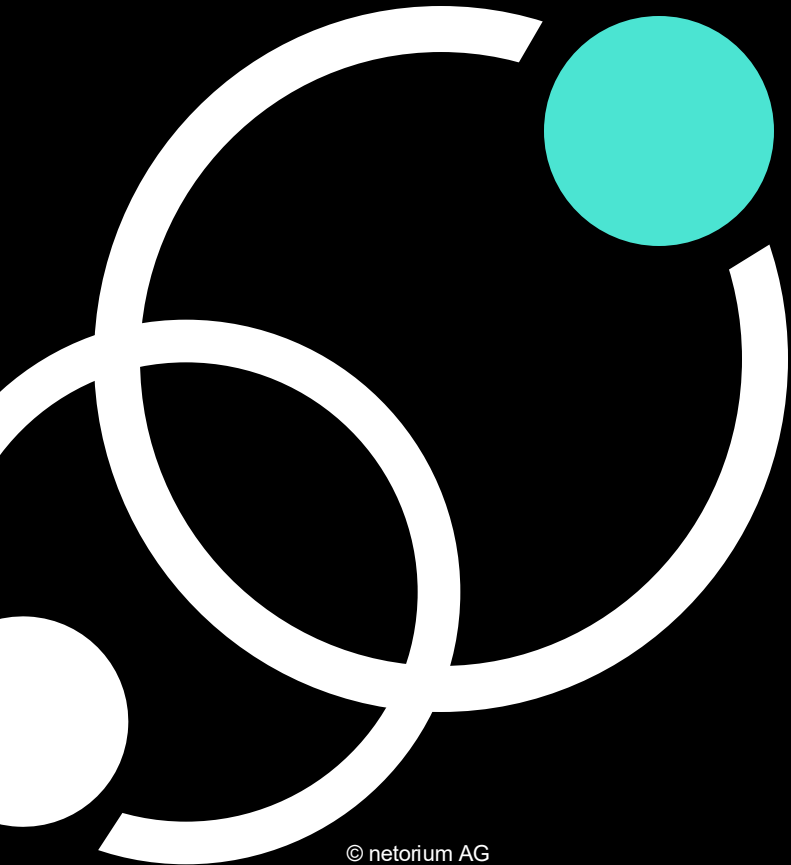
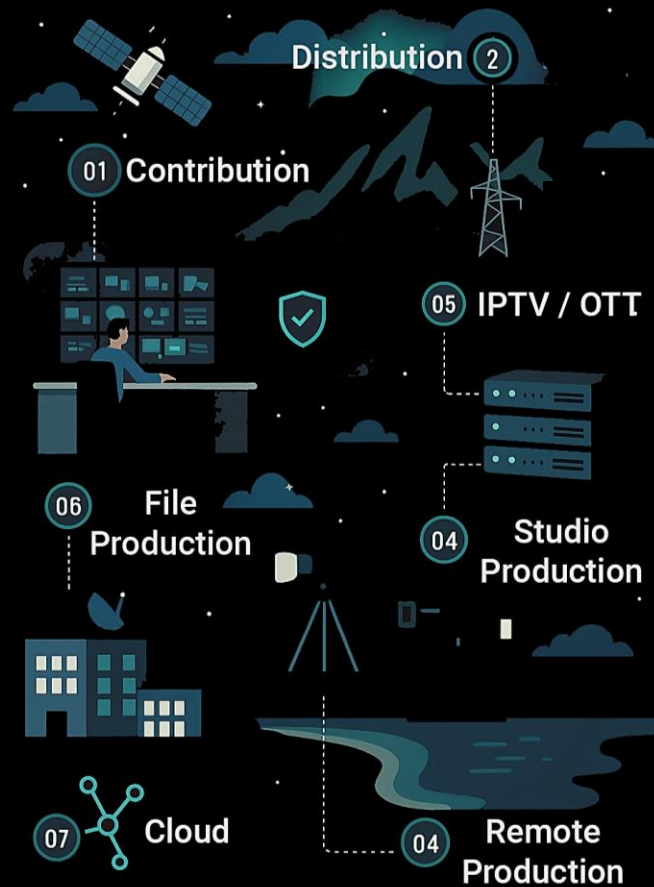




