



### 360° Focus

#### Hybrid Collaboration

**A guide for designing spaces to support in-office and remote collaboration.**

About This Guide

This guide brings together two decades of exploration by Steelcase WorkSpace Futures researchers and Steelcase application designers, new features from industry leaders like Microsoft and Zoom, and new insights around how to set hybrid teams up for success.

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This guide includes:

- Three key concepts for how to create better hybrid collaboration experiences.
- Six tips for new etiquette and protocols to increase equity and engagement.
- Four foundational space typologies showcasing ideas for integrating technology into collaboration, social, personal and learning spaces.
- Visual considerations when using cameras, displays and lighting so everyone can see and be seen.
- Audio and acoustic considerations so everyone can hear and be heard.
- Recommendations for a mix of analog and digital tools to keep people engaged.

# All spaces are now video spaces.

Hybrid collaboration happens when people in the office are working with people who are remote. It's complicated.

Here's what we know:

Proximity matters. Think about the relationship between people, content, displays and cameras.

Acoustics are important. Variables such as architecture, floor plan location and adjacencies have an impact.

Software and hardware are evolving constantly. Right now, IT support is often necessary to make sure elements work together.

This guide includes ideas for how to create a range of spaces and technology experiences — based on what's available today. Ideas can be adapted to work with a variety of space types and technology platforms.



## Three Key Concepts for Better Hybrid Collaboration

Steelcase researchers have identified three key concepts that apply to high-performing hybrid collaboration spaces whether you need to connect one-to-one or many-to-many.



### Equity

**Strive for equity and inclusion despite location. Design to eliminate the gap of not being co-located.**

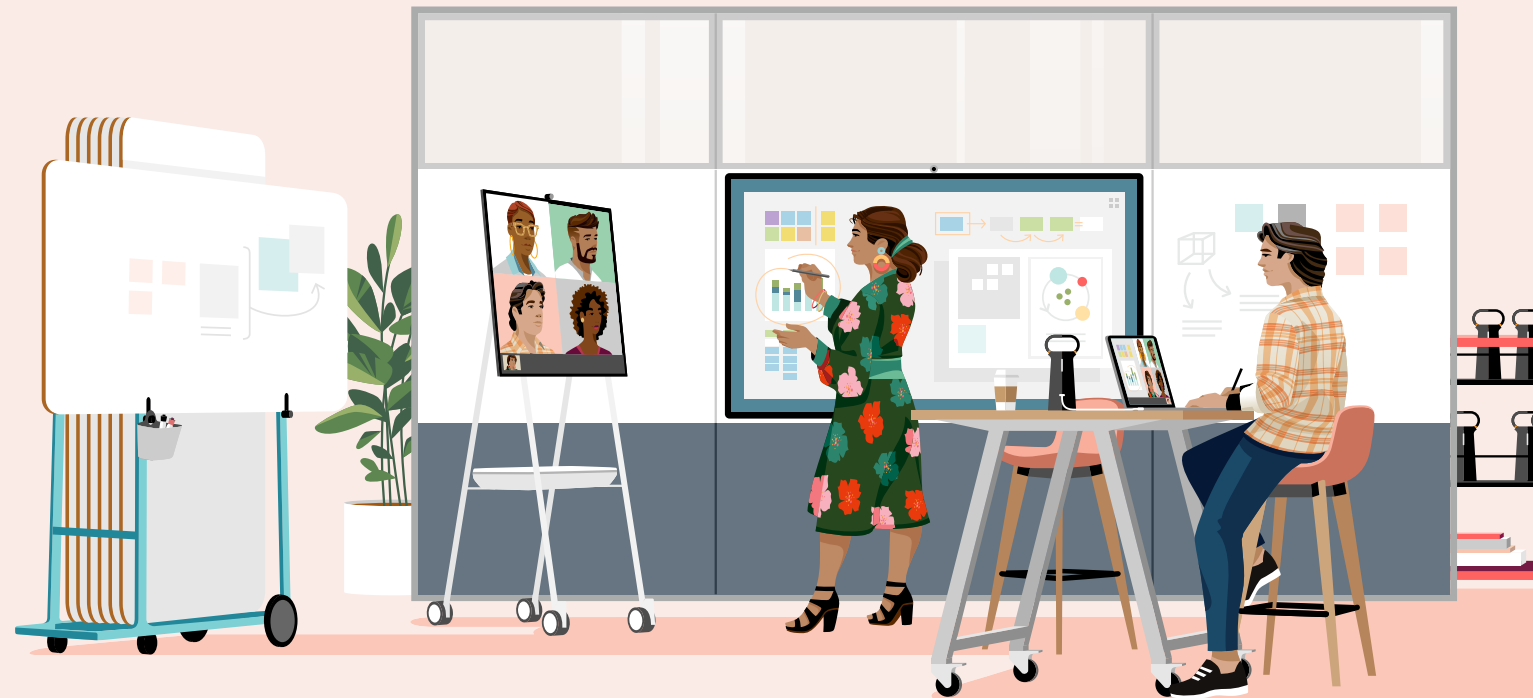
- Enable both remote and co-located participants to move around the room — mobile furniture and displays will help. Remote team members shouldn't always be “on stage” next to content.
- Use cameras on both shared and individual devices, especially for new teams. Shared devices (room view) should be primary and individual devices secondary.
- Help people feel confident on video by addressing on-camera, task and ambient lighting. Warm, intense LED lights just above head height and off to the side are best for video.
- Consider space size, boundaries, materials and the direction of microphones and speakers to create the best possible audio experience on both ends.
- Develop more intentional shared etiquette and protocols. (See page 7)



## Engagement

Design experiences that are human and engaging across a range of settings.

- Arrange remote and local participants, and digital and analog content to ensure more equal participation. Some software platforms and integrated technology systems support multiple displays, allowing people and content to be separated.
- Design for the camera's field of view. Make sure people and content can be seen by remote participants. AI-powered cameras allow for a wide angle and new ways to enhance analog content virtually (i.e. Huddly's Canvas content camera improves the virtual view of markerboards by boosting color and making people transparent.)
- Use shared content creation tools that provide equal access to digital and analog information and enable multiple modes of collaboration (ex. digital workspaces like Mural).





## Ease

**Design a variety of intuitive virtual and physical experiences that are easy to navigate.**

- Enable simple and seamless transitions across multiple interfaces and displays. Shared and personal devices should connect easily and allow people to interact with both when necessary.
- Ensure both remote and co-located participants have clean sight lines to people and content. Flexible furniture and/or mobile devices let you move within the space or adjust remote participants' views as needed.
- All technology experiences in the space should work together and pair with a variety of devices and software solutions. While your organization may favor one platform, people making external connections may need to use multiple platforms.

# Etiquette and Protocols

When everyone is in the office many cultural values and social norms can go unspoken. A hybrid workplace requires shared etiquette and protocols to be more clearly communicated. Explicit norms will increase equity and engagement, and create a sense of inclusion and belonging. Remember to stay agile and revisit these as needs change.

## Here are six tips from Steelcase Applied Research + Consulting:

### Schedule transparency

Develop a system for communicating who will be in person and who will be remote. This will impact who comes in (when your colleague is in the office, you'll likely want to be there as well), and it will impact the space and technology needed. Make this available to all so people can plan the best possible collaboration experience.

