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“How Much Can You Really Expect from Your Church’s Technical Systems and Operators”

Presented by Bill Thrasher, Sr., Wednesday, 2007 October 24th
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*** PRESENTATION HANDOUT ***

We all hear complaints about the sound systems in Churches, as well as many other public assembly, performance, and presentation places. Sometimes we also get complains about the lighting and video systems as well. The base philosophical question is how much can you, or anyone, realistically expect from your Church’s technical systems & it’s operators, and how do you know if you are expecting too much, or accepting less than you should? As a modern western culture, we have become very comfortable with and accustomed to depending on technology, and there are a few beliefs and expectations that have come along with all of these technologies.

First, we are very use to having very highly technical products and systems around us that are extremely easy to operate and use. Our automobiles, our microwave ovens, our home entertainment centers (TV, FM, CD, DVD, & etc.), and our personal computers (PC). We can grab our remote control, and instantly get the weather and current news, whether local, national, or international, we can get our favorite music to play at the touch of a button, even when we are out for a walk in the park, or swimming in a pool. It all looks easy, feels easy, and for the most part it is very easy to operate and use all of this technology, but we generally do not understand, and most of the time we don’t want to understand or even acknowledge, the staggering complexity that is behind these “easy to operate” technologies.

Second, we now expect that high performance technology will not be expensive, it fact is should get less costly every year. We now have consumer High Definition Television (HDTV) camcorders, and they are less expensive that their previous less than standard definition predecessors. Start thinking about all of the digital mixing consoles, automated luminaires, and this list can go on for days.

Third, we have come to believe that almost anyone can be taught or trained to do about anything. Our modern corporate practices tell us to have well written training manuals with thoughtful standard operating procedures, and then, with the proper training, any employee can be taught to handle about any task in the workplace. This sounds so great, but try telling that to an vocalist or an instrumentalist that has been practicing their art for 30 years or so.

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The fourth and greatest factor that influences the expectations of the average person in your Church, is the simple fact that we have become completely accustomed to and even complacent about the excellent quality presentations that are delivered by all of these media.

Very high quality has therefore become “Normal”.

Today, the average person sitting in Church has high quality expectations for the technical systems and the presentations that they experience in their Churches. The average person has relatively high performance audio and video reproduction systems at home, as well as high quality audio systems in their automobile's that are almost as good as those found at home. We have all become spoiled by the excellent reproduction capabilities of the Compact Disc (CD), the Digital Versatile Disk (DVD), and with the recent introductions of the higher-definition versions of these consumer storage mediums, the expectations of the average person will only increase. The decision by the Federal Government to move from analog television to digital television (DTV), once fully completed, will bring another measure of quality increase to the average consumer's living room.

The real issue that we must address is that we have become conditioned to rarely or never hearing or seeing any mistakes in any presentation.

We almost never hear someone sing out of tune, or lose their place in a song. We never see something technical in the background that isn't supposed to be in the shot. We don't see or hear actors lose their place in the script or ad-lib their parts. It's all about control and minimizing risk (perception of errors). Today's music CD's are recorded over weeks or months, with many of the vocalists and instrumentalists never seeing or meeting the other musicians. The ability to edit the audio tracks, almost like we edit a word processing document, including the abilities to correct pitch, timing, and to composite or “comp” vocals, means that what we get when we purchase our favorite Artist's new CD, what we get is often a fabrication or assembly of performances and craftsmanship. Often, we just don't understand and we just don't want to accept the difference between fantasy and reality. Overly produced, over-dubbed, digitally tweaked, and edited music and cinematic performances are really just a fantasy. What you hear is an artificial human fabrication, intended to bring you enjoyment. These performances can be and often should be considered to be great “art”, but they also somewhat deceptive.

Today, there are so few truly “live” performances and/or experiences that are presented without some form of post-production editing or that were presented with extensive pre-production accompaniment and/or computerized assistance. The concept of Real-Time, On-the-Fly, Live Presentations and Events are now considered by many presentation producers and directors as being too risky since they can and will often become “out of control”. Our Church services are, in reality, some of those truly live presentations that we are not so accustomed to experiencing.

When it comes to all presentation technologies, we all therefore expect the quality of our Church presentations to be equal to or to exceed the quality of what we have around us the rest of our week. There are multiple aspects of these technical systems that can directly determine or significantly affect the perceived quality.

Overall Comments

The technical systems must “technically” perform within reasonable expectations. Unrealistic expectations regarding cost of technical equipment, and the limits of performance are extremely common. There is a direct correlation between cost and quality. Moderate quality audio, video, & lighting technologies cost a moderately large amount of money. Very high quality audio, video, and lighting systems will cost a very large amount of money.

