

ASC Future Practices Committee

Technology Meetings

Virtual Scouting in a Covid World

Virtual Scouting

3 Entry Points to Consider

- 360° Cameras
 - Very inexpensive
 - Simple, fast, and almost no tech ability required
- DIY 3D modeling via Matterport or other apps
 - Shows users far more information about a location
 - Low cost, time, and technical ability
 - Accessible 3D for any average production
- LiDAR scanning and VFX tools
 - Offers the most options and flexibility



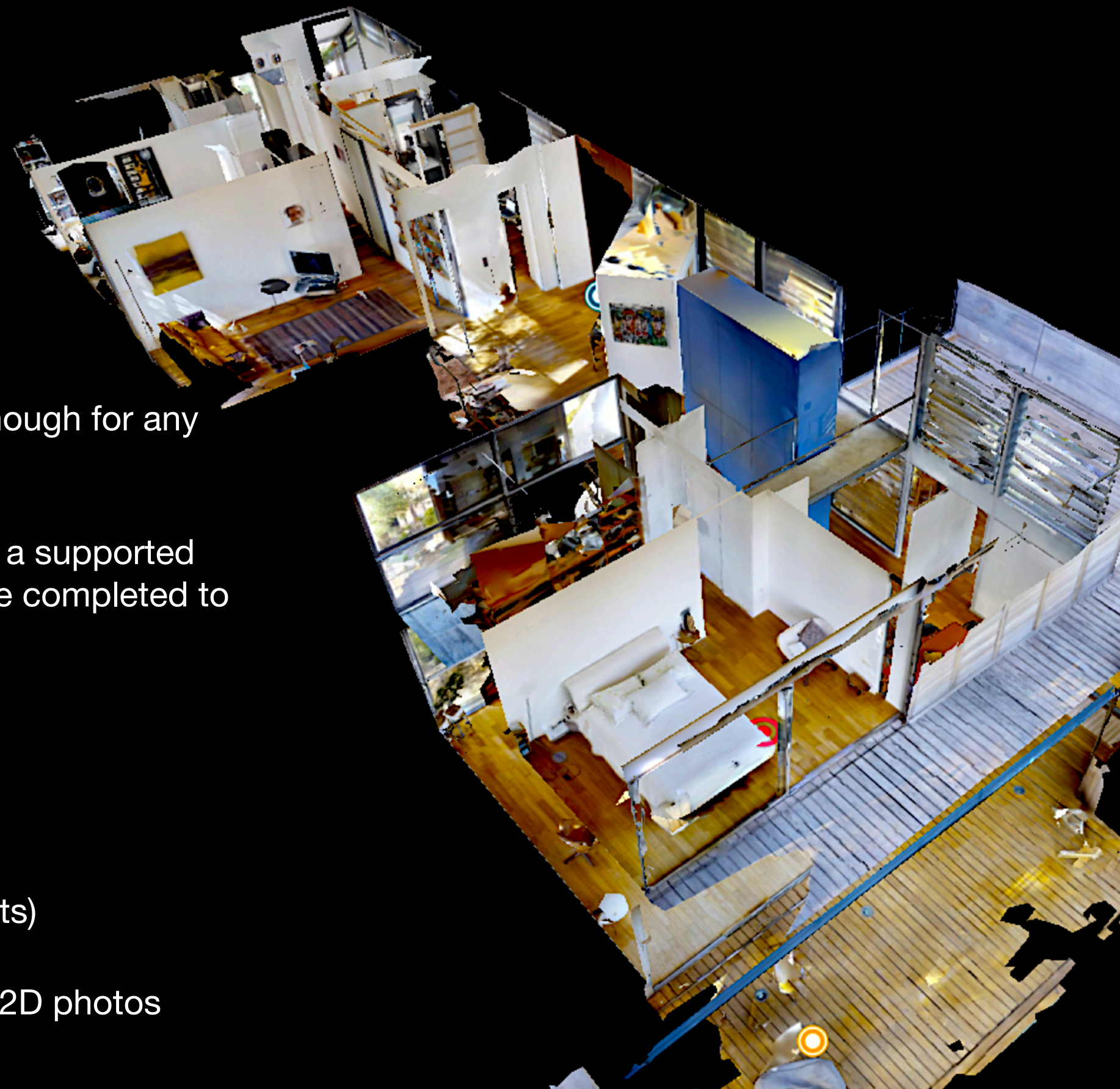
360° Cameras

- These point and shoot cameras use two back to back image sensors with wide angle lenses to create a seamless 'photo bubble' of the entire environment
 - This gives viewers a much better sense of geography
 - It minimizes the likelihood of forgetting to shoot something like a ceiling
- The 3 most commonly used cameras are made by Ricoh Theta, Insta 360, and GoPro
- Photo bubbles can be viewed from inside an app that comes with the camera on a tablet or phone
- They can also be viewed and shared on any web browser by using a hosting service such as Kuula 360, Facebook, and others
 - Example 1
 - Example 2



Matterport

- This service uses AI to build 3D models
 - Very low technical, time and cost barriers. Simple enough for any willing locations department
- Scan a location room by room via their app connected to a supported camera. The app builds a rudimentary model as scans are completed to show what remains to be scanned
- Supported cameras are
 - iPhone 11 Pro (not the best results, but convenient)
 - 360° cameras from Ricoh and Insta 360 (better results)
 - Photogrammetry approximates depth from the 2D photos
 - Matterport Pro2 camera (best results)
 - Uses IR depth sensors to get very accurate depth measurements
 - Leica BLK360 (best results)
 - Uses LiDAR for highly accurate depth measurements
- Models are built in the cloud after scanning in one to a few hours, then a shareable private link is emailed that can be viewed in any browser or in VR
 - Example



LiDAR and VFX tools

- True pre-visualization of a location
 - Virtual lenses show accurate FOV's
 - Virtual actors can be blocked
 - Set pieces can be built and moved around
 - Virtual camera moves can be created and recorded
- These 3D assets can flow from scouting, into prep and production, to post-vis, and into final vfx compositing
- These 3D models are built by visual effects artists
 - Photogrammetry can be used with 2D images
 - LiDAR scans, point cloud mesh, and texture mapping create the most accurate models
- Proprietary vfx software drives the previs
 - 3D models can often be viewed in a limited way from home with off the shelf software
- Requires the most time, money, and technically capable labor



