



## **Accessible cinema**

**What is it ? How does it work?**

## Accessible cinema - Definition -

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**Hearing impaired**

**Visually impaired**

# Accessible cinema - Definition -

## Requirement for hearing impaired content



Subtitles in addition to the „regular“ subtitles for events that are only recognizable in the audio of the show

Subtitles for hearing impaired audience so called „Closed Captions“

# Accessible cinema - Definition -

## Requirement for visually impaired content



**Voiceover narration:**  
 Lena is lying on the bed of the beach hut wearing a blue skirt.  
 She is sleeping and has a book in her hands.



A voice adds narration over the audio part of the feature. All picture elements you cant imagine out of the audio gets a additional explanation

Audio description for visually impaired audience

# Accessible cinema - Requirements for a all accessible cinema screening -

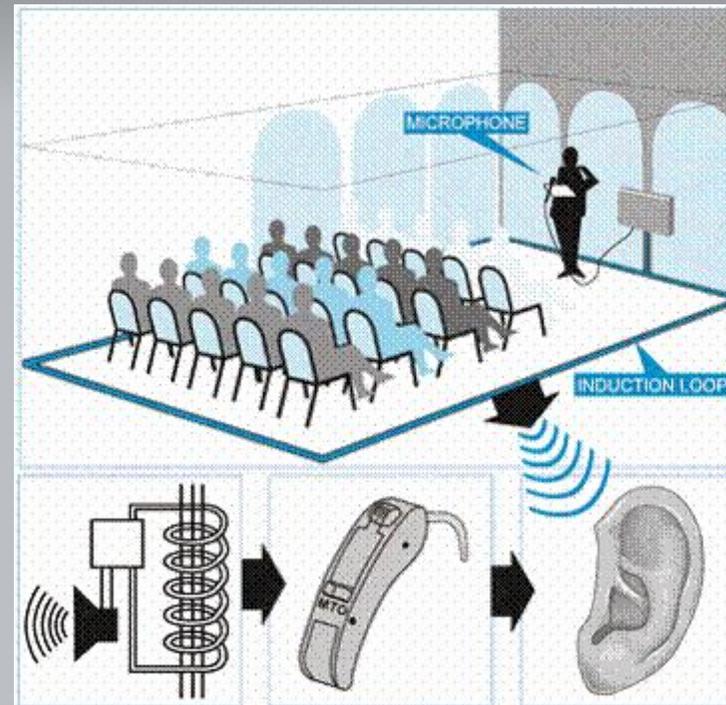
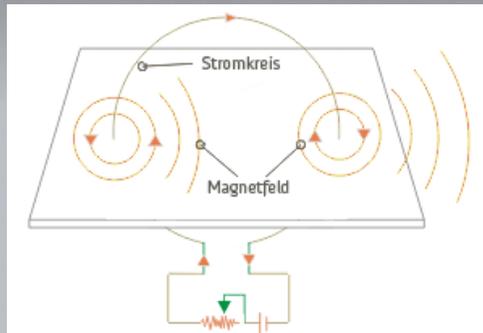
No interference between any audience members inside the same show

Hearing impaired:	„Closed Captions“ subtitles + scene description
Visually impaired:	Audio description. Added narrative description
No handicap:	Attends the show as used to

