



# Agenda

1.	Introduction to SRG SSR
2.	The history of the SRG internal loudness group
3.	Analysis
4.	Implementation Concept
5.	Audio Concept of the new HD Playouts
6.	Special Distribution Tasks
7.	Migration of Commercials
8.	Education Levels
9.	Some Figures
10.	Video „Loudness Revolution“

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# Introduction to SRG SSR (1)

**SRG SSR is the public broadcaster of Switzerland, currently on-air with:**

- 8 TV programs
- 18 radio programs
- Maximum of 10 TV event streams

**Units present in 4 language regions, all with TV/radio studios:**

- SRF (D): Schweizer Radio und Fernsehen
- RTS (F): Radio Télévision Suisse
- RSI (I): Radiotelevisione svizzera
- RTR (R): Radio e Televisiun Rumantsch
  
- Swissinfo: online services

# Introduction to SRG SSR (2)

## Subcompanies:

- tpc: Technology and Production Center Switzerland AG
- Schweizerische Teletext AG: Teletext services
- Publisuisse SA: acquisition of advertisement

## Services of General Direktion Operation:

- T+I: Technik und Informatik
- MSC: media services, including contribution + distribution services
- PZ BDH: Produktionszentrum Radio Fernsehen Bundeshaus  
(TV/radio studios at the capital city)

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# The history of the SRG internal loudness group

