



MissionKeeper® User Guide

missionkeeper.io
MissionKeeper Mobile iOS app

Version 2.2



MissionKeeper user guide



Welcome to MissionKeeper. MissionKeeper is a secure web-based collaborative environment that allows you to receive live streamed video and telemetry from multiple sources including drones, underwater robots, ground robots, mobile iOS devices and others over virtually any available network. Intended to deliver remote viewing and collaboration, it is designed to be simple to use and requires little to no software to be installed.

A word about “missions”. MissionKeeper is designed around the concept of a mission. This can be any kind of event such as a remote inspection or a public safety incident. All video and data related to a mission is kept together and accessed via your browser or mobile device.

MissionKeeper is built for secure real time collaboration with features that include chat capabilities and mission scheduling. Users can be invited to join your organization or be invited to participate in a “mission” on an as needed basis. A map can display the current as well as historic position of drones together with the orientation of the cameras they carry, thus giving geographic context to the video that is being watched.

MissionKeeper can receive live feeds from:

The MissionKeeper mobile app (available from the Apple App Store) which, when paired with a compatible DJI drone, acts as the DJI pilot application and can navigate and stream video and telemetry directly from the attached drone.

The MissionKeeper mobile app also streams securely into MissionKeeper from the IOS device’s own camera thus expanding the opportunity to share and collaborate to include smartphone video and device location.

Further expansion can be achieved via MissionCaster®. MissionCaster is an optional add-on portable hardware device designed and built by KSI to facilitate real-time streaming from virtually any device that delivers video via an HDMI output. It delivers enhanced connectivity and is complete with encoding and broadcast capabilities for both video and data thus expanding MissionKeeper’s available sources to ROV’s, Ground Robots and other non DJI drone platforms. MissionCaster is beyond the scope of this document and please reach out for more information.

This User guide is designed to get you up and running with MissionKeeper.

For technical support please contact us via email at support@ksidatasciences.com

For sales enquires please email us at sales@ksidatasciences.com





New Features

Some new features have been incorporated into the MissionKeeper system. Listed below are some highlighted features.

- Download Archive video to your local drive as a single video file.
- Telemetry display. Map view displays vehicle position, altitude and speed (when telemetry is available).

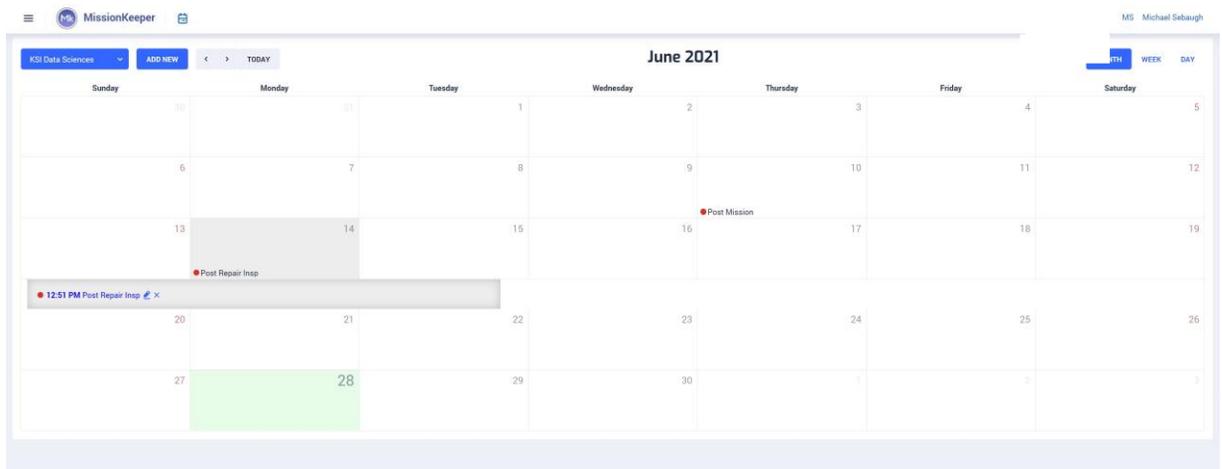


Getting Started

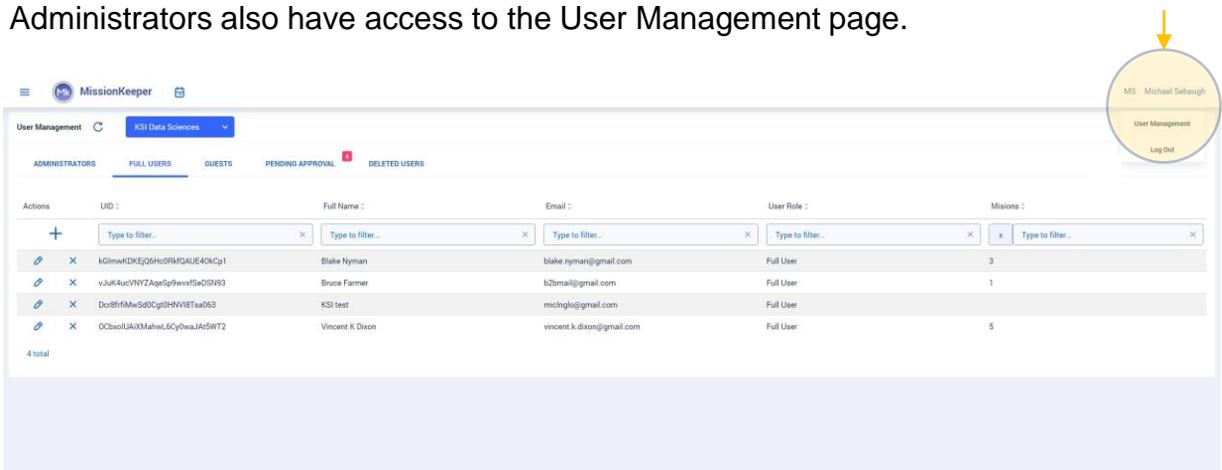
As a new organization, a custom configuration is completed by KSI and part of that configuration is providing initial login credentials to your organization’s assigned administrator(s). The administrator(s) will then manage users via the MissionKeeper Web Application.

Web Application

Using a Mac or PC and a Chrome browser, administrators can enter missionkeeper.io into the address bar to log into MissionKeeper. After logging in they will land on the MissionKeeper calendar that displays available missions.

