



*A year after our club's first on-line meeting, Lancaster Woodturners vote in this April 2021 screenshot to fund equipment for hybrid meetings.*

## How our woodturning club got to hybrid meetings on Zoom

*by John Kelsey, LAW Treasurer*

COVID disrupted our woodturning clubs and get-togethers. Many clubs, including ours, responded with on-line Zoom meetings. As the pandemic recedes, we'd like to resume meeting in person while respecting members who don't feel safe. Equally important, we don't want to lose what we learned and gained during lockdown.

**What did we learn?** Slowly we learned how to host hybrid meetings with some members in the room and some remote on Zoom,

with equivalent participation by all. Everyone can watch demos, make comments and ask questions, participate in show-n-tell, and conduct regular club business. Everyone can see and be seen, speak and be heard.

**What did we gain?** Live meetings recorded on Zoom give our members a huge new benefit: Choice. We can attend in person and touch the wood. On a rainy night we can stay home and Zoom. And later on we can watch the recording from our club website, [lancasterareawoodturners.org](http://lancasterareawoodturners.org).

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[lancasterareawoodturners.org](http://lancasterareawoodturners.org)

## 1. Benefits of hybrid meetings



### Equality

*A camera on members in the room enables communication for everyone. At left Matt and Henry*



*in the room chat comfortably with Doug, on the big TV from his iPad at home. He can see and speak directly to them, and they to him.*



### Time and Space no barrier

*In this coffee hour screen shot, a member in Pennsylvania chats with remote members calling in from Maryland and Germany. Zoom's "Spotlight" feature combines the views.*

**Versatile setups that show the full range of club activities create equality among members in the room and on Zoom. Any view can be Spotlit so it fills the room's big TV and remote member's screens.**



### What clubs need

*It takes three or four video cameras to cover a club's regular activities: business meeting, show-n-tell, live demo, social chat. They can be a mix of HDMI camcorders, USB webcams, and wireless phonecams on WiFi.*

*Besides cams, the setup needs a PC connected to the Internet, a big TV, mics for the speaker/demonstrator and for members in the room, and an audio/video controller. Starting from scratch, a club might need to spend \$2,000.*



## 2. Before COVID



*How many burly turners can get a good view standing around the demo lathe? In the old days an active club soon reached the limit.*



*At AAW events we discovered that by connecting an ordinary consumer-grade HDMI camcorder to a big TV, everyone in the room could see. Many clubs acquired A/V gear like this during the years before lockdown. Most of this gear can be used in a new hybrid meeting setup.*



*Lancaster club hosts the annual Mid-Atlantic WoodTurning Symposium. Our members helped build versatile camcorder booms for the event, plus one boom-and-camera setup for our own club.*

*The boom delivers the essential turner's-eye view. Canon Vixia camcorder, \$250; boom and tripod materials, \$400. Big TV, \$500-\$900. Yellow safety screen, \$200. For less expensive solutions see Hacks, page 9.*

### 3. Pandemic lockdown



**Meanwhile, COVID.** During lockdown in March 2020, Lancaster Woodturners began hosting monthly membership meetings on Zoom, plus weekly coffee hours open to all. Annual Zoom license, \$150.

**It took a while** for our members to get comfortable. We learned to designate a moderator, to use "Raise Hand," and to mute when not talking. April 2020 screenshot from our first on-line meeting.

An advertisement for a live online woodturning class. On the left is a photo of a large, dark, textured wooden vessel. To the right, text reads: 'Cindy Drozda Live Online Woodturning', 'Burl Vessel Hollowing and Finishing Saturday, October 30th, 1pm EDT', 'Includes Follow-up Session Nov 13th, and 6 months video replay of the class', '\$20 US per person', and a yellow button that says 'Burl Hollowing Signup'. At the bottom, it says 'Make the Most of Your Burl - Video available until April 15, 2021 - \$20' and another yellow button that says 'Burl Video'.

**Meanwhile, LIRDs.** During COVID many professional demonstrators set up for Live Interactive Remote Demos. Online demos eliminate the trouble and expense of travel, and make it possible to include clubs and individual turners.

Many pro demonstrators use V-Mix software for A/V management, though for a club V-Mix is steep to learn. For more info, [lucidwoodturning.com](http://lucidwoodturning.com).