The technical systems equipment must be reasonably secured, tamper-resistant. Nothing is worse than arriving Sunday morning, only to find equipment was borrowed by Student Ministry and not returned, or worse yet, it was returned but broken.

These technical systems are just tools, but not simple tools like a hammer. They have an Initial Cost, a very Finite Life Expectancy, Reoccurring Operational Costs, Required Routine Maintenance, Inevitable Repairs, and ultimately a Replacement Cost. Just like your automobile needs gasoline to operate, tires & filters are expendable and must be replaced to maintain proper operation, preventative maintenance (oil changes & lubrication) must be performed, repairs provided when things do fail, and, on average, 5 to 10 years from now, you will need to buy another automobile.

Typically, we can break down our presentation technologies into a few categories, but there is increasing overlap between some of these categories:

Audio

Video

Lighting

Staging/Scenic

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Audio Systems

The average person sitting in your Church expects sound quality to be at least as good as their home stereo or car stereo (either of which can be pretty impressive today). They also expect (desire) to be able to sit in any seat in the facility, and it basically sound the same (which is not at all, a “natural” concept). Uniformity of sound quality from the audio system to the listeners is almost entirely a function of the loudspeaker system design, and this level of design cannot be accomplished by amateurs or semi-professionals. If you don’t have uniform high quality sound now, then get the design and installation fixed.

The Audio System design must be capable of adequate Gain Before Feedback. If not, then get it design and installation fixed. While there is no permanent way to eliminate or “exterminate” feedback, a well designed system will however allow you to get enough gain (amplification) before you get to the point of feedback.

Sound systems are typically complex assemblies of many different parts, brands, and components. The ultimate performance can be severely compromised by a single weak link in the signal path (“chain”). Furthermore, problems and symptoms are often layered and interconnected, and it can become very difficult to ascertain what are the real problems and where are the “weak links”.

The Architectural Acoustics of your space must compliment the audio system and the program (especially the music). Problems must be corrected by architectural and acoustical changes, not by electronic system changes. Don’t let the former used automobile salesman turned audio equipment salesman convince you that the latest digital signal processing (DSP) box (or whatever is on sale this month) will correct that bad echo coming from the back wall of the auditorium. You must fix the wall, which is much harder and more expensive (don’t look for “cheap” ways out of problems). Also, it is very difficult to perform and make certain types of music work in certain types of acoustical environments. If you are trying to do reasonably fast or complex contemporary music in a very reverberant space, you will never be able to achieve enough intelligibility or clarity, due to the hangover of one note or sound into the next note or sound. The space must be designed to accommodate the style(s) of music that you are performing.

Excessive background noise, typically that being generated by the Heating, Ventilation, and Air Conditioning (HVAC) system will interfere with the audio system’s operation and the listeners hearing and can only be fixed by changing the physical hardware of the mechanical system.

Video Systems

The house video screens must be large enough for the viewing distances involved (the height of the image directly determines the font sizes and number of lines of text that you will be able to use, which determines readability in the back of the viewing area).

The house video screens must be bright enough and have adequate contrast ratio (which means you will have to spend money on high quality screens and high power projectors). If you have considerable daylight to overcome in your Worship space, then the brightness and contrast issues become much more difficult to overcome.

The average person expects that multiple screens should all look the same (color balance, brightness, flesh tones, & etc.), so don't think that you can get away with sticking any old small consumer or business projector anywhere, and not getting plenty of complaints.

Remember that when you add video screens to your Church, you are, in fact, getting into the video or television business. You may never, ever, consider a "broadcast" of your services, but you are nonetheless getting into the video business, and the costs to provide high quality images, productions, and all the accoutrements are considerable.

Video Cameras and Lenses must be carefully located to create professional shots and views. You cannot just put a camera anywhere, and then expect the output from that camera to look professional. Distances, angles, sight-lines, glare, and a whole host of considerations must be considered. This cannot be simplified, and it must not become a simple issue of internal politics. Don't forget that good lenses will often cost more than the camera head (lenses are still old tech).

Latency in the video signal to the house screens, if not considered properly, can and will become distracting, with movement on the platform will be followed by delayed movement on the screens, pulling the viewers attention away from the platform, to the screens. The video system must be designed with minimum conversions (analog to digital, component to composite, color difference to RGB, & etc.).

High quality video requires, without exception, high quality professional lighting. The lighting angles and requirement for video and TV are different than those typically found in theatrical presentations, but don't let anyone deceive you, it is not simply an either/or situation. You can have both high quality video and theatrical presentation lighting, but the production lighting designer must be skilled and experienced in both situations, as well as in combining the two styles effectively.

Lighting Systems

Location, location, location. Where the luminaires are placed and mounted is incredibly critical. You cannot just put the luminaries into any location, and then expect to get all the looks that you desire.

