

SMPTE B-CHAIN STUDY GROUP

PRESENTATION TO ICTA 2012-01-17

WELCOME!



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WHAT IS THE THEATER B-CHAIN?

GENESIS OF THE PROJECT

STUDY GROUP FOCUS

GOALS

CURRENT STATUS

CHALLENGES

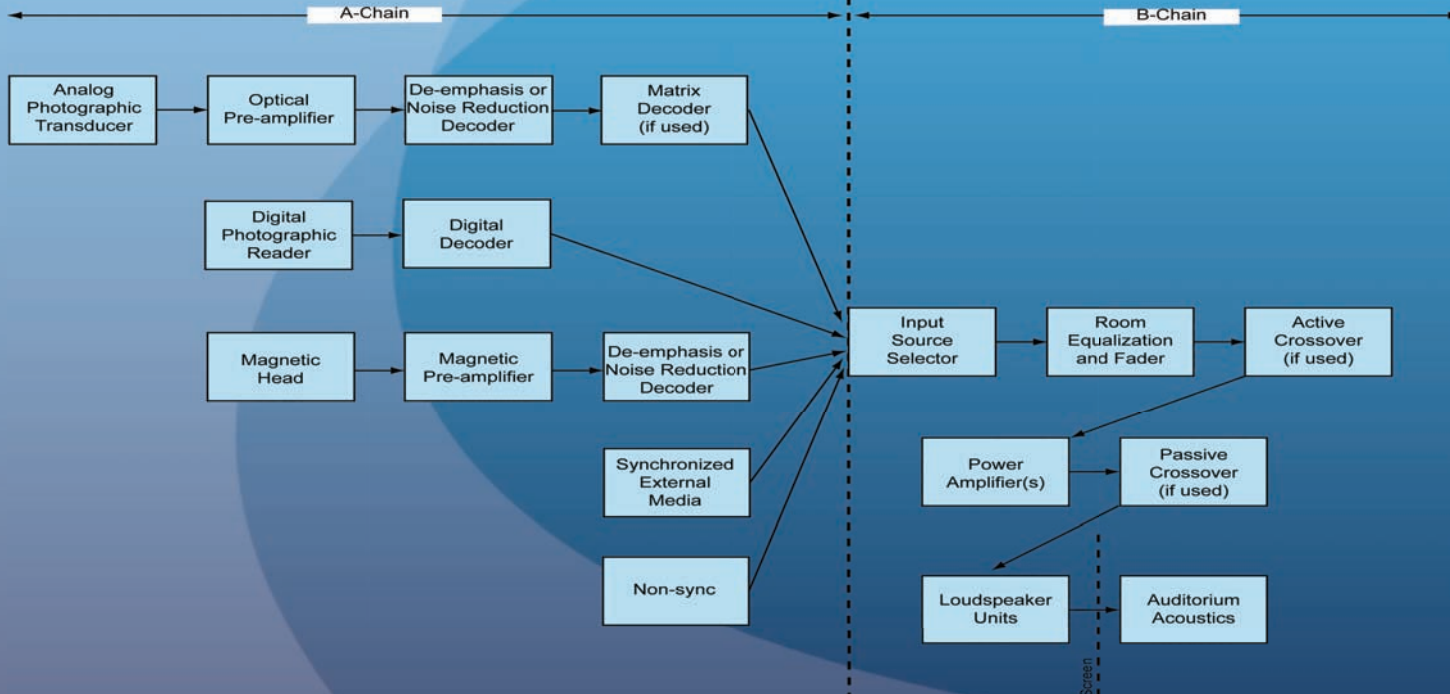
THE BIG PICTURE



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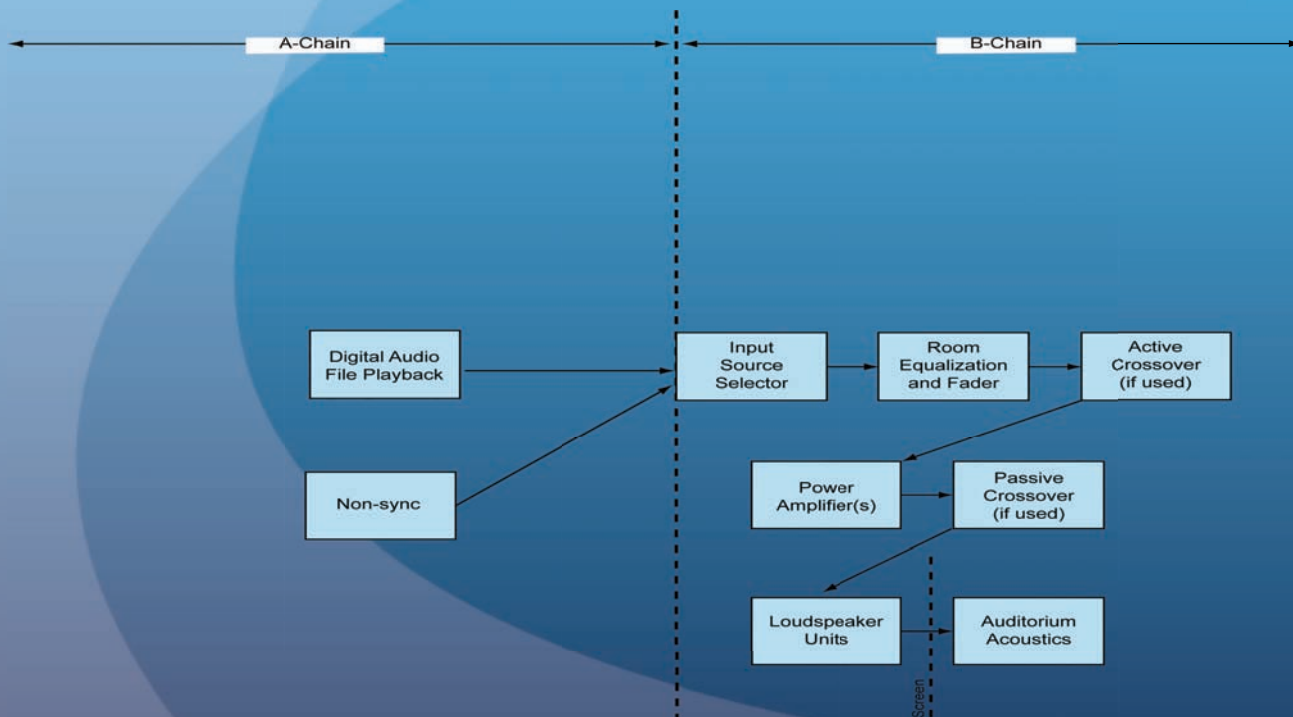
FILM A-CHAIN AND B-CHAIN



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DIGITAL CINEMA A-CHAIN AND B-CHAIN



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GENESIS OF THE PROJECT

- There is inconsistent sound from commercial cinema theater to commercial cinema theater and dubbing theater to dubbing theater
- Historically, great sounding cinema theaters and poor sounding cinema theaters seem to measure similarly using traditional measurement methods
- Advances in audio production and post production result in highly detailed and dynamic soundtracks with much less variability from the A-Chain since being delivered digitally



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GENESIS OF THE PROJECT

- Technological advances in measurement devices and audio reproduction equipment continue-Current standards may need revisiting
- Some users may not understand how to correctly apply modern measurement and audio processing techniques to set up the B-Chain
- Time to create a study group and determine what needs to be done!



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SMPTE STUDY GROUPS

- Study groups in SMPTE are formed to investigate issues and recommend work that needs to be done.
- Study group recommendations are used as the basis to create projects and form working groups that create standards and recommended practices.
- The B-Chain study group is comprised of audio professionals from all aspects of the industry, many of whom have contributed heavily to the evolution of cinema sound through multiple formats and innovations.
- We are in good hands!