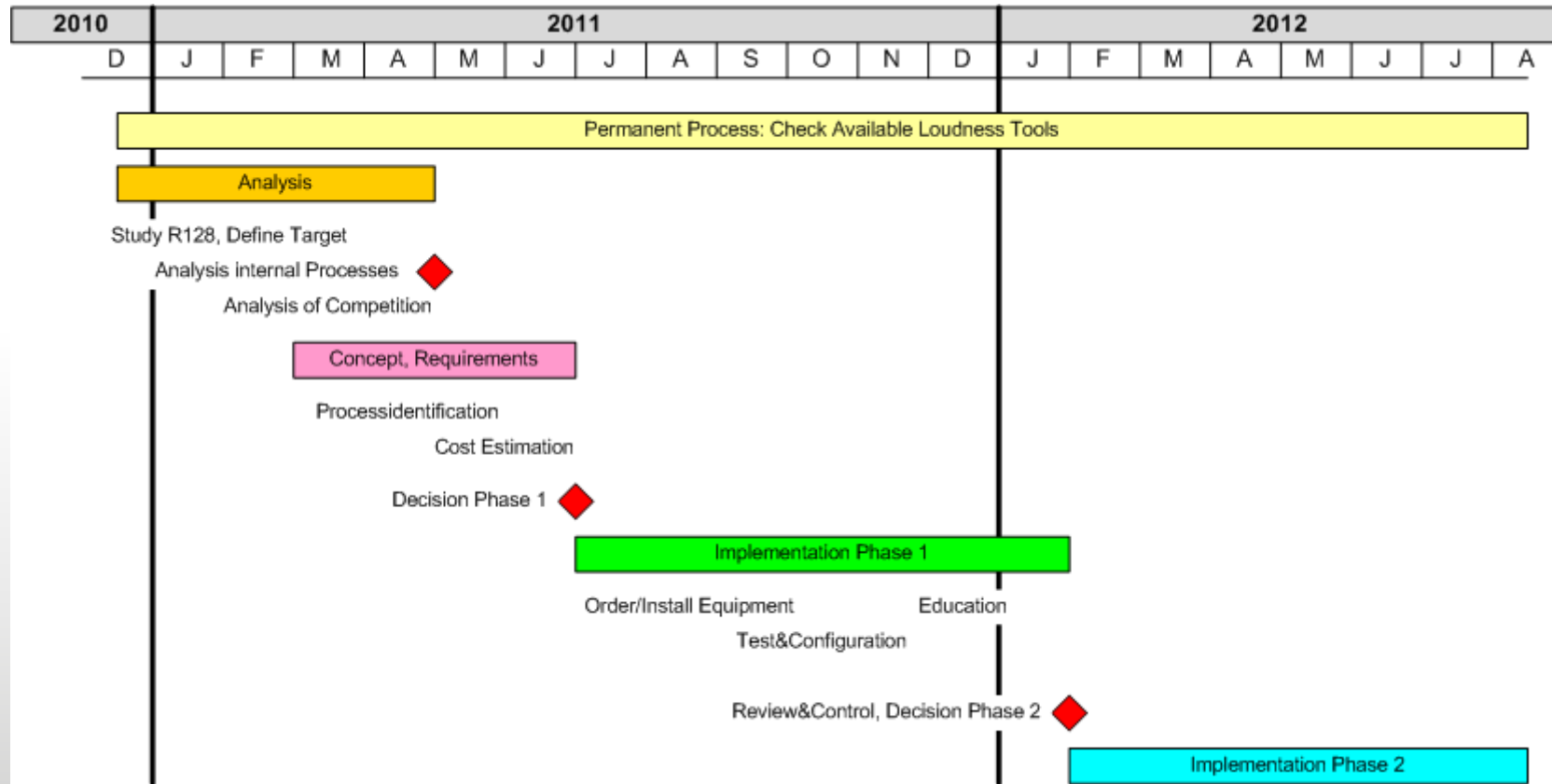
## 2008-2010

- Started after EBU PLOUD kick-off (IBC 2008)
- Responsible for the exchange of information between PLOUD and all SRG units
- Part of the working group for the audio concept of the new HD payouts
- Released early specification to use BS.1770 to evaluate DialNorm value
- Achieved commitment of the technical board to the introduction of EBU R128

## Introducing R128 at SRG SSR

- December 2010: Kick-off
- June 2011: analysis report and R128 implementation concept presented
- July 2011: official decision of the CTO board to phase 1 (TV implementation)
- Aug/Sept 2011: equipment evaluation and first orders
- Nov 2011: first seminars for experts, loudness video available

