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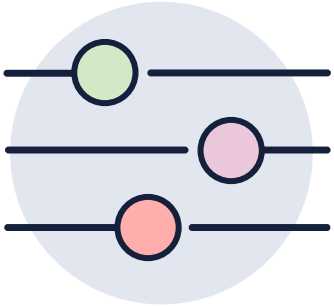
SYSTEMS

Solution Sheet

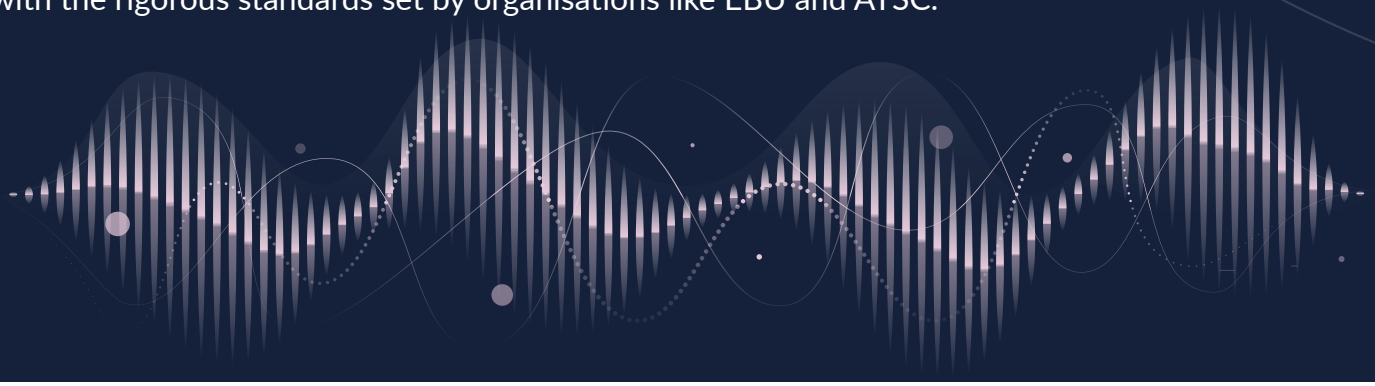
Emotion Systems Loudness Module
brings operational efficiencies to
Audio Processing of File-Based Video

engine



In the realm of broadcast media, ensuring a uniform and pleasing auditory experience for viewers or listeners is paramount. This is where the concept of loudness comes into play, and standards like EBU R128 and ATSC A85 have been established to guide the industry in achieving consistent audio levels. EBU R128 employs metrics such as Program Loudness (measured in LUFS) to determine the average loudness over the duration of content, True Peak to identify the maximum peak level, and Loudness Range (LRA) to assess dynamic range. On the other hand, ATSC A85 recommends practices like Dialnorm to set a reference level for dialogue loudness. These specifications are essential for broadcasters to adhere to, ensuring that the loudness of their content meets industry standards.

In a comprehensive loudness solution, various measurements contribute to the evaluation of audio quality. These measurements collectively contribute to maintaining a balance between consistency and quality in broadcast media, offering a harmonised audio experience for audiences while aligning with the rigorous standards set by organisations like EBU and ATSC.



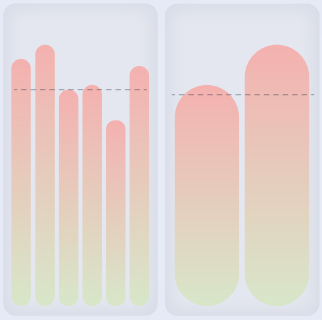
Benefits

- Uniform Listener Experience
- Compliance with Standards and Regulations
- Avoidance of Listener Fatigue
- Optimized Dynamic Range

With broadcasters onboarding more and more content it has become necessary to not only have a loudness solution that offers comprehensive measurements, but to also correct out of tolerance media files. Loudness regulating content is essential for maintaining audience satisfaction, as well as avoiding fines issued by regulators. With broadcasters receiving a multitude of file variants, and distributors sending content around the world; it is essential that a satisfactory loudness solution should offer the ability to correct loudness to any worldwide standard, as well as automate this process.

engine

Emotion Systems Engine revolutionises loudness correction with its suite of audio processing modules.