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CURRENT OUTREACH

- Audio Engineering Society
- Acoustical Society of America
- InfoComm International



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B-CHAIN STUDY GROUP FOCUS

1. Electroacoustic Measurements and Calibration
 - Investigate possible issues with current electroacoustic measurement methods that are typically used in cinema rooms
 - Investigate issues with current methods of calibrating the B-Chain
 - Recommend any standards work that may be needed in these areas



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2. B-Chain Equipment Performance

- Investigate the current B-chain equipment and modern performance requirements. Consider the demands of today's dynamic soundtracks and the typical cinema space found today.
- Recommend any changes and propose any standards work that may be needed in these areas.



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B-CHAIN STUDY GROUP FOCUS

3. Cinema Room EQ Curves

Based on the measurement and equipment performance study:

- Investigate the current “X-Curve” EQ curve and possible alternate EQ curves
- Recommend any changes and propose any standards work that may be needed in this area.



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ELECTROACOUSTIC MEASUREMENT AND CALIBRATION

1. Investigate and bench test current measurement gear
2. Measure a room with that gear, using the same microphone in various locations and compare results
3. Compare and contrast different measurement microphones in the same room



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ELECTROACOUSTIC MEASUREMENT AND CALIBRATION (cont.)

4. Measure an agreed reference room using multiple measurement techniques and underlying technologies and compare results. Listen to agreed test material in that room and note room character
5. Measure some representative commercial cinema theaters using the same techniques, compare to reference and store the data. Listen to agreed test material in these spaces and note room character
6. Re-calibrate commercial spaces using the techniques and results from the reference theater and listen to agreed test material. Note changes in perceived room character with each change and compare to reference



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ELECTROACOUSTIC MEASUREMENT AND CALIBRATION (cont.)

7. Compare findings between reference and commercial spaces and the techniques used to calibrate
8. Compare calibration methods used and the reliability and consistency of each
9. Recommend work to be done in the electroacoustic measurement and calibration area to SMPTE



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B-CHAIN EQUIPMENT PERFORMANCE

1. Measure performance of current B-Chain equipment in reference and commercial cinema theaters, quantifying relevant parameters
2. Test perceived performance of current B-Chain equipment in reference and commercial cinema theaters using modern soundtracks
3. Investigate specific areas in the B-Chain that may be causing issues
4. Recommend performance standards work that may be needed to SMPTE



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CINEMA ROOM EQ CURVES

1. Based on measurement and equipment performance results, propose possible alternate EQ curves.
2. Measure and adjust rooms to proposed solutions and/or curves and determine any technical issues that arise in attaining those curves based on equipment performance, room acoustics or other issues
3. Mix material in known cinema mix rooms using the proposed curves and determine if less or different processing is needed than mixing to the X-curve



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CINEMA ROOM EQ CURVES

4. Listen to the results of material mixed to the alternate EQ curves in commercial spaces that have been calibrated to the alternate curves and compare to the same material mixed to the X-curve and played back using the X-curve in the same commercial spaces
5. Compare perceived differences
6. Recommend work to be done in the cinema room EQ curves area to SMPTE



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CURRENT STATUS

- Excellent progress has been made
- Recommendations to SMPTE imminent
- Standards work will begin very soon!



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ULTIMATE GOALS

- Create or add to existing standards for electroacoustic room measurements and EQ using modern equipment and techniques
- Create a step-by-step, repeatable method for calibrating the reproduction system in a cinema room that can be done by a good technician without having to rely on subjective listening
- Create modern performance standards for the B-chain reproduction system
- Create RP's/EG's for sound system considerations and initial setup of theater system to meet these performance standards



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THE ULTIMATE GOAL

BETTER SOUND!



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CHALLENGES

- Involvement of the mixers and sound designers
- Involvement of the studios in order to to develop consensus to adopt new standards
- Involvement of the exhibition community to implement new standards and upgrade B-Chain equipment



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THE BIG PICTURE

- The B-Chain Study Group is methodically approaching this work and involving all of the key players in the science, testing and results
- SMPTE is enthusiastic and supportive
- AES, ASA and InfoComm are very supportive and are liaising with us to reach common goals
- SMPTE is pursuing community involvement through communication and education
- We are paving the way to the implementation of new standards in cinema sound



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Q&A



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THANK YOU!

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