# Project Timeline

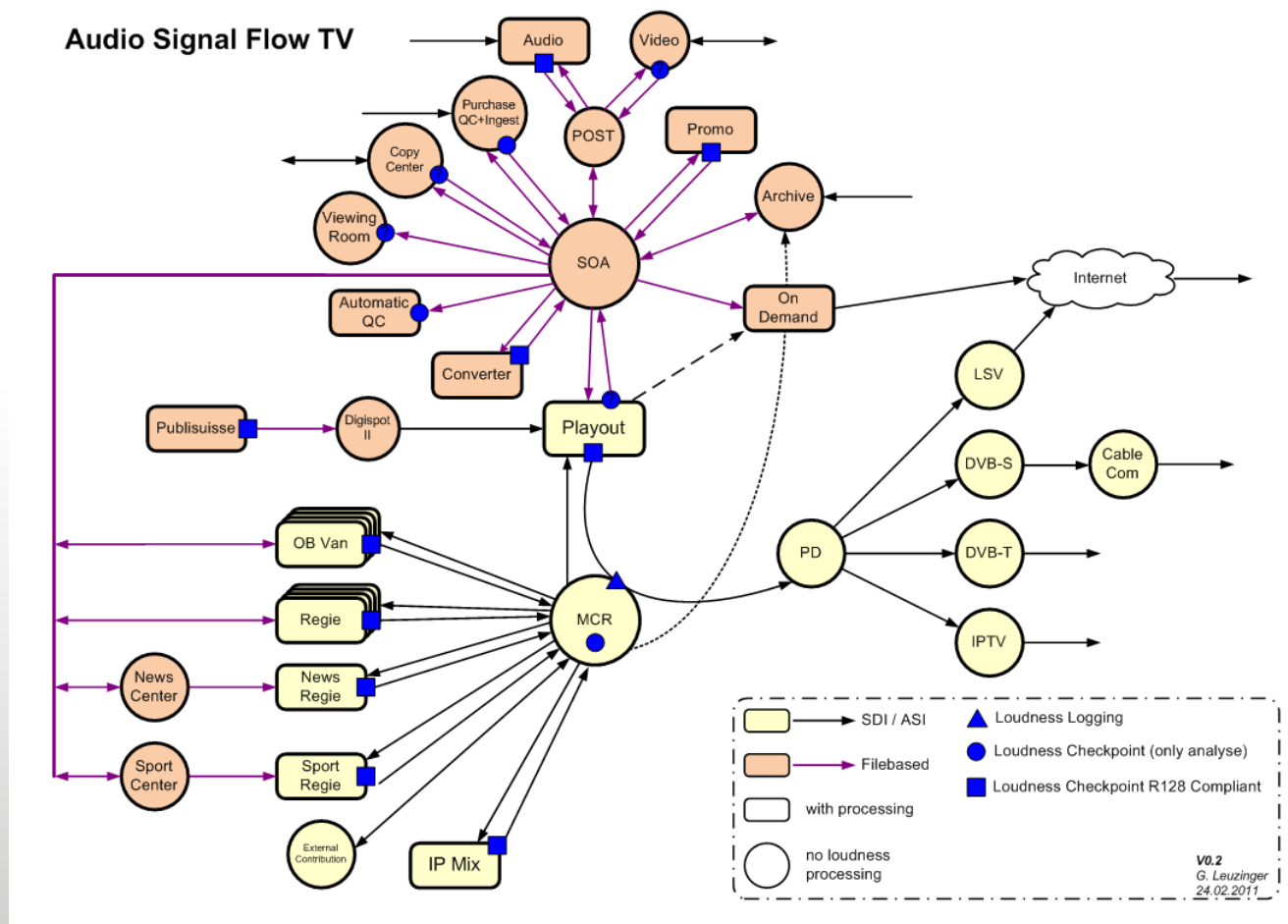




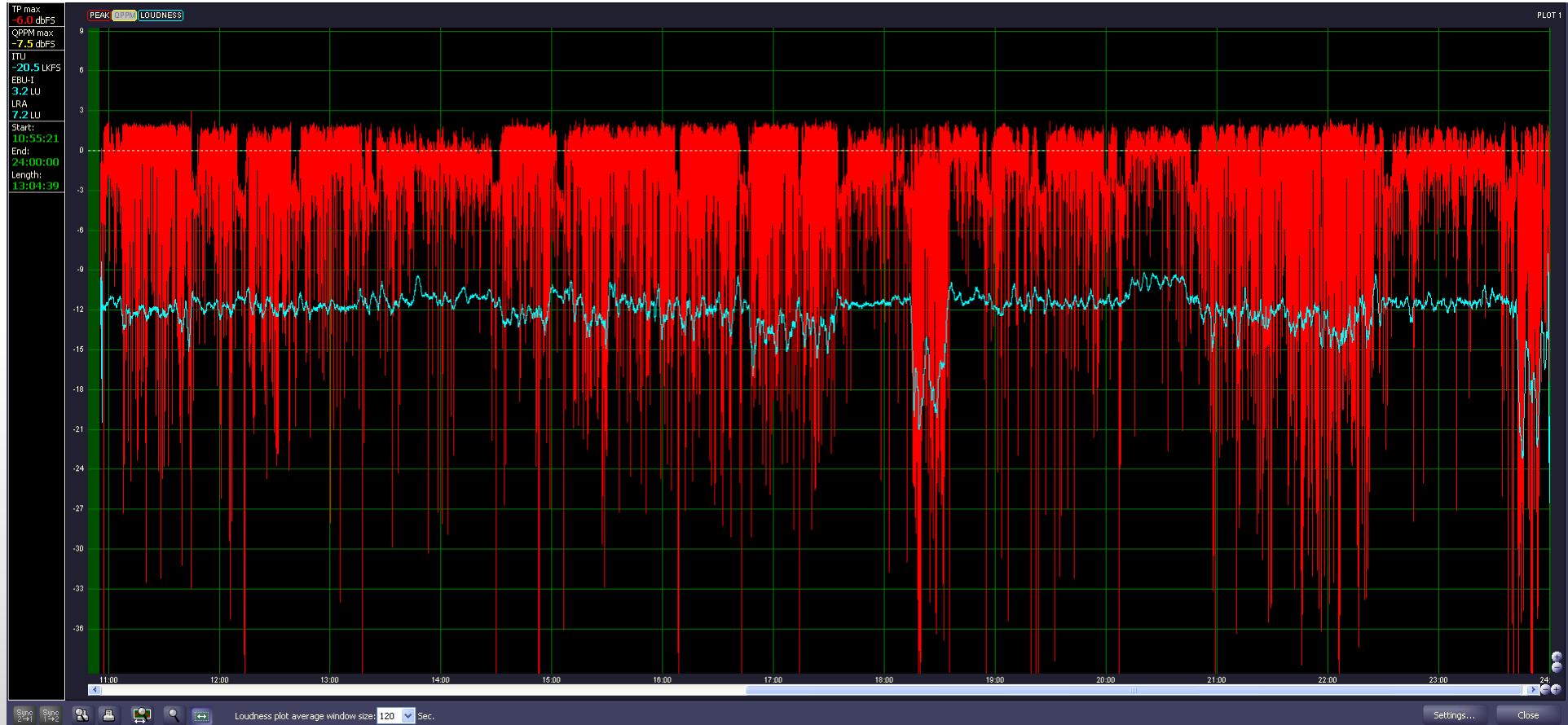
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# Analysis: definition of TV loudness check-points



