Here are my guidelines for design of the video layout screens:

### Background

Currently, there are two views in the MVP implementation:

Group: (a.k.a. “Grid”) where videos are displayed for a set of participants (can include instructors or coordinators depending on our design). This is laid out automatically based on the aspect ratios of the videos, number of participants, and the size and aspect ratio of the rectangular view that the grid occupies on the screen. The current algorithm seeks to maximize the area consumed by the grid given the space available and aspect ratio of the screen.  
  
Since the layout is responsive (reorganizes dynamically based on the current window size), the videos have an ordering in the grid, but not really a fixed position. That is to say, there is no concept of the “middle of the grid” or “center row” of the grid since that changes as the screen is resized (for example, a screen is switched from landscape to portrait, or the window is maximized, or we compare views between participants). This implies that a particular user sees in the “center” of the grid is not necessarily consistent with what another user sees.  
  
Note: There is an assumption that a particular user will mostly use their equipment in a consistent way so that *the locations on the screen are consistent for that user over time*.  
  
Currently, the ordering is based on the order in which videos are joined to the session, but in the future, the ordering would be determined by the “assigned seat” of the participant.  
  
The videos currently in the grid are determined by filtering all of the users in the session, based on user role.

Instructor: (The view that the participants see) which includes the Instructor (as big and clear as possible) and a view of the participant.  
  
The current implementation is to use the same underlying layout that the group view uses. In other words, we switch the filter to include only those users who are instructors. This makes switching fast and efficient, especially when going from group to instructor views.

### Design Constraints

Given the time and resource constraints of the project, and a need to have a more functionally complete and “robust” implementation at the end, we would like to leverage the existing implementation and algorithms as much as possible.

Based on these factors, the current guidelines for constraining the design are given:

1. The video screens should include the current grid layout mechanism where the grid consists of a subset of the users in the session
2. To support the “assigned seat” feature, user’s not yet present in the session still occupy a position in the grid
3. The video screen can also include a *separate* video preview of the current user’s video. In the current MVP, that is shown in the upper right. This is not a requirement; for example, the user’s preview can also be included in the grid.
4. The grid should consume a rectangular area with all videos the same size
5. Controls, text, graphics, etc can be overlaid each video in the grid, or over the entire grid.
6. Controls, text, graphics, etc can be overlaid on the preview if separate from the grid.
7. The preview can overlay the grid
8. As a general rule, implementation is easier if differences between what users see are based on switching things off/on based on role
9. The visual appearance of the videos in the grid (and the preview, and including background, margin, transparency), can vary depending on state and user role. Examples include:
   1. Active speaker
   2. User is present/absent
   3. Quality of Service (QoS) of the user’s connectivity and/or media quality
   4. Role of the user (instructor, participant, coordinator, etc)
   5. Muted/unmuted microphone
10. Constraints of the current implementation imposed by the group and instructor view implementation are not a requirement: they can have separate layouts, and the instructor’s video does not need to be within a grid.