QUALITÄTSSICHERUNG HETEROGENE NETZE

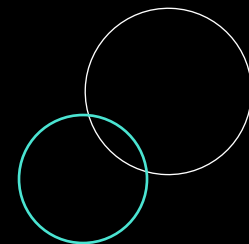
Markus Bisselik / netorium AG

IP-NETZWERKE IM EINSATZ



THEMEN

- SMPTE ST 2110 Messpunkte
- Remote Production Timing
- OTT QoS & QoE
- VOD Probing
- Device Test Automation



ST 2110 MESSPUNKTE



RTP



PTP



DPI



SDP



NMOS & SIGNAL
TOUTING



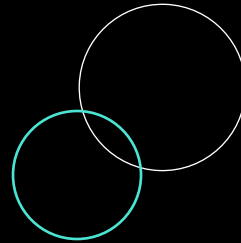
BAND
BREITE



ANC
STREAMS



FLOW
INTEGRITY



ST-2110 PROBING



IP Status

Run Time: 3d, 01:13:06

Port 1: OK

Total: 10.47 Gb/s

29

25Gb
No FEC

Port 2: OK

Total: 10.44 Gb/s

7

25Gb
No FEC

	ID	PORT	STRM	PROTOCOL	BITRATE	PAYLD	DEST IP
	27	1	1	S2110.30	8.32 Mb/s	97	229.30.11.1:50030
	26	1	2	S2110.30	8.32 Mb/s	97	229.30.12.1:50030
	25	1	3	S2110.30	8.32 Mb/s	97	229.30.13.1:50030
	24	1	4	S2110.30	8.32 Mb/s	97	229.30.14.1:50030
	23	1	6	S2110.30	6.016 Mb/s	97	229.30.16.1:50030
	22	1	7	S2110.30	6.016 Mb/s	97	229.30.17.1:50030
	21	1	8	S2110.30	6.016 Mb/s	97	229.30.18.1:50030
	5	2	1	S2110.30	8.32 Mb/s	97	229.30.11.1:50030
	4	2	2	S2110.30	8.32 Mb/s	97	229.30.12.1:50030
	3	2	3	S2110.30	8.32 Mb/s	97	229.30.13.1:50030
	28	1	1	S2110.40	165 kb/s	100	229.40.10.1:50040
	6	2	1	S2110.40	165 kb/s	100	229.40.10.1:50040
	42	1	2	S2110.43	9.014 kb/s	98	233.40.3.1:50040
	12	2	2	S2110.43	9.014 kb/s	98	233.40.3.1:50040
	1	1	--	PTP_Gen	11.84 kb/s	--	224.0.1.129:320
	18	1	--	PTP_Gen	1.169 kb/s	--	224.0.1.129:320
	2	1	--	PTP_Evt	5.71 kb/s	--	224.0.1.129:319
	--	--	--	UDP	0b/s	--	--

