Detailed Design

# *For*

OMMCOM NEWS

VERSION 1.0

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**Revision History**

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**Approval History**

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Table of Contents

[1 Overview 4](#_Toc382397411)

[1.1 Scope of this Document 4](#_Toc382397412)

[1.2 Definitions and Acronyms 4](#_Toc382397413)

[1.3 Platform and Tools 4](#_Toc382397414)

[1.4 References 4](#_Toc382397415)

[1.5 Assumptions 4](#_Toc382397416)

[1.6 Design Constraints 4](#_Toc382397417)

[2 Design Approach/ System Overview 5](#_Toc382397418)

[3 Alternative Design Approaches Considered 5](#_Toc382397419)

[4 Module Design 5](#_Toc382397420)

[4.1 Module Description 5](#_Toc382397421)

[4.2 Class Diagram 5](#_Toc382397422)

[4.2.1 Class 1 (say, minorb.orb.Any) 6](#_Toc382397423)

[4.2.2 Class 2 6](#_Toc382397424)

[4.2.3 Class 3 7](#_Toc382397425)

[4.3 Database Design 7](#_Toc382397426)

[4.3.1 Table 1 7](#_Toc382397427)

[4.3.2 Table 2 7](#_Toc382397428)

[4.4 Interaction Diagram 7](#_Toc382397429)

[4.5 State Transition Diagram (Optional) 7](#_Toc382397430)

[4.5.1 State Transition Table 8](#_Toc382397431)

[4.6 Error & Exception Handling 8](#_Toc382397432)

[5 Unit Test Recommendations 8](#_Toc382397433)

[6 Traceability Matrix 8](#_Toc382397434)

[Appendix 1. Alternate Designs Considered 9](#_Toc382397435)

# Overview

This document showcases OMMCOM's Media Pvt. Ltd. Web & mobile app which makes it easier for the viewers to read news on the fly and participate in live video conferences as well. Viewers shall be able to post their comments for any news/article and share any news/article in social media with ease.

## Scope of this Document

The document showcases the detailed design approach, description of users, description of modules and constraints related to design of the system and methodologies to overcome the constraints.

This document will give a brief description of thewebsite and android software product to be produced which will keep the viewers informed regarding various news and events happening across the globe.

The abstract objectives that the document will deal with are:

* App to all:
  + - Anyone can install the mobile app on the fly
    - Anyone can post comments, participate in live video conferences
    - Anyone can be a citizen journalist and participate in the good cause
* News to all:
  + - View the latest happenings (breaking news)
    - Users shall be able to view news under every category e.g. sports, politics, entertainment, etc.
    - Can share their views and images/videos using Citizen Journalist feature
    - Viewers can participate in live video conference

It will cover the following modules which will describe all functions of this software.

1. Landing Page(Web)
2. Landing Screen(Mobile)
3. Role Management(Web)
4. User Management(Web)
5. Content Management System(CMS) (Web)
6. Video Conference (Web and Mobile)
7. Social Media (Web and Mobile)
8. Audit Trail(Web)

The following types of users will be constructing the user set for the software package.

* Admin
  + - * 1. Can configure all master records at web portal
        2. Can create manage news, articles, etc. at web portal
* Content Writer
  + - * 1. Can write content to be published after admin's approval
* Viewers
  + - * 1. Can View the news, articles, etc. of the web portal
        2. Can take part in Video Conference
        3. Can post comment on any news, article, video, etc.
        4. Can share any news, article, videos, etc. in social media
        5. Can use the citizen journalist feature.
* Other Dynamically Created Users

## Definitions and Acronyms

## Platform and Tools

* Dreamweaver CS4
* Sublime Text 3
* Android Studio v2.1.2

**Make, Buy or Reuse Decision**

## References

1. Software Requirement Specification

## Assumptions

* Internet connectivity required to view the updated information in web/mobile application.
* Availability of electricity for accessing the web app.
* Availability of digital camera/web camera for visitors to participate in video conferencing.
* Internet connectivity of at least 25 kbps for a visitor to join live video conference.

## Design Constraints

The following are the Constraints taken into account while preparing this document:

1.Website might run slow due to the huge bulk of graphics and information.

2.Old browsers may slow down.

3. Enable of Cookies is mandatory

4. Enable of JavaScript is mandatory

5. Cookies can’t be enabled in Mobile Browser

6. Application might not install in some older android mobiles.

7. User needs to have battery backup/electricity & Internet connectivity to access the application in web.

8. User needs to have required battery charge in their respective mobile device and Internet connectivity to use the mobile app.