### Social start

Use a few minutes at the start of every meeting to check in and build social capital. Make proper introductions so everyone in the room and on video is familiar with each other (remote participants should have video on whenever possible).

### See and be seen

Consider assigning an in-person participant to pay attention to what's being seen remotely. Does the camera need to move? Can content be seen? Do you need to send a photo for a close-up of markerboard content?

### Hear and be heard

Know and clearly mark where microphones are in the room and make sure everyone who is remote can hear what's going on and be heard. Ask people to avoid making noise that will make it harder to hear (loud typing, crunching, side talk).

### Pause with purpose

Stop regularly and ask remote participants if they have input. Develop engagement protocols based on group size and type of work. Will everyone raise their hand digitally? Who will monitor the chat? How will you ensure remote participants can jump in and engage?

### Clear next steps

One of the worst experiences as a remote participant is missing the wrap up conversation that can happen after a meeting is officially over. Avoid this by ending each collaboration session with clearly stated and visible next steps.



# Foundational Space Typologies

Hybrid collaboration takes place in settings traditionally designed for collaboration as well as social, personal and learning spaces.

Teamwork may be scheduled or spontaneous. And, it helps to identify the type of collaboration being supported; informative (sharing), evaluative (feedback, reviews) and generative (solving problems, developing new ideas). Generative is the most difficult, yet the most critical because it drives innovation and growth.



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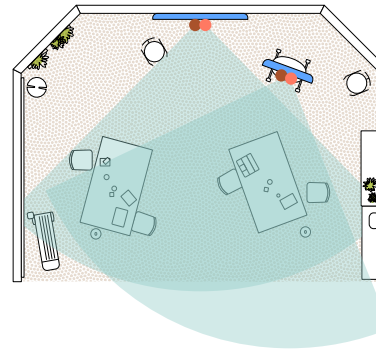
# Collaboration

Open and enclosed, adaptable settings and mobile tools and technology create high-performing collaboration spaces for teams of all sizes.



## Shared Team Collaboration Space

This setting can work in both an open or enclosed space, engaging hybrid teammates with multiple displays and cameras. The mobile monitor stand lets remote teammates be moved around the space based on how they are working.



**Display:** IT can use Microsoft's Coordinated Meetings software feature to separate the display of people and content on the two Microsoft Surface Hub 2S devices.



**Camera:** Cameras are integrated into the Microsoft Surface Hub 2S devices. The mobile monitor stand can be positioned to show closer views of people and content.



**Speaker:** Audio is integrated into the Microsoft Surface Hub 2S. If people are on the mobile monitor, use the audio on this device and mute other devices.



**Microphone:** Microphones on individual devices should be muted to allow room devices to be primary.



**Lighting:** Avoid lighting directly over people's faces. Position lights above people and at a slight angle.



- 1 Shared and individual devices can be used to connect to the meeting. Room devices can separate the display of content and people. Personal devices can share close-ups of team members.
- 2 Mobile tables are positioned for clear sight lines to people and content, and they can be adjusted as the needs of the meeting change.
- 3 V.I.A. walls provide acoustic and visual privacy as well as host digital and analog tools. Steelcase Flex Acoustic Boundary helps mitigate audio distractions. Ceiling and flooring elements can also improve acoustics.
- 4 Adjacent lounge seating and Orangebox On the QT phone booths allow for pre or post-meeting follow up with in-person or virtual colleagues.
- 5 Mobile Steelcase Flex Markerboards allow participants to array information so it can be seen by everyone in the room and on camera.

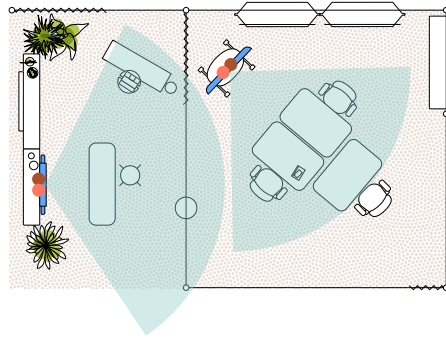
Planning Idea ID: [WF6KS3HF](#)

Featured Products: [Steelcase Flex Collection](#) [Steelcase Roam Collection](#) [Steelcase V.I.A.](#) [Smith System Planner Table](#) [Thread](#) [Orangebox On the QT](#)



## Team Space Ideas

This setting can be in the open or its elements can be used in an enclosed space. The two areas can be sectioned off as needed to take a video call.



**Display:** The Mackinac-mounted HD monitor uses the Poly X50 all-in-one video conferencing system and touchscreen controller (left). Start the meeting on the mobile monitor with a laptop using Microsoft's Proximity Join software feature or reserve the Surface Hub 2S for the meeting.



**Camera:** A camera is integrated into the Poly X50 system which includes 120° view, auto-framing, auto-speaker tracking, and electronic pan, tilt and zoom (left). A camera is also integrated into the Microsoft Surface Hub 2S (right).



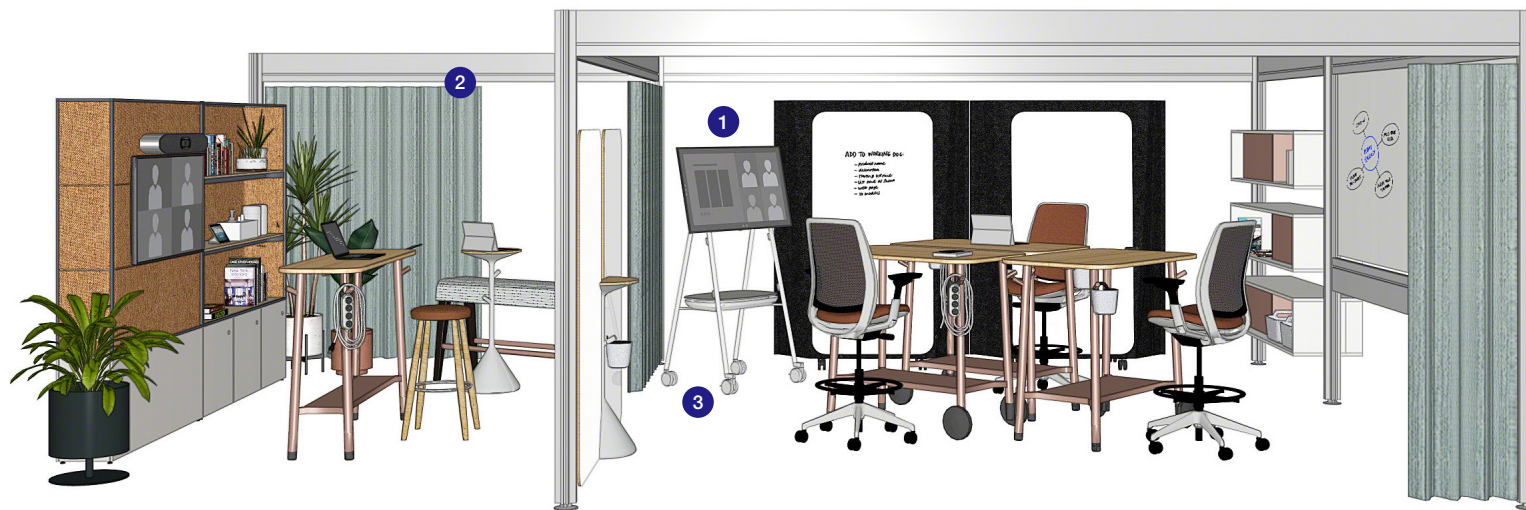
**Speaker:** Audio is integrated into the Poly X50 system (left) or the Surface Hub 2S (right). Close curtains behind the mobile display to direct sound. For best audio, speakers should only be used on one side of the space at a time.