Improving On Set Communications

Comms Systems

vs. conventional walkies

- Comms enables a natural 2 way conversation using duplex transmission (bi-directional)
- No need to wait for a channel to clear before talking
- No changing channels and mistaken broadcasts to the wrong department
- Cross-dissemination of information across departments is easy and natural
- Preserves the department leadership structures because instructions are not being broadcast to an entire department
- Helps keep the set quiet
- Our recent testing finds that comms work very well with cloth and N95 masks - with more clarity than a normal conversation between people



Clear Com / HME

- By far the most commonly used systems in film/TV
 - These are standard equipment with Technocranes
 - For the last few years they've been growing in popularity for general use
- Supports up to 15 headsets per base station
- 1 or 2 channels on the HME DX410. (Channels are called a partyline, or PL in the comms world)
- Limited to 3 or 4 duplex transmissions maximum depending on the channel mode
 - When the duplex limit is reached, no additional users are able to transmit. Someone has to stop transmitting, or there is an 'unlatch' button on the base station that clears all transmissions
- Operates in the 2.4 GHz WiFi spectrum
- There's an audio input for a Comtek feed to be transmitted systemwide



DX 410 system



WH 200 headset

Riedel Bolero

- Commonly used in live broadcast, theater, and events including the NFL, F1 Racing, and the RedBull Air Races - but they are nearly unknown to us
- Supports up to 10 headsets per base station (aka an antenna)
 - networkable up to 100 beltpacks and 100 antennas
- Supports up to 12 channels (PL's)
- Point to point connections enable a beltpack to call another beltpack directly for private conversations
- Unlimited duplex transmissions. Any beltpack can transmit to any PL or P2P at any time without restrictions
- Operates in the 1.9 GHz spectrum = less conflicts with 2.4GHz devices such as wireless DMX and camera control, as well as WiFi



Riedel Bolero

- Base station can be powered from a battery (i.e. Dionics) for uninterrupted use during moves
- The beltpacks are extremely customizable for personal preferences
- Monitor and transmit to up to 6 PL's or P2P's at a time on a pack
 - Discreet volume controls of every PL or P2P. Each one of these can be turned down or muted when they get busy so the other users can continue to communicate effectively on other PL's
- Bluetooth
 - Pretty much any earpiece will work, including AirPods
 - No wires, no large uncomfortable headsets
 - Makes use of the system very comfortable for the crew
- Full PP presentation on Bolero is at: theasc.com/future-practices