# Design Approach/ System Overview

|  |  |
| --- | --- |
| MODULE NAME | DESCRIPTION |
| 1. Landing Page(Web) | This is the home page of the news portal which greets the viewers with various news snippets and the viewer can navigate to various sections of the portal from this point. |
| 1. Landing Screen(Mobile) | This is the point of entry to the application and facilitates the citizen to view news of all categories in one single screen. |
| 1. Role Management(Web) | Admin shall be able to manage roles for given set of users and set access levels for each user set. |
| 1. User Management(Web) | Admin can create, update and remove users against specific roles. |
| 1. Content Management System(CMS) (Web) | This module includes features like;   * Managing news categories * Addition, updation and deletion of news items by journalists. * Publish/Unpublish a news item by the admin. * Admin can add vote/poll for a particular news item. |
| 1. Video Conference (Web and Mobile) | Citizen can join video conference for a discussion forum which is subjected to the approval of the joining request by the citizen to the admin |
| 1. Social Media (Web and Mobile) | Citizen can share news items in the following social media;   * WhatsApp * Facebook * Twitter   Also news sharing functionality is available via SMS service. |
| 1. Audit Trail(Web) | Viewers will be given the access to comment on a news item. Viewers will also have the access to update the comments.  Admin can moderate the comments from the users. |

# Alternative Design Approaches Considered

Not applicable

# Module Design

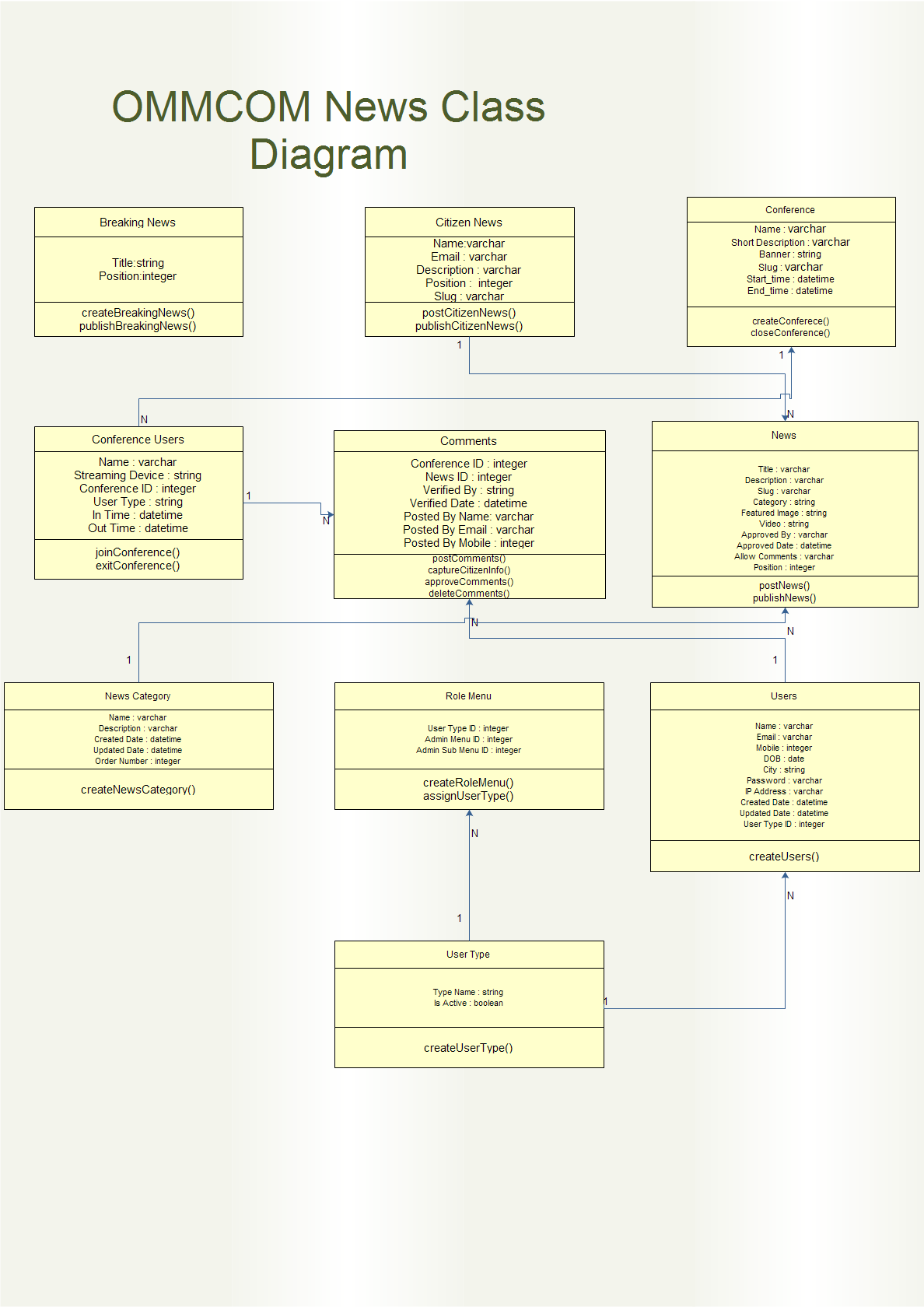
The following modules will be part of the application;