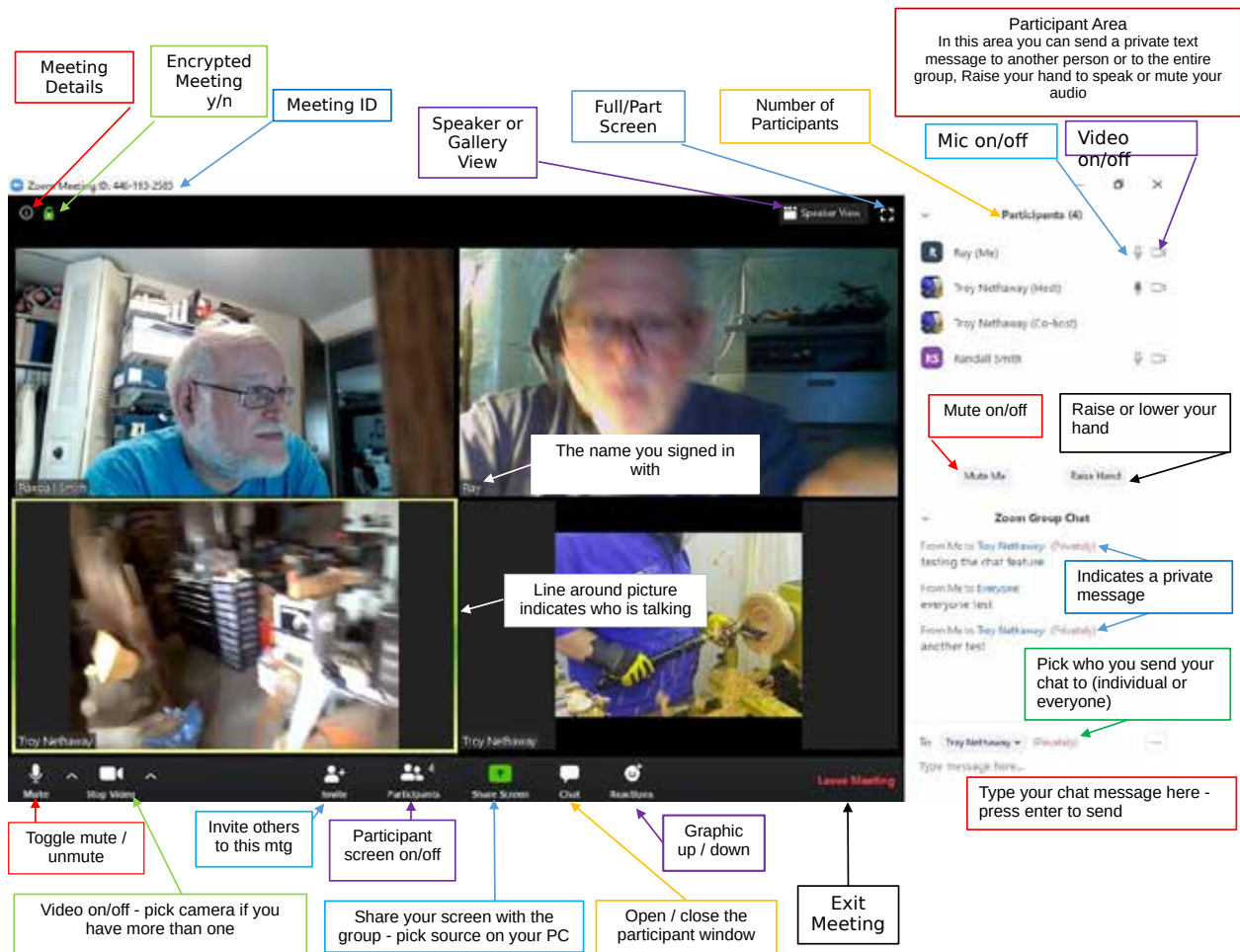


**Meanwhile here at home,** Lancaster club has held 20 monthly on-line meetings and 75 weekly Coffee Hours since March 2020. Since June 2021, all our meetings have been hybrid with some members in the room and some attending remotely on Zoom.

Our weekly online programming has attracted interest and new members, some from far away, and our club has grown from 40 members to more than 60.

Several stalwart Lancaster members joined me in video experiments; I added a complete demo setup to my basement workshop. We shopped for used gear and built inexpensive apparatus, we made plenty of mistakes, and we learned a lot.





