

# toggle.

---

**movies.shows.sports.events.one stop**

By:

Divya Shankar | ID: W1555024

Snigdha Jain | ID: W1555383

Sree Teja Kongara | ID: W1556367

# Contents

S.No	Title	Page No.
1.	Problem Statement	3
2.	Business Description	3
3.	Gantt Chart	4
4.	Business Need	4
5.	Business Requirements	4
6.	Business Value	4
7.	Issues/Constraints	5
8.	Scope of the System	5
9.	Functional Requirements	5
10.	Non-Functional Requirements	6
11.	Use Cases	7
12.	Context Data Flow Diagram	17
13.	Level 0 Data Flow Diagram	18
14.	Level 1 Data Flow Diagram	19
15.	Data Dictionary	22
16.	Program Structure Charts	23
17.	Screenshots of GUI	26
18.	Output Report	29
18.	Future Scope	30
19.	Conclusion	30

# Problem Statement

*Toggle* - A one-stop platform for all your entertainment needs.

Amazon Prime, Netflix, Hotstar, YouTube and HBO Live are a few examples of streaming services providing live streaming, movies, TV shows & many events across the globe and require customers to have an account registered with them to avail these services. However, customers face numerous challenges with these models, such as:

- **Content Restrictions:** Quality content is usually available only to the subscribers of a specific streaming service which limits viewership.
- **Geographical Restrictions:** Geographic licensing of content restricts viewership of premium content. This leads to an increase in piracy.
- **Multiple Account Management:** Every streaming service requires a unique account creation per user, which leads to hassles with managing multiple usernames and passwords.
- **Multiple Subscriptions Offering Limited Premium Content:** Every streaming service has limited premium or original content which attracts maximum viewership and other content which is older/non-premium. Subscribers are usually forced to subscribe to gain access to the limited premium content, which increases their overall subscription costs when spread across multiple streaming services. This leads to dormant users who do not actively engage in watching other content, which impacts the ROI per user.
- **Difficulty in content search:** It is very difficult to search for a particular movie or show, as it needs to be done specifically on each and every streaming platform individually. This is a laborious process which could be especially cumbersome for the non-tech-savvy consumer base, thus leading to alienation of users.

*Toggle's* vision is to serve customers by integrating their favorite movies, TV shows & live events such as sports, music concerts, and keynote events provided by various streaming services on a single application.

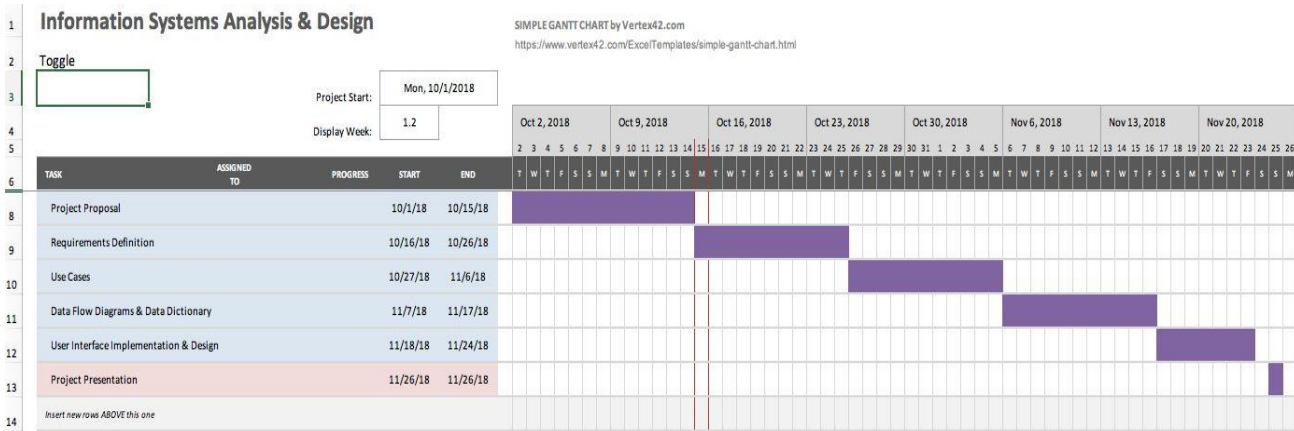
By integrating the content of these numerous streaming services, *Toggle* aims to provide an easy to use, single-search, single-login service which can overcome the above-mentioned drawbacks of the existing streaming models.

# Business Description

*Toggle's* business offering aims to enhance and enrich customer experience in the following ways:

- One application which will integrate various movies, TV shows & live events offered by multiple service providers.
- Streamline and offer one subscription which will give access to content offered by numerous service providers.
- Provide subscription offers which would enable customers to bundle up on an individual/group basis to customize their entertainment package.
- Promote TV shows, movies by increasing customer engagement and provide points-based incentives to customers for reviewing shows, movies etc.
- Overcoming geographical licensing restrictions by bringing content under one roof.
- Provide easier access to content by having a search function that searches databases of all streaming services at one go.

# Gantt Chart



## Business Need

- The Toggle project has been initiated to serve as a one-stop web-based entity which helps counter the problems being faced by users of streaming services such as scattered content, multiple account maintenance, content search difficulty and increasing subscription costs.
- It also helps the streaming services to better engage their dormant user base, reduce marketing costs and promote content viewability thus boosting revenue.

## Business Requirements

- Seamless integration with the streaming services' systems, so their content can be indexed and made ready for easy access by Toggle's subscribers.
- Creation of a single customer account that can be used to access content across platforms.
- Creation of a single indexed database with information on availability of content, that can be used for a single-search function across platforms.
- System alignment with a credit clearinghouse for online payment by user.
- Enables customers to pay for the movie/ show they want to watch. They do not necessarily have to pay for content they do not want to watch, as subscription is not time bound. Users can request for their desired material, if not available.
- The users can also club their movies/ tv shows/ live events and purchase a package on an individual/group basis which will cost less than purchasing each individually.

## Business Value

- Increase in the aggregate customer base of streaming services by 7%.
- Conversion of dormant customer base to an active user base, leading to a 6% increase in active users.
- Reduction in overall customer acquisition costs and customer retention costs, leading to a collective 4% savings in overheads for service providers.
- Reduced search time results in customers browsing more content, leading to better user engagement by 6%.

## Issues/Constraints

- Over 75% of active streaming services have agreed to content sharing with Toggle. Negotiations underway with the remaining streaming services regarding content sharing agreement.
- Many of our current customers have been requesting the option to stream live concerts in 4k resolution. We need to provide this service to further our live events portfolio.
- Geographical licensing regulations in South Asia continue to restrict certain content from streaming via Toggle. Negotiations must be carried out to maximize viewership during the Christmas holidays period of 2018.

## Scope of the System

- Content streaming for the territories of North America, Europe, South Asia, Japan and Australia.
- Live events including keynote addresses, product launches, operas, cultural events and art-based events.
- Language support for English, Spanish, French, Hindi & Mandarin.
- Promoting content of associated streaming services by displaying logos, trailers and recommendations.

## Functional Requirements

### Process Oriented Requirements

#### 1. Content Management

- The system will receive latest content meta files (including streaming links) from all the Streaming Services' databases.
- The system will save the received content meta files in the Content Data Store and index it based on content type (Movies, Shows, Live Sports, Live Events) and categories (Geolocation, Language, Genre, Premium/Non-Premium etc.,).
- The system will allow further additions to the content meta file in the form of ratings and reviews given by the users.
- The system will retrieve content meta file based on the content request received from the dashboard.
- The system will save/archive content meta files based on their current availability with the streaming services.
- The system will continuously update the content metadata such as number of movie views & trailer views in the Content Data Store.

#### 2. Account Creation and Management

- The system should ask the new user to fill in their required details.
- The system should validate, returning user's information and let them login to the system.
- The system should create a new user account with a unique User ID with the help of the information provided by the user.
- The system should display the Disclaimer (Service Level Agreement) to new Toggle users.
- The system should ask the user for their approval of the Service Level Agreement.
- The system should allow the users to change their personal details in 'My Account' such as email ID, Phone no, etc.

#### 3. Package Subscription

- The system should display all available subscription packages to the Toggle user.
- The system should allow the Toggle user to save their payment details (even multiple) and allow them to choose a preferred payment option which will speed up the payment process.
- The system should forward the payment information to the credit card clearing house for validation and provide a payment confirmation to the Toggle user.
- The system should allow an existing Toggle user to refer friends while subscribing to a package.
- The system should update the User data store and package data store with details of the purchased package.
- The system should send a reminder to Toggle user for package renewal, when the package is about to get exhausted.

#### **4. Customer Relationship Management**

- The system should update the User meta file with the user preference data depending on factors such as viewer history, language, genre etc.
- The system must allow the users to share the content on social media.
- The system must provide helpline related information to the user.

#### **5. Dashboard with Playback**

- The system will display a menu with options ‘Home’, ‘Shows’, ‘Movies’, ‘Sports’, ‘Events’ enabling basic content-type navigation.
- The system will display content that has been indexed and categorized based on user preferences.
- The system will provide a basic name search feature.
- The system will display a notification icon informing user of latest content added.
- The system will display an ‘Account Settings’ option enabling user to view account details.
- The system will enable user to make changes to account details on request.
- The system will play a trailer of the latest trending movie/series/sport etc.,
- The system will display content description showing ratings, reviews, episodes, play trailer option and play video option when prompted by user.
- The system will prompt Content Management for Meta data file and play the streaming link provided when prompted by user.
- The system will display social media options to user to enable easy sharing with friends and family.

#### **6. Reviews and Rewards**

- The system must allow an existing user to refer Toggle to potential users.
- The system must allow the user to rate and review content.
- The system must allocate incentives based on referral and user reviews.
- The system must notify the user each time reward points get added to their account.
- The system must update the user data store when reward points are added to the user account.
- The system must update the content meta file in the content data store when a user reviews or rates the content.
- The system must allow the user to redeem the reward points.

## Information Oriented Requirements

- The system must have a content sharing agreement between Toggle and Streaming Services.
- The system must have a user data privacy agreement between Toggle and Social Media services.
- The system must link the user’s Toggle profile with social media services in compliance with the user data privacy agreement.
- Bouquet package (3-month validity: 7 Premium shows/movies/events + unlimited non-premium)
- Base package
- The system must keep a user account till 3 years after last use.

## Non-Functional Requirements

### **1. OPERATIONAL:**

- The system should be compatible with all web browsers - Safari, Google Chrome, Mozilla Firefox & Internet Explorer.
- The system should be able to operate on handheld devices like smartphones and tablets.
- The system should support older versions of applications for handheld devices alongside the new version of applications.
- Unless the system is non-operational, the system shall present a user with a notification informing that the system is unavailable due to maintenance activities.

## 2. PERFORMANCE:

- The system should be available for use 24 hours a day, 365 days a year with an exception of scheduled downtime for maintenance activities.
- The system should retrieve search results in less than a second.
- The system should have latest data available for analytics purposes.
- Any interface between the user and the automated system shall have a maximum response time of two seconds.