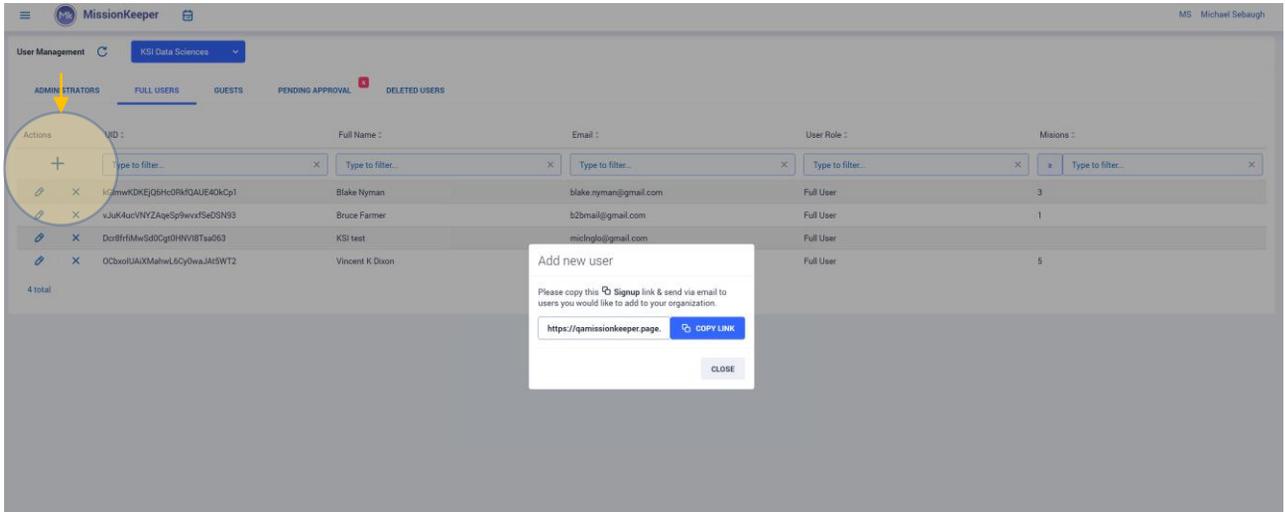


Administrators also have access to the User Management page.

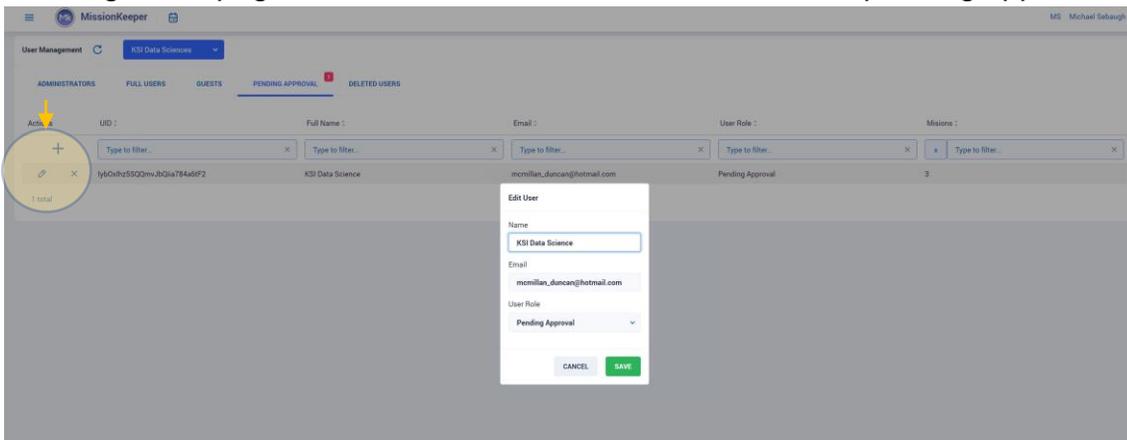


Adding new users to your organization

Users can be added to the organization by pressing the “+” button and copying the invitation link and pasting it into an email that can be sent to the individuals that you would like to register. The link will take the recipient to a registration page where they can create their account.



After creating a new account the user will be added to the organization as “Pending Approval” and not be able to access the account until the administrator has approved the account request. As in the image below, the Pending Approval tab on the User Management page shows a notification that there are users pending approval.

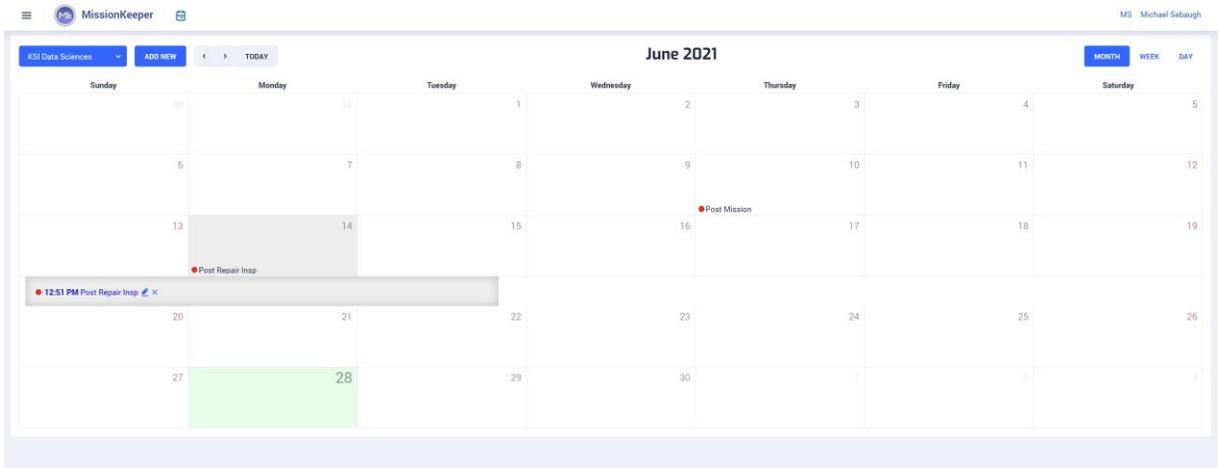


Clicking the pencil icon on the left side allows the user role to be edited. Setting the user to Full User will provide the previously Pending User access to login to the calendar, ability to join missions, create new missions and stream from the iOS Mobile application via the credentials they created during “Sign Up”. Setting to “Administrator” will provide additional access to the User Management page. “Guests” can login and view missions but cannot create new missions. Click the check mark on the left to save the new setting. After saving the new user can login with his credentials and will have the access with the new designated role.

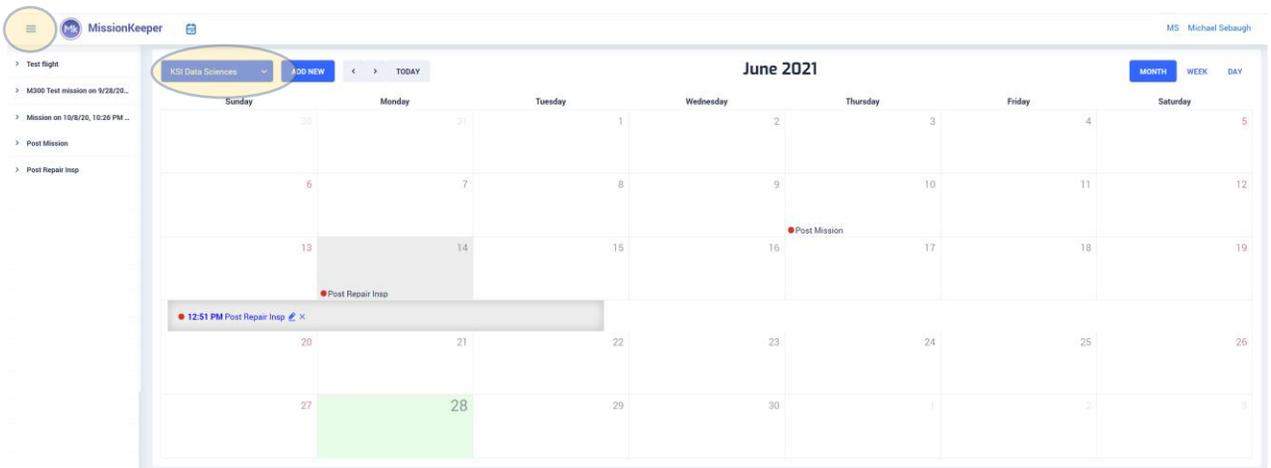


Creating new missions

Once users accounts have been upgraded from Pending Approval they can use a Chrome browser on Mac or PC to login at atfn.missionkeeper.io. After logging in with the approved credentials, users will land on the MissionKeeper calendar. Missions that are ongoing, completed and scheduled are shown on the calendar. Red dots reflect missions on that day and clicking on the day will expand the view to display all the missions from that day.

