University of Louisiana at Lafayette

STEP Committee

Technology Fee Application

School of Music
Pro Tools Recording System

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Signature of Dean

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Abstract

A proposal is made to create a high quality Pro Tools digital audio recording system in the School of Music's Recording Studio. The system will contain a computer with expansion cards, plugin processing software, a control surface, and input and output interfaces, making it possible to record twenty-four tracks at a time. The facility will be used for instruction and music production projects.

Proposal

Making music is obviously a central activity of a music school, for which there are two basic outlets: performing live, and making and distributing recordings. There is a steady stream of solo, small group, and large ensemble concerts at Angelle Hall throughout the year, but only a limited number of recordings, both in terms of numbers of releases as well as in the scope of projects due to a lack of an adequate production facility. The equipment in the School of Music's Recording Studio is nearly twenty years old and has reached the end of its useful life. It has not been incrementally upgraded due to the original significant investment in a large analog console and its accompanying processing equipment. This grant proposes the replacement of the Recording Studio analog system with an entirely new digital audio recording system that will complement and integrate with the other digital teaching and production facilities (MIDI Lab, DVD Lab, Music Education Lab, and Angelle Hall Control Room) in the School of Music.

The core of the new recording system will be a Pro Tools workstation, the industry standard platform for audio recording. Pro Tools comes in two basic varieties: "LE" (Limited Edition) is the entry level consumer version, and "TDM" (Time Division Multiplexing) is the professional version. The School of Music has several LE systems, but each are limited to 2- or 8- simultaneous tracks of recording, 32 total audio tracks of mixing, and a modest amount of signal processing power. In many situations this is not enough to make a professional recording. For example, 8 tracks is not enough to make a recording of a rock band using contemporary techniques, in which a drum set alone can take up 8 input channels. In professional studios separate microphones are used for the kick drum, snare, tom toms, hi hat, and overhead cymbals. This leaves no channels free for the other instruments and singers. The TDM system in this proposal will allow for 24 (or more) audio tracks to be recorded at a time, 96 total audio tracks for mixing, and a large amount of signal processing power.

The following are examples of how the facility will be used:

1. For instruction. MUS 376 and MUS 377 (Audio Recording Techniques I and II) and MUS 422 (Live Sound and Digital Editing) will be taught in the studio. Students will learn to operate the equipment and use the facility during the week for homework projects.
2. Student recording projects. Students use the studio for personal recording projects in the evenings and on weekends, producing work in a wide variety of styles.
3. Ensemble rehearsals. Students will get experience making recordings in the studio of the orchestra, wind ensemble, jazz ensemble and combos, brass ensemble, percussion groups, choirs, opera workshop, and marching band during class and rehearsal, in turn providing feedback for directors and performers. This gives performers an opportunity to become familiar with recording studio practices.
4. Performances recorded in Angelle Hall will be mixed in the studio, adding high-quality compression, reverberation, and surround sound processing. These will be played on KRVS, and distributed on CD, DVD, and as podcasts.
5. Performers and composers can have their work recorded for portfolios and publication. Currently, this is being done only for those who can afford it off campus.
6. Pepper Records is a student organization involved in recording students, faculty, and community musicians. Their DVD production entitled "Digital Spice" (http://music.louisiana.edu/projects/digitalspice.htm) is the first in a series of CDs and DVDs planned to showcase the work being done at the University of Louisiana at Lafayette. The new studio will be the place to fully develop projects begun in the smaller technology facilities of the School of Music, and to record and produce small and large groups.
7. Music theory instructional materials for classroom and online supplements will be prepared in the studio.
8. Recording assets for projects in collaboration with other departments, such as computer science, theater, and communications.
9. The majority of funds have been raised for the Tommy Comeaux Memorial Endowed Fund for Traditional Music at UL Lafayette. When the Endowed Chair in Traditional Music is complete, a series of visiting artists will be in residence in the School of Music. Having an onsite facility will give students an opportunity to work with professional musicians, and help promote Louisiana music.
10. The facility will draw regional musicians for recording projects. Students will make and assist in quality productions of established artists. This will help students make contacts and get real world experience, in the process supporting the development of Louisiana music business infrastructure.

Benefits

A digital recording system will enhance the quality of instruction, increase artistic and research production, be an asset in recruiting superior students, and open new opportunities for collaboration and distribution. High quality productions from the School of Music serve as instruments to promote the University and draw attention to its facilities.