## 3. SECURITY:

- The system includes all available safeguards from viruses, trojan horses, and worms etc.
- The system should use an advanced encryption standard to protect the user database.
- The system will provide specifications for passwords (example- the password should have a number, lower case, upper case and a special character)
- The system should ensure each username to be unique.

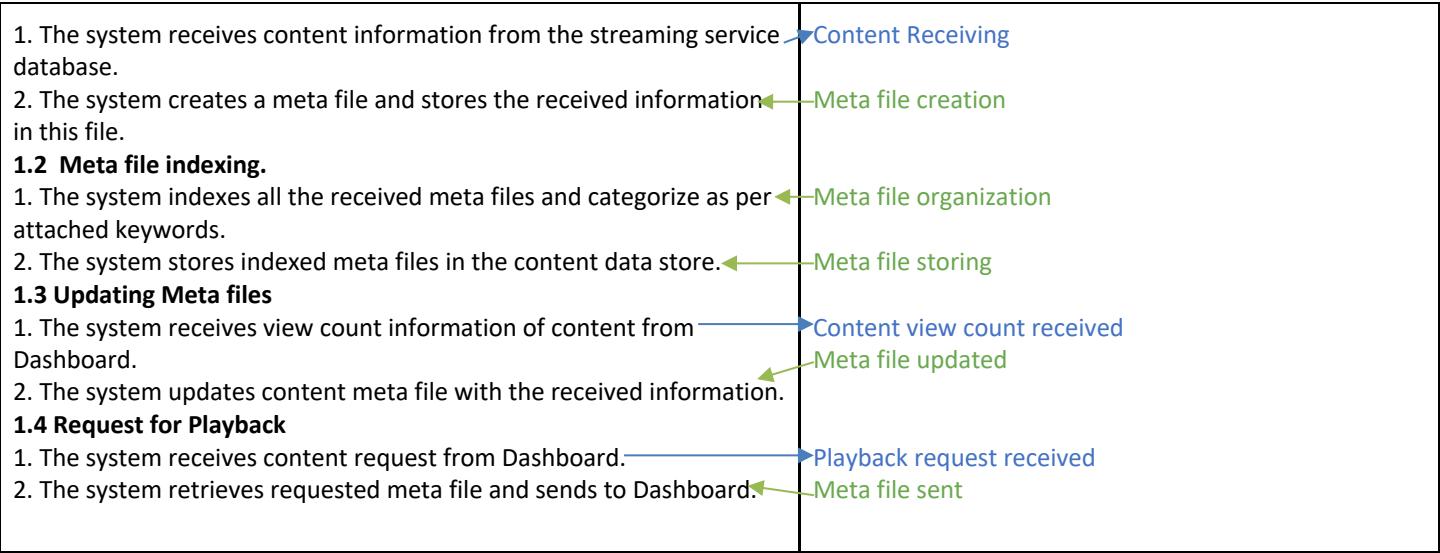
## 4. CULTURAL & POLITICAL:

- The system should support various languages.
- The system should display Toggle logo when the website is accessed.
- The system must display the streaming providers' logo at the bottom right of the player.
- The system should be able to support promotions/offers in accordance with the holiday calendar specific to a particular region.

# Use Cases

## Use Case 1: Content Management

<b>Use Case Name:</b> Content Management	<b>ID:</b> 01	<b>Priority:</b> HIGH
<b>Brief Description:</b> Receives, indexes and enables for retrieval the content information received from the streaming services.		
<b>Actor:</b> Dashboard, Streaming Services' systems.		
<b>Trigger:</b> User content selection or Streaming Service database update.		
<b>Type ➤ External Temporal</b>		
<b>Preconditions:</b> <ol style="list-style-type: none"><li>1. The streaming services have a content sharing agreement with Toggle.</li><li>2. The streaming services' databases are online and available.</li><li>3. The Content Data Store is online and available.</li><li>4. The Dashboard is online and available for User.</li></ol>		
<b>Normal Course</b> <b>1.1 Meta File Creation.</b>	<b>Information for Steps</b>	



#### Alternative Course(s):

##### 1.4 Handling Playback Issues

1. The system receives exception notification from Dashboard.
2. The system issues fresh content request to the Streaming service database.

#### Post conditions:

1. The content streaming link is activated by dashboard and the content is played for user.
2. The content meta file is updated for view-count and user feedback.
3. The Content Data Store is fully synced with the Streaming Services' databases.

#### Exceptions:

##### E1: Content meta file not available for retrieval.

1. The system signals the Dashboard to display alternative content options.
2. The system accepts alternative content request from Dashboard.
3. The system requests Streaming Service database for new meta file.

##### E2: Content playback failure.

1. The system signals Dashboard to prompt playback failure message to user and try again later.
2. The system archives the particular content meta file.
3. The system sends notification to Streaming Service for fresh meta file.

#### Summary:

Inputs	Source	Outputs	Destination
Content Request	Dashboard	Content meta file	Dashboard
View Count Update	Dashboard	Meta file update	Content Data Store
New meta file	Streaming Services' System	New Content Request	Streaming Services' system

## Use Case 2: Account Creation & Management

<b>Use Case Name:</b> Account Creation & Management	<b>ID:</b> 2	<b>Priority:</b> High
<b>Brief Description:</b> New User's account is created and returning user's account is validated. A unique user ID is assigned to each user.		
<b>Actor:</b> User		

**Trigger:** The User opens Toggle's web page or application

**Type** ➤ External Temporal

**Preconditions:**

1. The User Data Store is online and available.
2. The Dashboard is online and available for user.
3. The Service Level Agreement is updated and stored in the data store.

Normal Course:	Information for Steps
<b>2.1 Recording or Validating of User Information</b>	
1. New users provide their information and their information is recorded	User Information Returning User's Profile
2. Returning users information is validated.	User Information
<b>2.2 Creation of Account</b>	
1. A user account is creating using the user information	User Information
2. A unique user ID is assigned to each user account.	User Profile with Unique User ID
<b>2.3 Displaying Service Level Agreement</b>	
1. The system displays the Service Level Agreement to the user	Agreement Information
2. The user accepts the Service Level Agreement (Disclaimer)	SLA displayed for Agreement User's Approval
<b>2.4 Updating User Information</b>	
1. Users can update their details such like phone no., email ID, etc. in the 'My Account'.	Updated User Information
	Updated User Information

**Alternative Course(s):**

1. If the user is unable to login into their existing toggle account/ forgotten their password
  - a. A window pops up asking if the user has forgotten his/her password
  - b. A verification email is sent to their registered email ID
  - c. The link in the email ID enables the user to reset their password

**Post conditions:**

1. The user will select the desired package and make payment for the same.
2. After selecting the package, the user can now access the content provided by toggle

**Exceptions:**

- E1. The user does not accept the Service Level Agreement.
1. The system displays a message 'account creation unauthorized' and requests user to try again.

**Summary:**

Inputs	Source	Outputs	Destination
User Information	User	User Information	User Data Store
Returning User's Profile	User Data Store	User Profile with Unique User ID	User Data Store
Agreement Information	User Data Store	SLA displayed for Agreement	User
User's Approval	User	User's Approval	User Data Store
Updated User Information	User	Updated User Information	User Data Store

### Use Case 3: Package Subscription

<b>Use Case Name:</b> Package Subscription	<b>ID:</b> 3	<b>Priority:</b> High
<b>Brief Description:</b> The user has created a toggle account and subscribes to a suitable package to watch movies, tv shows, sports & other live events. In the event of package expiry, Toggle alerts the users to renew their subscription package.		
<b>Actor:</b> User		
<b>Trigger:</b> Creation of account by user. <b>Type:</b> ➤External Temporal		
<b>Preconditions:</b> <ol style="list-style-type: none"> <li>1. The user has created a Toggle account.</li> <li>2. The User Data Store is online and available.</li> <li>3. The Package Data Store is online and available.</li> <li>4. The Payment Data Store is online and available.</li> <li>5. The Credit Clearing House has a service agreement with Toggle and is available.</li> </ol>		
<b>Normal Course:</b> <ol style="list-style-type: none"> <li>1. <b>Package Selection</b> <ul style="list-style-type: none"> <li>• The system displays all the subscription packages available to the user and asks the user to select a subscription package.</li> <li>• Upon selection of a package, the system asks the user if they want to refer friends.</li> <li>• Upon referral of friends, the system calculates the amount due per user in the group and displays the amount to the user.</li> </ul> </li> <li>2. <b>Payment Validation</b> <ul style="list-style-type: none"> <li>• The user provides the payment details to the system.</li> <li>• The system forwards the payment details to the credit card clearing house for approval.</li> <li>• Upon approval, the system issues a payment receipt to the user.</li> </ul> </li> <li>3. <b>Updating Data Stores</b> <ul style="list-style-type: none"> <li>• After payment receipt issuance, the user details are updated in the user data store with the payment information.</li> <li>• The package data store is updated with user's package information.</li> </ul> </li> <li>4. <b>Package Expiry Reminder</b> <ul style="list-style-type: none"> <li>• If a subscription package is about to expire, the system alerts the user to renew their subscription package.</li> </ul> </li> </ol>	<b>Information for Steps</b> <p>Available Package Information User Package Selection Referral Options User Referral Choices Payment Due User Payment Details User Payment Details Payment Approval Payment Receipt Updated User Details Updated User's Package Details Package Renewal Alert</p>	
<b>Alternative Course(s):</b> <ol style="list-style-type: none"> <li>1. If the payment fails due to a time out, the system displays an error message.</li> <li>2. The system then asks the user to enter the payment details again.</li> <li>3. The new payment details are forwarded to the credit card clearing house for approval.</li> <li>4. Upon payment approval, the system issues a payment receipt to the user.</li> </ol>		

**Post Conditions:**

The package data store and the user data store have been updated with the Toggle user's subscription package information.

**Exceptions:** None

<b>Summary: Inputs</b>	<b>Source</b>	<b>Outputs</b>	<b>Destination</b>
User Package Selection	Toggle User	Available Package Information	Toggle user
User Referral Choices	Toggle User	Referral Options	Toggle user
User Payment Details	Toggle User	Payment Due	Toggle User
Payment Approval	Credit Card Clearing House	User Payment Details	Credit Card Clearing House
New Payment Details	Toggle User	Payment Receipt	Toggle User
New Payment Approval	Credit Card Clearing House	Updated Users Details	User Data Store
		Updated Users Package Details	Subscription Package Data Store
		Package Renewal Alert	Toggle User
		Time Out Error	Toggle User
		New Payment Details	Credit Card Clearing House
		New Payment Receipt	Toggle User

### Use Case 4: Customer Relationship Management

<b>Use Case Name:</b> Customer Relationship Management	<b>ID:</b> 4	<b>Priority:</b> High
<b>Brief Description:</b> The system stores customer preferences and allows them to share content on social media.		
<b>Actor:</b> User		

**Trigger:** User updates viewing preferences or sends social media share request or requests for customer helpline.

**Type:** ►External Temporal

**Preconditions:**

1. The user has an active Toggle account.
2. The user has existing social media accounts.
3. The User data store is online and available.
4. The Package data store is online and available.
5. The Payment data store is online and available.

