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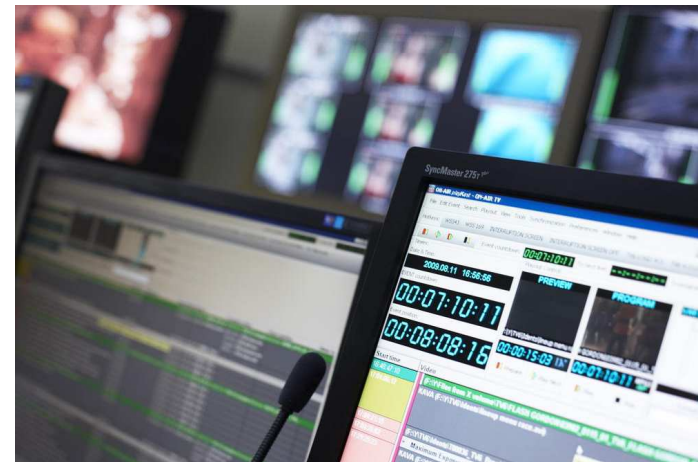
Implementation of requirements of EBU R128 at multichannel play-out facility. Experiences and lessons to learn.

Maksim Butsenko  
Technical Consultant  
LEVIRA

# Levira and its play-out center



- We are technical service provider for broadcasters
- Multichannel facility
- 100% file-based workflow
- PCM embedded audio



# Audio issue

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According to the European Broadcasting Union variations in volume are the single biggest cause of viewer complaints



## Problem we all had

- Audio was measured using peak-levels
- This kind of regulations are not successful
- Highly compressed material still complies, although sounds much louder
- Audience – not happy



# New era in broadcast audio



- ITU-R BS.1770
- CALM act (bill in 2010, in effect December 2012)
- EBU R128 (2011)
- The end in “Loudness war”

# ITU-R BS.1770



- Means of measuring audio levels based on perceived loudness
- K-weighting
- True peak
- Gating (2<sup>nd</sup> revision)

# EBU R-128



- **Programme Loudness Level shall be normalized to a Target Level of -23.0 LUFS (deviation shall generally not exceed  $\pm 1.0$  LU)**
- **Maximum Permitted True Peak Level shall be -1 dBTP**
- audio signal shall generally be measured in its entirety, without emphasis on specific elements such as voice, music or sound effects;
- measurement shall include a **gating method as specified in ITU-R BS.1770**

# EBU R-128



- Also EBU Tech 3341, 3342, 3343, 3344
- Based on open standards
- Countries that already adopted R128 in 2012:

France, Netherlands, Italy, Israel, Switzerland, Germany, Austria, Scandinavian countries, Poland



## We started with...

- In 2007 we used 1U levelers/limiters
- 12 TV channels = full rack
- Not perfect, but did the job... unless

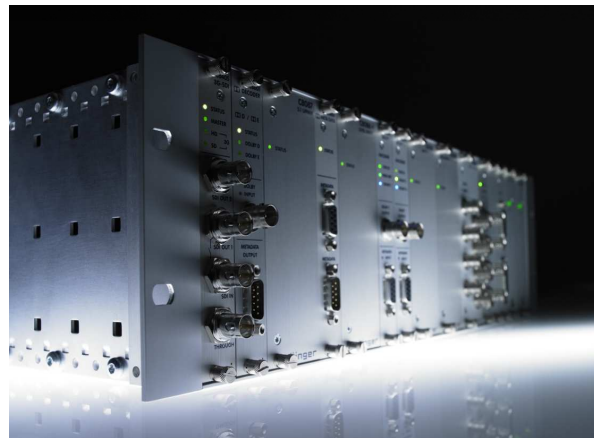


## Our problem

- TOO loud local commercials
- Incoming programs normalized to -24 LUFS
- Difference between program and breaks about 10-12 LUs

# Solution

- Upgraded audio levelling equipment
- Single frame (3U) – up to 16 TV channels
- Different options
- EBU Mode