INPUT: Mult-40_A11_c

AUD: P P P P P P P P P P P P P P P P

3840X2160p 59.94

PTP: 2024-06-10 15:18:08

REF: PTP:110

TC: LTC 22:18:09:19 2024-06-10

VID/REF: Locked

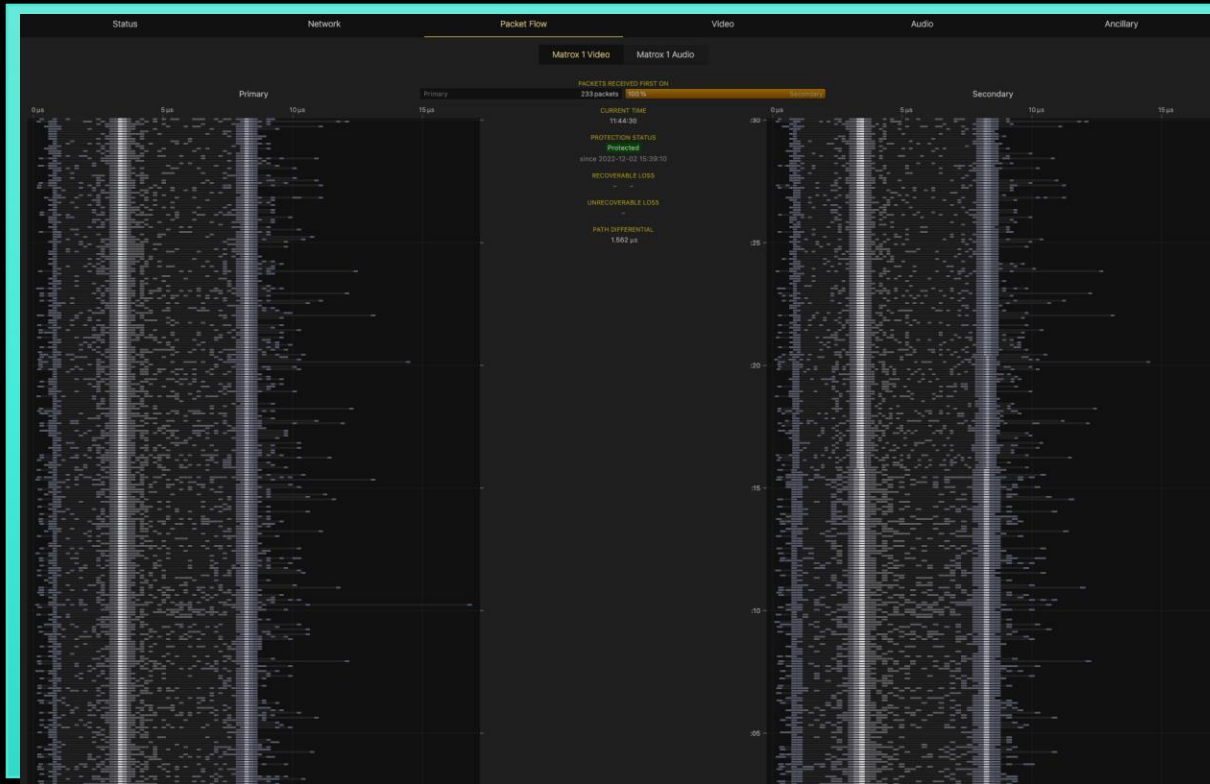
teletstream

tron-multi

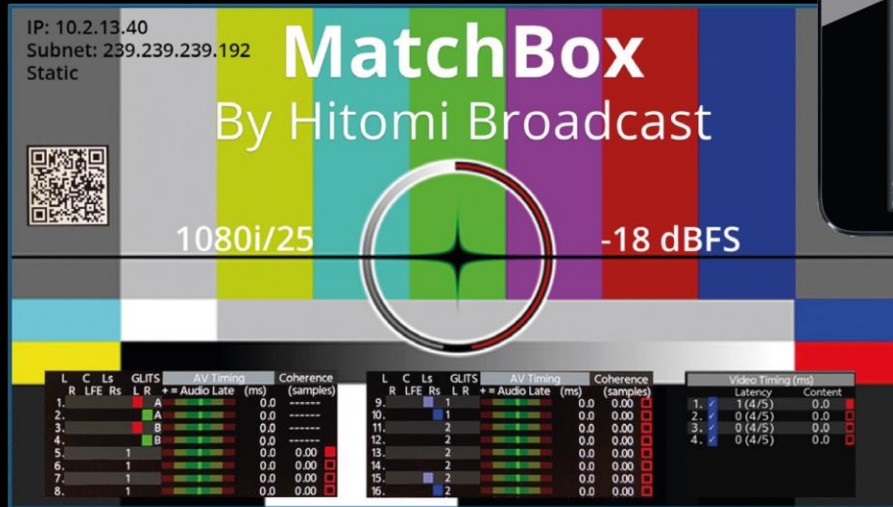
SW Ver: 4.2b4

Activity

RED/BLE VERGLEICH



REMOTE AV-SYNC & LATENCY

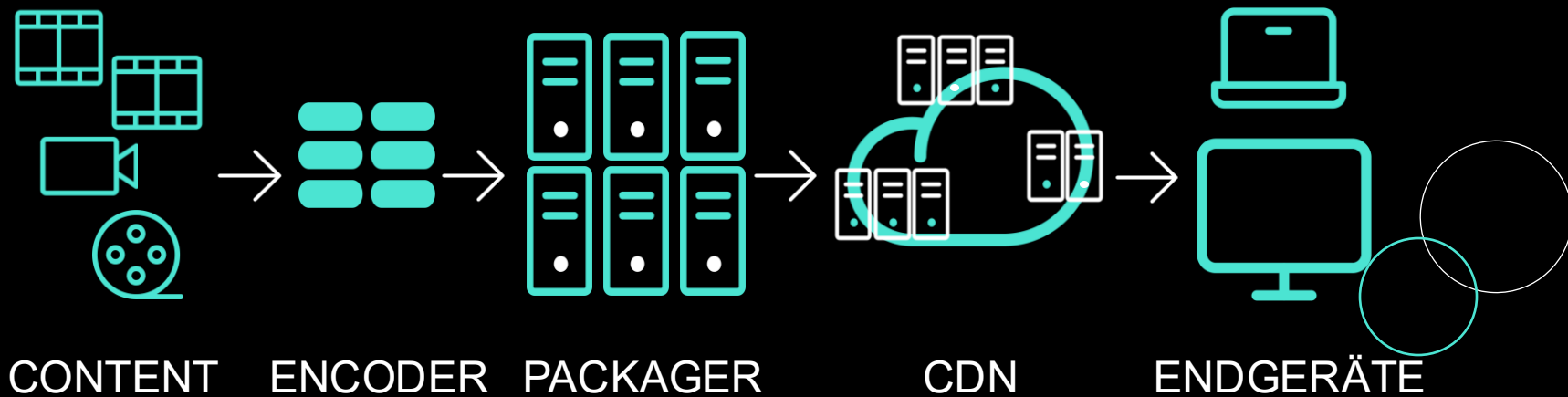


COMPLIANCE & LOGGING

The screenshot displays the LogPlayer application interface, which is used for managing and logging broadcast content. The interface is divided into several sections:

- Channels:** A list of channels on the left, including "Testing No Audio", "BF3 [HD 1920 Full] 9HD Melbourne", "BF3 [HD 1920 Half] TEN HD", "BF3 [HD 1920 Quarter] 9Life", "BF3 [HD 1280 Full] 7HD Melbourne", "BF3 [HD 1280 Half] 7TWO Melbourne", "BF3 [HD 1280 Quarter] 7flix Melb...", "Stopped BF3 Triple J Sydney", "Stopped BF3 AUS beIN 2", "BF3 [SD Full] ONE", "BF3 [SD Half] TEN Digital", "BF3 [HD 1920 Quarter]", "BF3 [HD 1920 Full] AMC HD WEST", "BF3 [HD 1920 Half] AMC HD WEST", and "BF3 [HD 1920 Quarter] WE HD".