The Media Division has the largest concentration of students in the School of Music, accounting for 45% of Bachelor of Music graduates. Its goal is to prepare students for careers in the industry, where engineers are expected to have experience recording and mixing ensembles. In order to provide this training, a 24-track Pro Tools TDM system is proposed which will be capable of making professional multitrack recordings. The facility will be a place where students can learn and practice their craft. Both the University and School of Music stress excellent instruction in their mission statements. A digital recording facility is vital for such instruction in contemporary practices in an increasingly technological age, and students will be able to use their Pro Tools experience in studios across the country, or abroad. Performers need experience in recording studios as well, as they may find themselves in the future working as much, or more, in media facilities as they do on stage in front of an audience.

This facility will allow upgrading the curricula of MUS 376, 377, and 422. In addition to a tripling of the number of tracks and processing power, TDM systems are designed to synchronize with film and video, allowing courses to move into multimedia production. The industry is moving away from CD as a delivery platform, with this system students will have their projects produced on DVD or Internet, combining audio with image.

A Pro Tools recording system is needed as a support facility in most areas of the School of Music's operation and will benefit the music program in general. A recording facility will enhance the quality of the curricular offerings throughout the School of Music, where performance and listening are critical in all phases of instruction. Theory teachers will be able to include custom-made recordings with assignments tailored to students' needs. Instead of trying to explain only with words, instrumental and vocal teachers will be able to give feedback from recordings of rehearsals and performances, helping to guide students in making improvements in instrumental or vocal performance. Recordings of performances are expected to increase student satisfaction and increase retention rates. A number of General Studies majors enroll in the Music Business class, and having local projects to promote will give them real world experience in publicity, marketing, and sales.

Composition students have a special need to record and critically listen to new works as part of the learning process. Students will have the opportunity to show their achievements each semester in composition, recording techniques, and media projects. Knowing that their work will eventually be publicly displayed on disk and online motivates students to do their best.

Music Education students would utilize the studio for hands-on projects and assignments incorporating diverse instrumental groupings. For example, the instrumental

music education major would be able to hear how a given transcription assignment sounds, and then make revisions. Conducting students can listen to playback, how closely the musicians played together, and what balance existed between sections.

The system will be an asset in recruiting outstanding students for the Music Composition/Media emphasis. Graduate students will become leaders at the School of Music in terms of technology and recording techniques, and will serve as mentors to undergraduates in the running the day-to-day operations and the handling of outside projects.

The School of Music's mission seeks to develop artistic expression and collaborative spirit. This is the nature of a recording facility due to its interdisciplinary nature, calling on expertise in engineering, performance, composition, and communications. For example, students in the School of Music are already involved in producing music for video games developed in the Computer Science Department. The incorporation of the recording studio into activities of other departments is expected to grow as the capabilities of the facility grows.

The studio will be a resource for other departments. For example, last year a number of incidental recordings were made for use in theater productions, but the necessary resources were not available to make a full cast recording, or an ensemble backing track requested for an out-of-state competition.

This facility will increase interaction between the School of Music and the on-campus National Public Radio affiliate, KRVS. The station lacks a multitrack recording and mixing facility, and it is expected that students will become more involved in production work for broadcast or webcast. Studio creations and concert events from the School of Music will be increasingly aired due to higher quality results.

It is hoped that the School of Music will take a leadership role in the development of a high-tech production of regional music for regular display in the new Louisiana Immersive Technologies Enterprise, a state-of-the-art visualization center being constructed in Lafayette that will include the world's largest digital 3-D auditorium. The proposed recording studio would be a facility for the acquisition and refinement of assets. Technology development within the School of Music will position it to piggyback as well as on the University's Digital Media Stock Market currently under development. National and international attention will be drawn to both of these initiatives, opening a channel for recognition of the contributions from the School of Music.

Louisiana's State Film Commission and State Government have a number of incentives for film production companies developing projects in the state. Students graduating from UL Lafayette with Pro Tools production experience will have a better chance to find work in film projects and recording studios, and to develop their own startup production companies. Film Scoring classes (MUS 408 and 409) will have greater resources for combining audio with video.

Projected Lifetime

The system is expected to be effective for at least eight years. It is expected that Digidesign and Apple will continue to make updates and upgrades to the system, extending its useful life.

Persons Responsible

Dr. Willey will be responsible for implementation.

The vendor will install and authorize software before delivery, and Dr. Willey, with assistance from students, will install the equipment once it arrives on site.

Dr. Willey, with phone support from the vendor, will maintain the audio portion. An Apple Care Protection Plan will be purchased for computer maintenance and support.

Dr. Willey will train students in use of the facility.

Dr. Willey and students will operate the facility.

Timeline

Implementation of the facility will take one year. Equipment will be ordered and configured the first semester, and integrated into the curriculum and activity of the School of Music during the second semester.

