



Meeting Room Case Study: Facility-Wide Control

The Q-SYS™ Platform provides software-based control for this facility without dedicated control hardware.

The Chicago Teachers Union (CTU) has been an instrumental force in education advocacy and public school reform in Chicago for more than 75 years. The recent move to consolidate its union and foundation activities on one 111,000 sq. ft. (10,022 sq. m.) site prompted a significant technical upgrade that included the extension of video conferencing capabilities and the installation of the Q-SYS Platform for audio, video and control.

CHICAGO TEACHER'S UNION Chicago, IL



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Mercer Aplin - Threshold Acoustics Consultant

The challenges confronting the project's primary executors – systems integrator and installer Pentegra Systems LLC, Q-SYS programmer Audiobiz, and consultant Threshold Acoustics – were to assist in the transition and to ensure the flexible movement of signals around a large facility that included 24 meeting spaces.



1. Third-Party Integration and Control

The DSP and control needed to perform processing and control tasks for individual rooms including the ability to easily control a number of third-party equipment such as video streamers, PTZ cameras, IR controllers, table microphones, and more.



2. Easy to Use

It also needed to be easy to control for any end user employee or member. That included any full-time and part-time employee, plus the hundreds of volunteers with different skill sets that could use the space from week to week. This necessitated a solution that was intuitive and self-explanatory.



3. Time and Cost Sensitive

With so many different meeting rooms, a traditional hardware-based control solution had the potential to push the project over budget due to extraneous dedicated control hardware and programming costs. Furthermore, Karl Eifrig, CTS of Pentegra Systems noted they faced “a very compressed time frame” in the midst of working on the integration “while construction was still going on.”



4. Enterprise-Wide Support

In addition to the meeting rooms, it also had to support flexible usage across the site and in challenging spaces like a 600-capacity meeting hall, main lobby, executive boardroom and training room. They had a vested interest in finding a single, unified platform that would integrate these different room types, and simplify the programming and installation phases, as well as subsequent day-to-day activities.



5. Scalability

Threshold Acoustics Consultant Mercer Aplin observed that CTU personnel were “looking for a profoundly scalable solution that could accommodate future growth. CTU was going from what was a fairly technology-free environment to what they wanted to be a technology-rich environment.”