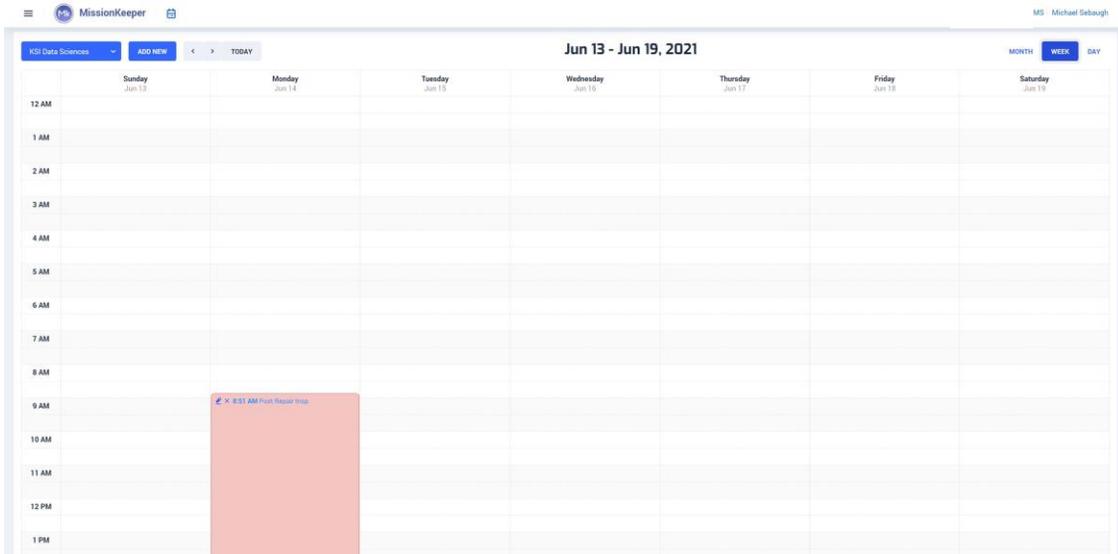


The sidebar icon on the top left opens a sidebar that provides a list view of the missions on the calendar. The organization drop down list on the left side of the page displays the current organization that the user is logged into. If the user is a member of multiple organizations, they can switch between the organizations with this dropdown and only data for the selected organization will be displayed.



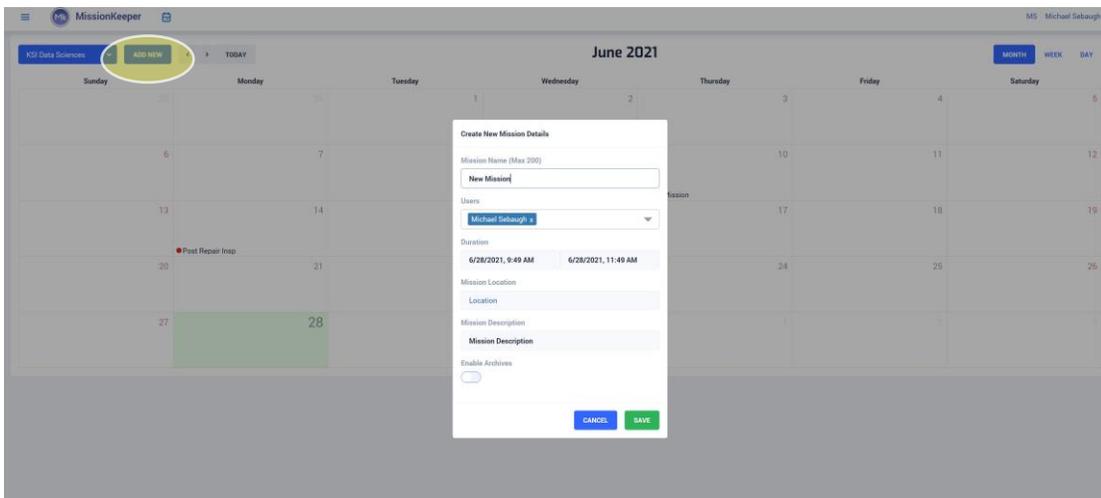


In addition, selecting the week or day view allows a more detailed timescale for the missions which are set when the mission is scheduled but can also be modified post mission to reflect the actual duration of a mission since often the duration of a mission cannot necessarily be determined beforehand.



Note: that the scheduled time of the mission does not limit the activity of the mission. Once the mission is started it can continue until operations are complete and will not be stopped until desired.

Clicking the Add New button will bring up the scheduling dialog to schedule a new mission





The dialog allows you to input relevant details about the mission. When selecting users from the Invite dropdown, note that users must be invited to the mission to see it on the calendar or mission list. Also note, any users that will be participating in the mission via the iOS Mobile application as either users streaming into the mission or viewing the mission **must be invited for access** to be available on the mobile application. The Invite Dropdown includes only members of the organization and those who have requested a user account.

A Mission Location needs to be set to position the initial map location in the mission.

The mission location can be entered in City, State or Postal Address formats

Archive toggle allows archive streams to be available or hidden during the mission. If toggled off, only live streams will be available to view.

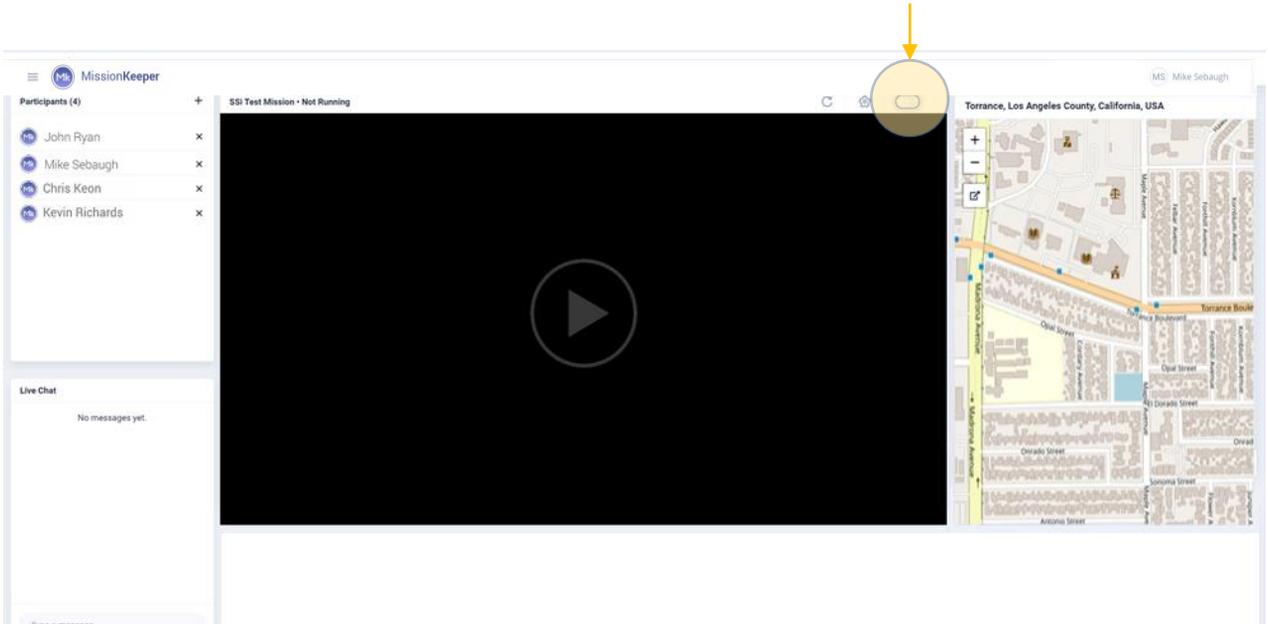
After clicking Save, the mission will be listed on the calendar and those included in the Invite list will receive an email alerting the user to the invitation.