Previously funded STEP grants

Dr. Willey has received several STEP grants of approximately $4,000 each to upgrade the School of Music's Resource Center, adding memory and hard drives to existing computers, updating operating systems, adding Microsoft Office software, and creating a multimedia workstation to edit videotapes and author DVDs.

Additional information

An attachment shows the layout of room 158 in Angelle Hall. The "studio" is the main part of the room where musicians set up and ensemble rehearsals take place. The Pro Tools recording system will be in the "control room," the smaller structure inside room 158, which provides sound isolation and security from the rest of the room. A window and speaker or headphone feedback allows communication between the two areas. An existing Wenger module in the corner of the studio is used to isolate a drum set.

Timeline

Length of implementation: 1 year

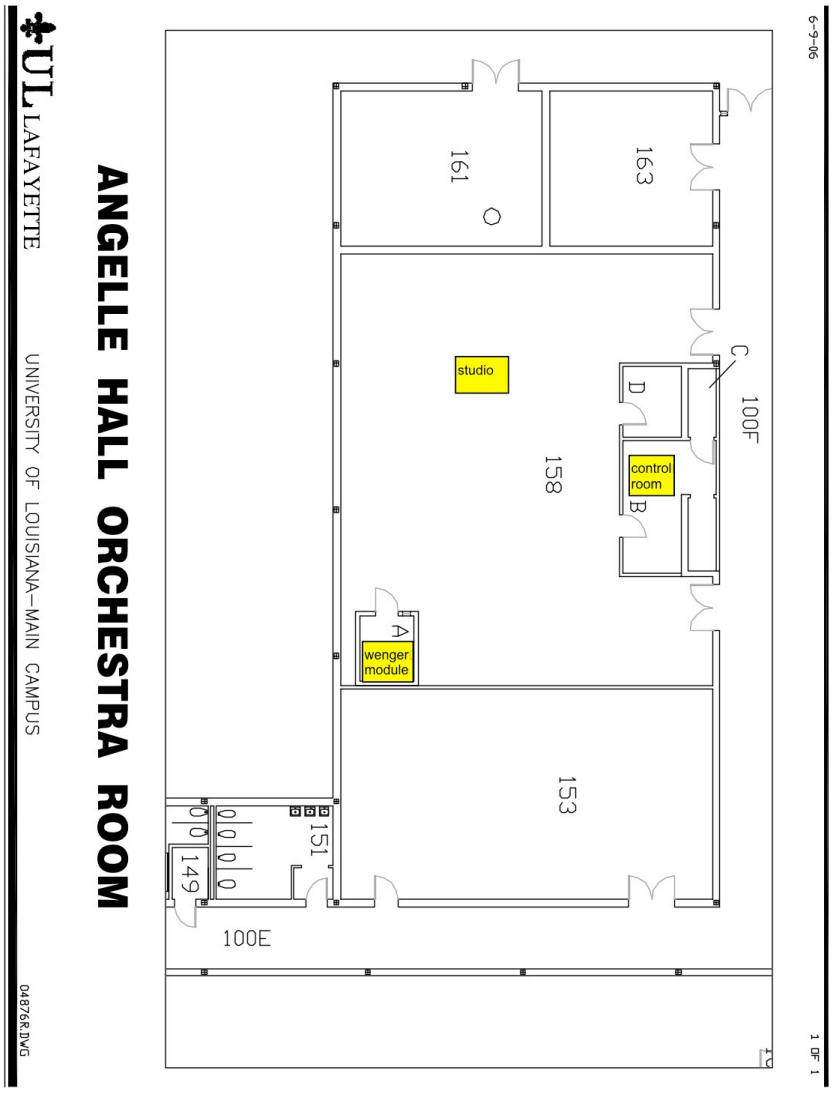
Budget Proposal

See attached spreadsheet for details

1. Hardware		
	Computer system	6,700.00
	Pro Tools audio system	30,587.92
2. Software		
	Pro Tools and plugins	3,705.00
3. Supplies		0.00
4. Maintenance		0.00
5. Personnel		0.00
6. Other		
	Shipping	345.00
TOTAL:		**$41,337.92**

Studio and Product Information

1) Room 158 in Angelle Hall.



Room 158 is used for the Recording Studio and orchestra rehearsals. Performers set up in the studio and Wenger module (for drums). The Pro Tools recording system will go in the control room, providing acoustic isolation from the performers, so that accurate monitoring can take place with loud speakers.

2) Argosy Console with Control | 24 Control Surface

The Control | 24 is a control surface for Pro Tools, giving the engineer physical controls to interact with the software. It has motorized faders for each of the 24 tracks, 16 microphone preamps, and a matrix to route audio to speakers in the control room and studio for communication with the performers.