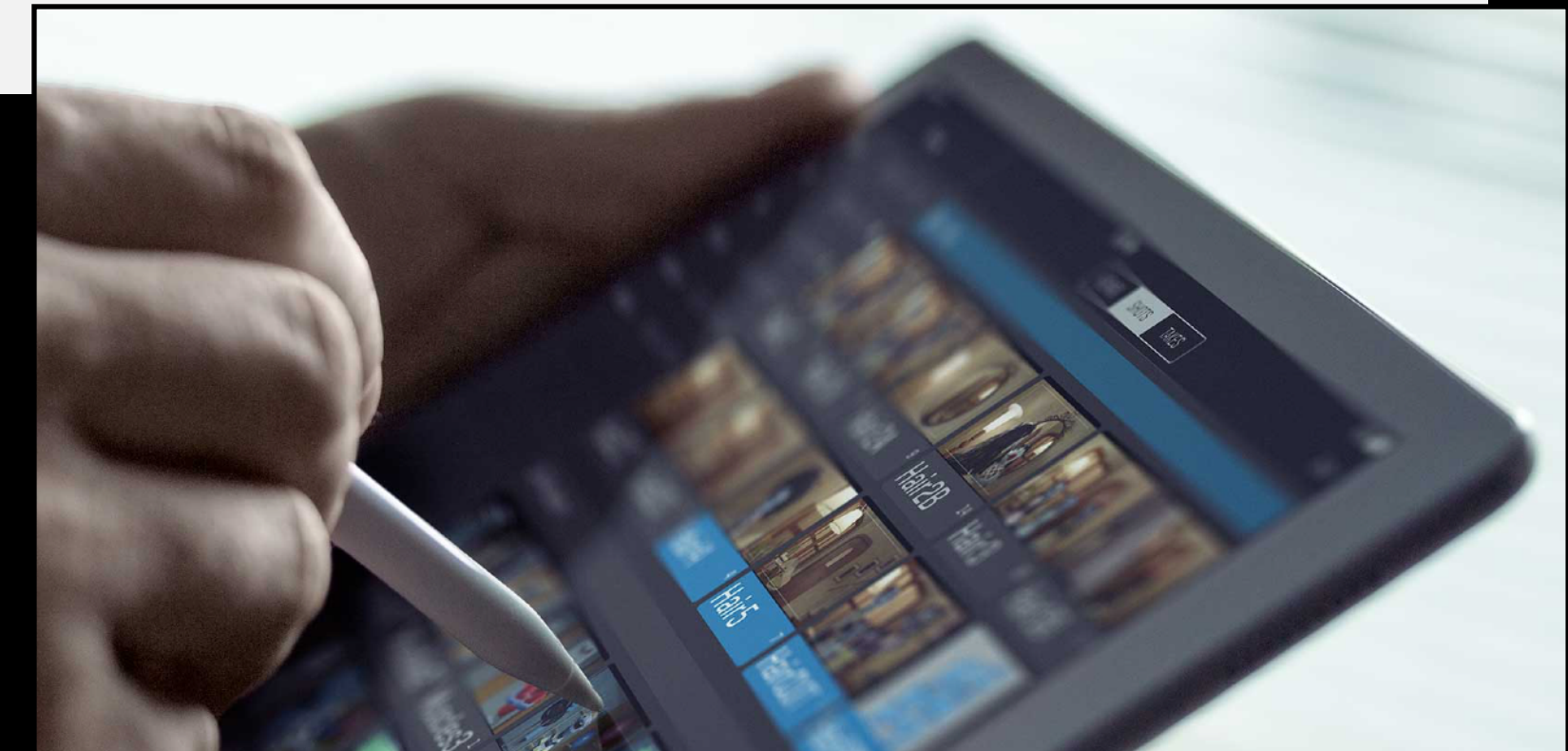