**„All accessible“ cinema = Everybody can be part of the same experience**

# Accessible cinema - Early systems -

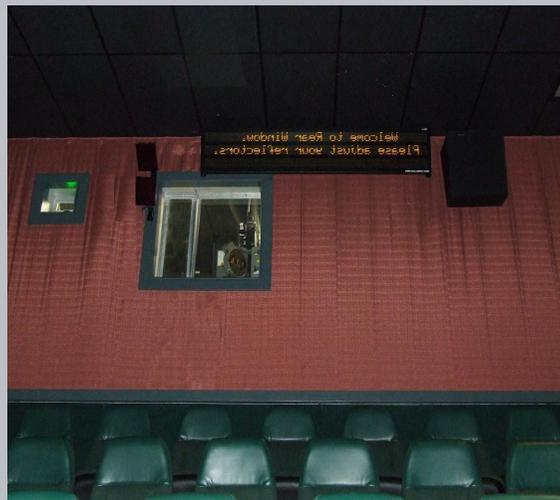
## Induction loop



# Accessible cinema - Early systems -

## Rear window LED backwall projection for Closed Captions

LED - backwall



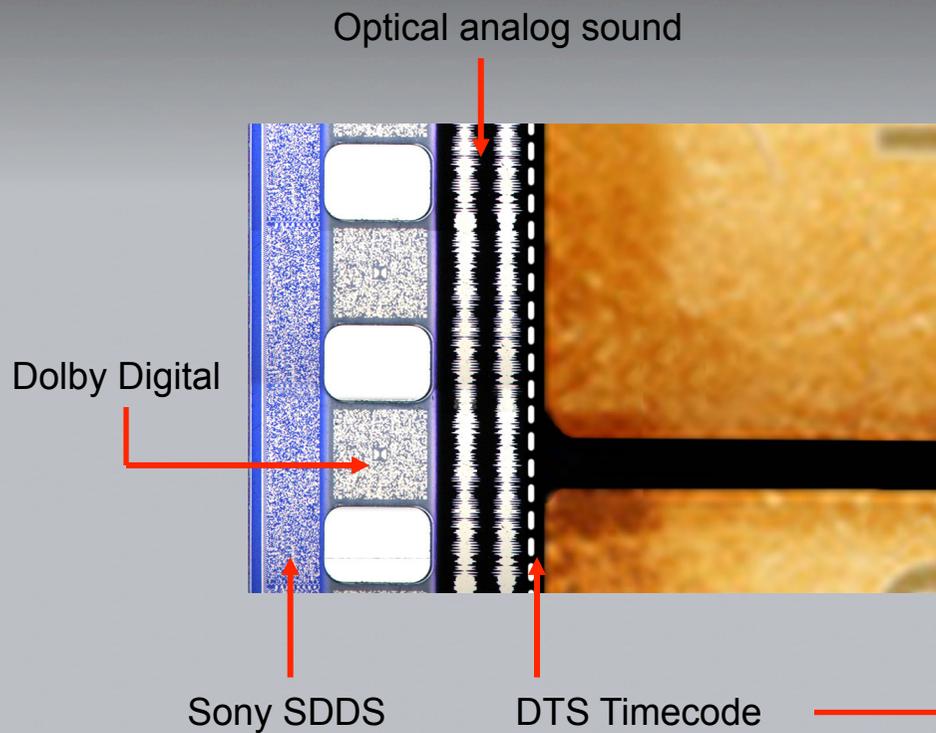
Reflective glas



Closed Caption



# Accessible cinema - Analog -

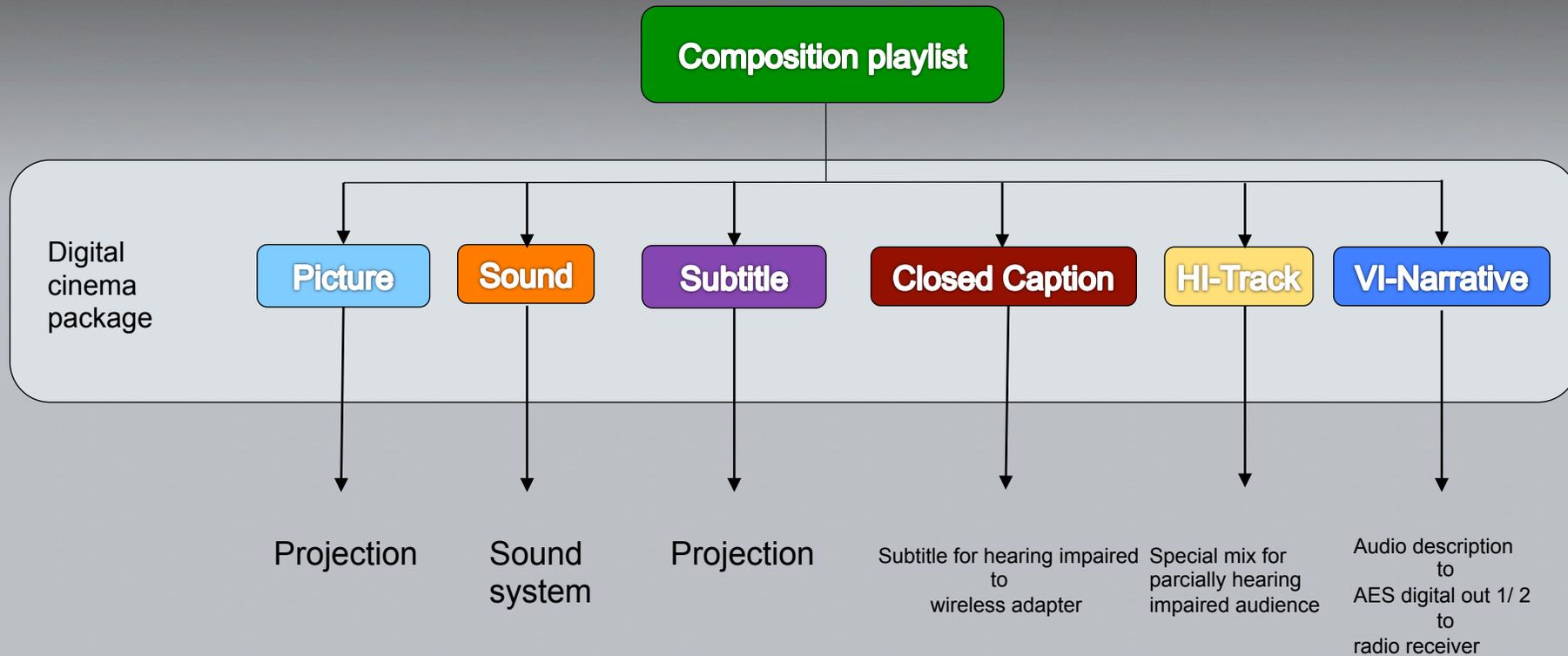


DTS Audio CD  
VI-Narrative Track



Timecode for  
Closed Caption  
system

# Accessible cinema - DCP structure -



# Accessible cinema - Digital standards in post production -

Defined standards in digital cinema for audio description



SMPTE S429-2	
Channel	SMPTE 429-2 Label
1	L
2	R
3	C
4	Lfe
5	Ls
6	Rs
7 / 15	HI
8 / 16	VI-N