**Normal Course:**

**4.1 Updating User Meta File**

1. The system updates the User meta file with user preference data, depending on factors such as preferred language, genre etc.

**Information for Steps**

User Preferences and Interests

Updated User Information

**4.2 Sharing Content**

2. The system asks the user if they want to share their viewing activity on social media.
3. The user gives their approval to share the content on social media.
4. The system on user approval shares on preferred social media.

Option to Share

User Approval

Content Shared

**4.3 User Helpline**

5. The system provides helpline related information to the user to resolve issues.

Content Information

User Information

Package Information

Payment Information

Helpline Information

**Alternative Course(s):** None

**Post conditions:**

1. The user preferences are stored in the User Data Store for better content suggestions.
2. The user's viewing activity is shared on their preferred social media site.
3. The user's account related, or playback issues are resolved.

**Exceptions:**

E1: The user may choose not to share the content on social media.

**Summary:**

Inputs	Source	Outputs	Destination
User Preferences and Interests	User	Updated User Information	User Data Store
User Approval	User	Option to Share	User
Content Information	Content Data Store	Content Shared	Social Media
User Information	User Data Store	Helpline Information	User
Package Information	Package Data Store		
Payment Information	Payment Data Store		

## Use Case 5: Dashboard with Playback

<b>Use Case Name:</b> Dashboard with Playback	<b>ID:</b> 05	<b>Priority:</b> HIGH
<b>Brief Description:</b> The user can view & update account information, view content information and play content.		
<b>Actor:</b> User		
<b>Trigger:</b> User content selection or Streaming Service database update.		
<b>Type</b> ➤External Temporal		
<b>Preconditions:</b> <ol style="list-style-type: none"> <li>1. The User has a logged-in Toggle account with active subscription.</li> <li>2. The streaming services' databases are online and available.</li> <li>3. The Content Data Store is online and available.</li> <li>4. The Content Management is online and available.</li> <li>5. The Dashboard is online and available.</li> <li>6. The social media sites have data confidentiality</li> </ol>		
<b>Normal Course</b> <p><b>5.1 Content Request</b></p> <ol style="list-style-type: none"> <li>1. The system displays content menu with categories to user.</li> <li>2. The user selects the content they intend to view from menu.</li> <li>3. The system requests Content Management for content meta data file.</li> </ol> <p><b>5.2 Meta File Interpretation</b></p> <ol style="list-style-type: none"> <li>1. The system will read the meta file and make the streaming link ready for playback.</li> </ol> <p><b>5.3 Playback</b></p> <ol style="list-style-type: none"> <li>1. The system will play content for the user.</li> </ol> <p><b>5.4 Handling Playback Failure</b></p> <ol style="list-style-type: none"> <li>1. The system will send a meta file review request to content management if there is a playback issue.</li> </ol> <p><b>5.5 Updating Account Settings</b></p> <ol style="list-style-type: none"> <li>1. The user sends request for viewing account settings.</li> <li>2. The system retrieves account information and displays to user.</li> <li>3. The user edits account information and prompts system on completion.</li> <li>4. The system updates user information in the User data store.</li> </ol> <p><b>5.6 Updating Package details</b></p> <ol style="list-style-type: none"> <li>1. The user sends request for viewing package details.</li> <li>2. The system retrieves package information and displays to user.</li> <li>3. The user makes changes to package and prompts system.</li> <li>4. The system updates package information in the Package data store.</li> </ol>	<b>Information for Steps</b> <ul style="list-style-type: none"> <li>Categorized content displayed</li> <li>User selects content</li> <li>Requested content information retrieved.</li> <li>Streaming link readied.</li> <li>Content playback.</li> <li>Playback failure handling.</li> <li>Account information requested.</li> <li>Account information displayed.</li> <li>Account information changed.</li> <li>Account information updated.</li> <li>Viewing package info request</li> <li>Package info displayed</li> <li>Package info changed</li> <li>Package info updated</li> </ul>	

**Alternative Course(s):****5.5. Account Information Updating**

1. The system does not allow user to change primary account attributes such as User ID. Only secondary account attributes such as phone number, email etc., can be updated.
2. The system prompts user to choose alternative option.

**5.6 Package Information Upgrading**

1. The system does not allow user to change base package. Only add-ons are allowed.  
(Redirect from point 3.2).
2. The system prompts user to choose alternative option.

**Post conditions:**

1. The content streaming link is activated by dashboard and the content is played for user.
2. The content meta file is updated for view-count and user feedback.
3. The user account information is updated in the user data store.
4. The package information is updated accordingly in the package data store.

**Exceptions:****E1: Playback failure.**

1. The system signals Content Management notifying it about playback failure.
2. Content Management sends meta file review request to Streaming Service.
3. Dashboard prompts user to choose alternative content for viewing.

**Summary:**

Inputs	Source	Outputs	Destination
Content Meta File	Content Management	Meta file Request	Content Management
Content Request	User	Review Request	Content Management
Rating/Review added	User	Rating & Review	Content Management
Account Settings Update	User	Settings Update Confirmation	User
Package Update	User	Package Update Confirmation	User
Account Information	User Data Store	Content Streaming	User
Package Information	Package Data Store	Account Information Update Package Information Update	User Data Store Package Data Store

**Use Case 6: Reviews and Rewards**

<b>Use Case Name:</b> Review and Rewards	<b>ID:</b> 6	<b>Priority:</b> High
<b>Brief Description:</b> The user can write reviews about the content, rate content, refer their friends and family to subscribe to Toggle and earn/redeem reward points from Toggle.		
<b>Actor:</b> User		

**Trigger:** Upon logging into Toggle, the user seeks for rewards.

**Type:** ➤ External Temporal

**Preconditions:**

1. The user has a Toggle account.
2. The user has an active/valid package subscription to watch movies, TV shows, Sports & other live events.

Normal Course:	Information for Steps
<p><b>1. Referral, Rating &amp; Review</b></p> <ul style="list-style-type: none"> <li>- The system asks the user if they want to refer their friends or family to toggle. ↘ Refer new users</li> <li>- The user provides the potential new user referral details to the system. ↗ New user details</li> <li>- The system prompts the user to review content upon completion of content viewing. ↘ Review content request</li> <li>- The user writes a review or selects skip. ↗ User written review</li> <li>- The system prompts the user to rate the content upon completion of content viewing. ↘ Rate content request</li> <li>- The user selects a rating on a scale of 1 to 5 ↗ User Content rating</li> </ul>	
<p><b>2. Reward Points Calculation &amp; Redemption</b></p> <ul style="list-style-type: none"> <li>- Based on the acknowledgement for new user referral and content review, the system requests for the calculated reward points. ↘ Reward Points Request</li> <li>- Reward points get added to the user account. ↗ Calculated Reward Points</li> <li>- The system provides an option to the user to redeem their reward points when the user navigates to their account settings under the menu dropdown. ↘ Earned Reward points</li> <li>- Upon user approval, the system displays the content list/subscription package list from which the user can select content based on the amount of points redeemed. ↗ Redeem rewards request</li> <li>- The selected content or subscription package get added to the user account. ↗ Rewards Redemption Acknowledgement</li> <li>↳ Display Content &amp; package list</li> <li>↳ User Selection of content or Package</li> <li>↳ Selection Acknowledgement</li> </ul>	
<p><b>3. Updating Data Stores</b></p> <ul style="list-style-type: none"> <li>- The system updates the content meta file located in the content data store each time a user reviews/rates content. ↘ Updated content meta file</li> <li>- The system updated the user data store with potential new user referral details. ↗ New User Details</li> <li>- The system updates the user data store with the earned reward point information and updated user information with respect to the package. ↗ Earned Reward Points</li> <li>- The system updates the package data store when the user redeems points and selects content or subscription package. ↗ Updated User Information</li> <li>↳ Selection Acknowledgement</li> </ul>	
<b>Alternative Course(s):</b> None	

**Post Conditions:**

1. Reward points are added to the users account based on the referrals made, content reviews submitted and content ratings.
2. The user data store and content data stores get updated with information regarding reward points earned and the user written content review.

**Exceptions:**

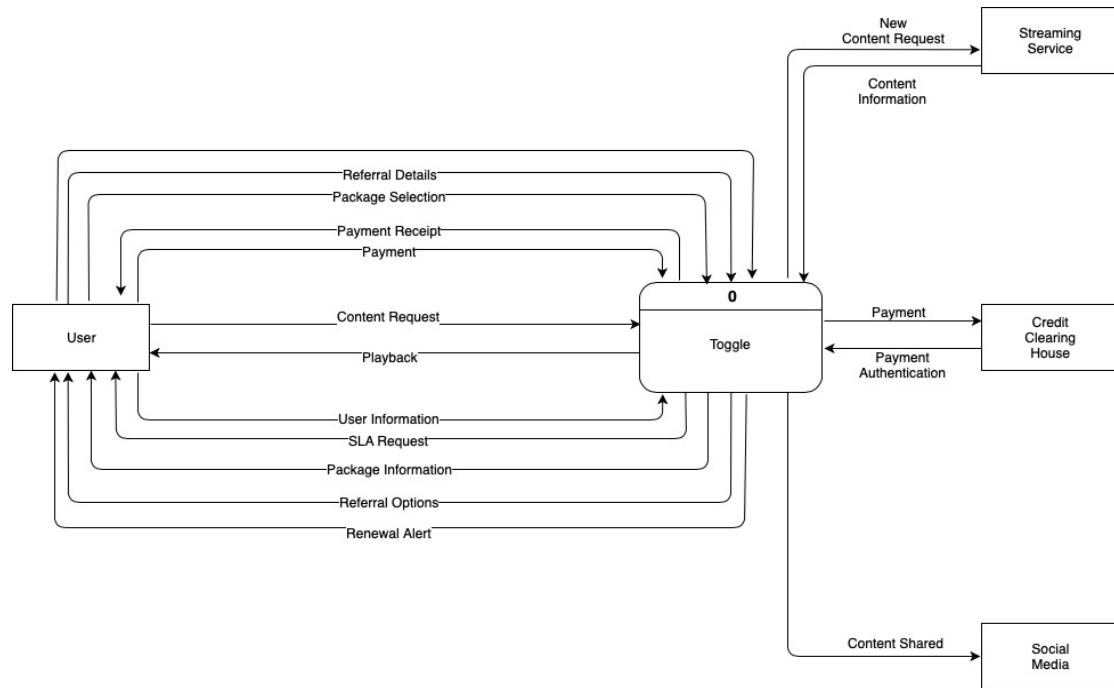
**E1: Failure of adding reward points to user account**

1. In the event of an unpredictable error or bug in the system, if the reward points do not get added to the users account.
2. The system alerts the user to contact customer help with the necessary details.