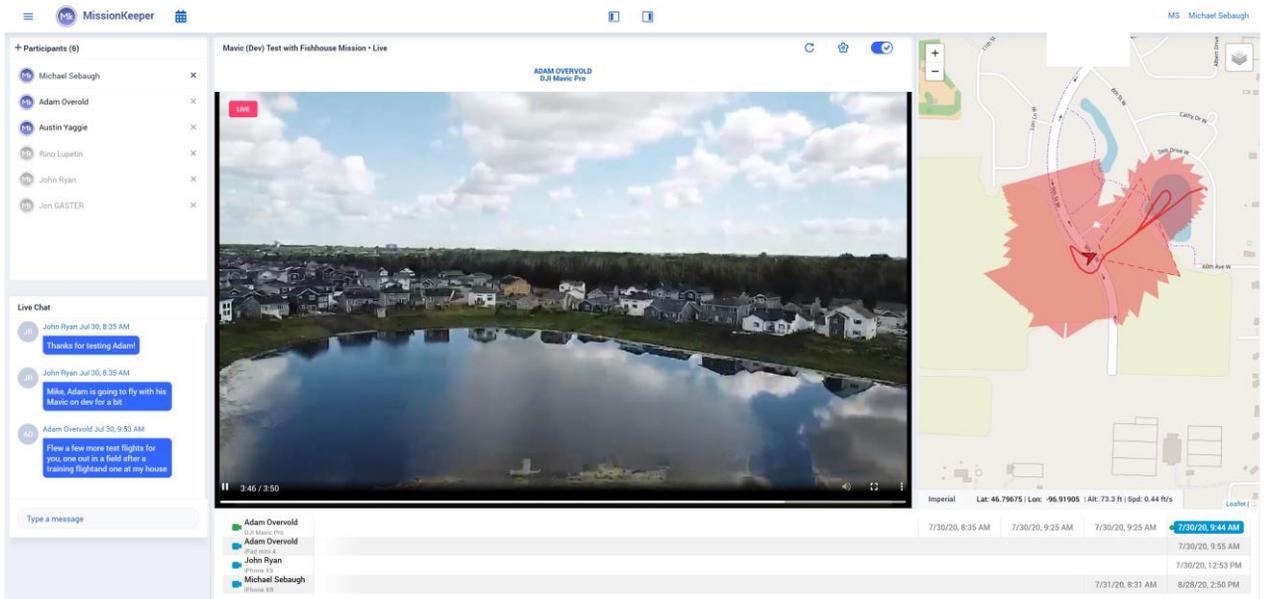
Mission details can be edited or the mission can be deleted

Missions

Upon first entering a new mission, the mission will be in a stopped state and no video will be available. After clicking the Start toggle, the mission will be live and accessible by those using web app as well as invited users via the iOS Mobile app.