1. Landing Page(Web)
2. Landing Screen(Mobile)
3. Role Management(Web)
4. User Management(Web)
5. Content Management System(CMS) (Web)
6. Video Conference (Web and Mobile)
7. Social Media (Web and Mobile)
8. Audit Trail(Web)

## Module Description

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Features** | **Functionality** | **Description (Including Sub-Functionality)** |
| 1 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Top Section** shall include:  - **Logo**  - **Horizontal Menu** (Menus to be shown as per categories)  - **More** to view all other categories added dynamically  - **Search** functionality shall help the viewers to find any news as per the keywords typed with much ease |
| 2 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Top News** section shall show the news being flagged as top news |
| 3 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Weather widget** shall show the current weather of the location detected where the application is being browsed. |
| 4 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Sports widget** shall show live score of ongoing matches (cricket, football, etc.). |
| 5 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Second Section** shall include:  - **Upcoming Video Conferences**  - **Latest News**   * **Upcoming Video Conferences** shall list all the upcoming video conferences which a viewer can easily view by clicking on **View** button * The latest 5 news being added shall show up under **Latest News** section. By clicking on more viewers shall be re-directed to Latest News page which shall be arranged in descending order as per date & time. Clicking on any latest news shall re-direct the user to its news details page. * The top 5-10 breaking news shall be shown along with an image. Clicking on forward/next button, viewer shall be able to switch between the breaking news. The initial contents of a respective breaking news shall be shown just below the breaking news's headline and clicking on **more..** beside the initial contents shall re-direct the user to the news detailed screen. Clicking on any breaking news shall re-direct the user to its news details page. |
| 6 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Third Section** shall include:  - **Featured Stories**   * The top 3 featured stories shall be shown along with an image. * Top 4-10 featured stories shall be displayed with news title only. * Clicking on any featured story shall re-direct the viewer to its respective news detail page. |
| 7 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Fourth Section** shall include:  - **OtherTop Stories**   * The top 3 top stories shall be shown along with an image. * Top 4-10 top stories shall be displayed with news title only. * Clicking on any top story shall re-direct the viewer to its respective news detail page. |
| 8 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Fifth Section** shall include:  - **International Stories**   * The top 3 international stories shall be shown along with an image. * Top 4-10 international stories shall be displayed with news title only. * Clicking on any international story shall re-direct the viewer to its respective news detail page. |
| 9 | Landing Page  **(Web)** | All viewers shall be able to view the landing page of the web application. | **Sixth Section**&**onwards** shall include:  - Other **Categories Stories**   * Each section shall include 3 categories (added dynamically) * Each category's first story shall include an image along with the title. * Each category's 2nd-5th stories shall contain the respective news title only. * Clicking on **More**, viewer shall be re-directed to the respective category's list page where the stories are sorted in descending order as per date & time. * Clicking on any story shall redirect the viewers to its respective news detail page. |
| 10 | Landing Screen  **(Mobile)** | All viewers shall be able to view the landing screen of the mobile app. | The viewer shall be shown the application's logo along with an audio being played when he/she opens the app for the first time.  Meanwhile the application's audio being played, all the news content shall be loaded in the background. |
| 11 | Landing Screen  **(Mobile)** | All viewers shall be able to view the landing screen of the mobile app. | The viewer shall view the following:  - Menu icon (tapping on it shows all the news categories).  - Video Icon : Tapping on it leads to a screen containing all featured videos and upcoming video conferences.  - Top News Section : Which shows the top news (the news which is being flagged as top news)  - Breaking News Section : Which contains first 5 news being flagged as breaking news.  - Footer section shall contain the **weather widget** &**sports widget** for live matches as well. |