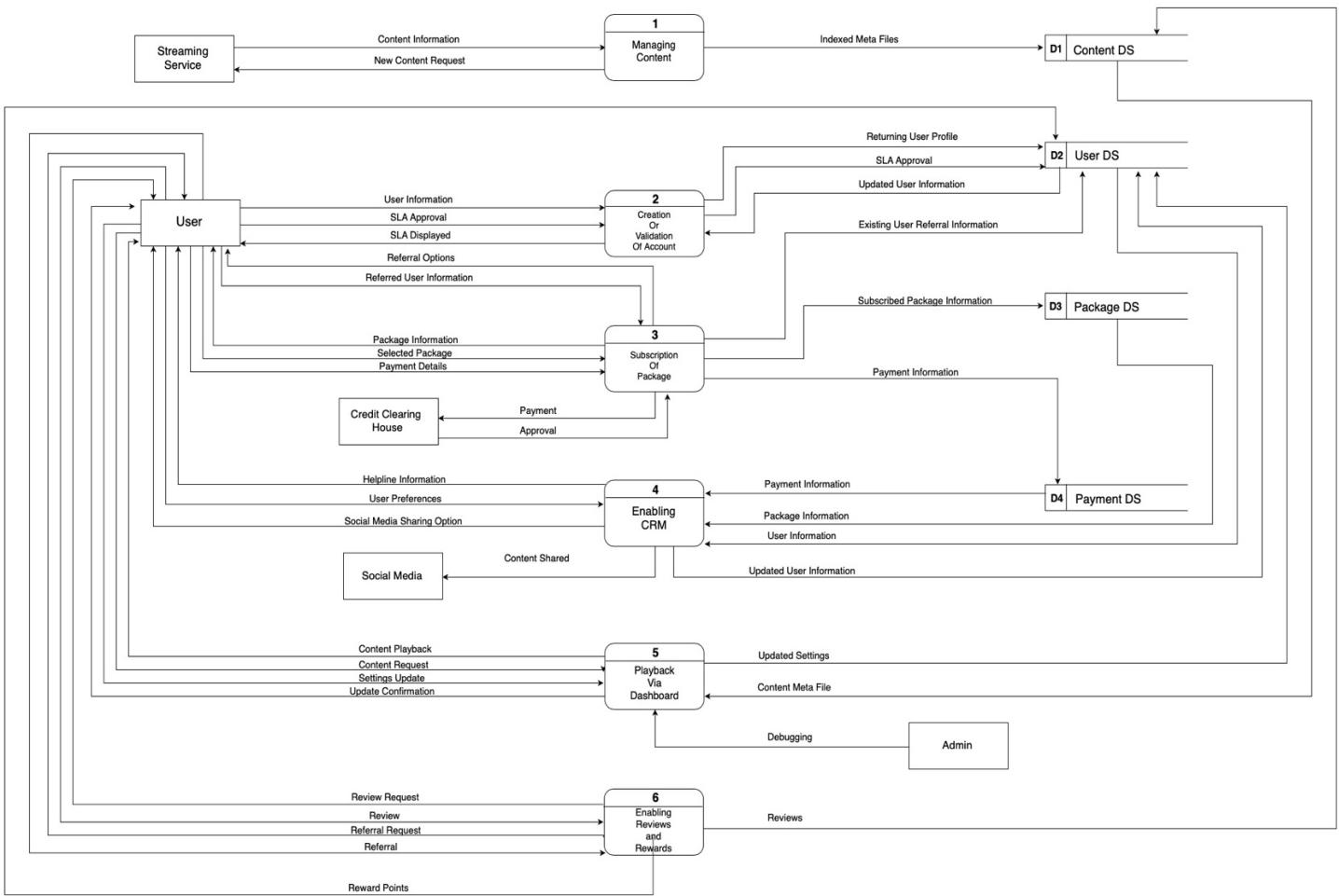
Summary: Inputs	Source	Outputs	Destination

New user details	User	Refer new users	User
User written review	User	Review Content request	User
User content rating	User	Rate content request	User
Calculated Reward Points	Package Data Store	Reward points Request	Package Data Store
User approval	User	Earned Reward Points	User, User Data Store
User Selection of content or Package	User	Redeem Rewards Request	User
		Display Content & Package List	User
		Updated Content Meta File	Content Data Store
		New User Details	User Data Store
		Updated User Information	User Data Store
		Selection Acknowledgement	User, Package Data Store