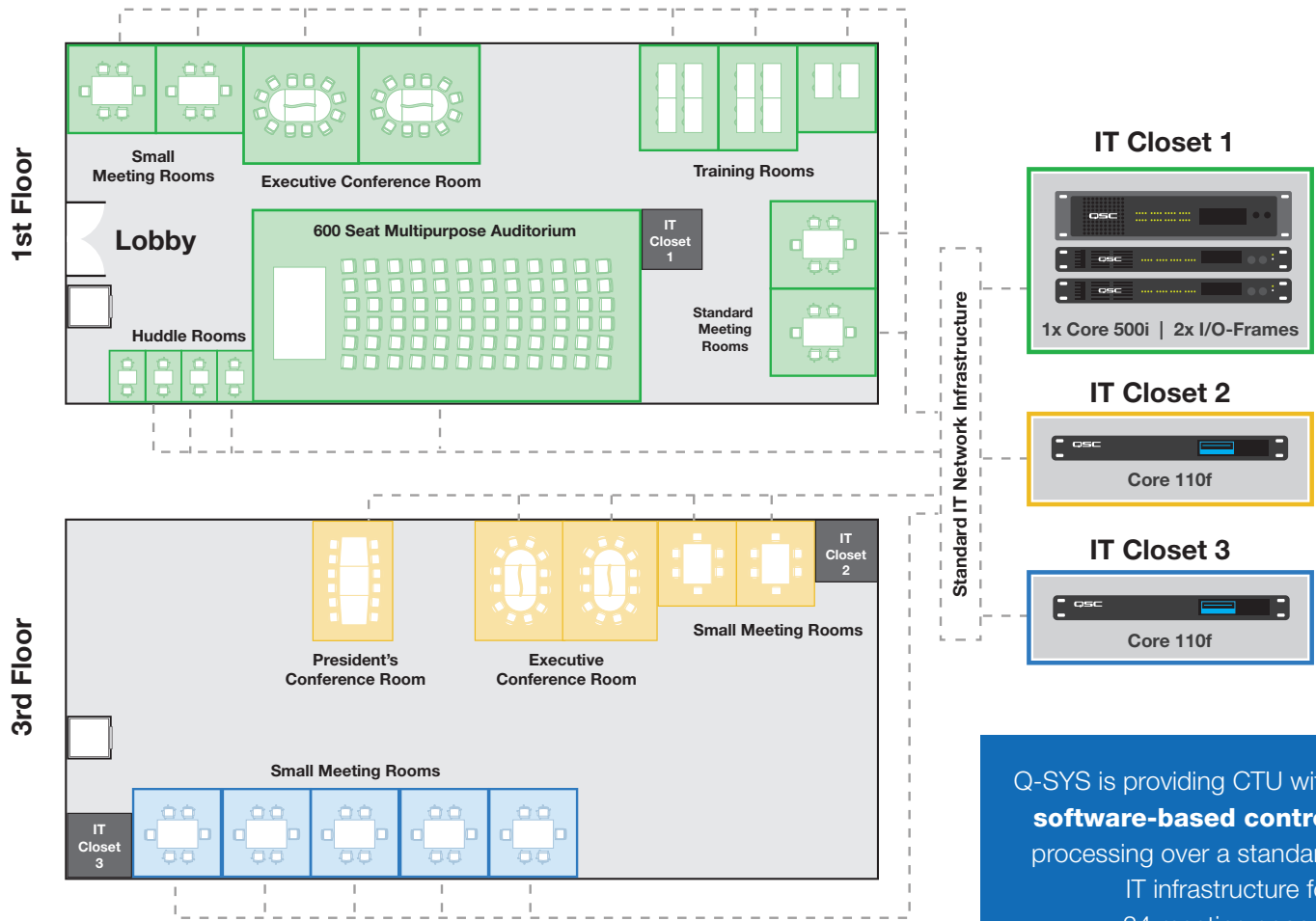
The installation needed to be open to reconfiguration in the future and provide “a way to move control capabilities around the facility in a very flexible way that didn’t lock us into dedicated control hardware.”

Scalable Control

Rather than putting dedicated hardware-based control processors in each room, Pentegra Systems and Theshold Acoustics used the Q-SYS Platform to deliver software-based control with a centralized processing architecture, which removed dedicated control hardware from the equation.

A single Q-SYS Core 500i Integrated processor was used to route and process the control, audio and video for 14 of the 24 meeting spaces, lobby and 600-seat multipurpose room. Additional audio and control I/O came in and out of the system via the Core's onboard I/O cards as well as remote Q-SYS I/O frames. Two additional Q-SYS Core 110f processors provided the remaining audio I/O and control support for nine additional rooms, including the acoustic echo cancellation and soft codec integration for the multipurpose "president's conference room". All Q-SYS Cores and I/O Frames delivered control over IP and in certain cases, via onboard RS232 ports to the room's different control needs.

Q-SYS is a full-feature control platform, which means that as CTU's control needs expand, integrators can easily add network I/O into additional rooms. If CTU decides to undergo another major expansion, integrators won't be faced with a "rip-and-replace" scenario for the control or audio programming. All Q-SYS Core processors are completely backwards compatible, which means system designs can be easily transferred to upgraded Cores without having to start over on the programming.



Integrated Control

CTU had dozens of different meeting spaces, each with individual audio and control needs. In a traditional hardware control scenario, a control programmer would have 50 to 80 individual integration parameters for each meeting space between the dedicated control processor and the audio DSP, camera and third-party devices. This arduous task is effectively eliminated with the Q-SYS Platform because all audio, video and control elements are contained in a single platform that speaks natively to each other through an integrated processor.

“The control processor-to-audio DSP integration alone usually represents 50% of my time as a systems programmer,” says Brian Christ, Technical Support & Application Specialist for AudioBiz and lead programmer on the project. “With audio and control capabilities developed and managed under one platform, we didn’t have to worry about programming one processor triggering another. Or how to program button feedback. It was all native to the Q-SYS Platform. It also made changes in the field much easier, which was a huge advantage in this case as we were on a short-time schedule,” said Christ.