- Video Grid:** A grid of video thumbnails showing various programs, including "BF3 [HD 1920 Full] 9HD Melbourne", "BF3 [HD 1920 Half] TEN HD", "BF3 [HD 1920 Quarter] 9Life", "BF3 [HD 1280 Full] 7HD Melbourne", "BF3 [HD 1280 Half] 7TWO Melbourne", and "BF3 [HD 1280 Quarter] 7flix Melbourne".
- EPG (Electronic Program Guide):** A section showing a schedule of programs, including "Ellen - New (Includes Sneak Peek - The Voice at 12:35 PM)", "Dr. Phil", "House Hunters Renovation", "The Devil's Teardrop", "NBC Today", and "House Rules".
- Video Player:** A central video player showing a video from "BF3 [HD 1920 Full] 9HD Melbourne" at 12:34:51 on 04/27/2018. The player includes a timeline, a play button, and a volume control.
- Loudness Graph:** A graph showing the audio loudness of the video, with a peak of -23.94 LUFS. The graph includes a "Mark In" button at 12:13:34 and a "Mark Out" button at 12:34:51.
- Metadata Panel:** A panel on the right showing details for the "BF3 [HD 1920 Full] 9HD Melbourne" channel, including "Track 1", "Closed Captions", "Time Zone (UTC+10:00) Canberra, Melbourne, Sydney", "Program", "Start Time", "Duration", "Classification", "Source", "Genre", "Description", "Extended Description", "PDC", and "CA".