*Our friends at the Susquehanna (Harrisburg) club made this map of Zoom. They organized on-line training sessions to walk each member through it, one by one and line by line.*

## 4. Getting started

To coach our members onto Zoom and prepare for our first on-line meeting, our club exec sponsored several on-line Coffee Hours. People were isolated and looking for a lifeline during the Spring 2020 lockdown, and we offered a friendly one. But still, we had to telephone members to persuade them to try it, and some needed wifely help just to log on.

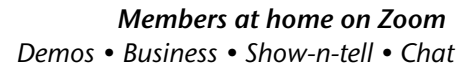
To participate fully, members needed to learn:

- How to click a Zoom invitation to enter the room. How to find and use the basic controls.
- Microphone mute/unmute, video on/off. Lower left of screen.
- Full screen/small screen. Wee squares in upper right corner.

- Gallery View/Speaker View, upper right. In Gallery View the screen looks like Hollywood Squares except our friends are the stars in boxes, in Speaker View the person talking fills the screen.
- Smartphones default to Speaker View and usually arrive in vertical (portrait) orientation. Turning the phone sideways to landscape makes a bigger picture.

We emphasized that this is not one-way TV to watch passively, it's multi-way communication. You see everyone, everyone sees you, and everyone can talk. People don't understand this until they have gained some experience. We all learned that participation and engagement improves the experience for everyone.

## Hybrid Club Meetings on Zoom



## 5. It's not that complicated

In summer 2021 Lancaster Woodturners participated with five other AAW clubs in panel discussions on hybrid meeting setups. It's easy to be overwhelmed by tech talk, but the overview reveals a common structure that most hybrid setups share, regardless of equipment and software choices. Club meetings generally follow a pattern too: president's remarks, business, show-n-tell, demonstration, social chat.

There's always a **computer** at the center, with a moderator/operator running the screen. The computer can be laptop or desktop, Mac or PC, though with recent processor and good graphics.

**Camcorder** and **microphone** positions flow from the meeting's agenda. Once focused and framed, wired cams don't need to move around much. For special situations a wireless phonecam on WiFi can be positioned almost anywhere.

The **A/V controller**, which can be hardware or software on the operator's screen, enables switching cams and managing mics. Zoom's A/V menus can do it, though clumsily. A hardware controller with lighted buttons works better and helps members operate the setup. Demonstrators need to see a **display** so they can interact with members in the room and on Zoom. Bigger clubs may have more than one big TV and may need PA systems to amplify voices in the room.

A cam on members in the room gives the room its own box in the Zoom gallery, enabling communication across the digital wall. Except for touching the turnings and swapping choice bits of wood, ya gotta be in the room for that!

Dennis Belcher of Hampstead NC organized the 2021 AAW panels, which were recorded and archived on [woodturner.org/Chapters/ChapterLeadership Online Community/Library](https://woodturner.org/Chapters/ChapterLeadershipOnlineCommunity/Library).

[illegible]

Room furniture includes TV monitor stand and safety screen built by Barry, tool cabinet/grinder stand built by Ben, tables donated by Angelo.

*The club plans to upgrade the demo lathe in 2022.*



## 7. Hybrid business meeting



**Club president Matt Kilaeski** conducts a hybrid business meeting. He's standing at the show-n-tell table, seen by a single camcorder. On the big TV, remote members appear as a gallery alongside Matt; top left box shows members present in the room.



**Members in the room** can take the floor to speak and vote, on equivalent terms with members on Zoom.



**Moderator/operator's desk** manages the Zoom feed, switching mics and spotlighting cameras as needed. From top left, HP monitor with webcam, power strip, Lenovo desktop computer with Movo wireless mics, ATEM Mini A/V controller, TV remote, trackball, keyboard, and puck mic.

**For a stable meeting** nothing beats an Ethernet cable connecting computer to Internet router. And likewise, HDMI/USB camcorders wired to the PC are less finicky than wireless phonecams.

**Clubs will always face a tradeoff** between technical complexity and long-term continuity. More than one member needs to know the system; a current startup-shutdown checklist is essential.