# Context Diagram

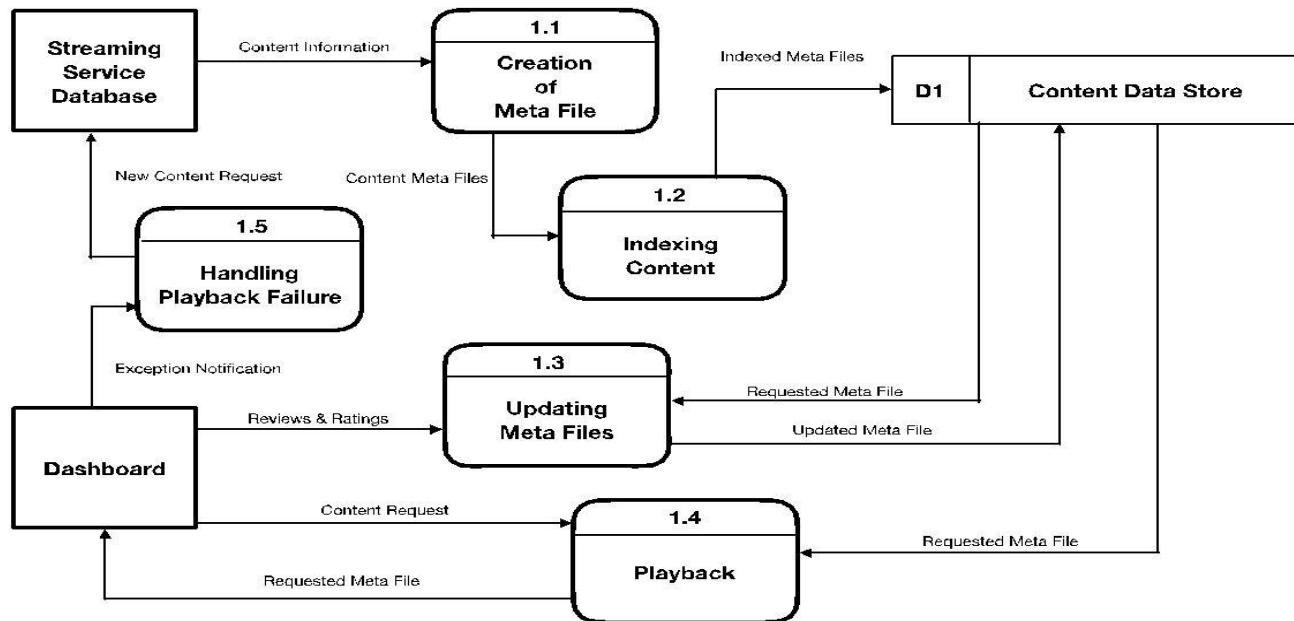


# Level 0 DFD

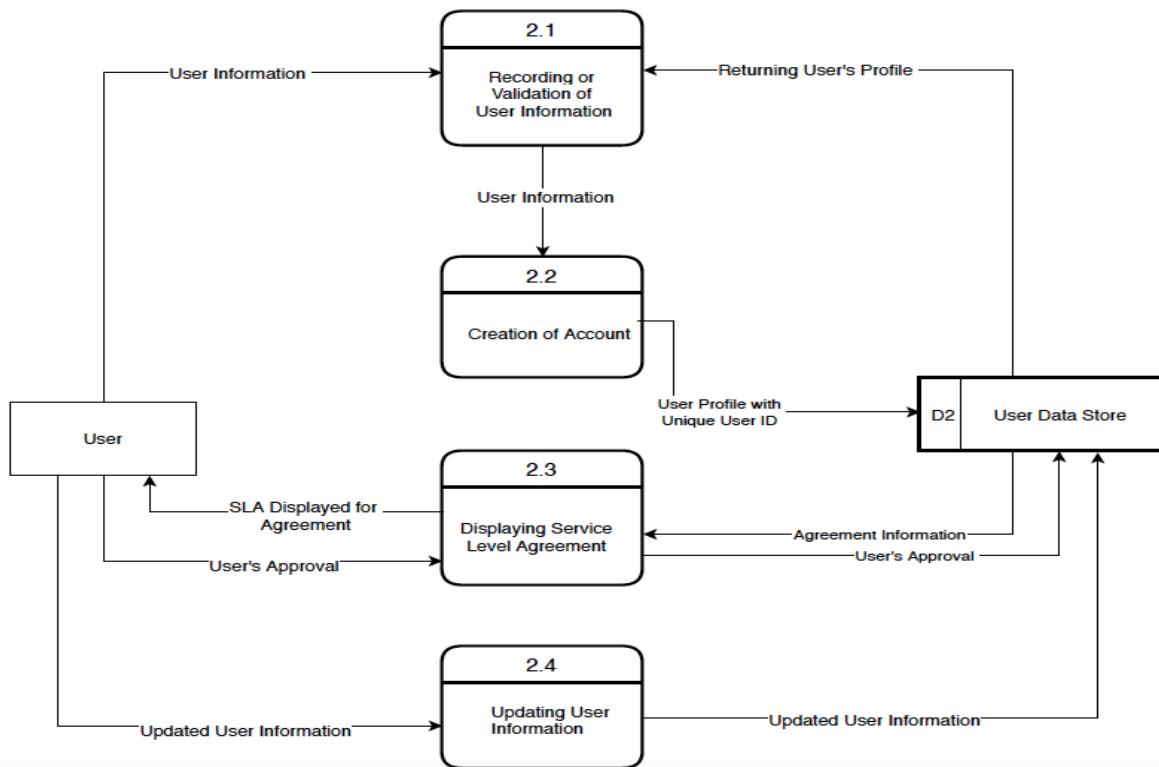


## Level 1 DFD

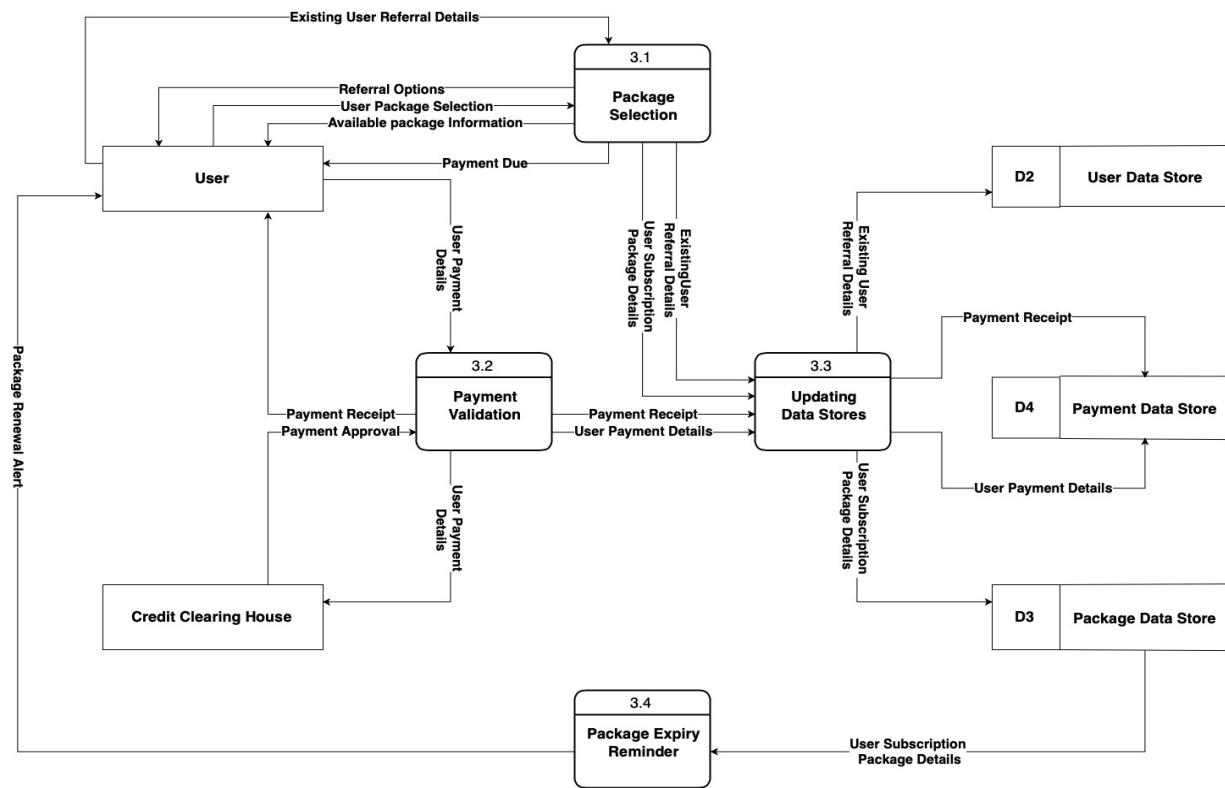
### DFD for Use Case 1: Content Management



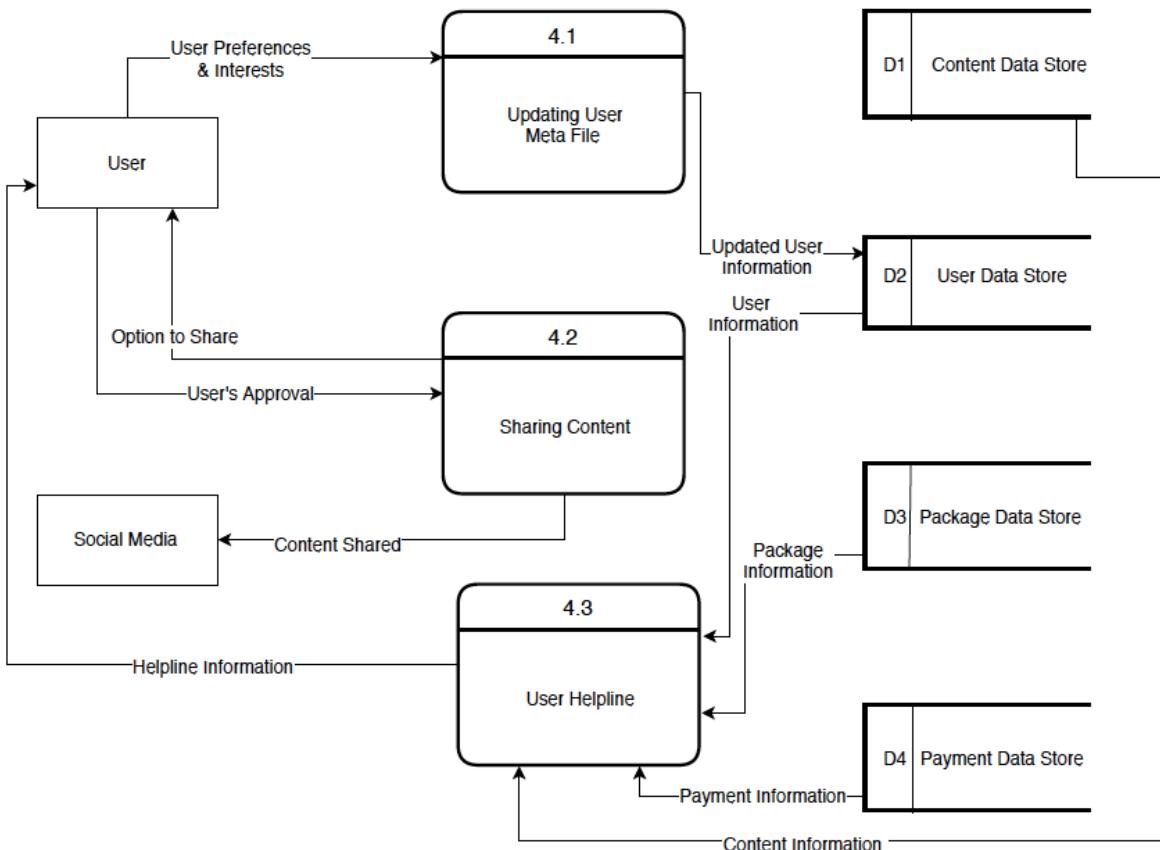
### DFD for Use Case 2: Account Creation & Management



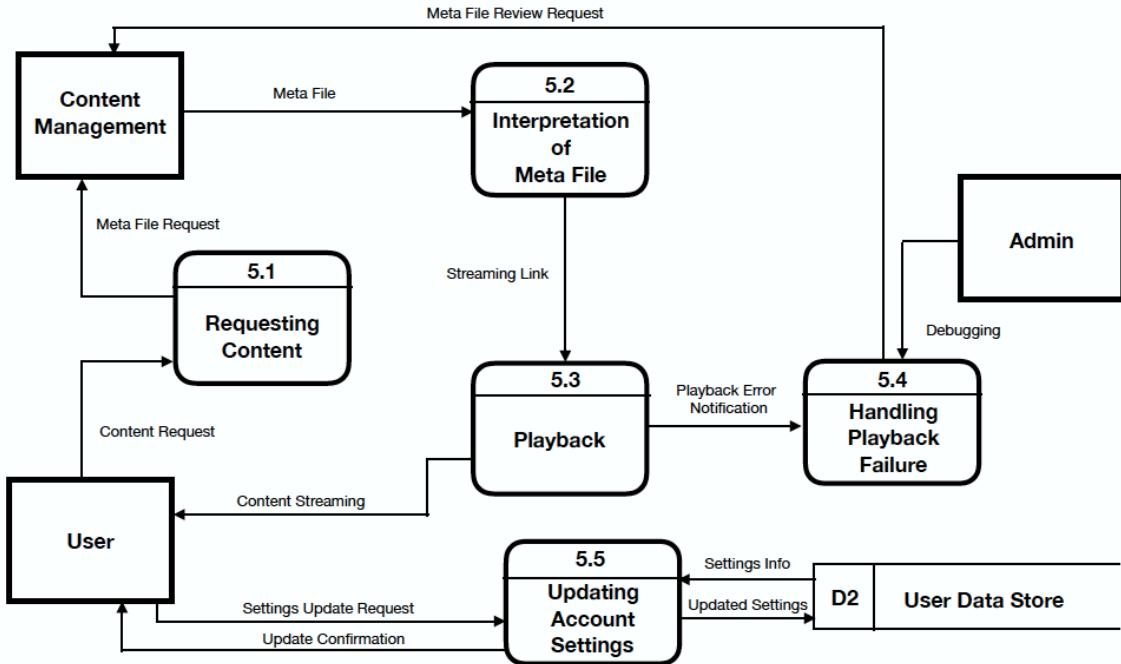
### DFD for Use Case 3: Package Subscription



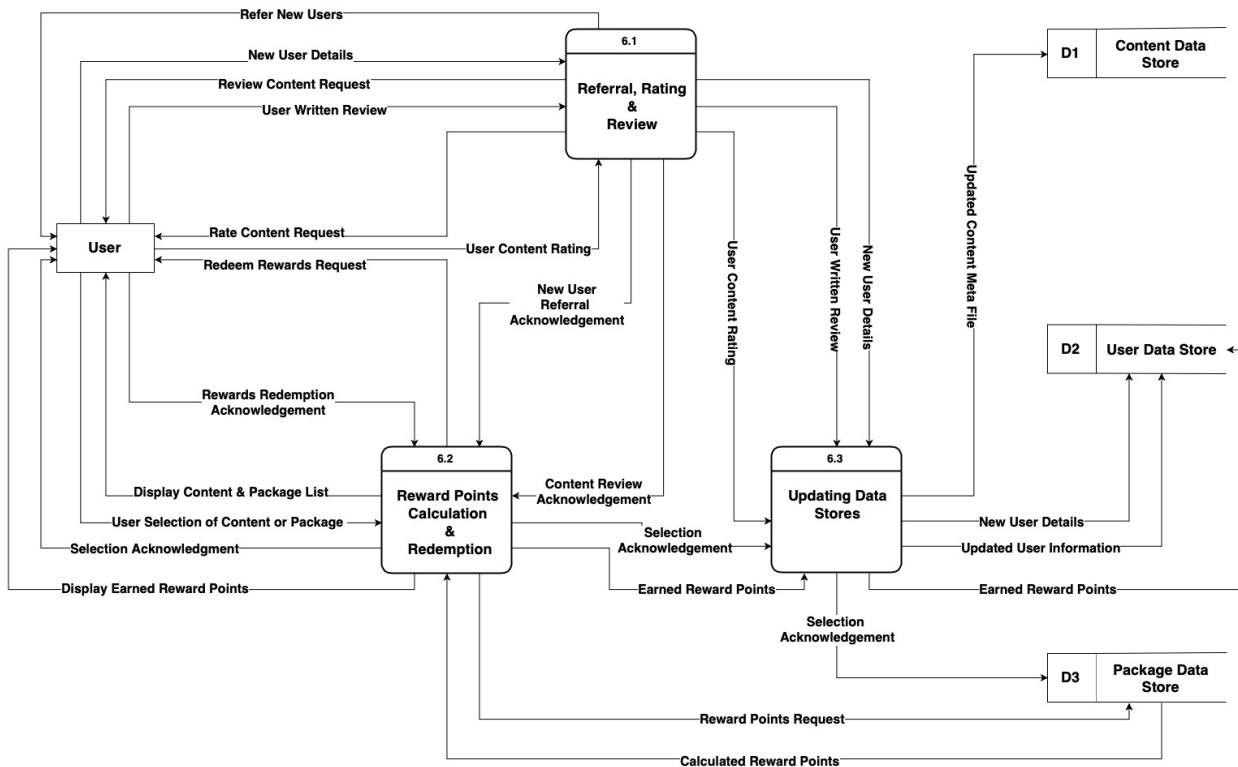
### DFD for Use Case 4: Customer Relationship Management