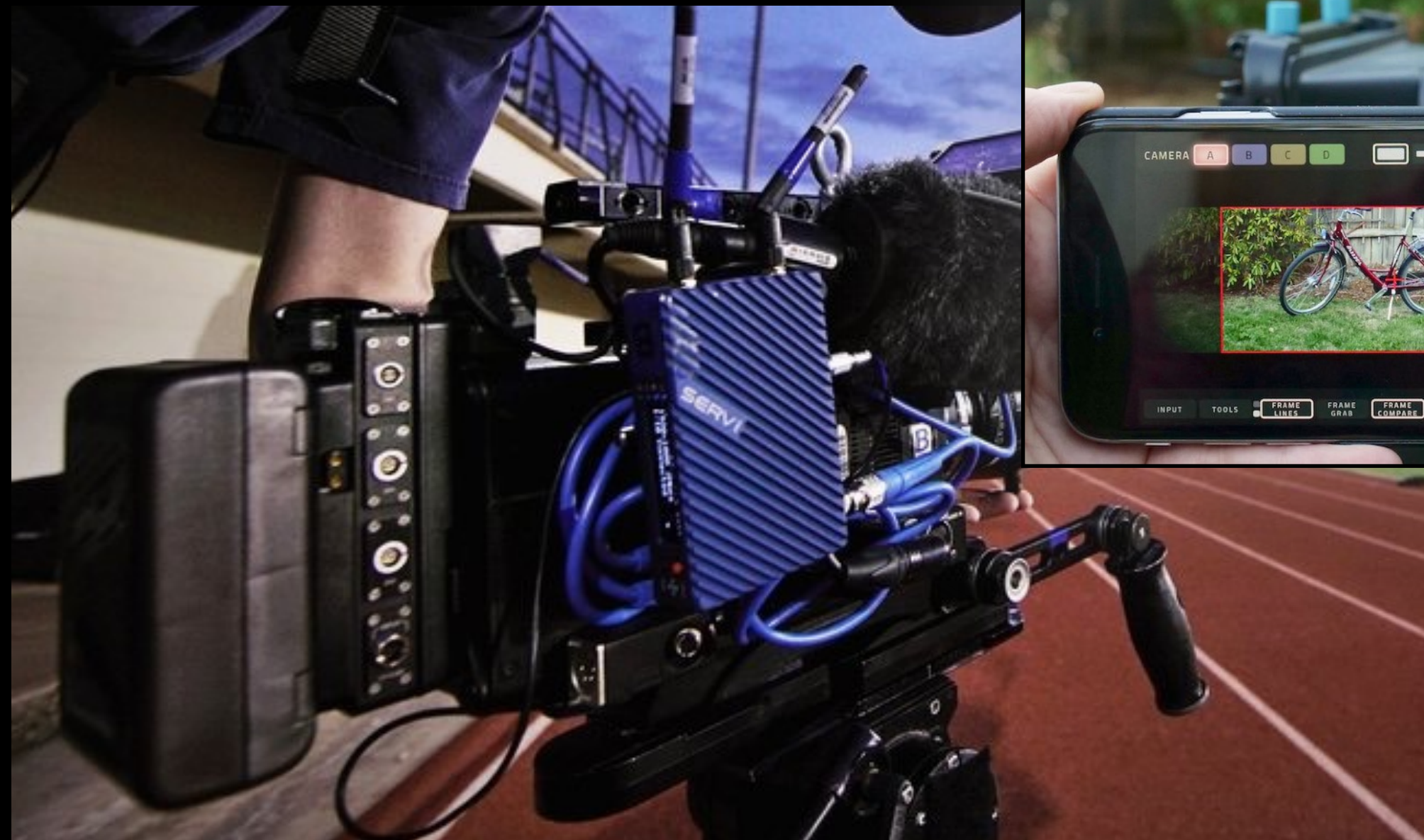