The Argosy console is custom made to fit the Control | HD. In the picture above, the rack mount space to the right of the control surface is not being used. In our system, a patch bay and preamps will be screwed in, placing the equipment conveniently within reach of the engineer.

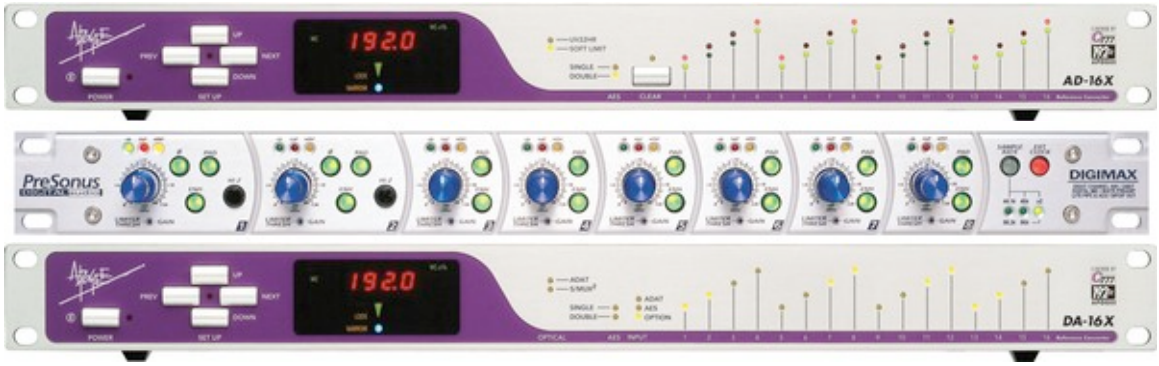
3) Pro Tools | HD 3 Accel System

The expansion cards (1 core card and 2 accel cards) in a Pro Tools HD 3 system add powerful signal processing resources. In an LE system, the CPU of the host computer has to do all computation as well as run Pro Tools and the rest of the operating system, greatly reducing the number of audio tracks and plugin programs that can be used. The acceleration cards added to the host computer have 27 DSP chips for powering the mix engine and TDM plugins, supporting up to 192 simultaneous audio tracks and 128 internal mix buses. Over 60 software plugins are included in the package, along with the Pro Tools music production software.

4) Tannoy TS12 Active Subwoofer

The present monitoring system in the recording studio has weak bass response. This causes engineers to overcompensate and turn up bass frequencies when mixing, resulting in muddy mixes when played back in other environments. A subwoofer will create a more accurate mixing environment by boosting bass frequencies to balance with the present speaker system in the studio.

5) Apogee AD16X and DA16X and Presonus Digimax



The Apogee AD16X combined with Presonus Digimax will provide 24 channels of analog-to-digital conversion (16 @192Khz, 8 @96Khz), allowing the analog signals of up to 24 simultaneous microphones, keyboards, or other instruments to be converted to a digital signal for recording.

The Apogee DA16X provides16 channels of digital-to-analog converters to get signals in back to the analog domain for monitoring. Five output channels will be used for surround sound speakers, the rest used for outboard signal processors, headphone monitoring, and stereo speakers.

This equipment will be rack mounted in the Argosy console next to the Control | 24 control surface.

6) Rackears to Mount External Firewire Hardrives (4)

Large amounts of data storage are needed for multimedia projects. Hard drives will be mounted in the machine room in a rack next to the computer, acoustically isolated from the control room.

7) Waves Diamond Bundle

Plugins are special purpose routines that work in conjunction with Pro Tools to do signal processing. Each track in the recording and mixing sections of Pro Tools can be individually processed, and the overall sound shaped when mastering. For example, a snare drum would typically have a compressor plugged in to limited its dynamic range, and a vocal track could have EQ and doubling applied.

In a TDM system plugins run on DSP expansion cards. This collection from Waves is a professional set that will complement the plugins that come bundled from Digidesign with the HD system.

The Diamond collection includes:

Ultramaximizer
C4 Multiband Parametric Processor
Renaissance Reverberator
Renaissance Compressor
Renaissance Equalizer
L1 Ultramaximizer
MaxxBass
Q10 Paragraphic
S1 Stereo Imager
C1 Parametric Compander
Enigma
Supertap
MondoMod
Doppler
UltraPitch
MetaFlanger
TrueVerb Room Emulator
DeEsser
AudioTrack
PAZ Psychoacoustic Analyzer
Linear Phase Equalizer
Linear Phase Multiband
L2 Ultramaximizer
X-Noise
X-Click
X-Crackle
X-Hum
SoundShifter
Doubler
Morphoder
TransX
Renaissance Vox
Renaissance Bass
Renaissance De-Esser
Renaissance Channel