## DFD for Use Case 5: Dashboard with Playback



## DFD for Use Case 6: Reviews and Rewards

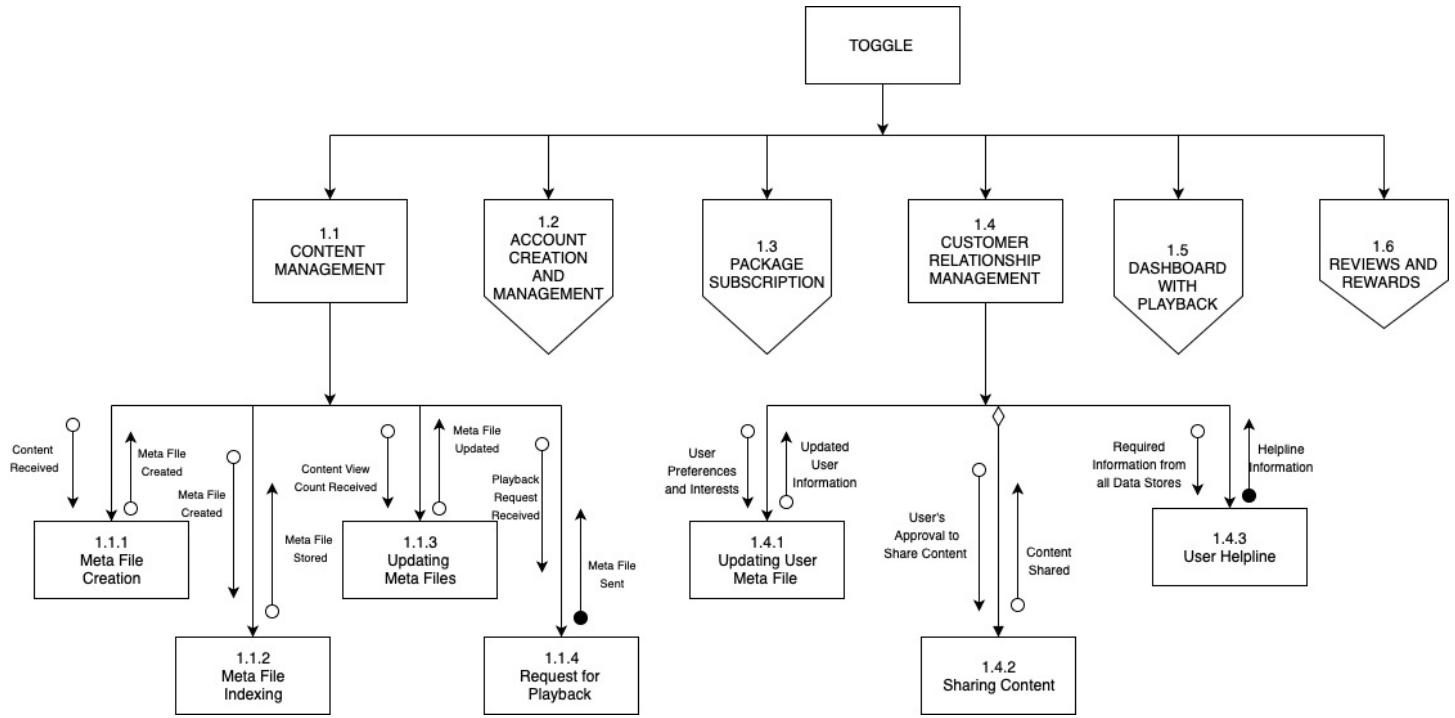


# Data Dictionary

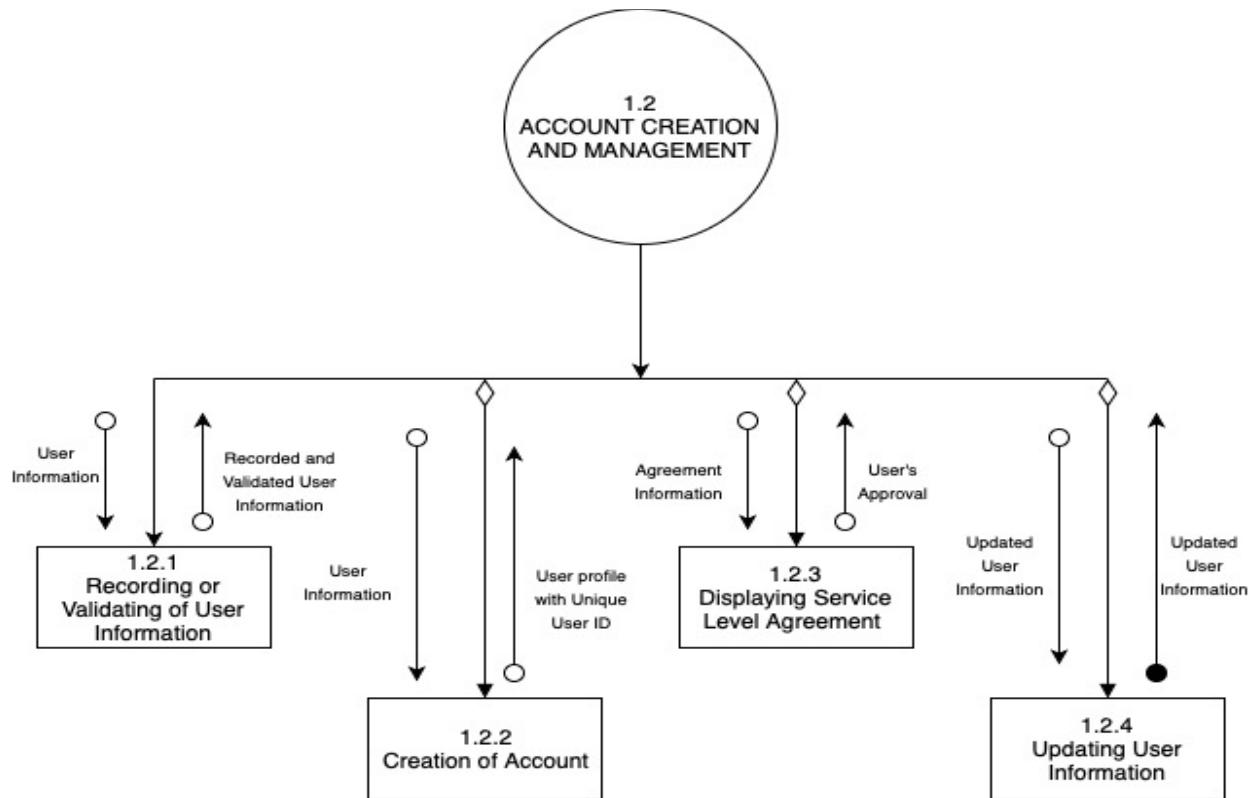
<b>Data Store Name</b>	<b>Data element</b>	<b>Data Element Description</b>	<b>Data Type</b>	<b>Example</b>
Content Data Store	Service Providers Name	Name of the Streaming Service	Varchar(20)	Netflix
	Streaming link	Link of the content provided by a streaming provider	Varchar(max)	<a href="https://www.netflix.com/watch/taken3452%">https://www.netflix.com/watch/taken3452%</a>
	Reviews	Reviews given to the content, both by the critics and the users	Varchar(max)	This movie is a must watch
	Ratings	Ratings given to the content, both by the critics and the users	Integer	4/5
User data Store	User's Name	Name of the User	Varchar(20)	John Russell
	User's Email	Email Address of the User	Varchar(40)	<a href="johnrussell@gmail.com">johnrussell@gmail.com</a>
	User's Phone Number	Phone number of the user	varchar(20)	650-223-6677
	User's Date of Birth	Birthdate of the user	Date	2/2/97
	User's Gender	Gender of the user	Varchar(15)	Male
	Unique User ID	Unique ID assigned to a user by the system	Varchar(20)	U1342255
	Username	Unique username of the user for Toggle	varchar(30)	rjohn12
	Password in encrypted format	Encrypted password stored for each user	varchar(30)	eR88Yu432
	User's Twitter Handle	The user's twitter handle	varchar(30)	JohnRussell56
	User's Facebook page URL	Link to user's facebook profile	varchar(20)	<a href="https://www.facebook.com/john.russell338%">https://www.facebook.com/john.russell338%</a>
	Service Level Agreement Information	Description of the commitment between Toggle and the user	varchar(max)	
	Service Level Agreement Signed by each user	E- signature of the user agreeing to the SLA	varchar(max)	
	Incentive points earned by each user	Points earned by a user by referrals, ratings or reviews	integer	78
	Different Packages Available	List of all the packages from which the users can choose with their cost	varchar(30)	Premium Package- 7 premium content for 7\$
Package Data Store	User's Package History	Record of all the Packages chosen by a user over the time	varchar(max)	Premium Package, Normal Package, Referral Package
	User's referrals	Names and User IDs of the users with whom the package is shared	Varchar(max)	Stacey White- R2341155
	Package Left	Keeps track of what percentage of the package is remaining	integer	45
	Expiry Date	Expiration Date of the package	DateTime	1/21/19
	Purchase Date	Date of purchase of the package	DateTime	11/21/18
	Review Points	Number of points earned by each review	integer	10
Payment Data Store	Payment Options	Records multiple payment options saved by the users	Varchar(max)	Debit Card, Credit Card
	User's Card Details	16 digit number user's credit/debit card	Varchar(max)	1234-5678-9012-3450
	User's Bank	Name of the bank, the user uses for payment purpose	Varchar(30)	Bank of America
	Amount payed till date	Sum of all the payments made to Toggle	integer	\$77
	History of all payments	Record of all the payment receipts	Varchar(max)	
	Payment Receipts	Payment Information for a particular payment made	Varchar(max)	
	Redemption of Incentive Points	List of all the points redeemed over the time	integer	