Automated or Moving Luminaires typically have greater versatility, but they also have greater initial cost, greater operating cost, greater maintenance costs, and shorter life expectancies than more traditional static luminaires. We believe that a mixture of both are most often the best solution. Don't let the salesman convince you that you really don't need any convention or static luminaires. There are proper, appropriate, and prudent uses for both of these technologies.

The programming time for moving or automated luminaires is considerable. We have heard estimates of from about 20 minutes to over 1 hour for each minute of actual presentation time.

The point is most often to draw the audience's visual attention to the focus point on the stage. The average audience member expects lighting to direct their visual attention to what or who matters most on stage. We recently noted a concert on TV with backup vocalists, when only one sang along with the lead vocalist downstage, that singer was illuminated, so that everyone could know who was singing, and when she stopped, the light went out, putting that back vocalist into the visual background. When the entire back vocal group sang, then they were all lit up.

Research, document, and enforce strict rules regarding lighting systems and their interaction and limits with regard to life safety issues.

THE SYSTEMS OPERATORS

Ultimately, the Technical Systems in your Church is only as good as their operators. A good operator can make a mediocre system work amazing well, but bad operator can ruin the very best system available. The equipment is an important part of the equation, but the operator is the most important. Similarly, the program or event must be well planned and coordinated.

When it comes to live audio, the quality of any individual's mixing skill's can be extremely varied (big time professionals versus your local volunteer musician or technician). The big time professional's are really a combination of musician, technician, and politician (they deal with people well), most with many years of experience at mixing.

Like most Churches, you probably have a collection of musicians and technicians. You must build a teams of people. Find, put, and keep a "people person" (politician) in charge of the group. Do not allow clique's and faction's to develop (technicians versus the musicians, or engineers versus artists, & etc.).

The Biggest Complaint - "The Operators' need to be paying more attention!"

PAYING ATTENTION TO WHAT? the Mixing Console, the Signal Processing Equipment, the Platform, the On-Stage Monitors, the Recording Deck, the Playback Deck, the Intercom and telephone, Complaints, the Order of Service, the Lighting Console, the Video Switcher, notes from your production meeting, & etc.

TO MANY THINGS AT ONCE - TILT - OVERLOAD - TILT!!!!

If you give the operator too many things to do, then he will have to limit his attention to critical things, and he will have to ignore others. Overall quality will suffer.

The solution is to get more people involved. One operator mixes, a second operator wears the intercom, holds the order of service, and handles the playback & recording decks. A third operator handles lighting, maybe a fourth handles video. Divide the tasks up, and delegate them to the team. If tasks increase (adding video for instance) then you must add to the team, not expect/demand that the existing crew handle any number of additional tasks.

Allow people to specialize & get good at something. Don't try to make everyone be great at every task.

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Operators that are Volunteer's (or maybe even getting part-time compensation)

How much time do they really have available for the Church. Don't expect more than they can really give.

They have lives outside of Church, families sacrifice the operator's time. Don't allow resentment and hostility to start and grow.

They need to be fed spiritually (not just used). They need to go to Church on occasion, not only go to work at the Church.

SPECIAL PROGRAMS - even more time required than any normal week!

Week to week consistency (ha!)

Rotating operator's? Mr. A, Mr. B, & Mr. C rotating through a 3 week period, A & B, then B & C, then C & A, and back around again. Someone always carries over from last week. There is always two people in case one gets sick.

Keep an eye out for new recruits, especially youth! Consider pairing an older, experienced operator with a younger trainee. They would always work and serve together, in effect preparing the younger team to someday take on major responsibilities and ultimately mentor another young person.

Operator's must, as part of their commitment to serve, be willing to arrive a bit earlier than the congregation, choir, & etc., and get the system ready for use prior to rehearsals, services, programs, etc. If a person is only willing to show up at the last minute, flip on the power switch and "mix", then you need to find another person. Don't allow any individual to develop a "star" attitude, expecting the rest of the crew to do all the work, and then that individual steps in and does all the "art". This sort of problem is not good for the technical team or for the Church.

Develop training, and especially cross-training for your all of your Ministry personnel. The music department should offer basics of music for technicians, and the technical department should offer basics of tech for musicians and presenters. Someone will need to offer training on how to deal with each other, how to resolve problems and conflicts, and how to build the team into a family.

You must NEVER, NEVER, NEVER allow derogatory comments to be made about the sound operator or the audio system from the platform, even if they are at fault. You wouldn't allow such comments about any staff member, or another minister.

Romans 12:10-11 (KJV) Be kindly affectioned one to another with brotherly love; In honor preferring one another.