## 8. Hybrid Show-n-Tell

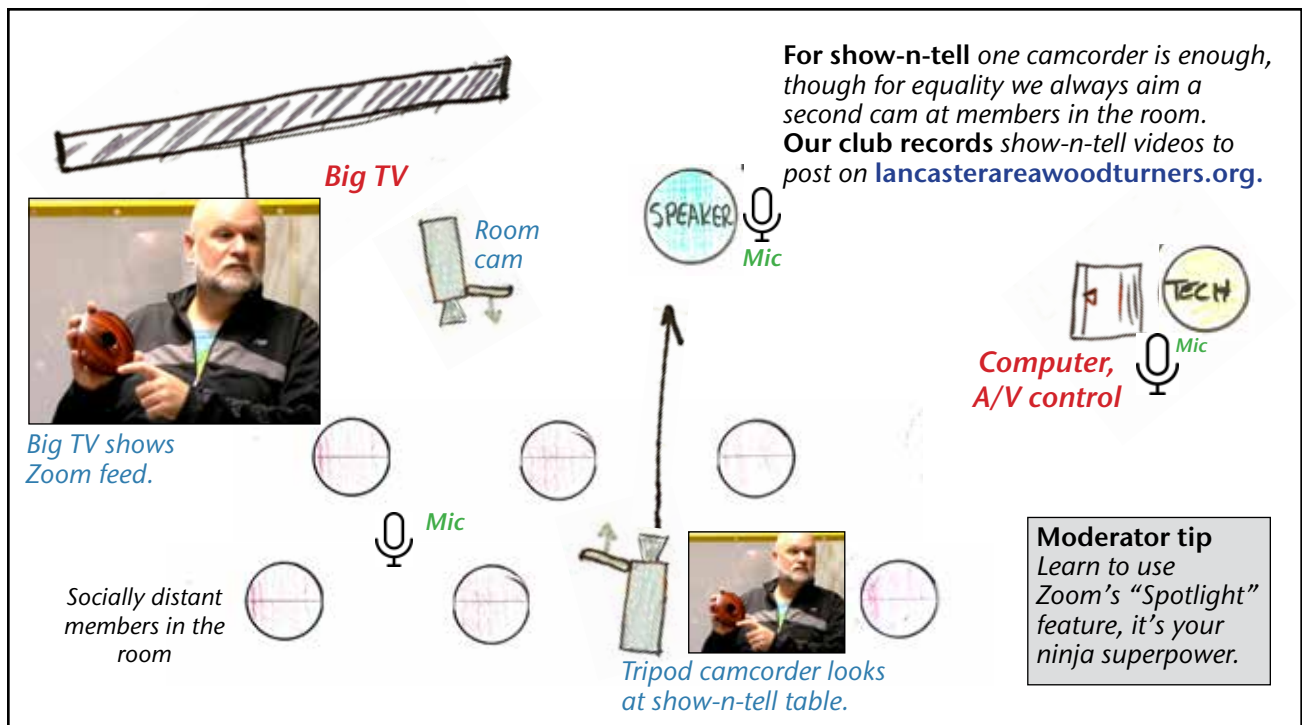


**Canon Vixia camcorder** on a tripod looks toward the show-n-tell table in the club meeting room. Puck mic taped to table picks up members speaking anywhere nearby.



**Tripod camcorder** shows the member speaking, and telephotos in on the work he's holding. Zoom Spotlight fills everyone's screen.

**Remote member on Zoom** can share photos from his own computer, or simply hold the work to his webcam.



For show-n-tell one camcorder is enough, though for equality we always aim a second cam at members in the room. Our club records show-n-tell videos to post on [lancasterareawoodturners.org](http://lancasterareawoodturners.org).

## 9. Hybrid Demonstrations



**Live demo** *needs at least two cameras, the overhead view and a tailstock view. If there's a third cam, aim it at the demonstrator's face. And if a fourth, aim it at members in the room.*



**Phonecam on WiFi** shows the demonstrator as a talking head. Zoom can show only one USB camera at a time, but it can Spotlight a WiFi phonecam alongside that USB view: picture-beside-picture.

**VMix and ATEM A/V controllers** *can do true picture-in-picture.*

### Demo tip

*A camera on the room and a demo monitor helps the demonstrator interact with members. Whether live or remote, demonstrators need this feedback.*