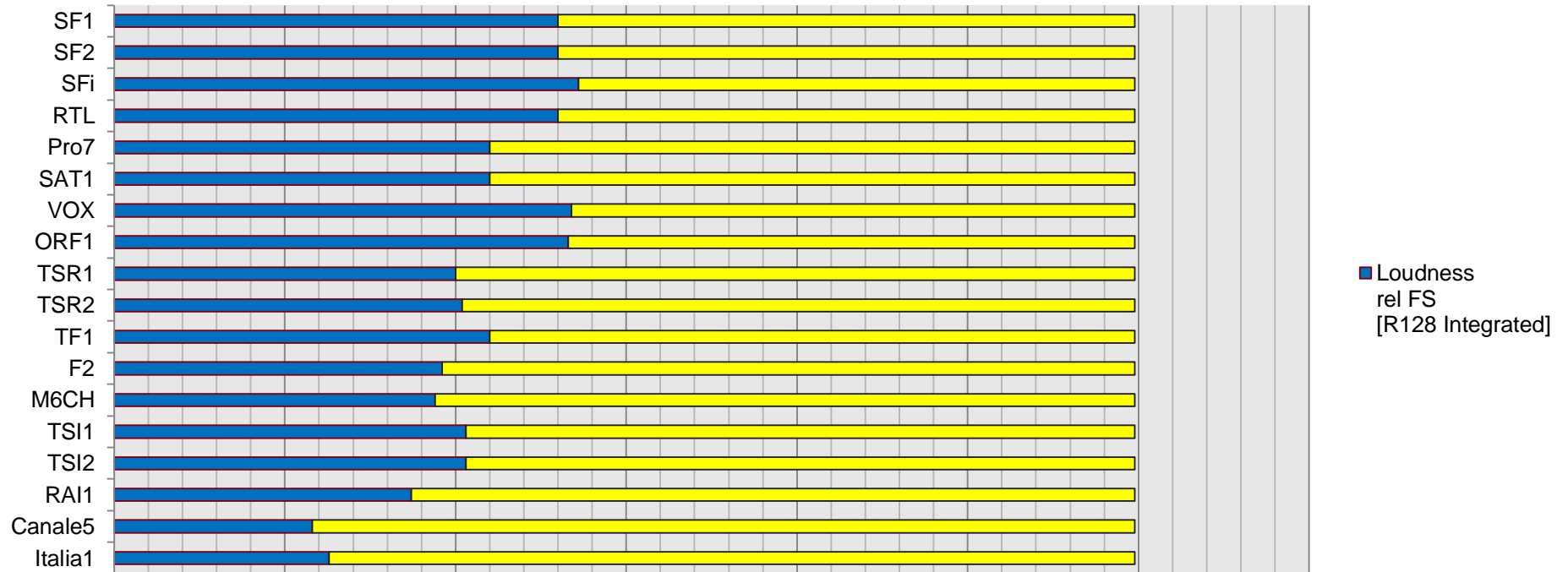
# Analysis: Loudness Logs



# Analysis: Loudness Comparison TV

## DVB-S / DVB-C

(März 2011)