| 12 | Landing Screen  **(Mobile)** | All viewers shall be able to view the landing screen of the mobile app. | **Menu Icon** shall include:  - Featured Stories section. Tapping on this shall re-direct the users to a feature story list sorted as per date & time.  - International Stories section. Tapping on this shall re-direct the users to a international story list sorted as per date & time.  - All news categories under **News** section  - All featured videos under **Video** section  - Terms & Condition, Privacy Policies, Other information under **Other** section  - Tapping on any one of the above mentioned information shall re-direct the viewer to its respective detailed page. |
| 13 | Landing Screen  **(Mobile)** | All viewers shall be able to view the landing screen of the mobile app. | Tapping on **Video Icon** shall re-direct the user to its respective video details page which shall contain:  - Upcoming/Ongoing video conferences list.  - All the featured videos sorted as per date & time |
| 14 | Landing Screen  **(Mobile)** | All viewers shall be able to view the landing screen of the mobile app. | **Top News Section** shall include:  The top news along with the respective image shall be shown. Tapping on the respective news shall re-direct the user to its news detail screen. |
| 15 | Landing Screen  **(Mobile)** | All viewers shall be able to view the landing screen of the mobile app. | **Breaking News Section** shall include:  - The top 5 breaking news being flagged as breaking news.  - Each breaking news shall have an image and the respective news's title. Tapping on any news shall re-direct the user to its respective news detail page.  - Tapping on more below the 5th breaking news shall re-direct the viewer to the breaking news list arranged in descending order as per date & time |
| 16 | Landing Page  **(Web)**  Landing Screen  **(Mobile)** | Viewer shall be asked to save his/her preference if frequently visits a single section. | After visiting a same section multiple times, the viewer is asked to save the respective section as preference.  As per the preference set, the recommended news section shall show up the news. |
| 17 | Role Management  **(Web)** | Admin shall be able to create/manage roles using the role management feature. | **Admin** shall be able to create roles and assign a set of functionalities/menus for that particular role by checking on the respective checkbox preceding the menu/functionality.  - **Existing Role list** along with disable, edit button for each role.  - Clicking on **Add Role**, admin shall see:   * **Text box** where he/she shall provide the role name [Mandatory] * Section showing all the menus/functionalities along with respective **checkboxes** where admin shall be able to check the menus/functionalities to be provided to the respective role. [At-least one is Mandatory] * **Create** button.After clicking this, respective role shall be created. * **Cancel** button. Clicking on this cancels the role creation.   - Clicking on **Edit** button of any existing role, admin shall be able to edit the respective role. |
| 18 | User Management  **(Web)** | Admin shall be able to add/manage users using the user management feature. | The **User Management** page shall contain all the existing user's list.  - Admin can deactivate any existing user. After de-activating, the respective user shall not be able to login to the application.  - Admin can edit any existing user's information. |
| 19 | User Management  **(Web)** | Admin shall be able to add/manage users using the user management feature. | The **AddUser** page shall contain:  **- Name of the user** text field.[Mandatory]  - **User-name** text field. [Mandatory]  - **Password**passwordfield.[Mandatory]  - **Retype Password**password field. [Mandatory]  - **Email id** mail field. [Mandatory]  - **Phone** number field.  - **Add User** button.  - **Cancel** button.  After adding a new user shall re-direct the admin to the user list page which shall contain the just added user in the list too.  \* Proper validations shall be provided for user-name, password, re-type password, email id & phone number fields. |
| 20 | Content Management System (CMS)  **(Web)** | Admin shall be able to add/manage news categories. | The **News Category Management** page shall contain all the existing news's category list.  - Admin can deactivate any existing news category/sub-category. After de-activating, no news can be created under this respective category/sub-category.  - Admin can edit any existing news category/sub-category. |
| 21 | Content Management System (CMS)  **(Web)** | Admin shall be able to add/manage news categories. | - Clicking on **Add News Category**, admin shall see:   * **Text box** where he/she shall provide the news category name [Mandatory] * **Parent Category** drop-down [Optional] * **Create** button.After clicking this, respective news category shall be created. * **Cancel** button. Clicking on this cancels the news category creation.   After adding a new news category shall re-direct the admin to the news category list page which shall contain the just added news category in the list too. |