„Hearing impaired track“:

Mix with main focus on dialog understandability for partially hearing impaired audience

„Visual impaired – audio description track“:

# Accessible cinema - Digital standards in post production -

Defined standards for „Closed Captions“ in digital cinema

## SMPTE 428-10 & 429:

**Closed Caption  
Closed Subtitle**      Format and standard of Closed Captions



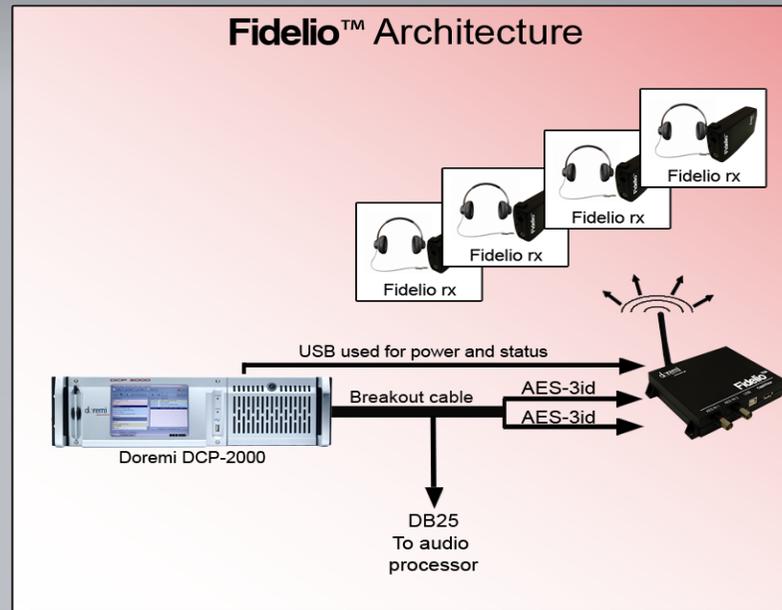
## SMPTE 430-10 & 430-11:

**Content Synchronisation Protocol  
Resource Presentation List**      Open source communication protocol between D-Server and  
Closed Caption system

# Accessible cinema - Modern generation technology in cinemas -

Audio description for visually impaired or partially hearing impaired audience

Transmitter



Receiver



# Accessible cinema - Modern generation technology in cinemas -

## Closed Captions



# Accessible cinema - Modern generation technology in cinemas -

Content access glasses



SONY



# Accessible cinema - Modern generation technology in cinemas -

## Streaming media to mobile devices

local streaming to mobile device



1. The D-server outputs CC and VI-N to a local router



2. Sennheiser connect app logs into the local network and the app streams CC and VI-N track

Audiodescription via  
headphone out

Closed captions via  
display



preload content and sync in the theater



1. VI-N and CC as well as the original feature soundtrack will be downloaded to mobile device from a cloud database of Greta + starks



2. The synchronization of the CC and VI-N track is achieved through an audio fingerprint of the original feature soundtrack

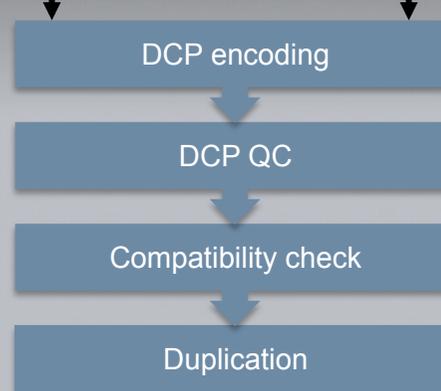
# Accessible cinema - Post production workflow -

## Audiodescription for visually impaired audience



VI-N mono mix

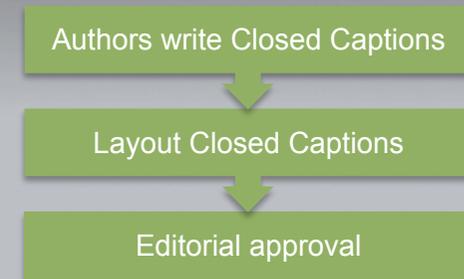
## DCP mastering



24 fps

Accessible DCP

## Closed Captions



Closed Caption XML file

25 fps

DVD / TV Version

## Accessible cinema

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**Thank you for your attention**