**Microphone:** Microphones are integrated into the Poly X50 system (left) and the Microsoft Surface Hub 2S (right).



**Lighting:** If needed, adding lights to the top of Mackinac may improve how people appear on video (left). Ensure lighting throughout the space so if the mobile device is moved people's faces don't end up in shadow (right).

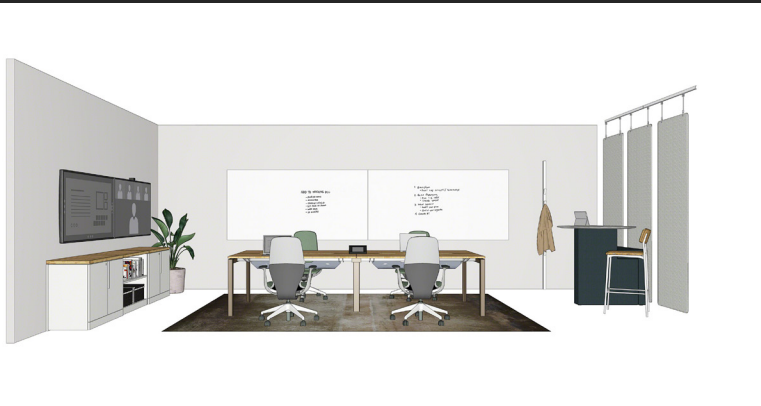


- 1 The Microsoft Surface Hub 2S on the Steelcase Roam mobile stand can be used in this space or moved to another area when needed.
- 2 Designtex drapery rated for acoustic absorption helps to keep sound from carrying in open collaboration spaces.
- 3 The Steelcase Roam mobile stand, flexible furniture and stool-height posture allow people to easily reconfigure the space to suit their needs and access markerboards easily.

Planning Idea ID: [GN7CB4SG](#)

Featured Products: [Mackinac](#) [Steelcase Flex Collection](#) [Steelcase Series 2 Stools](#) [Steelcase Roam Collection](#) [Post & Beam](#)

## Additional Collaboration Spaces

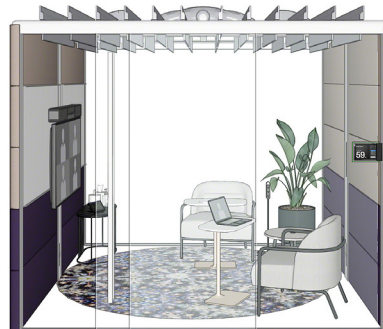


Shared Conference Zoom Room  
Planning Idea ID: [GC9KE9DR](#)



Dedicated Team Project Room  
Planning Idea ID: [CG5UN3AB](#)

Shared Huddle Room B  
Planning Idea ID: [JV6CY8DR](#)



Shared Huddle Zoom Room  
Planning Idea ID: [DY7QT3UQ](#)

# Social

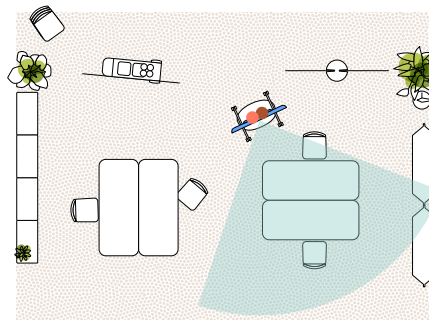
A range of flexible settings with a social, informal vibe engage in-office and remote teammates and enhance their ability to get work done.





## Community Hub

This high-performing community hub gives an on-site team the ability to bring in remote team members for short durations or informal meetings. Situating this in a low-traffic area with views to the outdoors lets them camp out while still having a place to snack or get lunch delivered.



**Display:** The Microsoft Surface Hub 2S on the Steelcase Roam mobile stand serves as the primary display. Individual devices are secondary. Start the meeting with a laptop using Microsoft's Proximity Join software feature or reserve the device for the meeting.



**Camera:** The Microsoft Surface Hub 2S serves as the primary camera. Individual devices provide a view of each person's face and allows those in-person to see content up close.



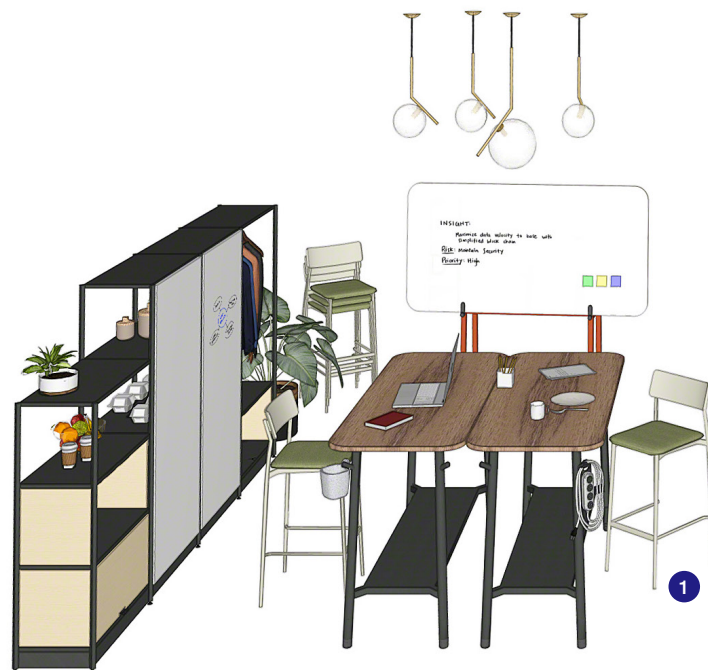
**Speaker:** Audio is integrated into the Microsoft Surface Hub 2S. Mute speakers on individual devices.



**Microphone:** The microphone is integrated into the Microsoft Surface Hub 2S. Mute audio on individual devices.



**Lighting:** The mobile display should be positioned facing away from windows to ensure that in-person teammates are not backlit.



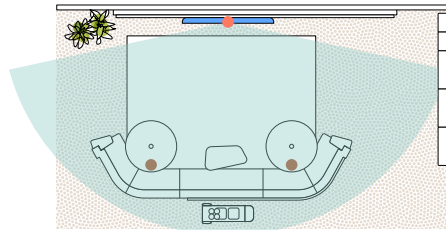
- 1 Furniture and boundary elements that are lighter in scale or on casters allow for easy reconfiguration on demand or if distancing guidelines change.
- 2 A mobile display lets the team configure their space to meet their needs and adjust the position of their remote teammates as their work changes.
- 3 Steelcase Flex Acoustic Boundaries provide visual privacy and sound absorption.

Planning Idea ID: [PH4RP7HR](#)

Featured Products: [Steelcase Flex Collection](#) [Steelcase Flex Active Frames](#) [Steelcase Roam Mobile Stand](#) [Turnstone Simple Stool](#)

## Lounge Space

A higher-than-typical lounge sit and straighter back creates a more comfortable posture and makes it easier to stand up and engage with content. The large-scale monitor and personal devices support a variety of views.