| 22 | Content Management System (CMS)  **(Web)** | Content Writers & Admin shall be able to write article/news for respective news categories | Content Writers & Admin shall have access to this functionality only after successful login. |
| 23 | Content Management System (CMS)  **(Web)** | Content Writers & Admin shall be able to write article/news for respective news categories | The News/Articles table shall contain the following columns:   * News Title * News Contents * News Category * Is/Was Breaking News ? * Is/Was Top News ? * Is/Was Featured story ? * Contains Video ? * Contains Audio ? * Status of the news   + Content Writer's Name (only admin can see)   + Content Writer type (i.e. registered user or citizen user) [only admin shall see]   + Already Published (duration of publish)   + Waiting for approval   + Publish (only admin shall see this)   + Reject (only admin shall see this)   + Delete (only admin shall see this)   + Republish (Only admin shall see this after an article/news is published before)   + Remarks   + Rejected. Please modify & send.   - Content Writers shall able to see all the news/articles (written by them only) sorted in descending order as per date & time.  - Admin shall able to see all the news/articles (written by everyone) sorted in descending order as per date & time. |
| 24 | Content Management System (CMS)  **(Web)** | Content Writers & Admin shall be able to write article/news for respective news categories | New news/articles can be added by clicking on **Add News** button.  Add News form shall contain the following:  - News Title  - News Category  - News Sub Category  - News Tags (this is helpful for tagging similar news under a same category)  - Is Top News ? Checkbox  - Is Breaking News ? Checkbox  - Is Featured Story ? Checkbox  - Upload multiple media (image, audio & video can be uploaded)  - Select Theme  - Content Writer (Text Editor to write the main content of the news/article)  - Preview button  - Submit button  - Save as draft button  - Cancel button  \*Clicking on Save as Draft button, the content writer shall be able to resume his/her writing from where he/she has left the article.  \* After submit, content writer shall not be able to edit his/sher article. |
| 25 | Content Management System (CMS)  **(Web)** | Admin & the authorized user shall be able to moderate/approve the contents being published by the content writer. | After content writer/admin submits the news/article, admin or other authorized user shall be able to view the articles being written.  - If article needs no changes, the admin or the respective authorized user shall click on **Publish/Re-Publish**.  Clicking on Publish opens a form which contains:   1. Publish start date-time (Current date-time should be selected by default) [Mandatory] 2. Publish end date-time [Optional] 3. The following are allowed for modification:    1. Is Top News    2. Is Breaking News    3. Is Featured Story    4. Category/Sub-Category 4. Publish button (Clicking on this publishes the respective story as per date-time selected) 5. Cancel button   - If article needs changes, the admin or the respective authorized user shall click on **Reject**.  Clicking on Reject opens a form which contains:   1. Remarks for Rejecting text area. 2. Reject button 3. Cancel button   \* A featured video uploaded by content writer shall be published under Featured Videos section. |
| 26 | Content Management System (CMS)  **(Web)** | After rejection, the respective content writer is allowed to edit the respective previously submitted news/article. | After Admin or Authorized user rejects the article along with a remark, the content writer shall be able to open the respective article/news in editable mode and shall be able to re-submit the edited article again.  \*Content writer shall only be able to edit the news/articles after submission if they are rejected by the admin or the authorized user.  \* This process shall continue till the admin or authorized user rejects the respective news/article. |
| 27 | Content Management System (CMS)  **(Web)** | Admin shall be able to add/manage theme for the News/Article publishing. | - Admin & other registered users shall be able to see a list of themes already added.  - Only admin shall be able to add a news theme to the theme list.  \* These themes are used for writing News/Article which shall be seen implemented in the respective News/Article detail page. |
| 28 | Content Management System (CMS)  **(Web)** | Admin shall be able to create Vote/Poll to which viewers can interact with. | Admin & other authorized users shall able to view all the recent votes/polls being conducted. This contains the poll title, % of votes for each option & stop poll button for each ongoing polls.  By clicking on Add Poll, admin or authorized users are shown a form which contains:  1. Poll Title  2. Poll option text field (min. 2 to be provided)  3. Add more (This will keep on adding the poll option text field)  4. Delete option (To delete the poll option added by clicking on add more)  5. Poll start date-time [Compulsory]  6. Poll end date-time [Optional]  7. Submit button  8. Cancel button |