**Boom  
camcorder  
looks down  
at lathe**

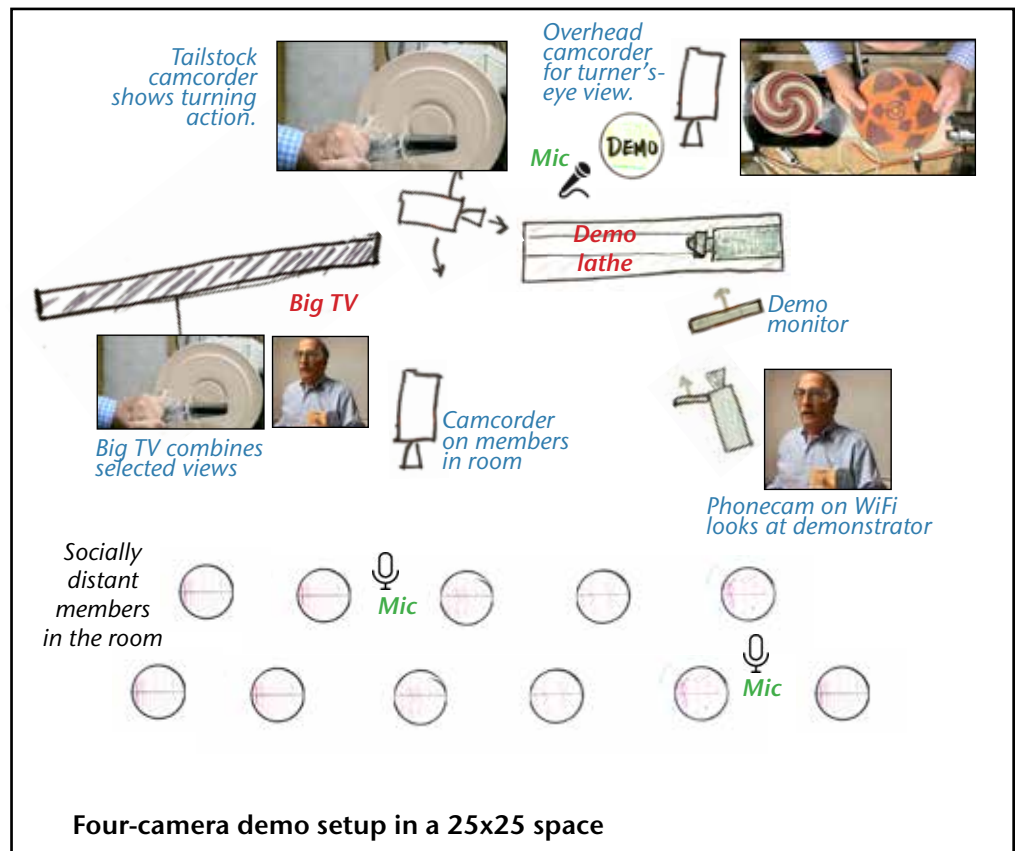
**Tailstock  
camcorder**  
*looks at  
mounted  
workpiece*

**Phonecam**  
on flexible arm  
looks at the  
demonstrator



### Camera tip

*Position and aim each cam, find the right wideangle-telephoto frame, then leave it alone. Panning around makes viewers queasy.*





## 10. Audio's not easy

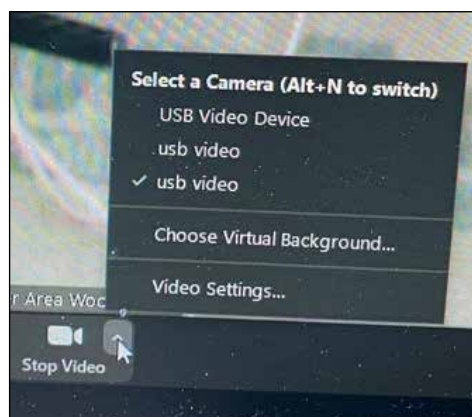


**Soundtech CM1000** conference room mics pick up voices inside a 20-foot circle. Three of them daisy-chained together can mic members in the room, the speaker, and the meeting moderator. \$35 each.

**Mic tip:** Test volume on ^Audio Settings menu.



**Movo Duo 2-mic wireless system**, \$200, provides a lapel mic for the demonstrator and a second mic on a talking stick for members in the room. It's similar to Rode's wireless Go II system, which has rechargeable batteries, \$300.



**Alt + N** makes it possible to switch USB cameras directly in Zoom. Mic selection requires tedious mousing to the ^Mute/Unmute menu at right.



**Hart audio mixer** can control four mics or microphone systems. This \$75 USB device, along with Alt+N camera switching, is enough to manage a hybrid meeting.

### Audio tip

Wireless Bluetooth mics and speakerphones may have unacceptable stutters and latency. For stability, choose wired mics with small TRS jacks that plug directly into USB mic port.



**ATEM Mini A/V controller** has big lighted buttons for four HDMI camcorders plus selection and volume control for two mics - a \$300 solution that simplifies meeting management. An ATEM almost pays for itself by eliminating the need for audio mixers and HDMI-USB video capture cards.