Distributed Monitoring for Physical Distancing

Distributed Monitoring

On Set Broadcasting to Local Devices

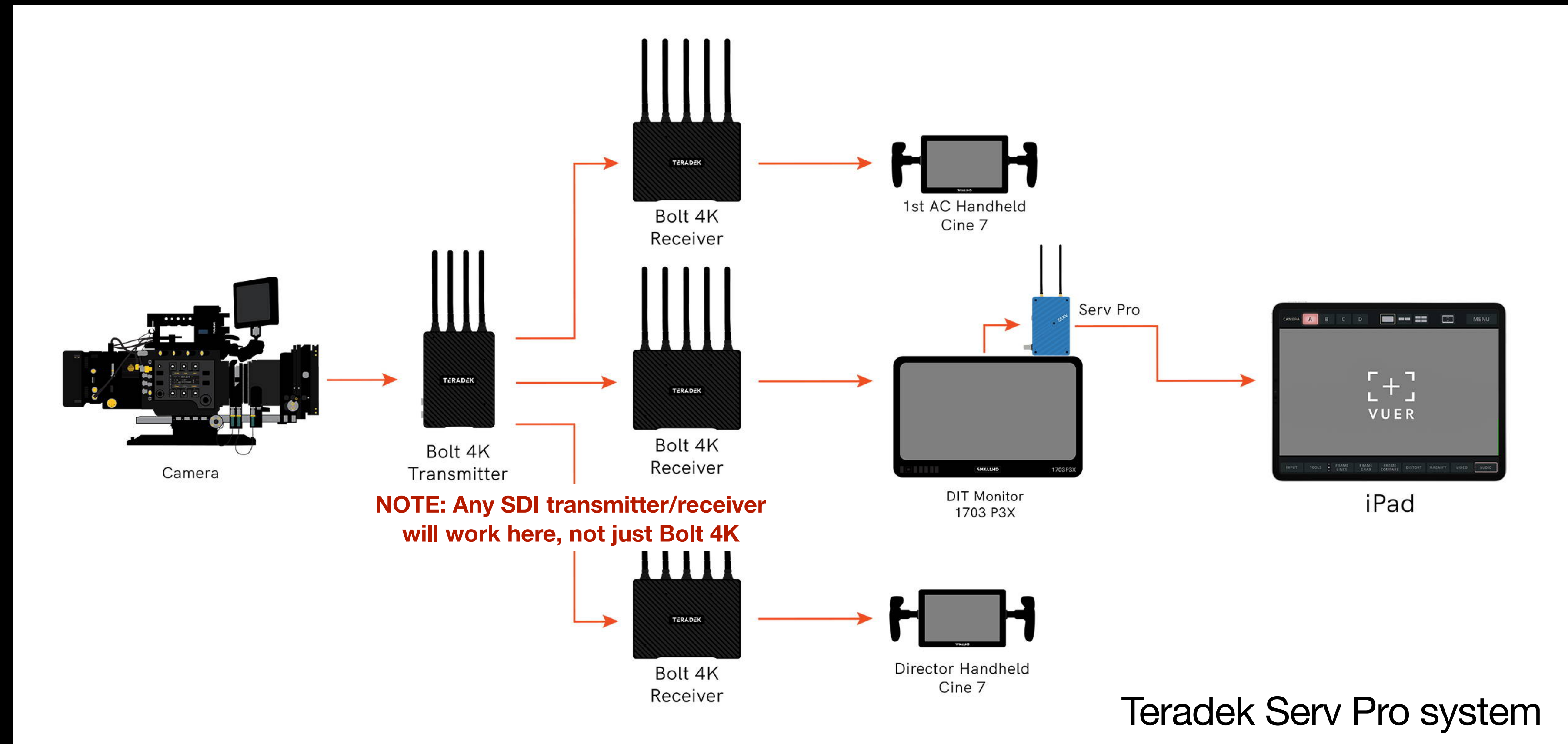
- Stream video to personal devices on set
- Q Take and the Teradek Serv Pro are the most commonly used solutions
- These have often been considered luxuries in the past compared to renting more monitors, but now these will be necessary tools to keep crew physically distanced