**Display:** The HD Monitor connects to Microsoft Teams and the Logitech Tap all-in-one unit (which supports multiple software solutions). People can also connect from their laptop to provide a close-up individual view.



**Camera:** The Huddly IQ ultra-wide 150° view camera detects and auto-frames the people in the space.



**Speaker:** Audio is integrated into the display or external speakers could be added on the tables to help those in the room hear and avoid sound from projecting too far.



**Microphone:** Logitech Rally Mic Pods are positioned on the tables to provide better audio for remote participants.



**Lighting:** Light the entire seating area. Angled lights in the ceiling in front of the seating area provide the best facial lighting.



- 1 High-back screens and tall boundary elements allow people to meet in the open with a sense of privacy and improved acoustics.
- 2 The microphone pucks on the tables make it easier for remote participants to hear.
- 3 A camera with auto-framing capabilities allows remote participants to see whomever is speaking even if they move around.
- 4 A higher sit makes it easier to access Steelcase Flex markerboards which can be moved from the wall rail to the cart to share content with remote participants. Using the digital whiteboard for co-creation would also enhance engagement.

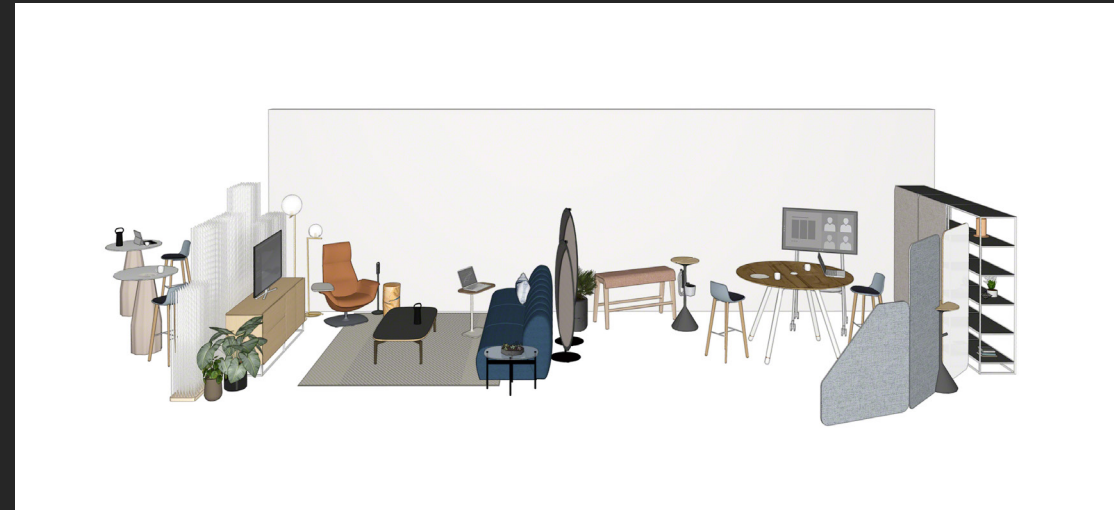
Planning Idea ID: [KC7NM8VP](#)

Featured Products: [Orangebox Away from the Desk](#) [Steelcase Flex Collection](#) [Steelcase Flex Active Frames](#) [Steelcase V.I.A.](#)

## Additional Social Spaces



Quick Connection Space  
Planning Idea ID: [ZT5EN3EQ](#)



In-Between Space  
Planning Idea ID: [HQ2PU6NP](#)



Breakout Space  
Planning Idea ID: [WK6XM2JP](#)



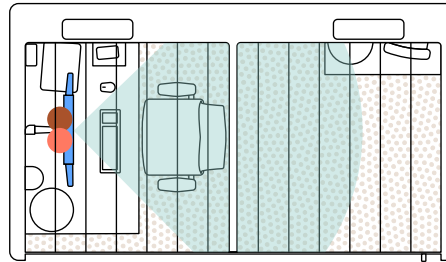
# Personal

A range of spaces give people more control over how they get work done and support generative, evaluative or informational sessions with remote colleagues.



## Personal Pod

Use this pod to seamlessly transition from focus work to hybrid collaboration. Connect a laptop to the monitor to display content or participate in a video call. The height-adjustable desk lets someone stand up to present or participate in a more generative session.



**Display:** Monitor arm-mounted HD display connects to a personal device with an HDMI cable.



**Camera:** The Poly P15 system uses a 4K, all-in-one camera with auto-framing video, microphone and speaker unit. It simplifies cable management with a single connection and supports USB A and USB C.



**Speaker:** A speaker is integrated into the all-in-one Poly P15 system which also supports headphones.



**Microphone:** The integrated microphone in the Poly P15 system features AI noise cancellation. It can be configured to pick up sound inside a specific area. Headphones are also supported.



**Lighting:** The Lume Cube broadcast lighting kit is attached to the display.



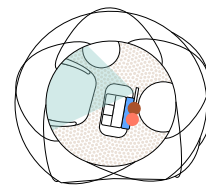
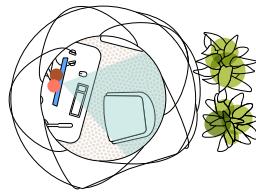
- 1 This Orangebox Air3 Pod supports both analog and digital tools. The freestanding pod can be moved to another part of campus if needs shift.
- 2 Choose the right posture to suit individual needs. Use the height-adjustable desk to stand up and present, and to activate the body and the brain.
- 3 The pod's ceiling louvers allow for more ventilation and air flow, and more acoustical privacy when closed.

Planning Idea ID: TX9QZ6PJ

Featured Products: Orangebox Air3 Pod Ology HAD with Rise App Sarto Screen Think Chair

## Privacy in the Open

Individuals can pop into these Steelcase Pod Tents to listen in on a webinar, a large group share-out, or make an impromptu video call with headphones.



**Display:** Arm-mounted HD display connects to laptop with HDMI cable (left). Personal device used (right).



**Camera:** The Poly P15 integrated camera is mounted on the monitor for a more flattering camera angle (left). Personal device is used (right).



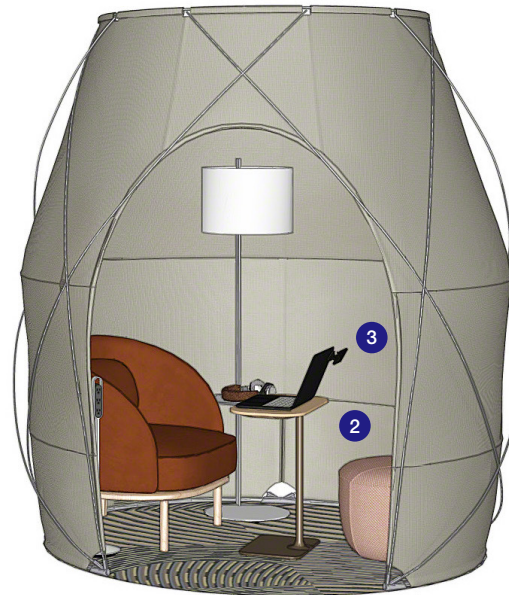
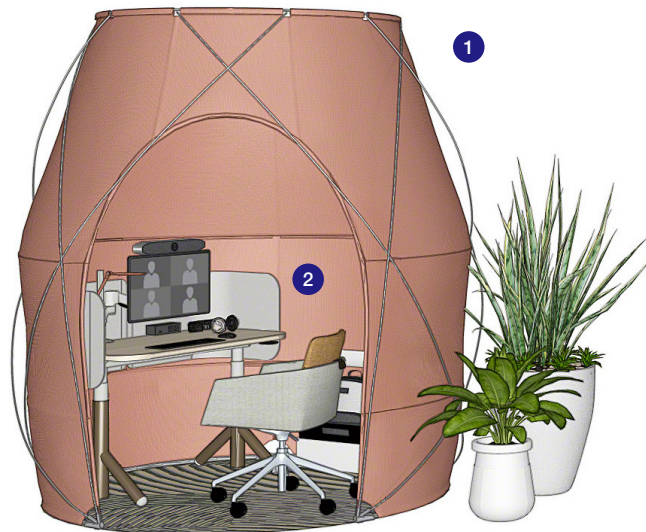
**Speaker:** The Poly P15 all-in-one system integrates speakers. Position space away from other heads-down areas when using integrated speakers (left). Consider headphones if other focus areas are nearby.