## 11. Money-saving hacks

**Lancaster Woodturners** has invested about \$3,000 in our video setup, about the cost of a mid-range lathe. Other clubs have devised other solutions, some more complex and more expensive, some simpler though perhaps more limited in scope. Here are some equipment alternatives:

**Computer.** Many pro demonstrators use a gamer-quality laptop with great graphics and extra USB ports, \$1,500. Instead, our club spent \$400 for a used 2017 Lenovo desktop computer with monitor, NVidia graphics, i7-level processor, 8 ports, and 16GB of RAM.

**Camcorders.** Sometimes they are available refurbished or used for a substantial discount. Older models work well enough provided they have HDMI output, not composite RGB. The Canon Vixia line has internal menus to disable on-screen messaging, for clean video output.

**Big TV.** Fall 2021 sweet spot for 75" screens is under \$1,000, for 65" screens it's around \$500. Maybe get the smaller one now and add another next year.

### Phonecam tip

To avoid squealing audio feedback, join without audio, mic OFF and speakers OFF.



**Old phonecam** becomes a wireless camera that can be placed anywhere. Costs nothing, but too many of these may overwhelm the meeting room's WIFI.



**Shop-made drawer-slide arm** mounted on a freestanding mast has 2 ft. of motion across the lathe, 1 ft. left to right. Shop-made gimbal mount at left end allows the camcorder (not shown) to rotate, swivel, and tilt. Gear like this can replace hundreds of dollars in tripods and booms.



**Shop-made arm** mounted on shop ceiling pivots down to hold phonecam looking toward demo lathe's tailstock. This design offers a wide range of adjustment without eating any floor space.



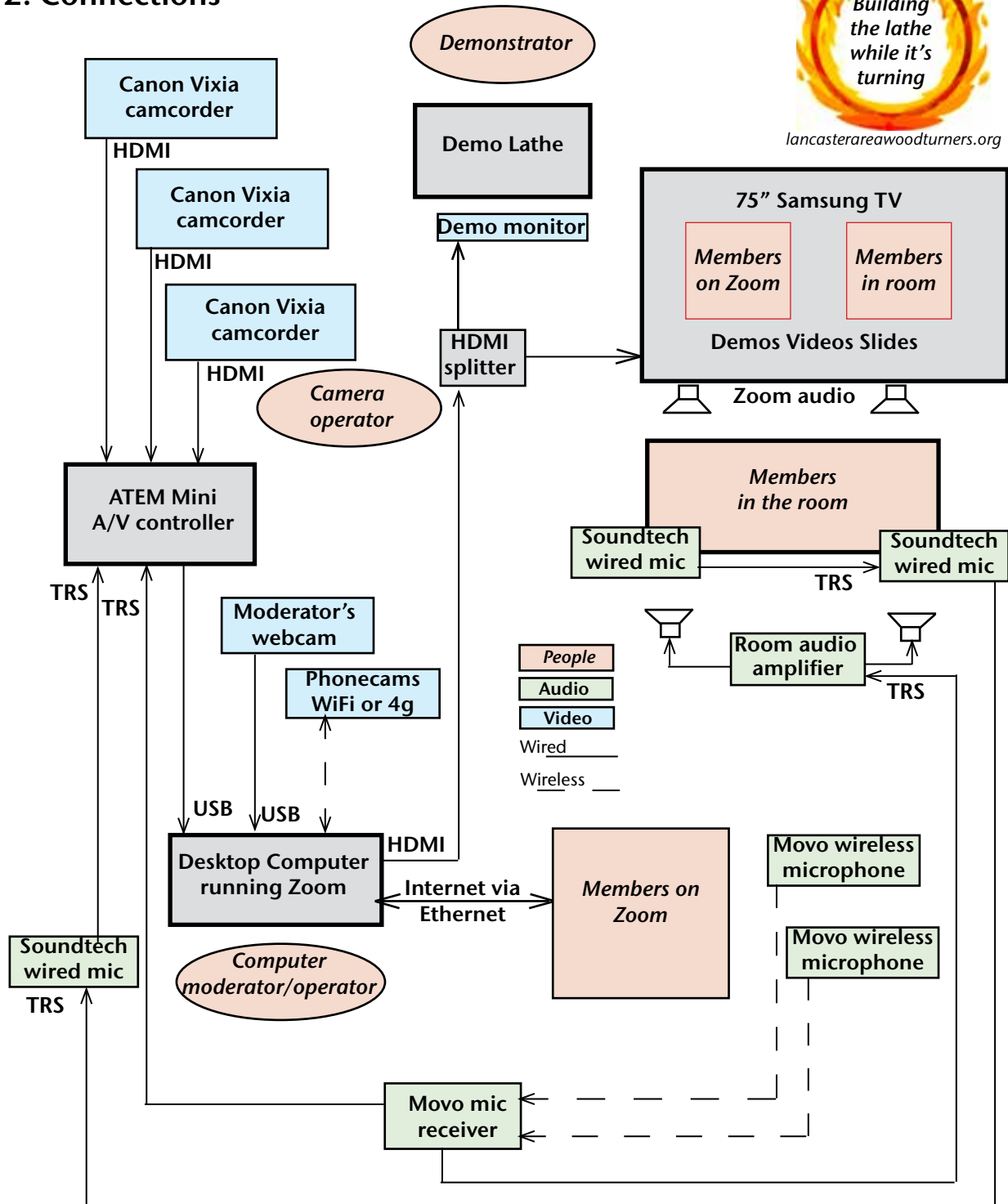
**Inexpensive USB webcam** can stand in for an expensive camcorder. Most webcams contain mics.