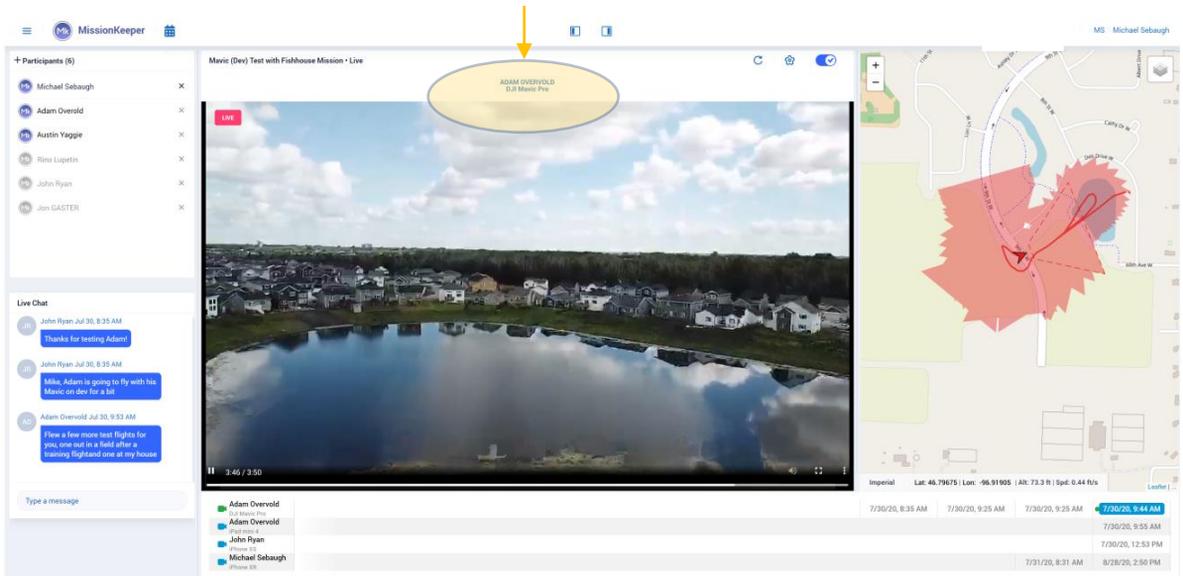


Video is available after Starting a mission





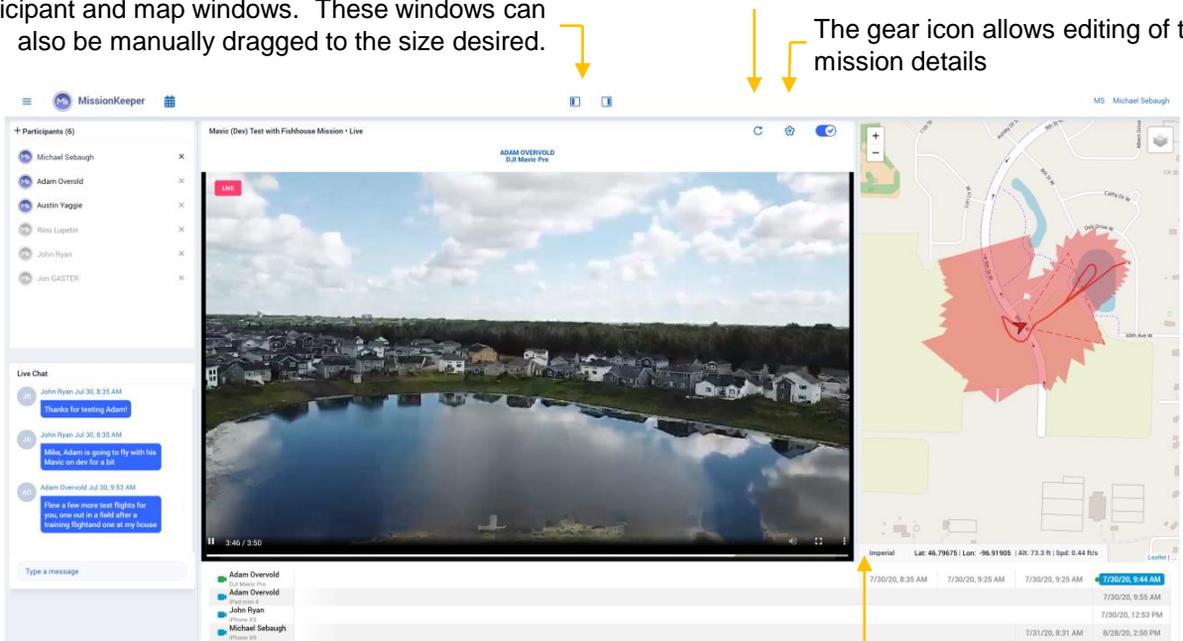
When the user begins the stream from the iOS Mobile application, the stream will initialize for approximately 10 -15 seconds and then source title, (MICHAEL SEBAUGH IPHONE XR) pictured below, will appear above the video window and video will be available. Clicking on the source title will start the video. Sources utilizing the iOS app will include telemetry that will display position and, when provided, orientation of the camera on the map. If multiple live sources are available they will appear along the top of the video window however only one source can be viewed at a time.



The sidebar icons will collapse and open the participant and map windows. These windows can also be manually dragged to the size desired.

The refresh icon will refresh the video player and immediately request the most recent frames available.

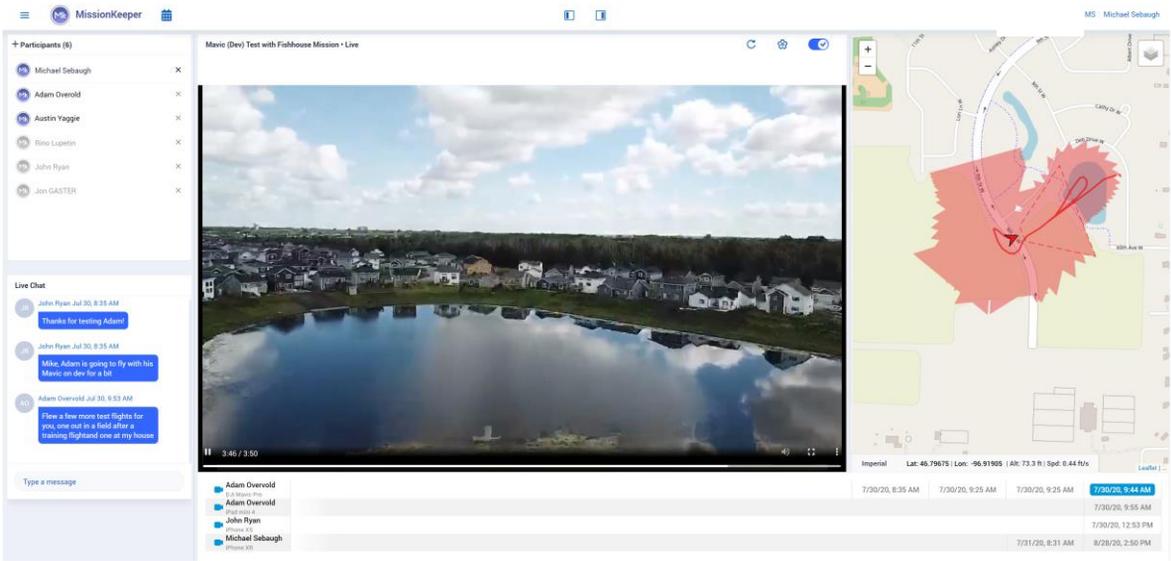
The gear icon allows editing of the mission details



When telemetry is available, the current location, altitude and speed of the vehicle is displayed on the lower portion of the map. Units can be switched between Imperial and Metric



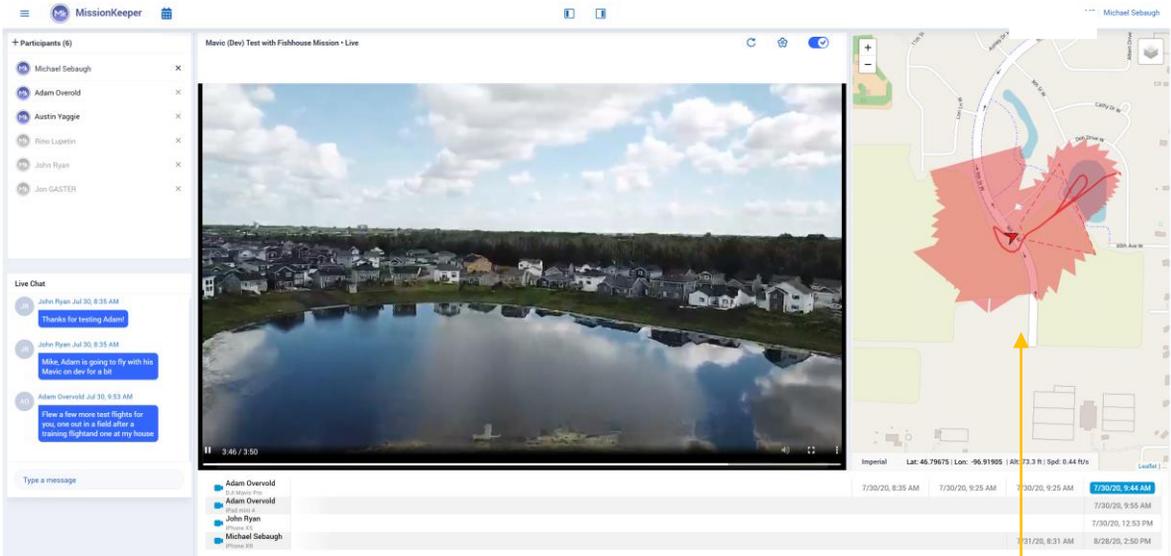
Archive



As streams populate the mission, each source is identified and listed so that all the streams from that source are grouped in chronological order. If a source is currently live its camera icon is shown in green.



The streams from each source populate the list with the most recent streams on the right. The stream that is currently being viewed is highlighted in blue and current live streams have a green dot next to their title.



The map displays the current position of the vehicle that is currently being played. In the case of a UAV, the field of view is estimated and painted on the map. The dashed box represents the current field of view..