Simplified Control

Drag & Drop GUI Editor and Native Control Devices

From within the same software suite (Q-SYS Designer Software), Christ was able to drag native control elements from his design, along with custom logos and background, into the Q-SYS user control interface (UCI) editor. With one push, he deployed the design onto a Q-SYS network touch screen controller. “For the smaller rooms, it took an average of 30 minutes to build a UCI for a single room. From there, I was able to copy-and-paste the design onto each room’s touch screen, change a few IP addresses, then rinse-and-repeat throughout all of the small conference rooms. The best part is Q-SYS designs only take seconds to compile. With over 75 end points throughout the building, having everything on one network under one platform made deployment a breeze,” said Christ.

Modern Scripting Language

Some of the third-party device integration called for more advanced scripting tasks. For this, Christ used the advanced Q-SYS scripting environment which uses Lua, a lightweight, open source modern programming language. “Lua is a very easy environment to work in with a small learning curve. It has the power of Python without the complexity, and is a tremendously powerful feature,” continued Christ.



Cost Savings

Using Q-SYS to manage all control requirements yielded an approximate 10% saving on overall system costs. With the extensive capabilities of a software-based platform, Q-SYS delivered a reduction in set-up times and expenses by removing the need for a complex integration between different platforms and the engagement of multiple programmers. “We originally had a competitive solution in the job spec, but we quickly realized we could save significantly by relying on Q-SYS to manage control,” says Aplin.

Remote Support and Flexibility







With two expansions already completed and more on the way, Q-SYS offered the flexibility to grow and scale as required, which can be done with a simple firmware update to the Q-SYS Cores, which takes only minutes. Even now, the system is monitored remotely by Pentegra Systems allowing Eifrig to “make changes to the Q-SYS design file from my desk, which is pretty handy.”

Piece of Mind

Threshold Acoustics Senior Consultant Jason T. Kartak believes that the end result is “probably going to set the standard” for a lot of unions. Many such organizations, he said, “rent an average hall which has ceiling speakers, but not much in the way of control, and hence they are limited in on capabilities. Having a hall dedicated specifically for CTU meetings will open doors for other unions thinking of pursuing a similar approach.”

A CTU spokesperson confirms that the new installation has “given us the much needed change in AV quality that we wanted, as well as the flexibility to be able to host a variety of meetings. We feel confident that the system will provide us with the power and flexibility to adapt as our requirements evolve.”



Model	Pcs Used	Description	Image
Q-SYS Core 500i Integrated processor	1	Customizable I/O featuring 8 onboard I/O card slots, 128x128 local audio channels, 256x256 network channels and 64 AEC processors	
Q-SYS Core 110f Unified processor	2	Class leading onboard I/O includes 24 I/O + USB, POTS and VoIP, simultaneously, 128x128 network channels and 16 AEC processors	
I/O Frames	2	4 customizable onboard I/O card slots, up to 16 channels of audio I/O	
SPA4-60	11	SPA Series amplifiers 60 watts x 4 channels	
TSC-7T	3	7" wall-mounted Q-SYS network touch screen controllers	
TSC-7W	9	7" wall-mounted Q-SYS network touch screen controllers	
TSC-3	3	3" wall-mounted Q-SYS network touch screen controllers	
AD-S4T	32	AcousticDesign™ Series surface-mount loudspeakers 4" 2-way, 120° conical DMT, passive	
AD-P6T	7	AcousticDesign™ Series pendant-mount loudspeakers 6.5", 2-way, 135° conical DMT, passive	
AD-C6T	50	AcousticDesign™ Series ceiling-mount loudspeakers 6.5", 2-way, 135° conical DMT, passive	



About QSC

QSC is a globally recognized manufacturer of audio, video and control (AV&C) solutions for huddle rooms to stadiums—and everything in between. Our systems make it easy for your team to design and integrate flexible, scalable solutions and deliver the native IT integration and standards-based technology your customers expect.



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