**Microphone:** The Poly P15 microphone includes acoustic fence technology and AI noise blocking to hone in on an individual's voice (left). Personal device is used (right).



**Lighting:** The Lume Cube broadcast lighting kit shown is used in the space on the right.



- 1 High boundaries and shelter provide a sense of refuge and visual privacy.
- 2 Tables to accommodate laptops and access to power allow people to bring their own devices and easily connect.
- 3 A stand and suction cup mount for lighting (right side) gives people the confidence they need to feel like they are camera ready.

Planning Idea ID: [SB7DX6CB](#)

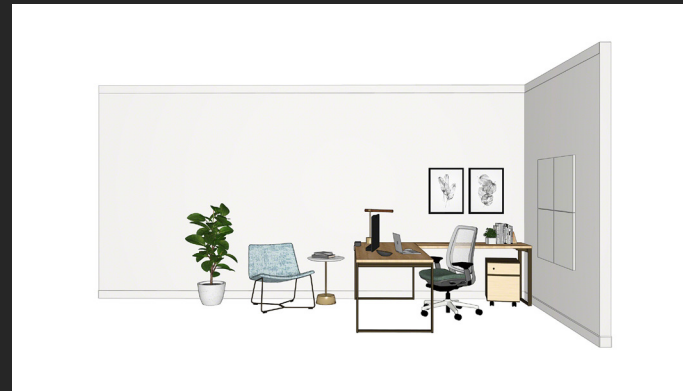
Featured Products: [Steelcase Pod Tent](#) [Steelcase Flex Collection](#) [Coalesse Marien152 Chair](#) [Bolia Fuuga Armchair](#) [Lagunitas Personal Table](#)

## Additional Personal Spaces

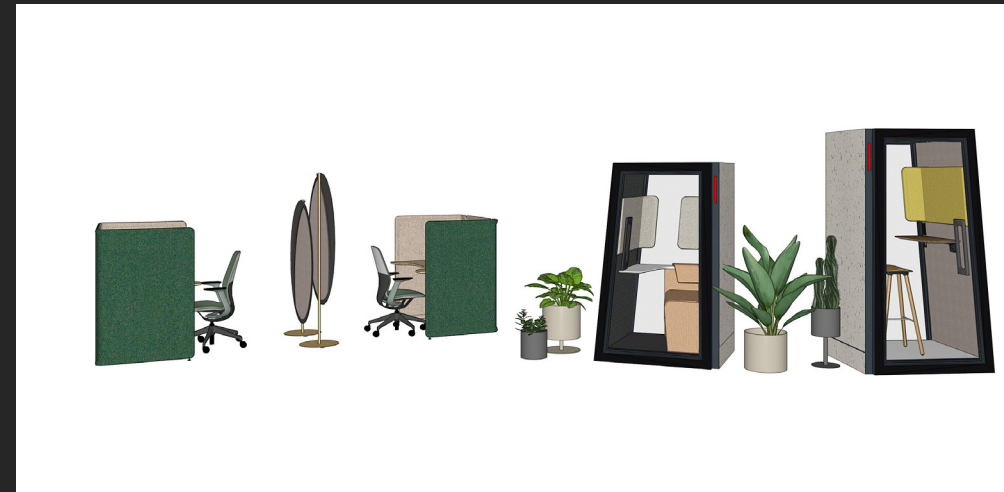


Work Zone Area  
Planning Idea ID: [ZU7FK8AC](#)

Zoom Room Phone Booths  
Planning Idea ID: [CS4BB3EX](#)



Zoom Room Home Office  
Planning Idea ID: [ZV6BJ8MB](#)



Individual Privacy Spaces  
Planning Idea ID: [HF6JA5FE](#)

# Learning

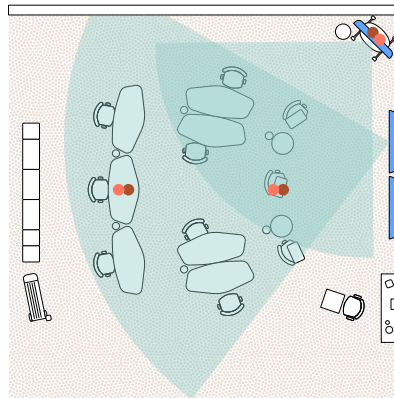
Whether it's a large training session, small group learning or peer-to-peer education, learning spaces should be able to adjust on demand.





## Active Corporate Learning Space

This active learning space is designed with flexibility in mind and an emphasis on virtual participants. Furniture can be adjusted by those in the space on demand and tiered seating allows everyone to see and be seen.



**Display:** A touch screen controller makes it easy for people to connect to the meeting with the HD wall-mounted monitors. The Microsoft Surface Hub 2S on the Steelcase Roam mobile stand can be moved for close-up displays of content or people.



**Camera:** The Logitech Rally Plus system camera provides a room view and can support the addition of a second camera if needed. The Microsoft Surface Hub 2S on the Steelcase Roam mobile stand provides a small group view or a close-up view of content.



**Speaker:** The Shure ceiling speaker array connects to the Logitech Rally Plus system to provide better audio throughout the space.



**Microphone:** The Shure ceiling microphone array connects to the Logitech Rally Plus system to ensure that everyone in the room can be heard.



**Lighting:** This room needs to be well lit, 400-800 lux at the table surface. Avoid pointing cameras toward open windows.



- 1 An auto-tracking camera above the wall-mounted displays provides a room view for remote participants.
- 2 The Microsoft Surface Hub 2S on the Steelcase Roam mobile stand shares content with those in the room or supports a smaller breakout conversation with virtual teammates.
- 3 A ceiling-mounted microphone and speaker combination unit provides audio.
- 4 Steelcase Flex Active Frames provide a visual and territorial boundary for the space as well as a place to store team artifacts and tools.