Live indicator



Current duration of the stream

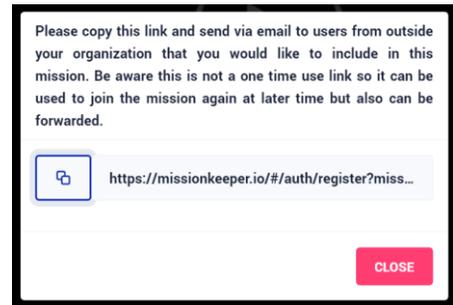
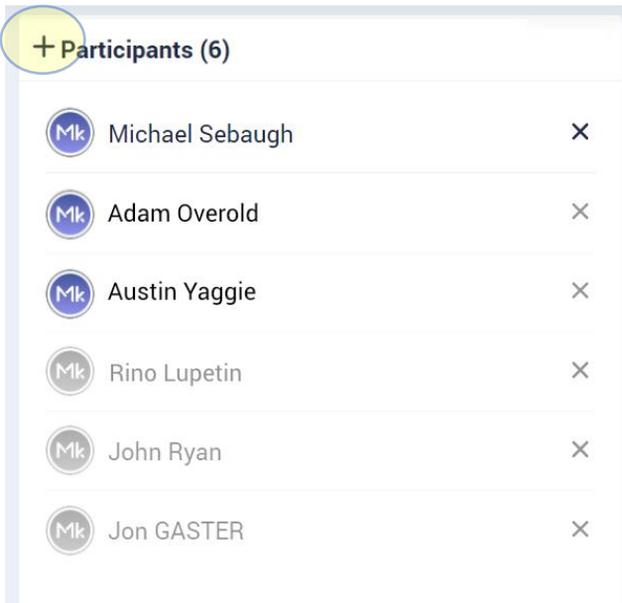
During the live stream, the time on the player scrubber reflects the current runtime of the stream. The red “LIVE” indicates that the stream is currently showing the latest data.

The player scrubber can be dragged back to view footage from earlier in the stream. When dragged back the player will play from the chose position. The LIVE button will go grey to indicate that the player is not currently showing the latest data. Clicking on the LIVE button will immediately push the player to LIVE status. Clicking on LIVE will also refresh the stream if you feel the player has fallen behind at any time due to loss of data from the field based on potentially lost bandwidth at the streaming location.



Inviting external or temporary user that is not part of your organization

If it is necessary to invite users outside the organization to participate in a specific mission, clicking the + icon on the Participants pane will launch a dialog allowing you to copy a link to the mission that can be sent via email to outside users.



A link to the mission can be copied to the clipboard to be pasted into the users' email system to create custom invitations.

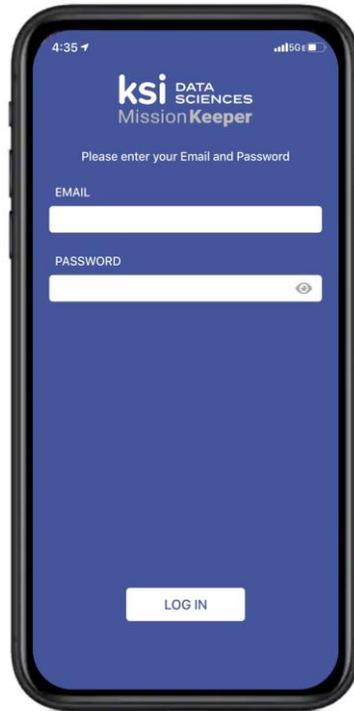


Opening the link in a Chrome browser will take the invited user to the “sign up” page to create an account and upon completion they will only have access to the mission from which the link was sent.

If the user has an existing account they can use their login credentials to get direct access into the mission.

iOS Mobile Application

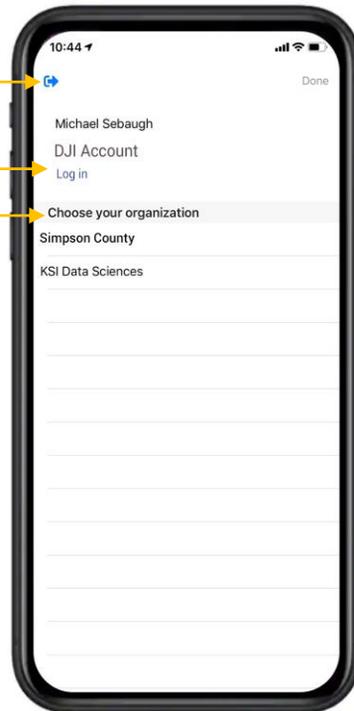
After installing the MissionKeeper Mobile application on your iOS device, you will enter the same approved credentials used for the web application to login to the mobile application.



Tap to logout of the application

This DJI account login is NOT necessary to access MissionKeeper and is in place only to allow for circumstances that require flight waivers to be applied for no-fly zone override. This feature is still in testing in collaboration with DJI.

After logging in, if you are a member of more than one organization, you will be prompted to choose which organization you would like to log into for the current session.





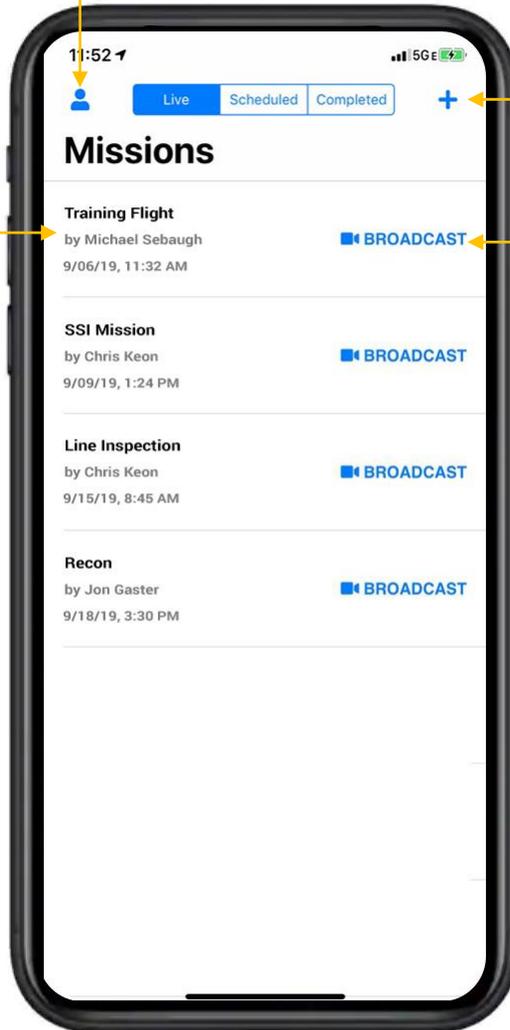
Upon login and organization selection, the list of missions that the user has been invited to will be listed. Missions that have been “Started” will be in the Live list.

Tap to return to the organization selection list or logout

Tap to create a new mission. The start time of the mission selection defaults to the current time and if that time is not modified the mission will “start” automatically and be in the Live mission list. If a time in the future is chosen, the mission will appear in the scheduled list. The mission can be manually started regardless of the scheduled time.