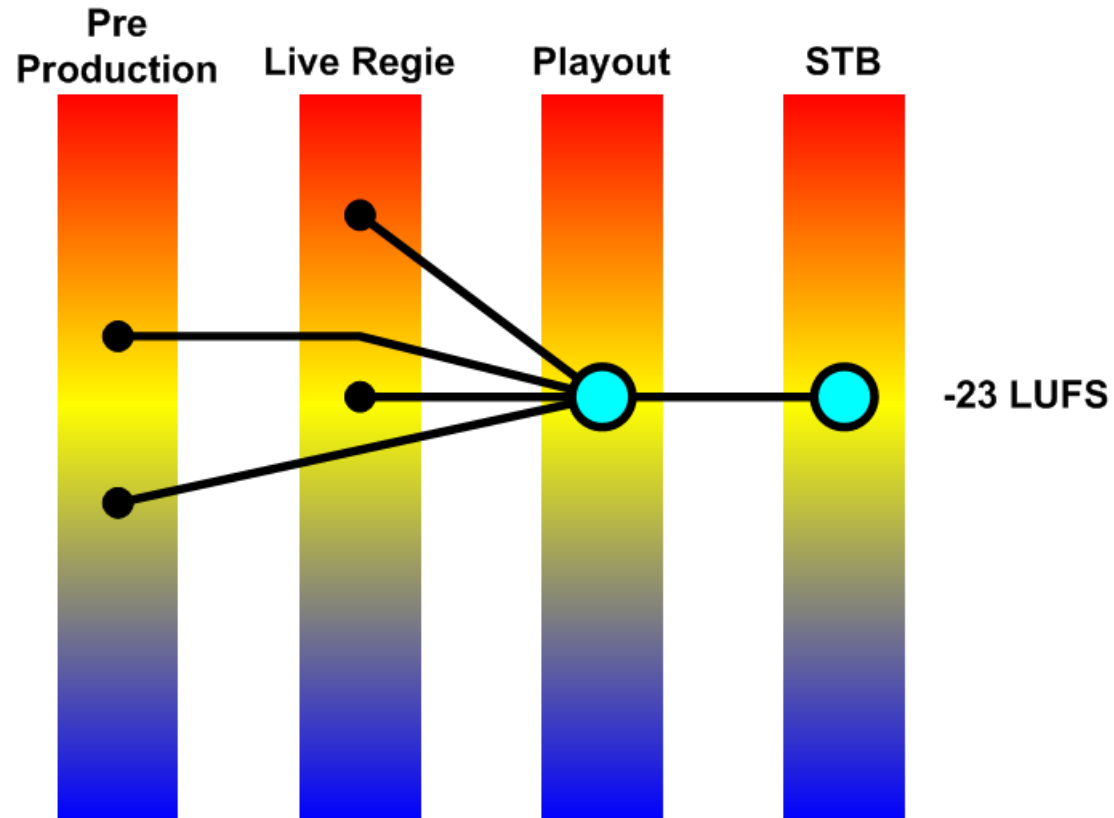
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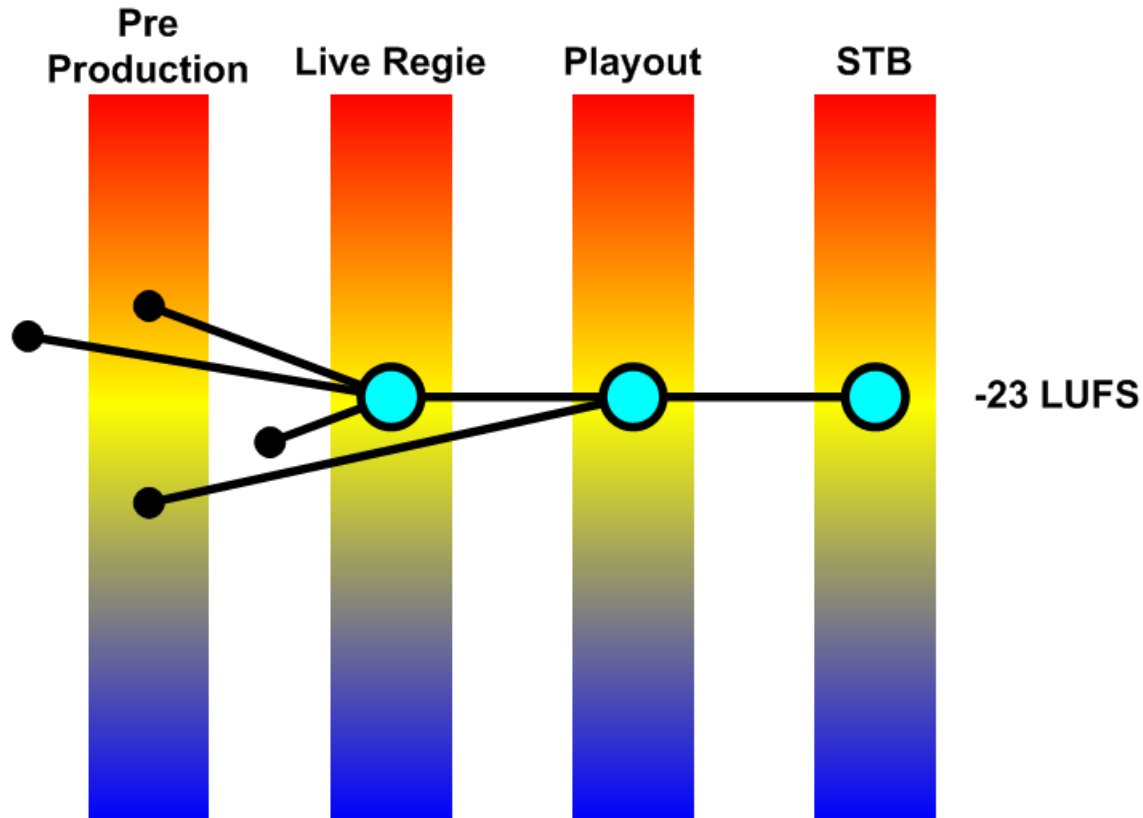
# Implementation Concept