| 29 | Content Management System (CMS)  **(Web)** | Viewers can participate in opinion polls. | Viewers shall able to vote on all the ongoing polls. By selecting the respective option and clicking on submit, submits the respective poll.  After submission only the viewers shall be able to see the percentage vote voted till now.  \*Only one poll is allowed per device ID. |
| 30 | Video Conference  **(Web)** | Admin and authorized users shall be able to create/manage Video Conference. | - All the viewers shall be able to view all the previously held video conferences under Videos section arranged as per date-time in descending order.  - Admin shall be able to delete any previously held video conferences.  - Admin shall be able to re-telecast any previously held conference recordings.  - Admin shall be able to share the respective recordings in youtube.  - Admin shall be able to send any respective recording to archive. |
| 31 | Video Conference  **(Web)** | Admin and authorized users shall be able to create/manage Video Conference. | Admin & authorized users shall be able to create a new video conference. The new video conference form shall include:   1. Conference Title 2. Conference Purpose 3. Select Moderator(s) [can select one or multiple moderators] 4. Conference Start Time 5. Conference End Time 6. Anchor's Name 7. Guest's Name 8. Can Visitors Join ? Checkbox   \*Video Conferences created shall show up under Second Section (Upcoming Video Conferences). By clicking on View, the viewer shall able to see the ongoing video conferences. If a conference is not started yet, a respective message should be shown “Conference is scheduled to start on DD/MM/YYY HH:MM”. |
| 32 | Video Conference  **(Web & Mobile)** | View on-going Video Conference | Viewers shall be able to view the ongoing video conference by clicking on the **View** button for the respective Video Conference under **Upcoming Video Conference** section.  Mobile viewers shall be able to view the video conference by tapping on the **video** icon and tapping on the respective conference under Video list. |
| 33 | Video Conference  **(Web: for moderator & viewer**  **Mobile for viewer only)** | Moderator shall be able to moderate the Video Conference processes | If any viewer wants to participate in video conference, he/she needs to click on Join button under the video conference page/screen. Join button only shall show up when Internet connection speed is 25 kbps or more.  After Join button is clicked/tapped the viewer has to do the one step verification (ex. sign in using social media gateway).  After sign in using social media gateway, the viewer shall be shown a message “You are N number in queue. Please be patient.”  While viewer joins the queue, information such as viewer's name, mail id, device IP, phone number, etc. are captured.  The respective viewer shall be added to the conference once the admin/moderator approves him/her.  The respective viewer's conference can be ended by the admin/moderator when already in call.  The respective viewer shall not be added to the conference if admin/moderator rejects the viewer.  \*Moderator shall able to see viewers name, geo-location of the viewer, viewer's device ID & whether he/she is blacklisted/blocked.  \*Maximum number of participants allowed in a video conference to be decided. |
| 34 | Video Conference  **(Web: for moderator & viewer**  **Mobile for viewer only)** | Moderator shall be able to moderate the Video Conference processes | Video Conference View:  - Two top rows for Anchors & Guests.  - Visitors shall appear in small boxes after the second row. |
| 35 | Video Conference  **(Web: for moderator & viewer**  **Mobile for viewer only)** | Moderator shall be able to moderate the Video Conference processes | Admin/moderator shall be able to mute or discard any participant in the video conference. |
| 36 | Video Conference  **(Web: for moderator & viewer**  **Mobile for viewer only)** | Moderator shall be able to moderate the Video Conference processes | Admin/moderator shall be able to re-arrange the boxes and each box's size. |
| 37 | Video Conference  **(Web: for moderator & viewer**  **Mobile for viewer only)** | Moderator shall be able to moderate the Video Conference processes | Admin/moderator shall be able to make any conference participant's screen to full screen. |
| 38 | Video Conference  **(Web: for moderator & viewer**  **Mobile for viewer only)** | Moderator shall be able to moderate the Video Conference processes | Admin/moderator shall be able to play pre-recorded videos in any box during live conference. |
| 39 | Social Media  **(Web & Mobile)** | Viewers shall be able to share any news/article/videos | Viewers shall be able to share the news, articles, videos, etc. in social media after authenticating to the respective social media site.  Number of social media shall increase in count for each share being made. Number count being provided for each news, article, videos, etc. at the top right corner of the article, news, videos, etc.  Viewers shall be able to share any news, article, etc. using WhatsApp & SMS as well. A link would be generated which the viewer shall be able to share in any WhatsApp group or individuals. The link generated can be sent as SMS to any number as well. |