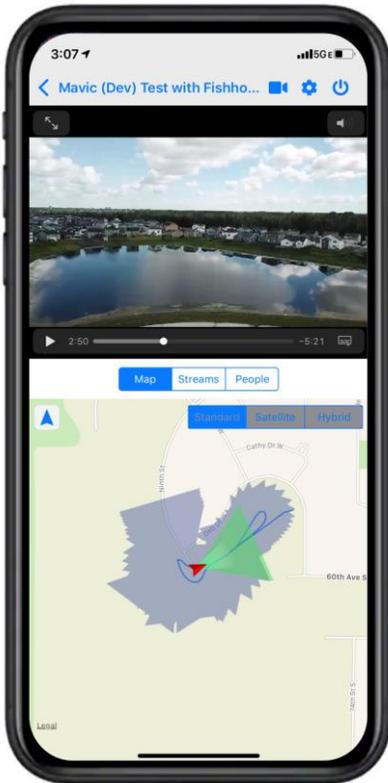
Tap to join mission to view streams

Tap to broadcast into mission

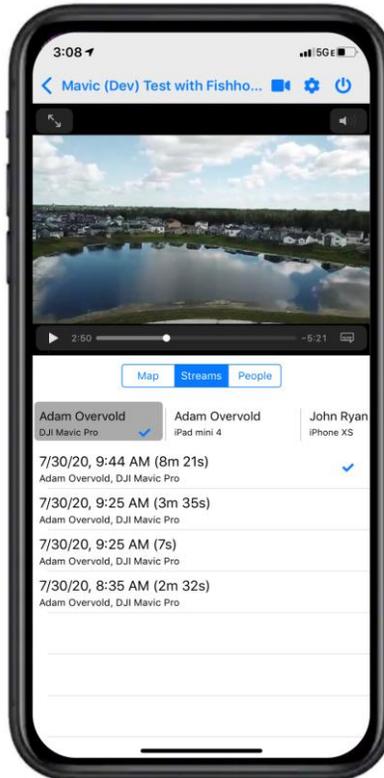


Viewing Missions

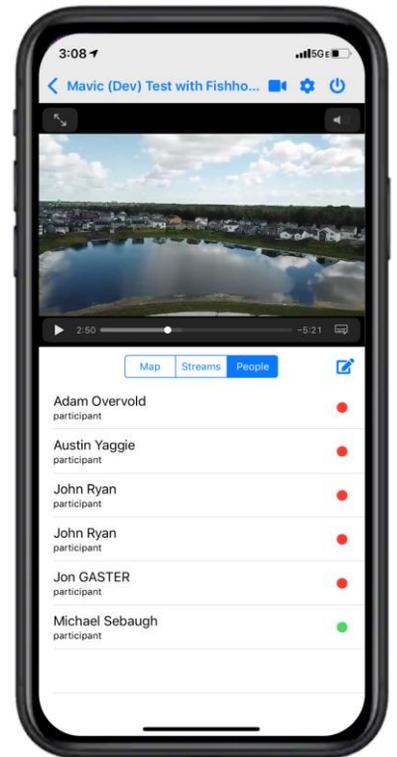
Tapping the mission name to join the mission provides the live video in the player and options to view the map, additional sources and list of logged in users.



Map View displays the location of the streaming device being viewed.



Stream View displays the available sources that have streamed into the mission and the streams associated with each source. Tapping the stream title will load the desired video or refresh the video player if necessary.

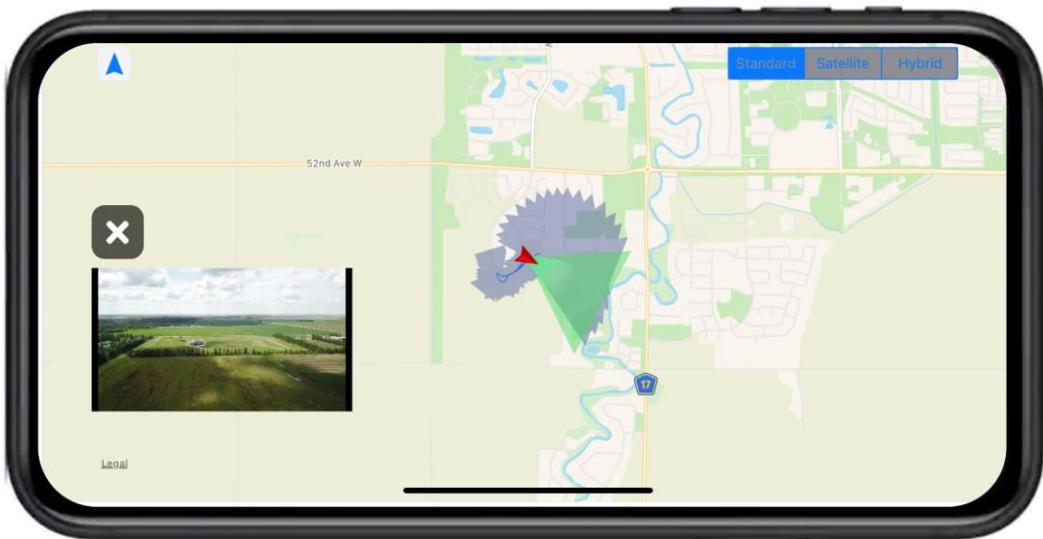


People View displays users logged into the mission

Rotating the device into landscape orientation takes the video full screen. Rotating back to portrait takes the view back to Map/Streams/People view



Tapping the thumbnail toggles the views full screen



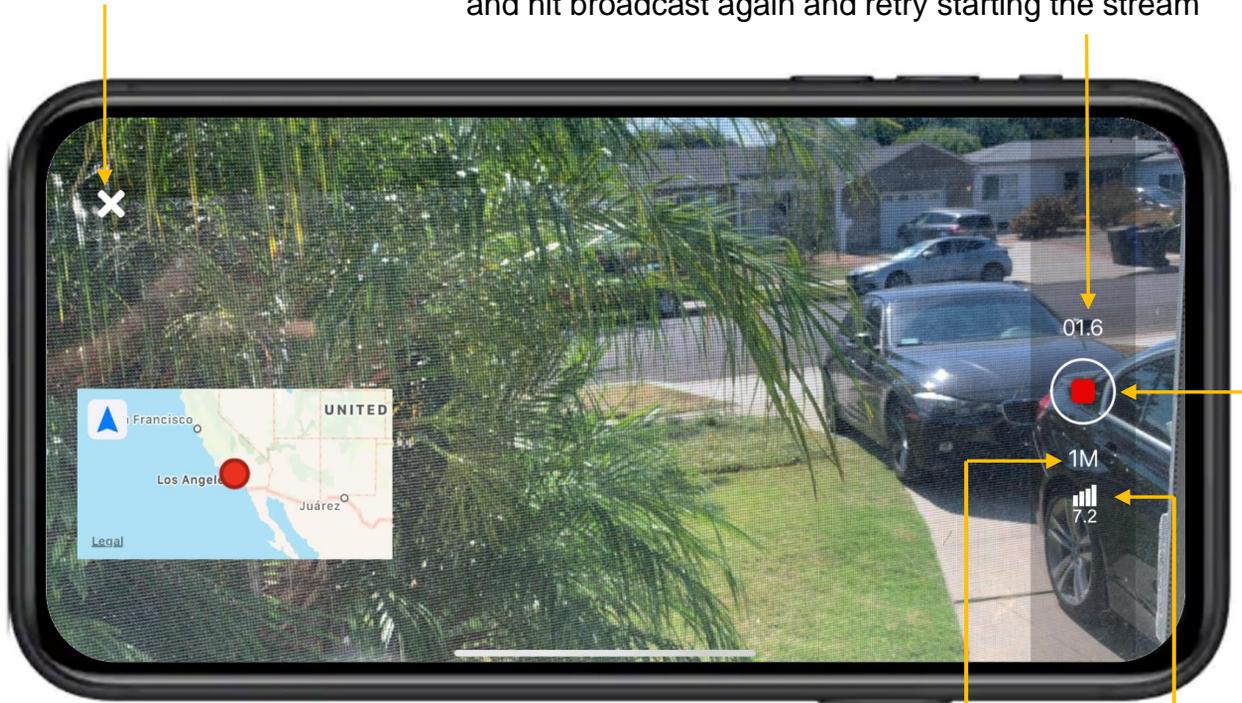


Broadcasting into Missions via iOS device

After tapping Broadcast, the app will display the device camera view and location.