Distributed Monitoring

On Set Broadcasting to Local Devices

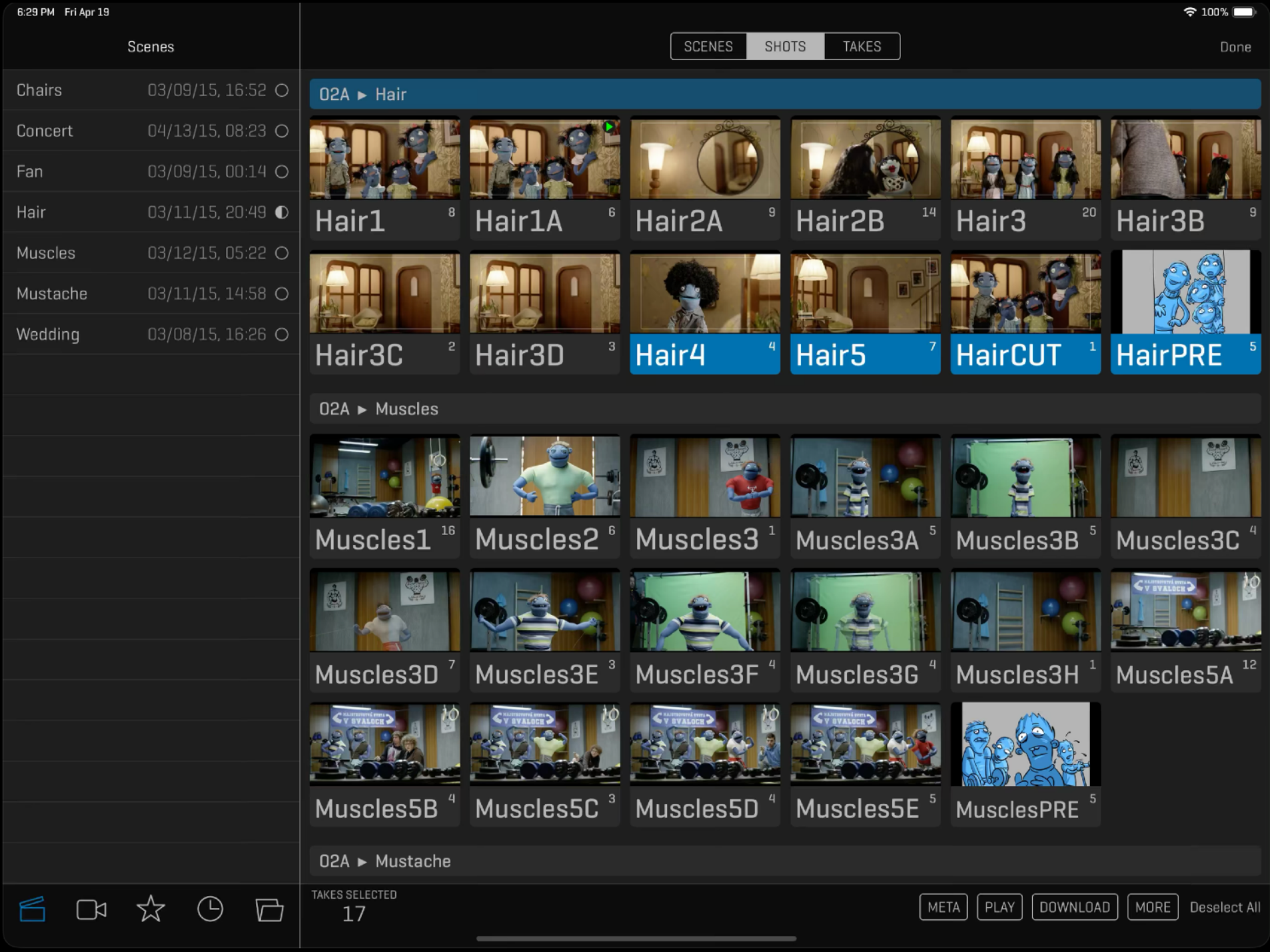
- Serv Pro can transmit up to 4 live camera feeds to a Teradek app running on up to 10 devices
- Frame grabs can be made and stored on the device to help with continuity
- Network is password protected



Distributed Monitoring

On Set Broadcasting to Devices

- Q Take can stream to devices on set and off set anywhere in the world
- The Q Take app allows users to play back captured footage from anywhere on their own device
- Requires a VTR operator



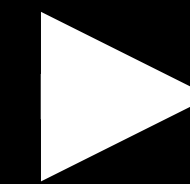
Distributed Monitoring

Near Set Broadcasting to Devices

- Stream directly to networked hardware or via a cloud service to monitors and/or devices at remote locations
- QTake and Teradek are again the most common solutions
- Some studio facilities can do a direct hard line connection between stages and offices requiring no additional hardware



DIRECT IP CONNECTION OR CLOUD SERVICE
VIA TERADEK CUBE



Distributed Monitoring

Remote Broadcasting to Devices via Bonded Cellular

- Transmit from anywhere where there is decent cellular service
- Can include IP data, intercom, and return video transmissions
- Typically backpack or camera mounted