Planning Idea ID: [MC8MA8YZ](#)

Featured Products: [Steelcase V.I.A.](#) [Steelcase Flex Active Frames](#) [Elbrook Tables](#) [Shortcut Chair Collection](#) [Thread](#) [Steelcase Roam Mobile Stand](#) [Exponents Lectern](#)

## Additional Learning Spaces

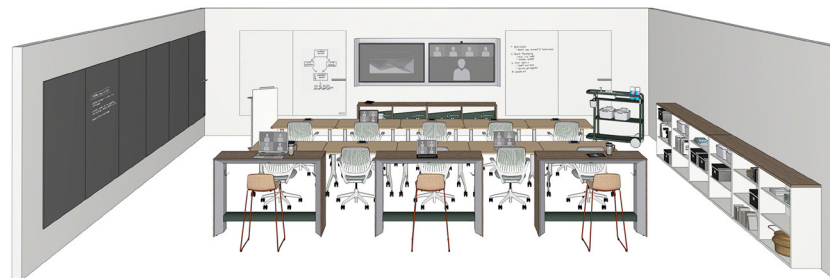


Team Training Space  
Planning Idea ID: [FS3RX4AT](#)

HyFlex Classroom  
Planning Idea ID: [XV5DC9AY](#)



Training Zoom Room  
Planning Idea ID: [XH9EV9XJ](#)



# Tech Considerations

**For a better hybrid collaboration experience, think like a director — lights, camera...audio, content.**

This guide includes existing hardware and software features to consider when designing for hybrid collaboration with any solution.

People will get the most out of these experiences with hands-on training.

## In This Section:

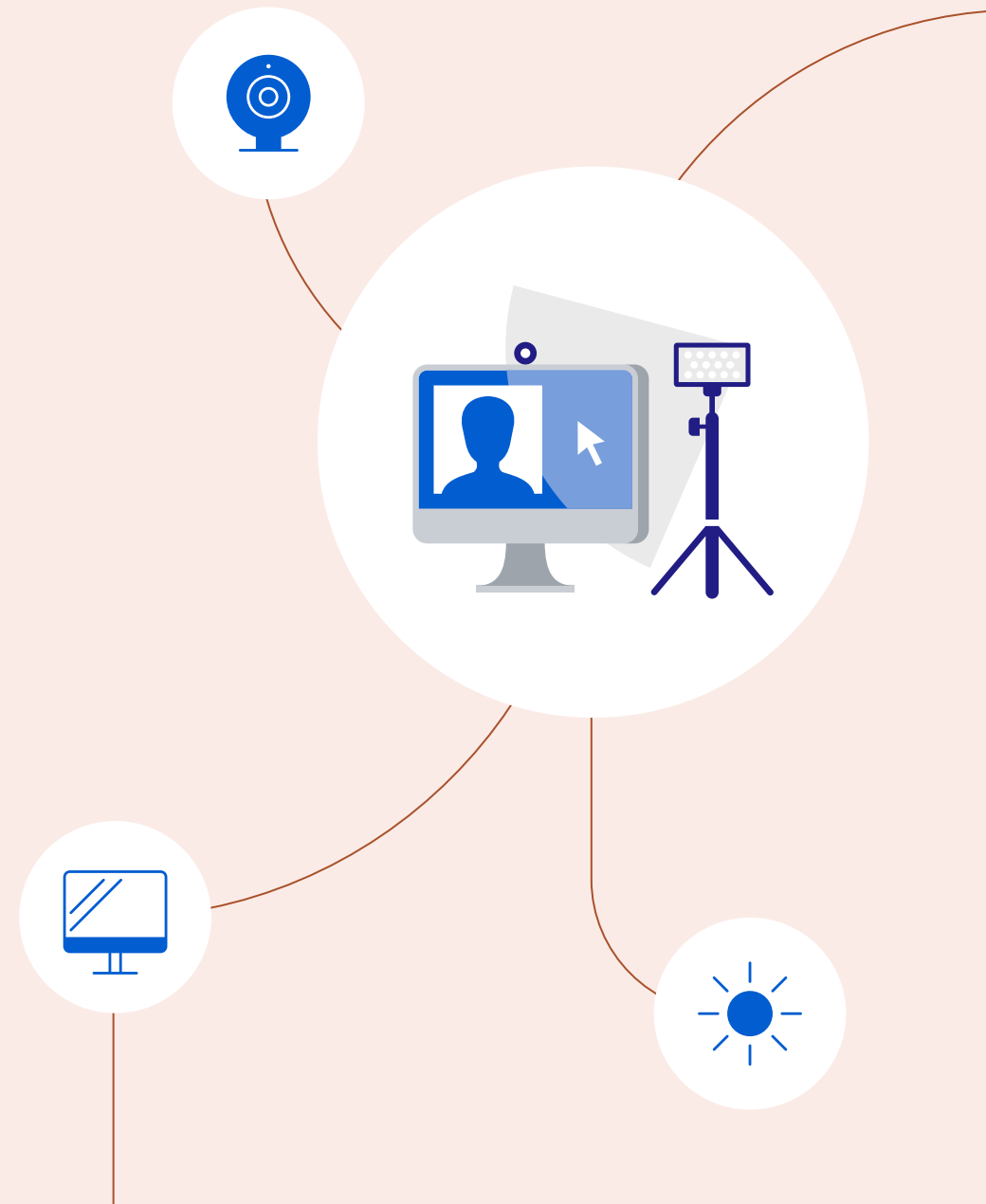
25 [Visuals](#)

29 [Audio](#)

33 [Content](#)

# Visuals

See and be seen. Design for the camera, consider how displays are used and think about the impact of well-placed lighting.







## Camera

To keep people engaged, make sure they can see and be seen, whether they are in the office or remote. This means choosing the right camera or cameras for the type of collaboration being supported.

### Hints

The smaller the space, the smaller the field of view needed.

Auto-tracking is an optimal feature for a long-form presentation by a single presenter. The camera can follow them as they engage the audience.

Auto-framing is most useful when people are moving around the room — the camera widens or minimizes the field of view based on the number of people in the space.

#### Field of view angle

Angles typically range between 70° for individual use, 180° for wall-mounted use in group spaces and even 360° for a center-of-the-room device. Wide-angle lenses can create a “funhouse mirror” effect which is not ideal. Ensure the field of view is wide enough to take in participants and content, but narrow enough to avoid visual distractions.

#### Proximity + placement

Eye contact is a three-way relationship between the camera, remote attendees and the people in the space. It is best achieved when the camera is placed less than 10° (vertical & horizontal) from where you would expect a person’s eyes to fall — typically top center of the display. Also, keep the camera as low as practical and make sure those in the room have some distance from the screen.

#### Number of cameras

Some off-the-shelf hardware and software systems can support multiple cameras. Consider using a content camera in addition to a room camera in spaces that support generative collaboration. Large training rooms can benefit from audience and presenter view cameras.

#### Manual tilt, pan, zoom

These features allow people within the space to control what’s being viewed. This can be done mechanically or digitally. Presets may be available. A few cameras allow for remote adjustments, but most must be done in the room.

#### Resolution

Higher resolution is better for capturing image details such as slight facial expressions. The resolution can be degraded for a variety of reasons, such as bandwidth limitations or video compression.

#### Auto-framing

The camera automatically frames the view by detecting where people are located and cropping the video. Each software or hardware manufacturer does this differently.

#### Auto-tracking

Typically, audio localization determines where the sound is coming from and the camera automatically crops the video to follow the person actively speaking.