OTT QoS + QoE



VMAF

INPUTS

REFERENCE
VIDEO

TEST
VIDEO

COMPONENTS

VIF

Visual Information Fidelity

ADM

Detail Loss

MOTION

Motion Sensitivity

TEMPORAL
POOLING

Time-variant Effects

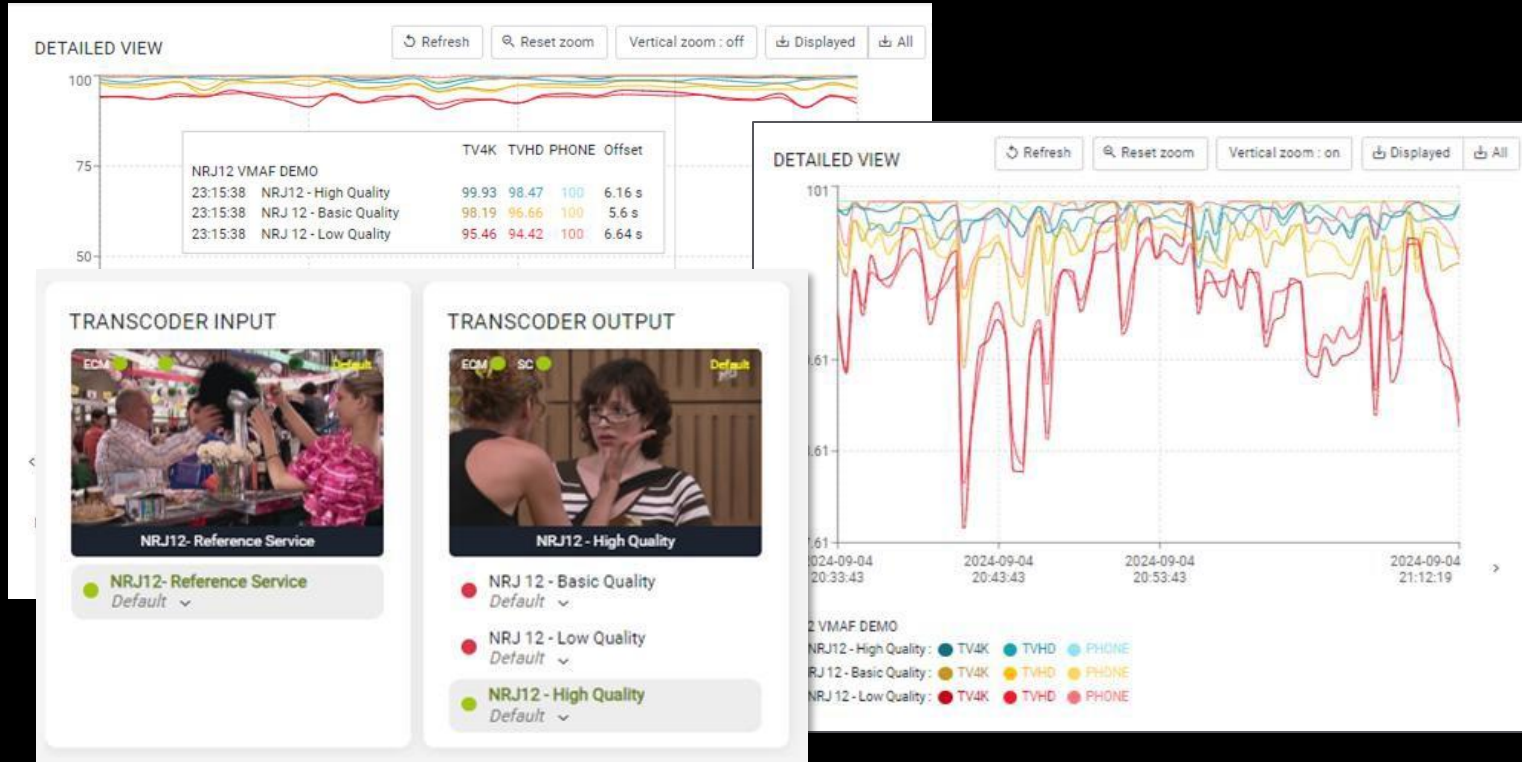
MODEL

VMAF
SCORE
94,7

0 TO 100

Higher score
means better quality

VMAF BEISPIEL



Player Analytics

QUALITY OF SERVICE (QoS)