AVIWEST

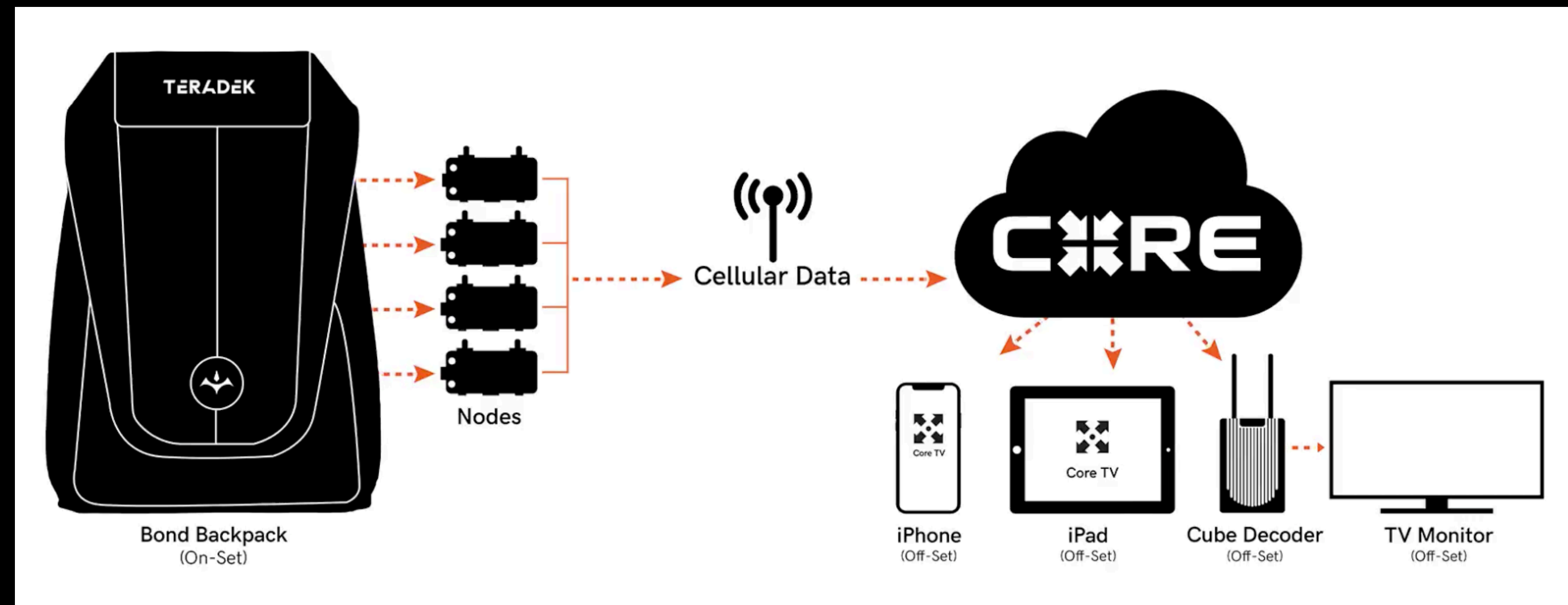


Teradek BOND

Distributed Monitoring

Remote Broadcasting to Devices via Bonded Cellular

- These systems all work in a similar way to this diagram
 - SDI video is split into multiple streams
 - The streams are broadcast over normal cellular service through 4-8 modems
 - A cloud server reassembles the stream and broadcasts the video to devices and monitors
- Depending on the product, up to 16 video signals can be processed at once to support multiple cameras



Wireless Everything

- Because of the coronavirus there will be more wireless devices competing for the same bandwidth in the already very complicated wifi radio spectrums. Many productions have already been experiencing transmission problems in the last few years.