- TV first: HD Migration of all major SRG programs in February 2012
- Priority nodes: content producers of „ready to broadcast“ material
- General implementation direction: from playout to sources
- BTW: Dolby channels of HD programs require loudness normalization anyway
- Radio postponed, needs more time to develop, accept first experiences in production, any changes on FM refused yet

# Loudness Normalisation at Playout

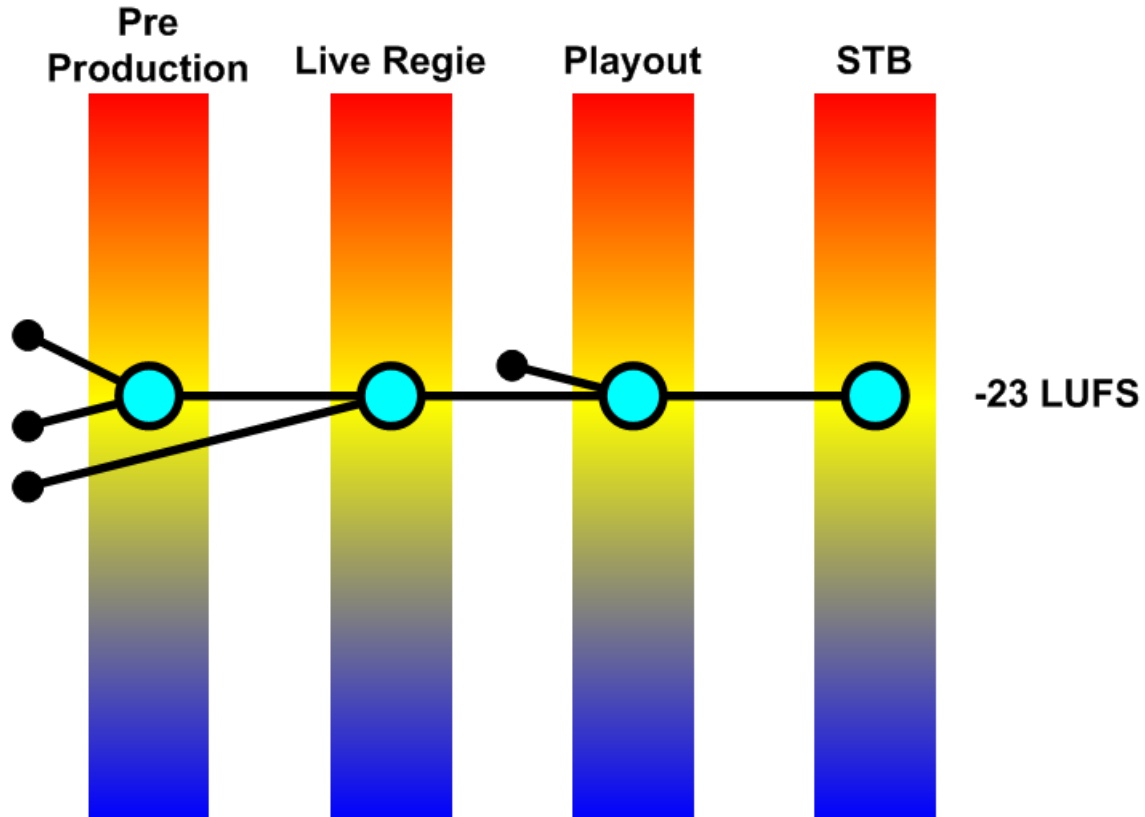


# Loudness Normalisation at Regie and Playout





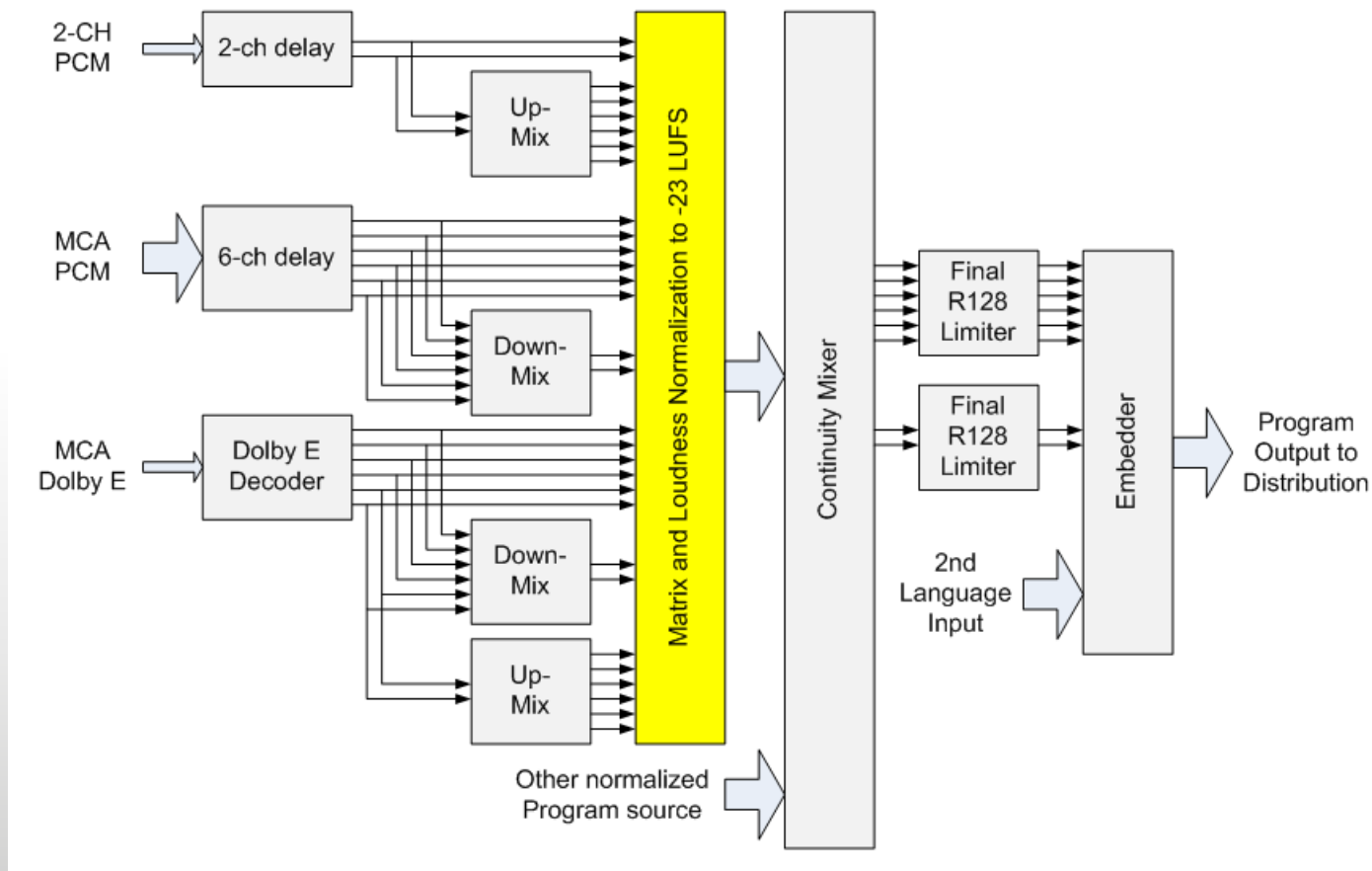
# Loudness Normalisation Progress



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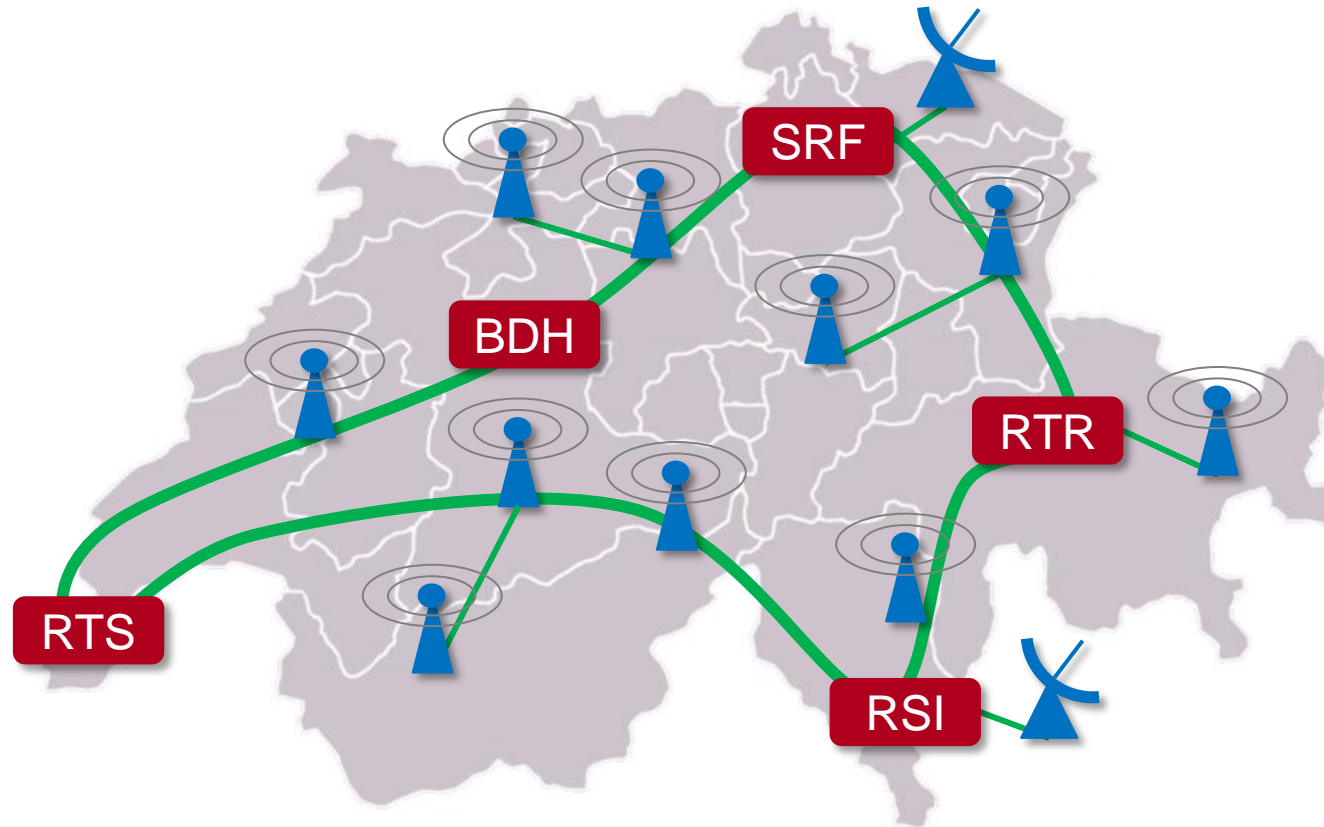
# Functional Audio Concept of the new HD Playouts



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# Distribution Network / Playout



# Distribution tasks for TV redistributors

## Special tasks of the centralized distribution playout:

- As proposed by EBU Tech 3344, pre-emphasis limiters at distribution playout
  - ⇒ applied only on audio channels intended for analogue PAL services (by cable operators)
