential effect of the risk and the mitigation plans were communicated to the stakeholders. The communication was continuous and was done in parallel with

the sequential steps- risk identification, assessment, prioritization, and mitigation. The Scrum team also discussed the risks related to their tasks with the Scrum Master during Daily Stand-up Meetings.

9.0 RELEASE PLAN

The release plan defines the project scope that the team aims to deliver by a given deadline. Release deadline is mostly fixed. Agile release cycles are shorter than others. These releases are made up of iterations/Sprints.

In this project, we aim to release the product before the deadline. This project release will consist of 2 Release Cycles. The deliverables after the final release are the full-featured Video Streaming Web application.

In the first Release Cycle we will be providing the basis Web application features for video streaming as explained below, that will be covered in the span of 8 months.

In the Second Release cycle we will be releasing the extra two features with updating the already existing features considering the feedback of the users. This will be done in the last 2 months.

Total duration of project: 10 months

Total number of sprints to be performed: 10

Release type	Sprints	From	End	Duration
Release 1	Sprint 1	August 18	September 18	1 month
	Sprint 2	September 18	October 18	1 month
	Sprint 3	October 18	November 18	1 month
	Sprint 4	November 18	December 18	1 month
	Sprint 5	December 18	January 19	1 month
	Sprint 6	January 19	February 19	1 month
	Sprint 7	February 19	March 19	1 month
	Sprint 8	March 19	April 19	1 month
Release 2	Sprint 9	April 19	May 19	1 month
	Sprint 10	May 19	June 19	1 month

Estimation: *The estimation in the below table is take from the product backlog Story points for each User Story.*

Team Velocity: *The Team velocity is the total number of effort made by the team in one sprint. We will be calculating the total team velocity of the team in each sprint by adding the estimated effort based on the Story Points.*

TABLE 9.2 DETAILED RELEASE PLAN

User Story ID	User Story	Release Cycle	Sprint	Estimation	Team Velocity	Estimated time for Completion
US 1.1	**User would like to login/register through Social medias such as Google, Facebook, Twitter.**	Release 1	Sprint 1	100	100	1 month
US 2.2	User would like to change the video quality.		Sprint 2	60	60	1 month
US 3.1	Premium User would like avail movie offers.		Sprint 3	60	80	1 month
US 4.1	User would like to place a friend request with other users.			20		
US 5.1	User would able to upload a video or telecast a live event on Ace-Player		Sprint 4	60	60	1 month
US 6.1	User would like to chat with friends regarding an live video event or about my video asking live feedback.		Sprint 5	60	60	1 month
US 10.1	User would like to sponsor a channel on Ace- Player		Sprint 6	60	60	1 month
US 1.2	User would like to register with Ace-Player through email ID.		Sprint 7	13	73	1 month
US 3.2	Premium user would like to download movies.			60		
US 7.1	User would like to share a video on other social media		Sprint 8	20	60	1 month
US 8.1	User would like to change the video privacy			40		
US 9.1	User would to	Release 2	Sprint 9	20	80	1 month

	post a comment for the video					
US 11.1	User wish to know the recent video trends			60		
US 2.1	User would like to like a video or unlike a video.		Sprint 10	20	40	1 month
US 5.2	User would like to record the mobile screen and upload the same on Ace-Player			20		1 month

10.0 ITERATION PLAN

The Sprint or iteration planning meeting is for team members to plan and agree on the backlog items or user stories to complete during the sprint and define the detailed task and test for delivery and acceptance.

Sprint plan or iteration plan is a subset of release plan stories that will be completed in the sprint or iteration. The development team will have the authority to set the estimates. The iteration plan mainly breaks the user stories into tasks and estimate them.

We decided to implement ten Sprints for our project over the period of two release plans -

- The ten sprint cycles will cover each User Story and Feature.
- The estimated duration for our project development: 10 months.
- Number of Sprint cycles involved: 10 Sprints
- Number of Releases: 2 Releases

Sprint 1: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number of Iterations	Hours Effort
US 1.1	Meet and discuss the details of the target User. Develop interface to login and register the User using Social Media (Google, Facebook and Twitter)	High	4	

Sprint 2: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 2.1	Meet and discuss the details of the video quality settings. Develop interface to provide with compatible video quality (144p, 240p 360p, 480p, 1080p)	High	3	

Sprint 3: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 3.1	Meet and discuss the details of the Prime Users and the access and the Movie offers valid for this user. Develop an interface for the user to avail the movie offers.	High	3	
US 4.1	Develop a scripting page through which one user can send and accept friend requests	High	1	

Sprint 4: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 5.1	Develop a page for the web application that will allow the user to upload and telecast a live video.	High	3	

Sprint 5: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 6.1	Develop a page for the web application that will allow the user to chat with friends regarding a live video event or about the video,	High	3	

	asking for live feedback.			

Sprint 6: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 10.1	Develop a page for the web application that will allow the user to sponsor another users' channel.	High	3	

Sprint 7: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 1.2	Develop a page for the web application that will allow the user to register to the application through the Email ID.	Medium	1	
US 3.2	Develop a page for the web application that will allow the premium user to download movies.	Medium	3	

Sprint 8: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 7.1	Develop a page for the web application that will allow the user to share a video on Social Media (Facebook,	Medium	1	

	Twitter)			
US 8.1	Develop a Setting page allowing the user to change the privacy of the video.	Medium	2	

Sprint 9: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 9.1	Develop a page for the web application that will allow the user to comment on the video	Medium	1	
US 11.1	Develop a web page in the application that will allow the user to check the latest trending video.	Medium	3	

Sprint 10: Sprint Back Log

User Story ID	Task Description and work to be completed	Priority	Number off Iterations	Hours Effort
US 2.1	Develop a scripting page for the web application that will allow the user to like or unlike a video	Low	1	
US 5.2	Develop a web page in the application that will allow the user to record and upload the mobile screen.	Medium	1	

11.0 PROJECT SCHEDULE

In this section, we have discussed various project schedules and milestones that has been planned as a part of our project proposal.

11.1 MILESTONE 1

Milestone 1 will be at Release 1 (after Sprint- 8 completion) which will include epics such as Login/Register, watch a Video, upgrade a User Profile and so on. This release will take 8 months to complete.

11.2 MILESTONE 2

Milestone 2 will be at Release 2 (after sprint-10 completion) which will include all specified epics like or unlike a video, displaying the latest trends and so on. This release will take (approximately 2 months to complete).

TASK	AUG-18	SEP-18	OCT-18	NOV-18	DEC-18	JAN-19	FEB-19	MAR-19	APRIL-19	MAY-19	JUNE-19
Planning & Initiation											
Project Initiation	X										
Requirement Analysis	X										
Design Document	X										
Product Architecture	X (Deliverable 1)										
Execution											
Milestone 1 (Sprint 1-8)		X	X	X	X	X	X	X	X (Deliverable 2)		
Milestone 2 (Sprint 9-10)										X (Deliverable 3)	

Project Closure											
Deployment											X
Main release											X (Deliverable 4)
Product close out activities & Support											X (Deliverable 5)

12.0 References

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