- 2.4GHz

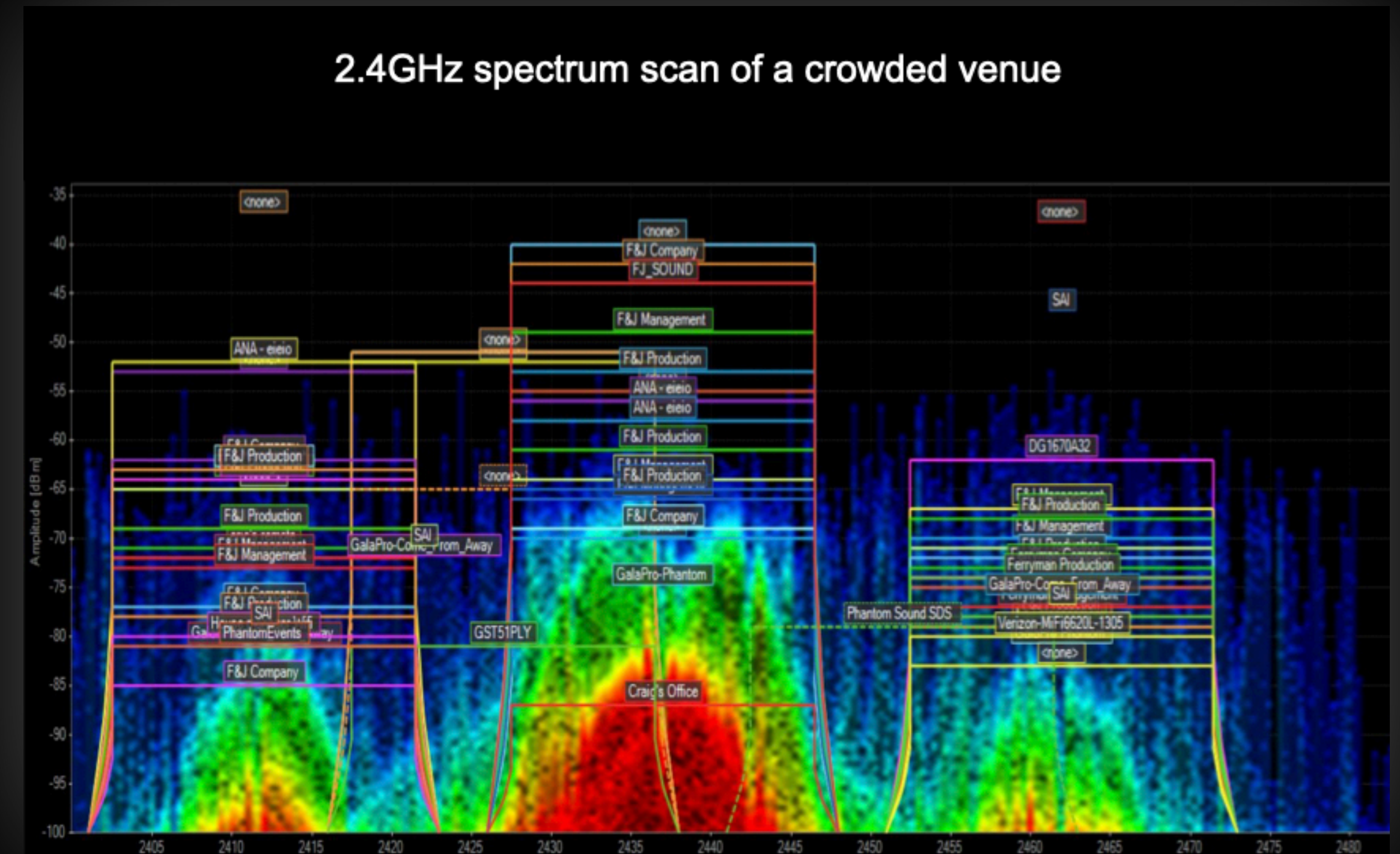
- Camera control
- Wireless DMX
- Clear Com/HME systems

- 5.6GHz

- Video monitoring

- WiFi networks at a studio and in surrounding neighborhoods operate in both spectrums

- RF Coordinators with spectrum analyzers may need to be hired by productions to make all of this work together, particularly at the beginning of a production



Equipment Sterilization

Equipment Sterilization

- Sterilization has become a lower priority as we learn more about how the virus is transmitted. It is still important however, particularly for high touch surfaces and peace of mind
- PERG has written guidelines for rental house protocols to keep crews safe, and gives guidance on how to safely clean camera, grip, and lighting equipment
- Find the PERG guidelines doc in our library at: theasc.com/future-practices
- No sterilization technique is perfect or appropriate for every situation. An 'all of the above' approach to the toolset should be considered that includes several EPA and CDC approved techniques, with close attention paid to the requirements each needs to inactivate the virus (i.e. dwell times for disinfectant solutions)



**Production Equipment
Rental Group** part of **ESTA**