When sound operator makes a mistake, that operator should apologize to the people embarrassed by the mistake. Likewise, when someone on the platform makes a mistake, they need to apologize to the sound operator. Every participant needs to take responsibility for their part in any disaster, no matter how small.

We need to lighten up, and learn to laugh, encourage, publicly introduce, thank, harass, and make the technical staff up in the balcony a part of the platform team (they really are part of the Worship team you know!)

When errors do occur, you can to some degree cover up for one another, don't signal or point out the mistake to the congregation. Most mistakes will go unnoticed if they are not telegraphed to the audience.

THE PROGRAM AND HOW YOU USE THE SYSTEM

We hear regularly about problems that are blamed on the operator, many of which are well deserved, and then again, I heard from a Church operator about a surprise soloist being sprung five minutes (literally) before that morning's 11 AM service began. Obviously they got no sound check, and the soloist had brought a cassette accompaniment tape, with multiple versions of the same song on the tape, and the tape was not queued to the correct version of the song. A disaster waiting to happen. The soloist got up to sing, the wrong song was queued, and they had to spend several minutes during the service and on live TV trying to find the correct place on the tape to start the song. **THIS WAS NOT THE SOUND OPERATORS FAULT!!!!** And yet, the sound operator got publicly blamed from the Platform by the Soloist and the Worship Leaders.

The sound operators & technical team needs accurate information with adequate time to prepare and to setup. It is a waste of your operator's time (and can easily become a personal insult) to expect them to come in early, setup the systems, test everything, only to find that the program was changed several days ago, and no one bothered to let him know about the changes. Unavoidable last minute changes will not offend. Carelessly wasting your volunteer's time (personal & sacrificial) will only cause bitterness and resentment.

Regarding the musical portions of your programs and Worship Services, it is important that you understand that while the Sound Operator has an important and maybe critical role in the mixing the music, it is however, all of the Musician's, the Instrumentalist's, the Vocalist's, the Arranger's, the Conductor, and the Musical Director's roles and responsibilities to make sure that the Music is the appropriate quality, before they hand their performances over to the Sound Operator. The Sound Operator is powerless to achieve good sound, if the Music isn't good to start with.

Sound-check's & Rehearsals

Should be completed before the congregation arrives, and not done in front of whole church. Why do the song during the service if you just did the sound-check in front of everyone? At a Billy Graham Crusade or Mission, the choir rehearsal is conducted while the stadium crowd is arriving, with the house sound system muted. While this is not best situation (noisy, distracting, & etc.), it can be manageable and non-offensive if you can think it all through.

A sound-check is conducted by the sound operator. A sound-check is not a musical rehearsal. Performer(s) needs to learn the music on their own time or during designated rehearsal times, and not during their sound-check.

Control of Feedback (acoustical and electronic)

Don't expect or demand the sound operator to work miracles. Only rarely can the laws of physics be even slightly bent.

More microphones closer to sources (mouths, instruments, & etc.).

Have as few microphones or sources turned on at any time as possible. Only the microphones in actual use should be on. The Operator WILL therefore spend most of their time turning things on and off. This is NORMAL! Anyone who says "just turn all the microphones on, and leave them on" is either ignorant of the simple restrictions that the laws of physics dictate, or that person is arrogant and has no place in administrating or serving on the technical team..

It is both the responsibility of both the audio operator and the individuals that are using microphones on the stage to minimize feedback.

Listeners

They will tolerate a fairly wide range of loudness (for a limited amount of time), but too much of anything will generate complaints. We recommend a maximum of 95 dB-SPL (sound pressure level), “A” Weighted, Slow Response, as a guideline for most Churches. OSHA allows for four hours of this sound level per day without hearing damage. If you raise this number up to 100 dB-SPL, then OSHA lowers the exposure to 2 hours per day. You can get a reasonable idea of how loud your services are using an inexpensive sound level meter (SLM) available from Radio Shack. It doesn’t meet standards for expert testimony in court, but is an inexpensive decent basic SLM.

On the average, somewhat older listeners want more vocals relative to the instruments. The common complaint is “it’s too loud”, which can mean:

- a. The instruments are too loud compared to the vocals,
- b. The overall the volume is really too loud,
- c. I don’t like this style or music selection, and I feel the need to complain,
- d. I don’t like something about the service, and this is one thing that I feel justified in complaining about, because everyone complains about the sound.

HOW CAN WE GET OUR SITUATION TO BE THE BEST THAT CAN BE???

1. Balanced Management Priorities (good technology starts at with good management)
2. Teamwork (recruiting, training, scheduling, conflict resolution)
3. Planning (master-planning, managing, coordinating)
4. Respect (personal, professional, and spiritual)
5. Adequate Budget (operational, maintenance, and capital expenditures)
6. Trustworthy Professional Assistance (designers, contractors, vendors, & etc.)