#### Auto-image correction

Natural or overhead light can cause brightness levels to vary. Auto image correction identifies individuals and adjusts parameters such as image brightness to ensure everyone looks their best.\*

#### Face cropping

This feature cuts out the space between individuals in a room view. It provides better views of faces, but also removes some spatial context for remote participants.\*

#### Participant count

Typically cameras with auto-framing can also detect the number of people in the space. This can be used to automatically determine if a room is over capacity.\*

#### Physical distancing

To determine if distancing requirements are not being followed, cameras can identify the distance between individuals.\*

\* This is an emerging feature and may not be available on all cameras.



## Display

Consider how teams will be collaborating when selecting the right display. Creative, generative sessions will benefit from more interactive tools.

### Hints

Two displays let teams separate people and content for generative collaboration. Check hardware and software to ensure it supports this ideal state.

Size and resolution of the display will help determine how far people can sit from the screen and still see content effectively.

If remote participants need to actively engage in a meeting, ensure the display is large enough to provide them with adequate presence in the room.

#### Size

Display size is important to give remote participants equitable presence. Participant tiling and sizing is dependent on the software used, but estimates can be made to display people at an equitable size. If people need to be highly engaged, a display large enough to spotlight them is ideal.

#### Resolution

Most displays are considered high definition, which typically means at least 720 horizontal rows of pixels (full HD is 1080 px and 4K doubles that). Consider how far people will be sitting from the screen and the size of the screen to determine the right resolution.

#### Viewing angle

Most displays are flat, limiting the view from which they can be seen. In-person participants should be somewhere in front of the display to see remote teammates without much distortion. If the display is curved, typically in a concave manner, individuals should sit directly in front of the display.

#### Quantity

Depending on software and hardware, either one or two displays is typical. With one display, each platform will tile people and content differently. Train individuals on how to spotlight people or content for the best experience. With two displays, people and content can be separated which allows for optimal placement.

#### Meeting interface and controls

Meetings can be started and controlled with personal devices or a shared room device. Some displays enable a touch interface, ranging from personal displays like a smartphone or tablet to large displays like an interactive touchscreen. Input includes one point of touch, multi-touch or a stylus. Voice controls are emerging and support a touchless experience.



## Lighting

Task, ambient and accent lighting are different from lighting used to design a great video experience. The future workplace needs to consider all of the ways lighting contributes to hybrid collaboration.

### Hints

Illuminate participants with key lighting above and just in front of people at a 45° angle.

Light the wall behind people uniformly to help separate the background from people.

If you can't avoid strong backlighting from windows, look for window treatments to mitigate the light.

#### Video lighting angle

Facial lighting is best at a 45° angle from horizontal, positioning lights slightly in front of participants. Steeper angles cause strong facial shadows and shallow angles cause glare and hotspots.

#### Ambient lighting sources

Indirect lighting disperses light over a large area. This helps ensure each person is well lit while trying to minimize eye strain.

#### Color spectrum

Consider the warmth or coolness of the lighting source. When combined with ambient lighting sources such as natural light from a window or ceiling lights, people might look different on video than they do in person. Lights with an adjustable color spectrum will allow people to select the light that makes them look their best.

#### Backlighting

Try to reduce strong backlighting, either from windows or lamps. Most cameras try to manage an average brightness level from the entire scene, and so people's faces may be difficult to see clearly with a bright background. Use shades, screens or other dividers to block some or most of the backlighting.

#### Lighting the background

Wall wash lighting provides separation between the wall and participants. Avoid hotspots or shadows by lighting the wall behind participants uniformly. Some back lighting helps outline people and enhance depth of field.

# Audio

Hear and be heard. Pay attention to elements that impact how sound moves through technology and around a space.







## Acoustics

Furniture and materials all impact acoustics. Based on where the space is and what's happening inside of it, consider where acoustic-absorbing properties can be added.

## Hints

Consider how to add sound-absorbing elements to the ceiling, floor and walls.

Add soft finishes to furniture to help dampen sound.

Use boundaries that can improve acoustic performance in the open plan.

### Spatial layout

Consider adjacencies when planning hybrid collaboration spaces. Research tells us that a steady hum of noise is not as disruptive as punctuated sounds. And teams tend not to be bothered by conversation from their team, but are disrupted by noise from other teams. Open collaboration spaces should be distanced from heads down, deep-focus areas.

### Acoustic privacy

Consider how to keep sound inside a space to protect those nearby and how to avoid distractions from nearby spaces. Prefabricated walls block sound from passing from one area to another. In the open plan, phone booths and pods offer acoustic privacy.

### Sound absorption

Carpet squares, rugs and suspended acoustic panels absorb sound and limit the reflection of sound waves within a space. Also, consider wrapping interior walls in fabric or other plush sound-absorbing material to reduce the reflection of sound waves.

### Sound masking

Unlike white or pink noise, sound masking uses precise filtering to deliver a quiet, uniform and airflow-like background sound based on its overlap with only the frequencies of human speech. It can enhance the ability to focus and provide additional acoustic privacy.

### Deployable boundaries

Screens, panels and boundary elements can help contain sound in the open plan and block sound coming from nearby spaces. Pods can also support acoustics in the open plan by giving people more places to take video calls uninterrupted.



## Microphone

Power, placement and pickup of sound are all key elements to consider when choosing the right microphone or microphone array for a space.

### Hints

Take advantage of software system noise suppression.

Help employees learn how to adjust settings to provide for optimal sound.

Virtual microphones can improve sound quality in a large space, but make sure people know they can be heard even when whispering.

#### Noise suppression by sound type

Many software platforms offer noise suppression based on noise type or provide an auto setting. Preferences may allow for filtering all sound except voice or allow some background sound. These settings can change as software or hardware is updated. Be aware and communicate changes to individuals and teams.

#### Noise suppression by zone

Using an array of microphones to determine the location of a sound, some microphones allow users to create a zone of sounds to include and exclude. This can be done by picking up sound within a certain shape area in front of the microphone, or using a floor plan with drawing tools to design a more complex pickup location.

#### Sound conduction

If the software or hardware being used doesn't include adequate noise suppression, adjust the microphone's mounting location. Larger work surfaces can help by keeping microphones further from vibrations when people are typing or eating. Small tables can allow microphones to be placed away from doors or HVAC locations.

#### Virtual microphones

Some higher-end microphones use a processing technology that simulates virtual microphones throughout a space. These microphones can pick up sounds, even very quiet ones at a great distance. Use care with this technology as someone in the space might think they are whispering, yet are able to be heard by remote participants.

#### Location

Common options are tabletop or ceiling-mounted microphones. While tabletop microphones are easy to set up, they typically require cabling. Some devices, such as collaboration bars, contain an integrated microphone, but don't allow for optimal placement close to people speaking. Consider ceiling-mounted in a larger space. In the open, place microphones on tables as close to people as possible when using a fixed device.



## Speaker

The right speakers can amplify and spotlight sound, and integrate with other technology in the space to avoid echos and reverb.

## Hints

When there is only one directional speaker, it should be placed near the display of remote participants for a more natural experience.

Audio spotlights limit the reach of sound and can be beneficial for collaboration in the open.

An emerging feature uses spatial awareness to adjust sound to enhance people's voice based on where the speakers are and can help create a more natural connection.

### Power

Speakers are rated in watts. Match speaker power to the conditions it needs to serve, including the size of the space and background noise it needs to overcome. For example, don't rely on individual devices to serve an open group setting.