# Program Structure Charts

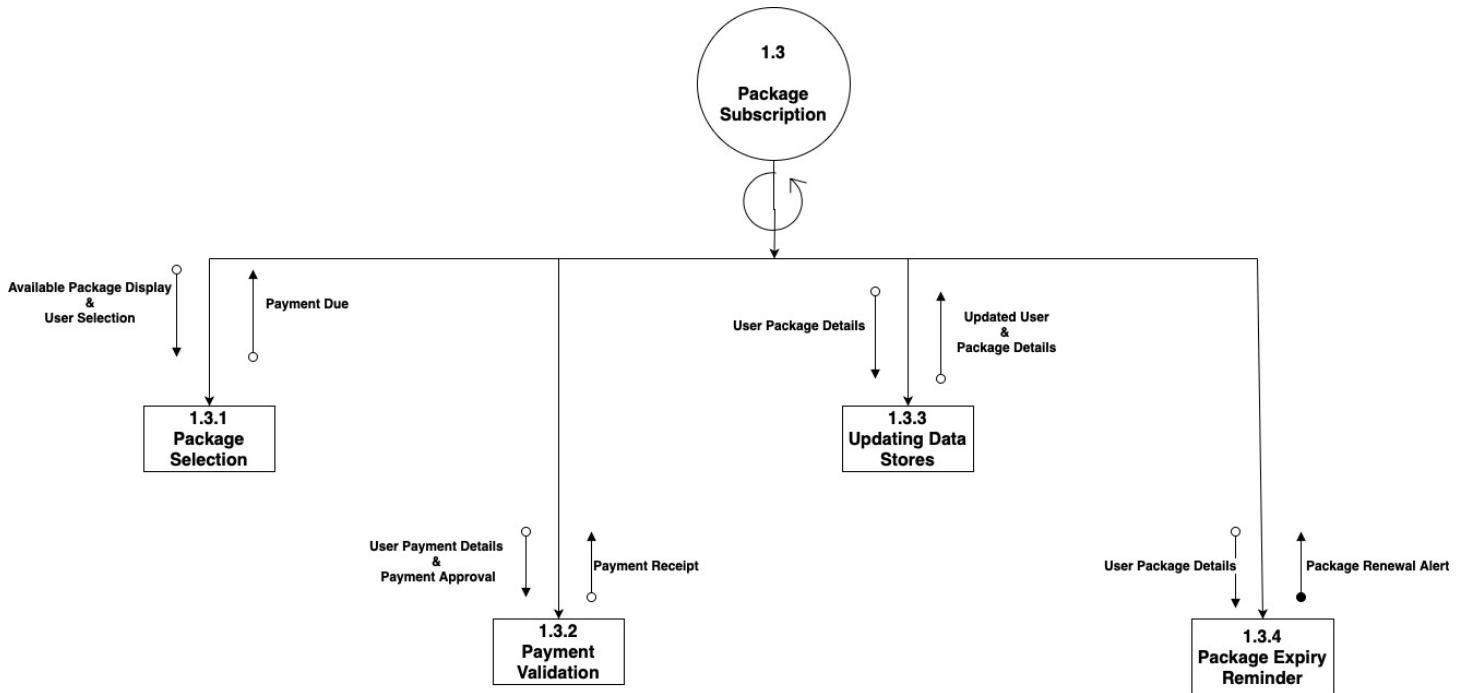
## Program Structure Chart Part 1:



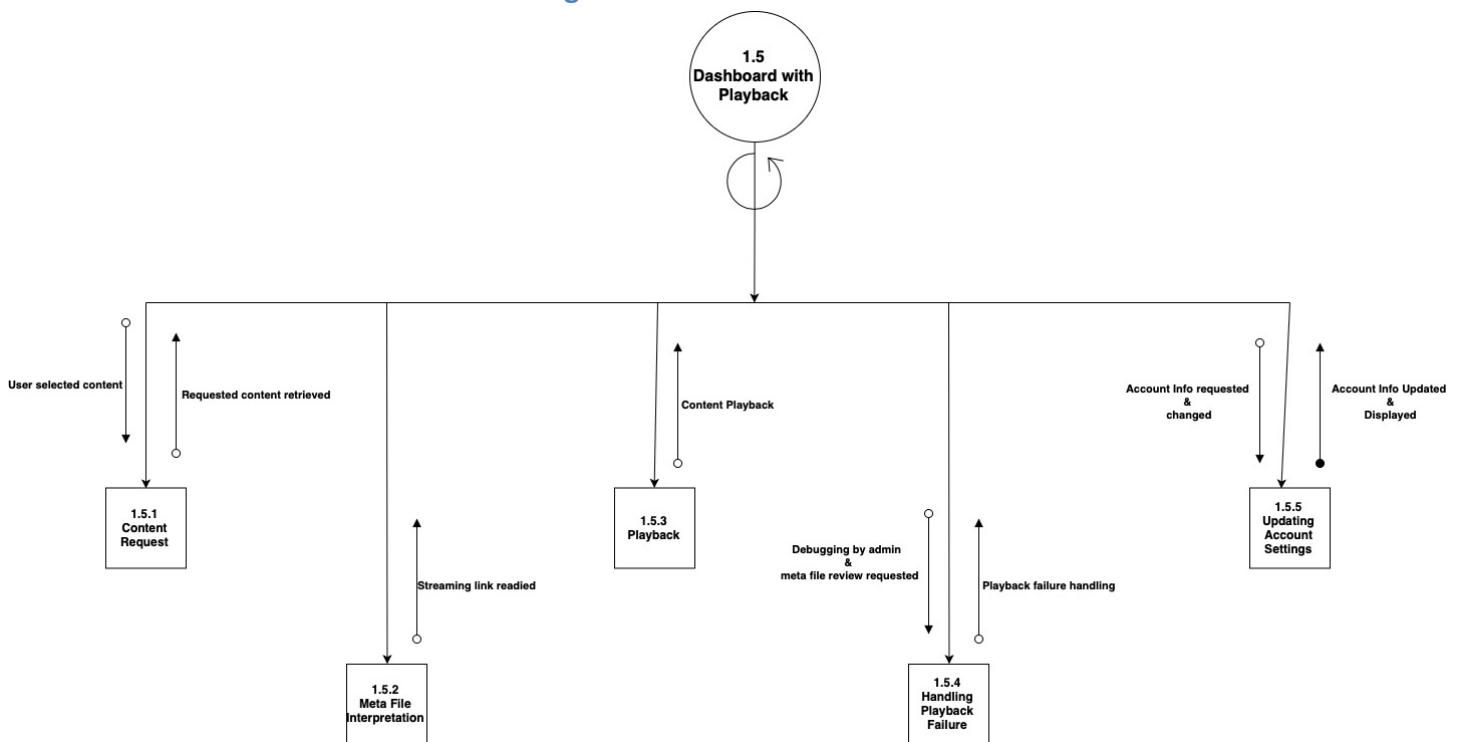
## Program Structure Chart Part 2:



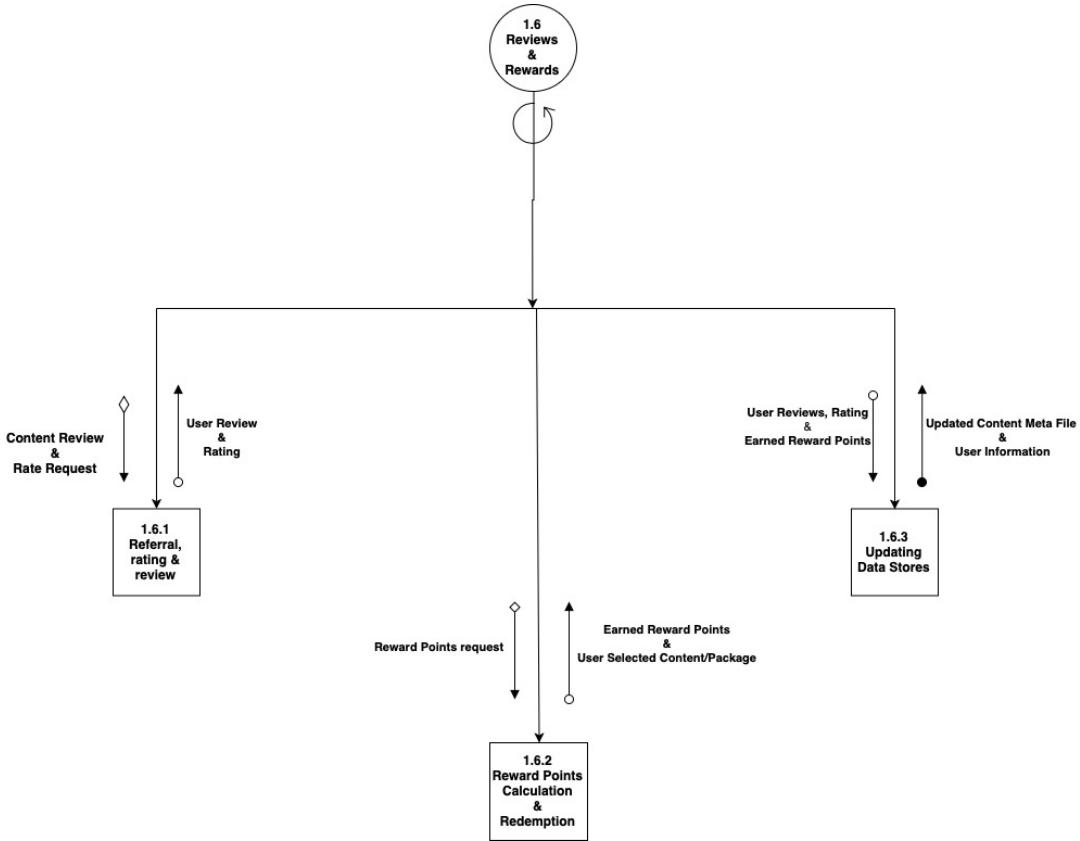
### Program Structure Chart Part 3:



### Program Structure Chart Part 4:

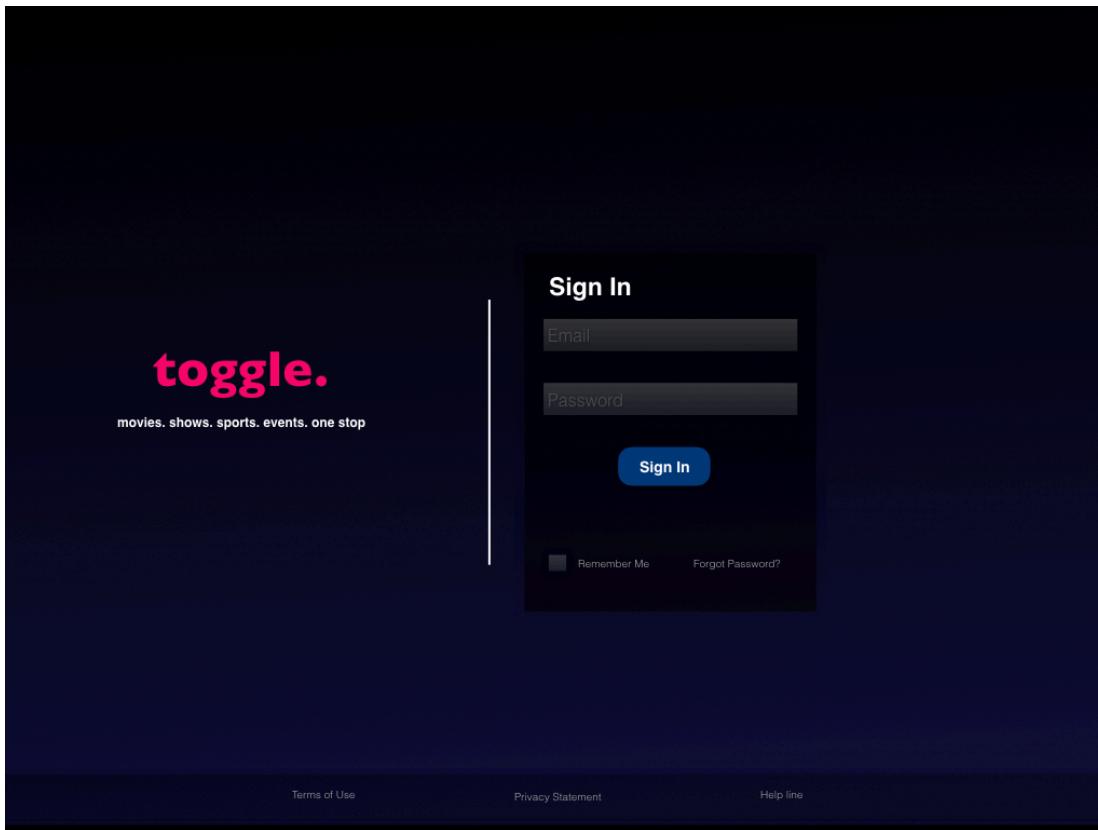


## Program Structure Chart Part 5:

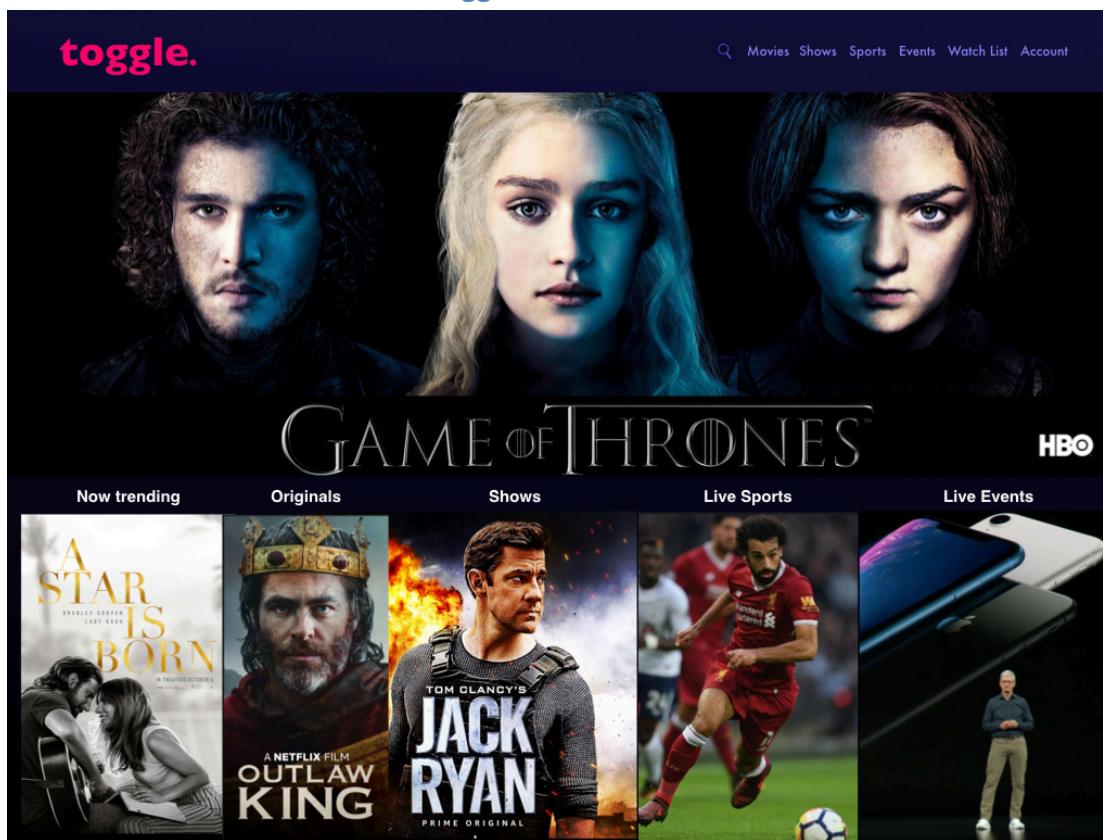


## Screenshots of GUI for external user

Toggle Landing Page



Toggle Home screen



## Toggle Content

toggle.

Movies Shows Sports Events Watch List Account

Spotlight



Oklahoma City Thunder Vs Utah Jazz



Go Live



ESPN

## Toggle Share Content Screen

toggle.

Movies Shows Sports Events Watch List Account

hulu



Hey, check out Infinity War. Now on toggle!



Resume playback

## Toggle Subscription Page

The screenshot shows the Toggle Subscription Page. At the top, there's a navigation bar with the Toggle logo, a search icon, and links for Movies, Shows, Sports, Events, Watch List, and Account.

# Subscription

Select a package

**TOGGLE POOL bestseller**

- 25 premium shows, movies, events or sports
- Pool with buddies and share costs!
- No expiry date

[View pricing options](#)

**PREMIUM PACKAGE bestseller**

- 15 premium shows, movies, events or sports
- Shareable with family members (up to 5)
- No expiry date

[View pricing options](#)

**ANNUAL or MONTHLY value**

- 9 premium shows, movies, events or sports per month
- Shareable with family members (up to 3)
- Annual or Monthly subscription options available

[View pricing options](#)

## Toggle Help Center

The screenshot shows the Toggle Help Center page. At the top, there's a navigation bar with the Toggle logo, a search icon, and links for Movies, Shows, Sports, Events, Watch List, and Account.

# Help Center

**Account Management**

- How do I add a new user or remove an existing user?
- How do user profiles work on toggle?
- How do I set parental controls on toggle?

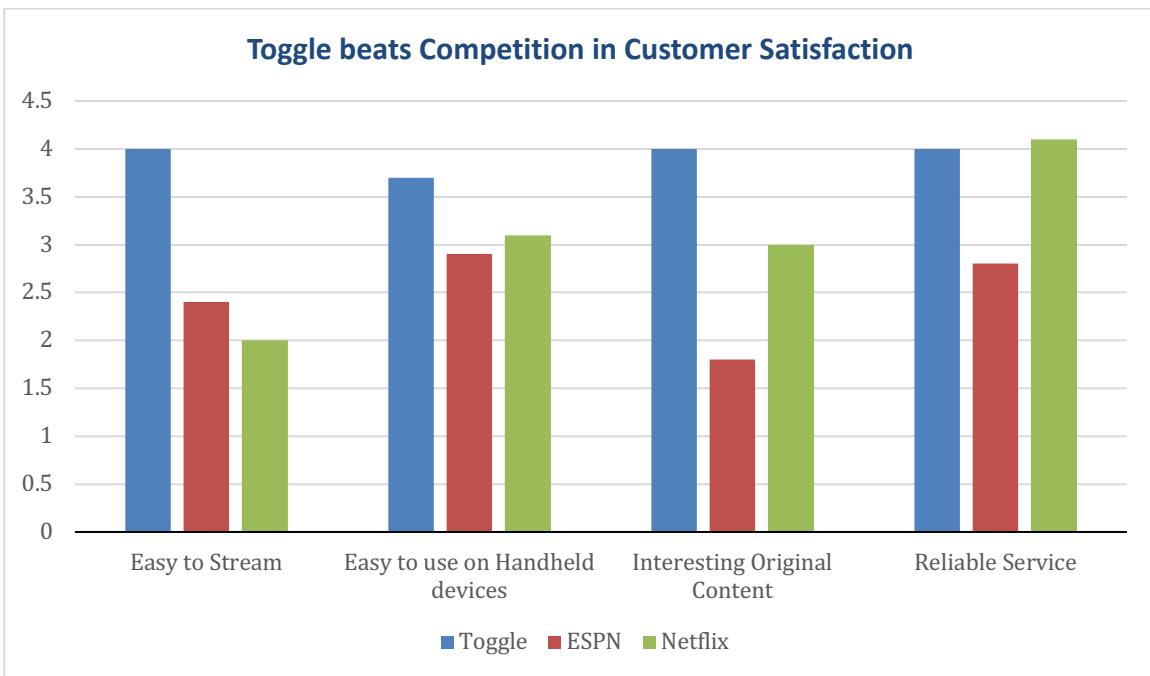
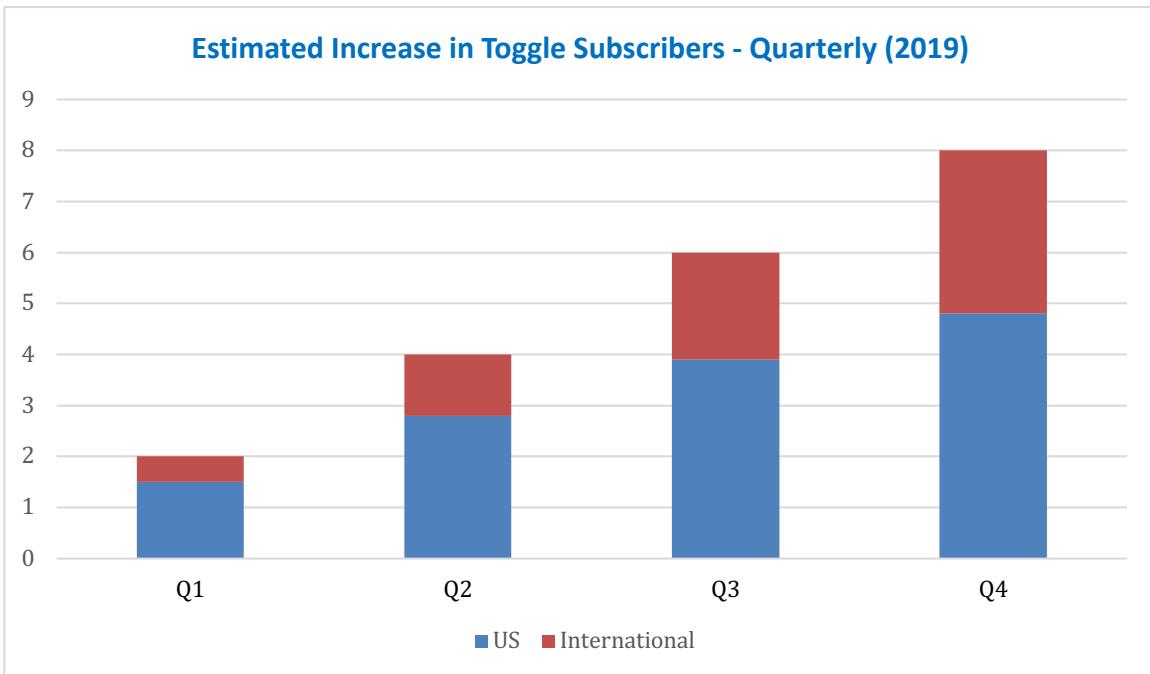
**Playback Issues**

- Why is the video not playing?
- I'm having issues with subtitles, language or sound.
- Why is the video not playing in Ultra HD?

**Billing Related**

- Why is my toggle account on hold?
- FAQ's about billing.
- Toggle gift cards.

# Output Report



## Future Scope

- Content streaming for territories other than the ones mentioned above.
- Political events, demonstrations, religious events are not covered.
- Music only streaming.
- Content of non-associated streaming services not to be promoted via trailers, recommendations etc.

## Conclusion

- Toggle is expected to go live in January 2019.
- We estimate the International Toggle subscribers to increase from 25% in Q1 to approximately 40% in Q4 of the total subscribers.
- An improvement in customer engagement, reduction in marketing overheads and improved content viewability is expected.
- Based on beta tests conducted, Toggle beat it's competitors in customer satisfaction.