Use cases:

This worksheet contains a brief investigation of how video streaming drones could be used in different fields and what requirements may occur. Note these use cases and requirements are based on logical deduction and not actual quotes/facts.

Military

In many military operations, a full overview of the situation/battle field is desirable. Operations could be in offense, defense or rescue missions. For that a drone could be sent to the target zone for capturing the situation giving a birds eye view. The captured video would the be available to multiple soldiers on multiple screens. With the footage it would be easier for the soldiers to make decisions.

Requirements for such a system:

- The video stream must be reliable
    - Must work with interference or signal blocking materials, e.g. if the task force stands inside a house
- It must be real time (No or very low delay on the stream)
- Secure communication
    - Confidential → E.g. Only authorized user can access the stream, and the communication between the user and the drone must be confidential
    - Integrity → **Data**: The system must be able to verify the video stream, so no manipulations can be done. **User**: The system should be able to detect human errors, e.g. request of invalid settings
    - Availability → E.g. It should be able to have contact to the drone at all time
- Authentication
    - Only authorized users can assess the the drone.
- The system must at some point be low power
- The video quality must be high enough, to clarify which object is being filmed
- The stream can be viewed at multiple devices at the same time.

Rescue operations and disasters

In many rescue operation, it is dangerous to send people to locate victims or difficult for humans to even reach the destination. In some cases it is also very large areas that needs to be searched, this could e.g. in a avalanche, mountain climbings, hiking, etc. A drone could in these situations enable faster and better planing

Requirements for such a system:

- The video stream must be reliable
    - Must work with interference or signal blocking materials..
- Delay in the video stream is not desirable, but not as critical
- Secure communication
    - Confidential → E.g. Only authorized user can access the stream, and the communication between the user and the drone must be confidential
    - Integrity → **Data**: The system must be able to verify the video stream, so no manipulations can be done. **User**: The system should be able to detect human errors, e.g. request of invalid settings
    - Availability → E.g. It should be able to have contact to the drone at all time
- Authentication
    - Only authorized users can access the stream.
- The system must at some point be low power
- The video quality must be high enough, to clarify which object is being filmed
- The range of the stream must be large
- Multiple receivers may not be necessary

Sport event

For many sport events, the audience is placed far away from the actual 'action'.
In extreme sport, like snowboarding, most audience stands at the bottom of the slope.
Another example could be watching football on a big stadium, if you are placed in one side of the stadium, one half of the event you are watching your teams goal. In both cases the drone can be set to follow either the ball (in the football case) or the athlete (in the extreme sport case).

Requirements for such a system:

- The video stream must be reliable
    - Must work with high interference.
- The video stream must be real time (No or very low delay).
- Secure communication
    - Availability → E.g. It should be able to have contact to the drone at all time
- Authentication
    - Only authorized users can assess the stream, this is needed if the stream is pay-per-view.
- The system must at some point be low power (The drone should be able to be in the air for the whole event)
- The video quality must be high.
- The range of the stream must be large
- The stream should be able to be sent out to a large amount of users.