### Moderator tip

When a member wants to show photos from a remote computer, make time before the meeting to practice screen-sharing. It's tricky, nobody gets it right at first.



## 12. Connections



Lancaster Area Woodturners Digital Team - October 2021

John Kelsey  
Ben Kauffman  
Barry Price  
Doug Reesor  
Ernie Conover  
Mike Jungkurth  
Kai Koethe  
Dave Schell  
Matt Kilaeski

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## **13. Hybrid Meeting checklist**

### **1 - Starting up**

- 1.1 - Power strip on desk ON
- 1.2 - Lenovo computer ON
- 1.3 - HP desk monitor ON
- 1.4 - Samsung TV ON using remote
- 1.5 - ATEM Mini ON with power strip
- 1.6 - Wait for Windows to start
- 2 - Start Zoom. Join with computer audio. Be sure Zoom records meeting on computer.
- 3 - Camcorders ON and plugged in. Lens open.
- 4 - ^Video
  - USB Video Device = desk webcam
  - Blackmagic Design = ATEM: 3
  - Canon Vixia camcorders
- 5 - Phonecams: join Zoom on WiFi, audio and speakers OFF, rotate to landscape view.
- 6 - Microphones, ^Mute/Unmute
  - Select Blackmagic Design = ATEM
  - Mic 1 = 3 Soundtech pucks
  - Mic 2 = Movo 2-mics wireless
  - switch 3 units ON
- 7 - Speakers, ^Mute/Unmute
  - Select SAMSUNG (NVIDIA High Def Audio), volume on remote
- 8 - Zoom Ninja: Gallery View, Spotlight, Remove Spotlight
- 9 - Show-n-Tell
- 10 - Demonstrations

### **11 - Shutdown**

- 1 - End Zoom (End Meeting for All)
- 2 - Convert meeting recording, save
- 3 - Windows power OFF (Shut Down)
- 4 - Monitor OFF
- 5 - Power strips OFF
- 6 - Camcorders OFF
- 7 - Room lights OFF
- 8 - HVAC mode OFF



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## **LAW Hybrid Meeting Protocols**

### **Before every meeting**

Be sure all systems are switched ON and tested: computer, cameras, mics, big TV.

Be sure Zoom is set to record on our club computer.

Remind everyone - on Zoom and in the room - to silence their phones. And remind the Zoomists to mute themselves if they must take a phone call or talk to their partners.

### **During the meeting**

Members in the room, please wear a COVID mask and maintain social distance.

When you want to talk or ask a question on Zoom, click “raise hand,” we’ll spotlight your video. In the room, raise your actual hand, we’ll aim a camera at you.

**Computer Operator:** Remember to Remove Spotlights and return to Gallery View whenever the meeting moves on. From there, reframe for the next situation.

**Camera operator:** Frame your subject, then stop moving. Fiddling around makes us dizzy.

**Meeting moderator:** Everyone see and be seen, speak and be heard, remote on Zoom AND present in the room.

### **After the meeting**

Wait for the computer to convert the recording, and save it.

Before leaving be sure the room lights, HVAC, and all electronics have been switched OFF.