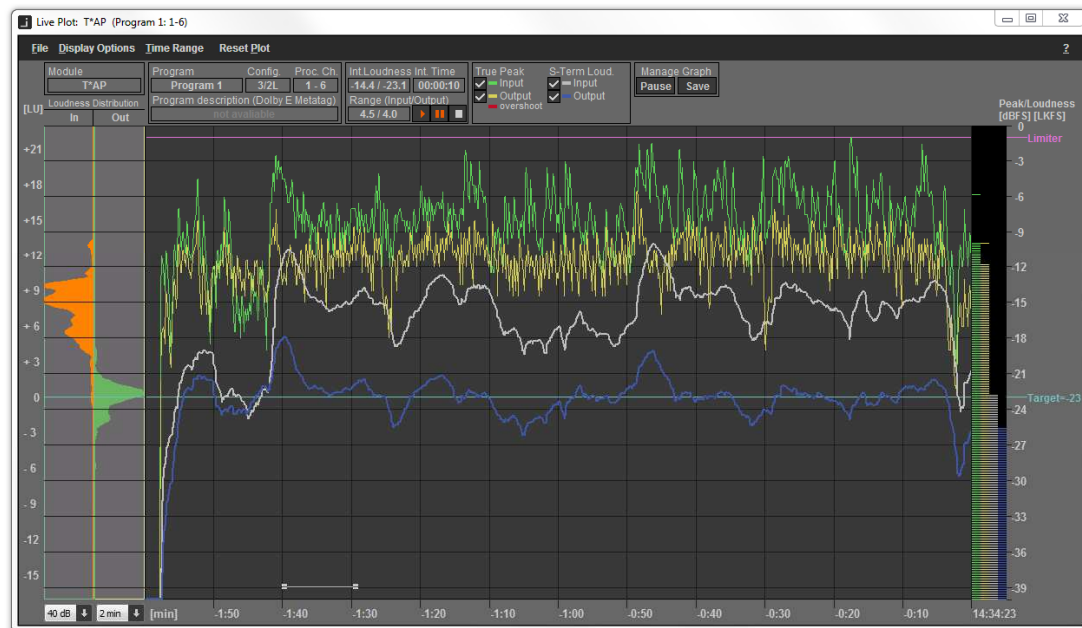


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# Solution

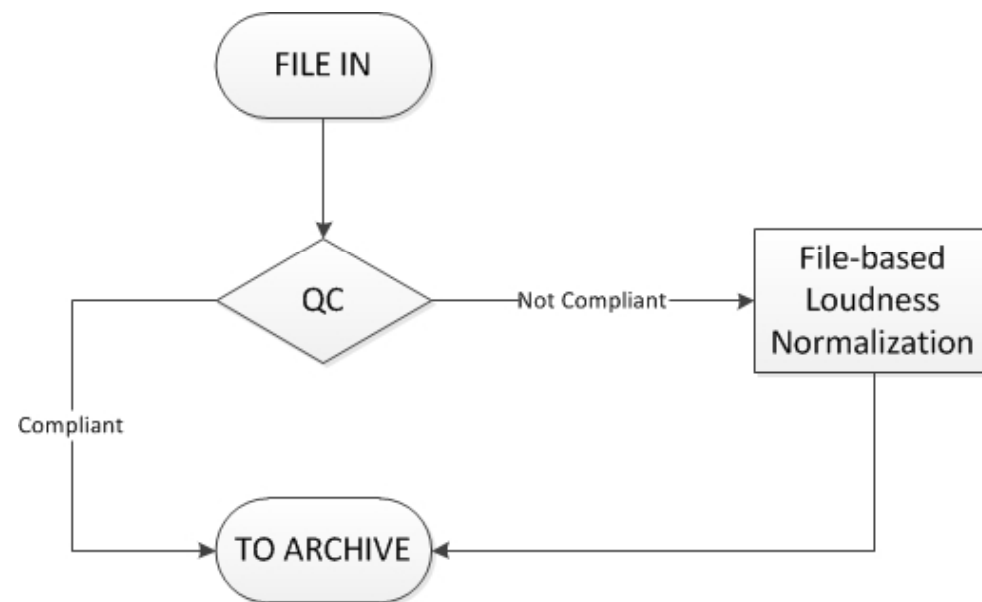
- Logging



# Solution



- Loudness QC
- Loudness Normalization



# File-based loudness normalization



- A year ago it was impossible to find a suitable product
- Plug-ins for editorial suites
- Transcoders
- No standalone product to get
- Situation gets better now

## Biggest issue

- Not a technology
- Not an operational
- **Who covers the cost?**

## Who covers the cost?

- Technical service provider
- Broadcaster
- Commercial agencies
- Combination of those



## What have we learned?

- Education is the key – EBU PLOUD has tons of useful material
- To comply you don't always need to change whole equipment range
- Be flexible – give your client options
- In the end – it just has to sound good and keep viewers happy

Questions

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