| 40 | Social Media  **(Web & Mobile)** | Viewers shall be able to view What's trending in Social Media | All the latest topics trending in social media (i.e. facebook, twitter, instagram, etc) shall be shown to the viewers under **Social Media** section. |
| 41 | Audit Trail  **(Web)** | Viewers shall be able to comment/edit their existing comments on any news, article, videos, etc. | Viewers shall be able to comment on any news, articles, videos, etc. using the comment field below the news/article.  Viewer shall be able to submit their comments using following processes:  - Social Media login gateway  - Providing Name & Email id |
| 42 | Audit Trail  **(Web)** | Viewers shall be able to comment/edit their existing comments on any news, article, videos, etc. | Viewer shall be able to successfully post his/her comment after authenticating to his/her social networking site (ex: face-book, twitter, g+, etc) using the social gateway. |
| 43 | Audit Trail  **(Web)** | Viewers shall be able to comment/edit their existing comments on any news, article, videos, etc. | Viewer shall also be able to successfully post his/her comment after providing his/her name & email id.  \*The comment shall not be published unless admin approves the respective comment to be published. |
| 44 | Audit Trail  **(Web)** | Viewers shall be able to comment/edit their existing comments on any news, article, videos, etc. | Admin or the authorized user shall be able to delete the comments posted by the viewers. |
| 45 | Audit Trail  **(Web)** | Viewers information are captured when he/she comments or requests to join a video conference | Viewer's information captured are:   * ID of the device * Name of the viewer * Email id of the viewer [optional] * Phone number of the viewer [optional] * Geo-Location of the viewer |
| 46 | Audit Trail  **(Web)** | Admin & Authorized users shall able to block any respective viewer's activity. | Admin & authorized users shall be shown a list of all the viewers who ever commented or have taken part in the video conference.  The table shall contain the following columns:   1. Name 2. Social media login info 3. Email id 4. Phone number 5. Device ID 6. Block/Unblock |
| 47 | Audit Trail  **(Web)** | Admin & Authorized users shall able to block any respective viewer's activity. | Viewer shall not be able to comment or take part in video conference if the respective viewer is blocked. |
| 48 | Audit Trail  **(Web)** | Admin & Authorized users shall able to block any respective viewer's activity. | A blocked user shall be able to resume all the activities once he/she is unblocked by the admin or the authorized users. |
| 49 | Audit Trail  **(Web)** | Admin and authorized users shall be able to view all the activities taking place in the application in the audit log | Admin and authorized users shall be able to view all the activities taking place in the application in the audit log.  Audit log is sorted in descending order as per date-time. |
| 50 | Sponsors & Advertisements  **(Web)** | Admin & authorized users shall be able to view/add/modify advertisements & sponsors | Admin & authorized users shall able to view the existing advertisement & sponsors. The table shall contain the following:   1. Sponsor's/Advertiser's Name [Text Field] 2. Advertisement or Sponsored by? [Radio button] 3. Upload multiple media [Image, Audio & Video] |
| 51 | Sponsors & Advertisements  **(Web)** | Admin & authorized users shall be able to view/add/modify advertisements & sponsors | Admin & authorized users shall be able to add a new advertisement/sponsors which shall be added to the exiting list.  The add advertisement/sponsors form would contain:   1. Name of the advertiser/sponsor 2. Advertisement/Sponsor radio button 3. Multiple media upload [image, audio & video] 4. Save button 5. Cancel button   \*Once an advertisement/sponsor is added, it shows up in the list. |

Reference: SRS Document

4.2. Class Diagram 

## Interaction Diagram

## Error & Exception Handling

For Error and Exception handling in case of occurrence of exception, the system willwill create a textfile date wise and store all the exception. It will Store all application related exception into notepad file, but the error code like 404,402,501,503 such type of error code Errorpage will be available to redirect.

|  |  |  |
| --- | --- | --- |
| Error Code | Error Description | Action taken |
| Error No | Describe the error | This can be, you return an error code to the calling module or you display an error message and stop processing or anything required to handle the error. |
|  |  |  |

# Unit Test Recommendations

Unit test is recommended for all the modules.

# Traceability Matrix

OMMCOM\_Requirements Traceability Matrix v 1.x