- Similar on the video side, composite legalizers at distribution playout
  - ⇒ applied only on distribution vectors which will be used for analogue PAL services (by cable operators)

# Pre-emphasis Limiter for analogue TV



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# Migration of Commercials

Together with Publisuisse we have developed a solution, which allows the customer:

- to stay with R68 commercials, if they still want to use it
- to use new R128 commercials, if they are ready
- to allow them migration to R128 on their own time schedule

⇒ basically Publisuisse does the R128 normalization job during ingest

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# Education Levels

Level	Definition	Difference in knowledge
Experts	Experienced Sound Engineers and technicians, willing to educate colleagues	Able to mix live on loudness target 2 day seminar, also Dolby Digital+MCA
Level A	Sound Engineers of live events	Same as above
Level B	Postproduction editors and MCR technicians, usually no live processing	Able to normalize loudness near-live or filebased, also Dolby Digital+MCA
Level C	Editors, Journalists, Producers	Able to normalize loudness filebased only, stereo only
Level C+	DJ Journalists	Able to mix live close to target, stereo only

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# Some Figures for SRG SSR initial TV migration steps

Experts: 20

Level A: 90

Level B: 120

Level C: 220+

Estimated equipment cost: 1.1 Mio Euro total TV

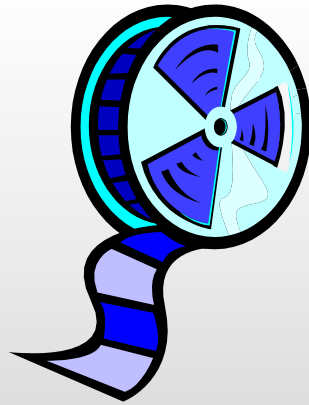
Estimated education cost: 0.4 Mio Euro total

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# Video „Loudness Revolution“

- Introduction to R128 and loudness normalization
- Quick start for manual file-based loudness normalization
- Target: all non-audio technical (Level C), Journalists, Producers, Management, intro to suppliers



# Conclusion

## Important factors for seamless introduction of R128:

- Building of new playouts for HD could be combined with R128 introduction from the beginning
- Commercials require seamless migration phase
- Yet, we got very good support of our CTO, the CTO board and the board of directors operation
- Last but not least: at the time of implementation our internal group was already well established



**Thank you!**