After beginning the stream the output bitrate will be displayed. This will fluctuate and provide feedback that the app is streaming. If this shows 0.0 the app is not functioning properly. User can return to the mission list and hit broadcast again and retry starting the stream

Tap to return to the mission list



This is the currently selected output bitrate. Tapping the bitrate setting toggles through bitrate options (256k, 500k, 1M, 1.5M, 2M, 3Mbps, Auto). The bitrate can be changed while streaming. The higher the bitrate the higher the video quality but requiring more upload bandwidth to maintain smooth video.

Tap the red button to start and stop the stream.

Network bandwidth. Tapping this will re-test the connection between the device and MissionKeeper servers

Note: when streaming from the device camera, holding the device in landscape orientation before starting the stream will display a stream in landscape mode which will be optimized for the player in the web application. Holding the phone in portrait when starting the stream will cause the stream to extend past the player window requiring the user to scroll to see the whole view in the web application. When connected to the drone, the view automatically defaults to landscape.

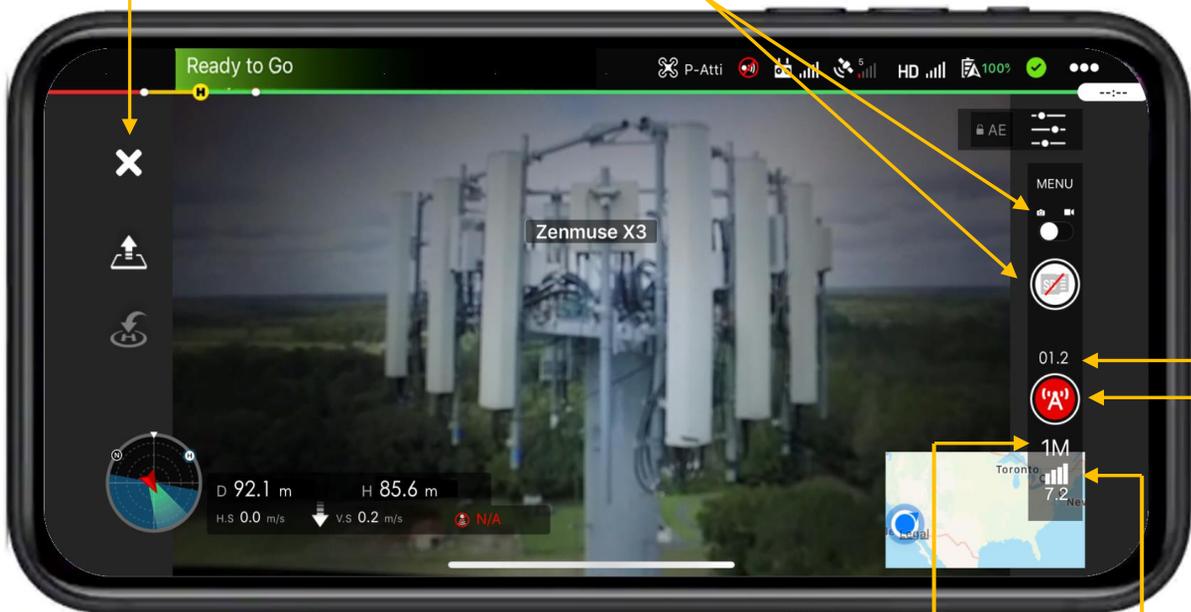
Operating DJI drone and Broadcasting into Missions via iOS device with DJI drone connected

After tapping Broadcast with a connected DJI drone plugged into the iOS device, the app will display the DJI flight control screen as well as MissionKeeper's streaming controls.

After beginning the stream the output bitrate will be displayed. This will fluctuate and provide feedback that the app is streaming. If this shows 0.0 the app is not functioning properly. User can return to the mission list and hit broadcast again and retry starting the stream

Tap to return to the mission list

Toggel SD card recording for image/video. Video/Photo SD card record.



This is the currently selected output bitrate. Tapping the bitrate setting toggles through bitrate options (256k, 500k, 1M, 1.5M, 2M , 3Mbps, Auto). The bitrate can be changed while streaming. The higher the bitrate the higher the video quality but requiring more upload bandwidth to maintain smooth video.

Tap the red button to start and stop the stream.

Network bandwidth. Tapping this will re-test the connection between the device and MissionKeeper servers

Note: After installing the mobile application for the first time, after pressing the start stream button the stream will not start and you will be requested to allow the application to access the camera. This may be required a second time for the device location. If the stream does not start after the access is granted, return to the mission list and tap Broadcast again. After access has been granted this will not have to repeated.



DJI drone platforms and camera options continue to evolve and we are continually updating our iOS mobile application to support offerings available. As of this writing the DJI products listed represent platforms that we have used and tested successfully. It should not be assumed that unlisted products will not work but testing has not been verified in all cases.

1. Inspire 1

X3 visible

XT thermal

2. Mavic Series

Mavic Air

Mavic Pro

Mavic 2 Enterprise (dual visible cam supported, streaming thermal in testing)

Mavic Mini

3. Phantom 4 Pro

4. M200 series V1

Z30

5. M600 Pro

6. M200 V2, M300 H20/H20T in testing

We recommend mobile devices be updated to most recent version of iOS and suggest using iPhone 8 or newer for optimal results.



Troubleshooting

If you experience issues the following are general troubleshooting steps that can be performed.

1. *I don't see the mission in the calendar on the web app or on the list of missions on mobile.*

Confirm that you are invited to the mission. When a mission is created, only those who have been invited will see the mission available on the calendar. Also, after mission is “started” it will appear in the Live mission list on the mobile app and Broadcasting to the mission can commence.

2. *I pressed the stream button on the mobile app but I don't see the stream in the mission.*

If the stream is not appearing as expected it usually makes sense to start at the source.

1. On the mobile app, the bitrate selection value will start to fluctuate as it reports the output bitrate when the app is streaming. If the bitrate value is static at 0.0 or 1.5M, 1M, 2M, 3M, Auto then the stream has not started. In this case if the stream button is still a solid red circle try and press the button again. If the button is a red circle with a square in the center, try stopping the stream, exiting back to the mission list and hitting Broadcast again to retry.

2. If the bitrate is fluctuating correctly, the next thing to check is network bandwidth on the mobile device that is streaming. Perform a network speed test to make sure the device has approximately 5mb/s upload or more bandwidth.