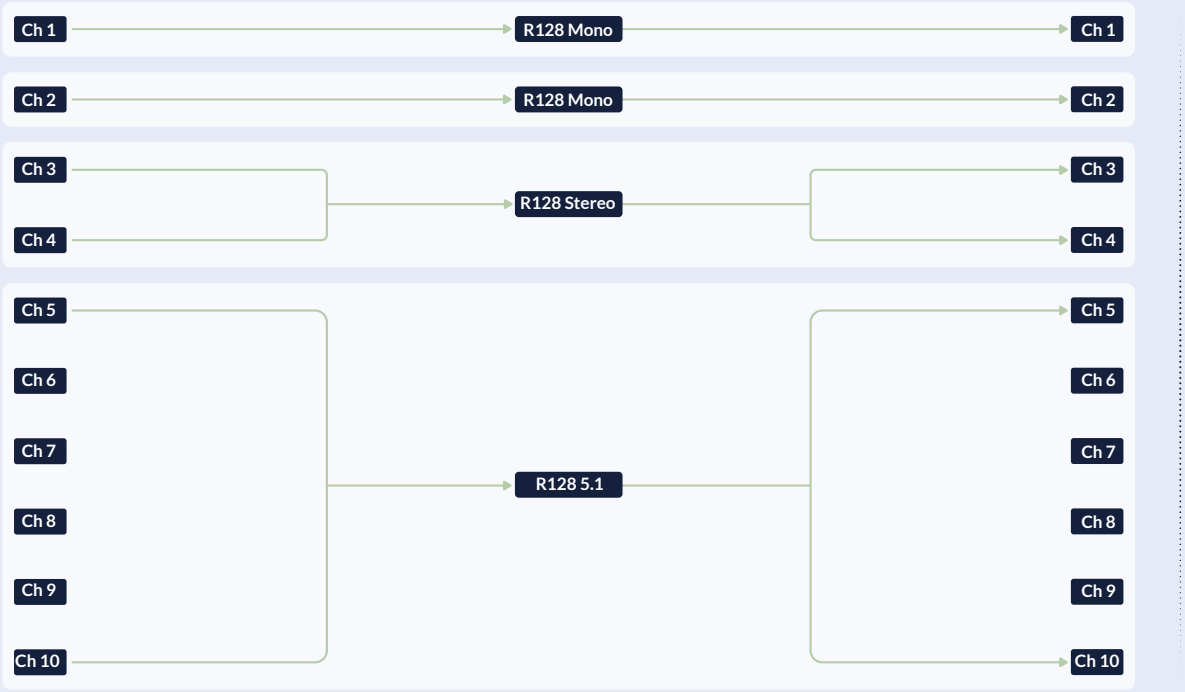
All adeptly applied to popular broadcast file formats like MXF ,MOV, Wav.

Delivering Loudness Corrected Content in Engine:

Engine, an advanced automated audio processing solution, boasts a dedicated module designed for loudness measurement and correction, ensuring the delivery of high-quality, standardised content. The creation of a workflow, capable of handling up to 64 channels, allows operators to measure and correct loudness on large files; ensuring no bottlenecks will affect the overall content delivery pipeline.

Options for Loudness Measurement & Correction:

Engine's loudness module presents a comprehensive array of options for both correction and measurement, empowering operators to analyse audio content with precision. The tool's ability to generate detailed reports, highlighting the degree of deviation from tolerances and indicating the necessity for correction, aids operators in making informed decisions. The Loudness module offers a comprehensive set of all loudness measurements, including program loudness, true peak, PPM, short-term, and momentary loudness. Furthermore, it accommodates legacy measurement profiles and tools like LEQ-M and VU meters, providing operators with a versatile suite of options to adhere to any loudness specification. To enhance efficiency, the loudness module is adept at detecting and ignoring tones, removing the issue of tone being included in the measurement. Additional flexibility allowing the operator to measure and correct any combination of audio groups, from mono and stereo, 5.1 to complex formats like 9.1.6, underscores Engines scalability and adaptability. This robust feature set positions Engine as a reliable and efficient solution for broadcasters and media professionals seeking a comprehensive loudness correction and measurement tool within their content processing workflows.



Challenges:

- Movie content is mixed for large auditorium presentation and therefore has a wide dynamic range.
- As the theatre is a relatively quiet environment it is possible to have wide dynamics and still hear the dialogue.
- However, presenting movies for home and online consumption requires careful audio processing to provide a balance between the dynamics and clearly audible dialogue.
- Broadcast delivery has loudness standards that define overall Program Loudness and Loudness dynamic range (LRA).
- Online delivery has standards that are platform specific, but do not define clearly the LRA requirement.
- Audiences have noted and complained about the general experience and specifically dialogue intelligibility.

Using Engine to implement an automated loudness workflow presents numerous advantages, optimising the audio processing pipeline and elevating user experience. Foremost, Engine's automated loudness solution enhances efficiency and expedites the audio post-production workflow. This is especially advantageous when dealing with a diverse range of content, enabling carefully attenuated loudness adjustments without the time-consuming manual fine-tuning - in turn greatly increasing cost effectiveness by minimising the need for extensive labour hours dedicated to individualised audio post-production tasks.

The reliability and accuracy of automated loudness ensure a standardized and optimal listening experience, eliminating variations in volume levels and errors that may arise from human-dependent approaches. The scalability of Engine's automated loudness solution allows seamless integration across a spectrum of audio formats, providing a versatile and comprehensive solution for organisations handling various types of multimedia content.

Furthermore, Engine's integration with leading audio processing tools and systems ensures a streamlined and efficient production pipeline. An automated loudness workflow can be triggered over the API, this has lead to many customers integrating Engine into their MAM or Transcoder, further streamlining the media pipeline. In essence, the implementation of an automated loudness solution in Engine not only improves the overall audio quality but also offers a reliable and scalable solution for organisations seeking a sophisticated method to achieve consistent loudness levels in their multimedia content.

About Emotion Systems

Emotion Systems provide audio professionals in the broadcast and television industry with the very best products to solve real-life problems. We do this by focusing relentlessly on audio processing, listening enthusiastically to our clients and industry colleagues, and collaborating to create products that innovate the broadcast industry. As a small team of specialists, Emotion Systems has designed products that have helped audio professionals all over the world transition from analogue to digital delivery, navigate the changes in the industry, and provide operational efficiencies in the process. More information available at www.emotion-systems.com