### Spatial audio

Some speakers use built-in spatial awareness to automatically adjust the audio for the acoustics of the space and the desired source location. This typically happens using sounds not heard by humans, but picked up by the speaker which determines any sound adjustments needed.

### Source location

Speakers can be placed on a tabletop or mounted in the wall or ceiling. When there is one directional speaker, the source of the sound should be co-located with the image of the remote person who is speaking for a more personal experience.

### Reach

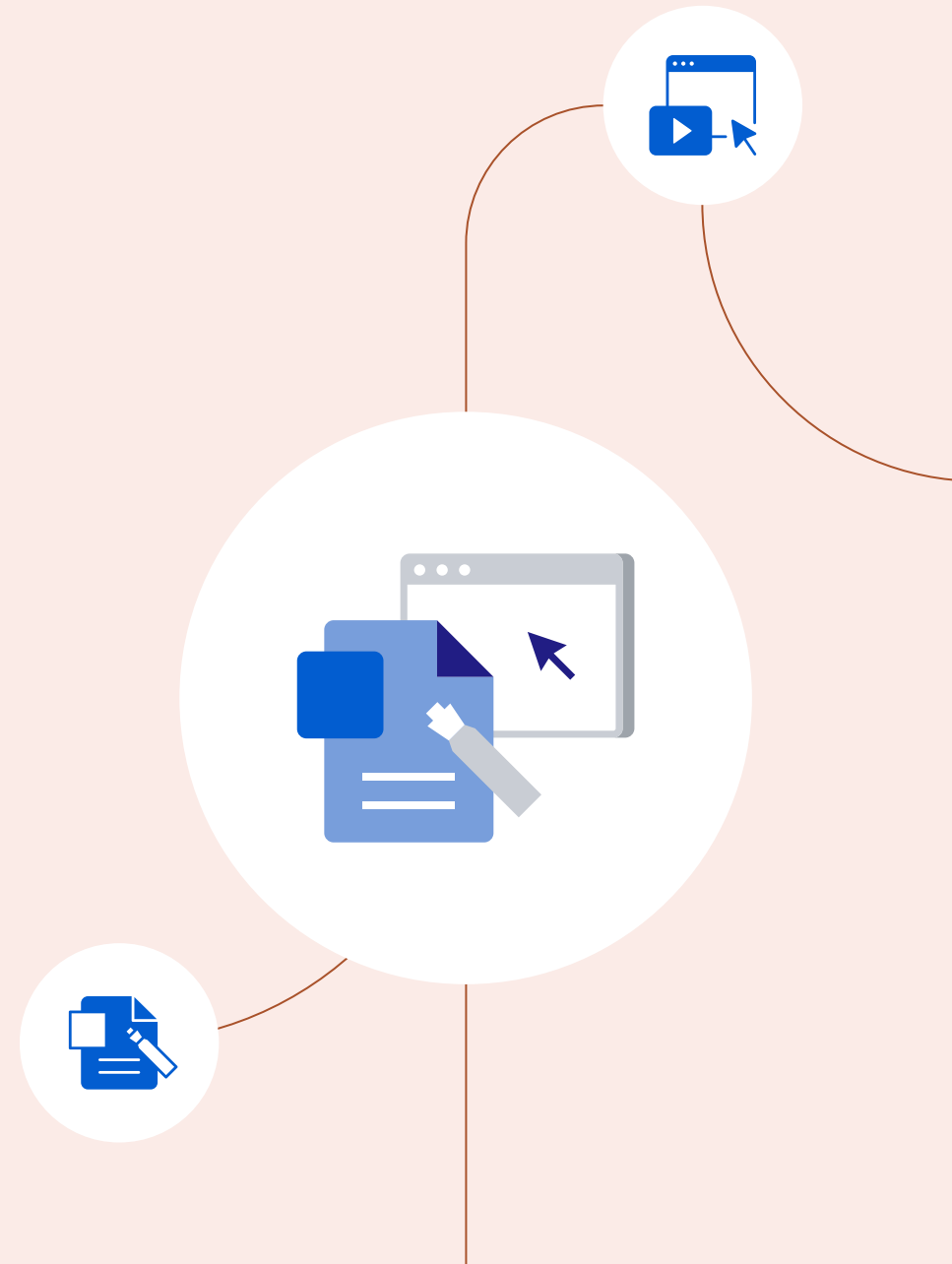
Sound travels throughout a space, reflecting off surfaces. Some speakers can limit the reach of the sound. Sometimes called audio spotlights, these speakers make it easy to hear within the zone of reach while people outside that zone hear very little.

### Transcription and translation

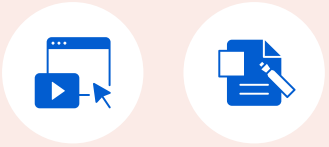
Many platforms offer automatic meeting transcription and language translation. This can be valuable as another way to interact with remote teammates, as well as document the meeting. Accuracy is dependent on many factors, including audio pickup quality, accents, jargon, etc.

# Content

Engage more people in more places by using a variety of shared content creation tools. New cameras and a range of tools are already improving hybrid collaboration.







## Digital + Analog

To keep people engaged on both sides of the camera you should provide a mix of analog and digital tools, as well as consider how you'll display content while collaborating in a hybrid model.

### Hints

Content cameras provide significant benefit to generative collaboration.

Digital whiteboards enable co-creation between in-person and remote participants.

When using analog markerboards, make sure remote participants can see the content.

#### Variety

A range of digital and analog tools will benefit in-person and remote participants by giving them choice and control. Personal and shared devices can work together or separately based on preference. Always consider how people can co-create, and how to share and capture any content created using analog tools in the space.

#### Content cameras

These cameras are dedicated to capture analog content on markerboards or sticky notes. They are also designed to remove skew, reduce glare, and otherwise improve the image for better readability.

#### Digital content creation

Software apps let people create sticky notes, draw shapes, include images and perform other actions typically done on a markerboard, large screen, touch display or personal device. Digital whiteboards allow for multiple, distributed users to participate synchronously.

#### Smart whiteboard

These products combine analog markerboards with content capture mechanisms. Some products track the location of the physical marker to reproduce the same writing on a digital whiteboard.

#### Analog content creation

Surfaces such as markerboards are a common tool to capture ideas. Place them in easy-to-access areas.

#### Additional tools and artifacts

Sticky notes, pinnable surfaces and tangible artifacts can all benefit the creativity process. Consider where these are positioned within the space and if remote participants can see and contribute to what's being discussed.

## Our Commitment

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Together, Steelcase and our industry-leading dealer network deliver the expertise, ease of doing business and experience you need to create great spaces for hybrid collaboration and beyond. From technology and space design to acoustics and lighting, Steelcase dealer partners streamline the entire process of creating a better work experience.

Steelcase is committed to working with you to test, learn and innovate to create a better workplace. Here are some ways to get started:

- See new experiences and applications in **virtual or in-person visits**
- Test new applications in a **pilot experience**
- Understand evolving user needs with a **collaborative situations workshop**
- Explore application thought starters in our **design guide**
- Develop **custom conceptual ideas** for your space with help from our application designers
- Build a **work-from-home program** for your organization

Contact us to get started.

[steelcase.com/WeCanHelp](https://steelcase.com/WeCanHelp)

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