- Video startup time
- Buffering/stalling events
- Resolution switches/bitrate adaptations
- Dropped frames

ENGAGEMENT

- Video watch time
- Completion ratio
- Number of viewers
- Skip Points

QUALITY OF EXPERIENCE (QoE)

- Overall quality
- Mean Opinion Score
- Audiovisual quality
- Stalling quality

STANDARD METADATA

- Device type (OS and version)
- Video stream source
- WiFi statistics (if available)
- ISP and IP geolocation (GDPR compliant)
- CDN information

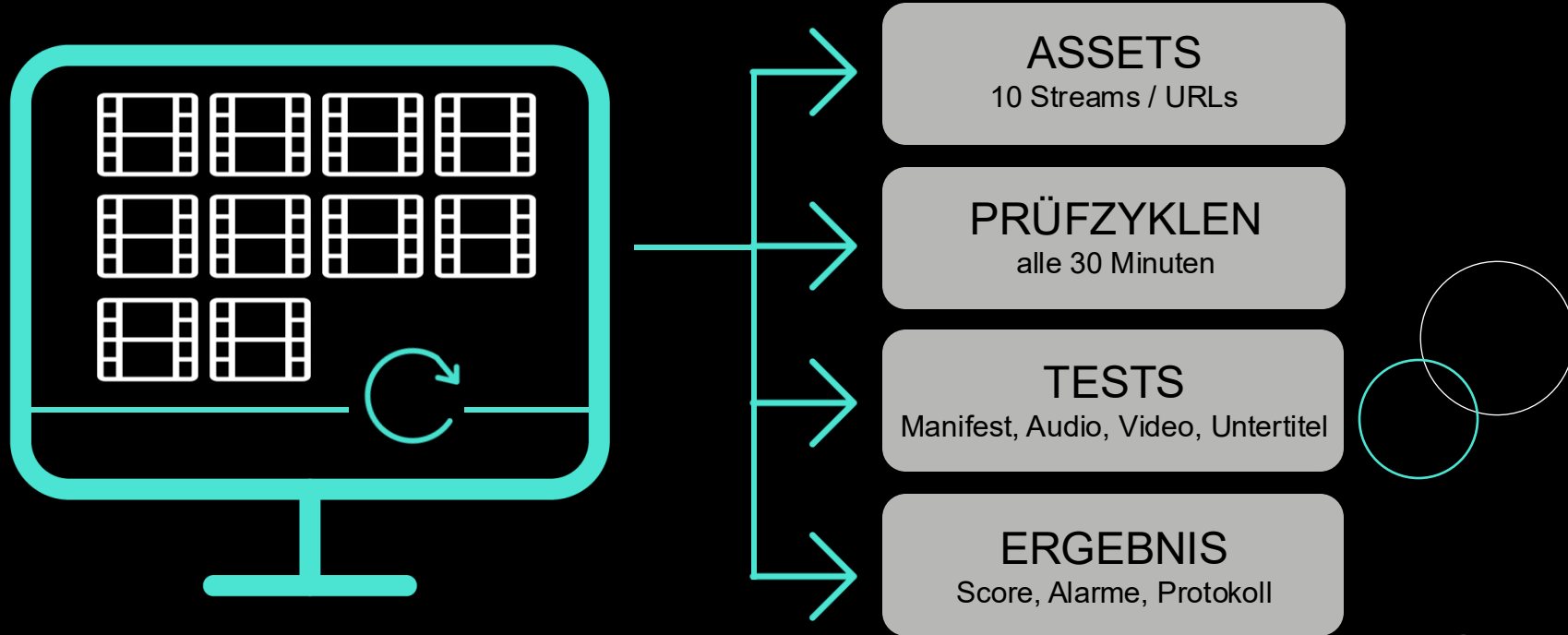
YOUR OWN METADATA

Filter by what's important, e.g.:

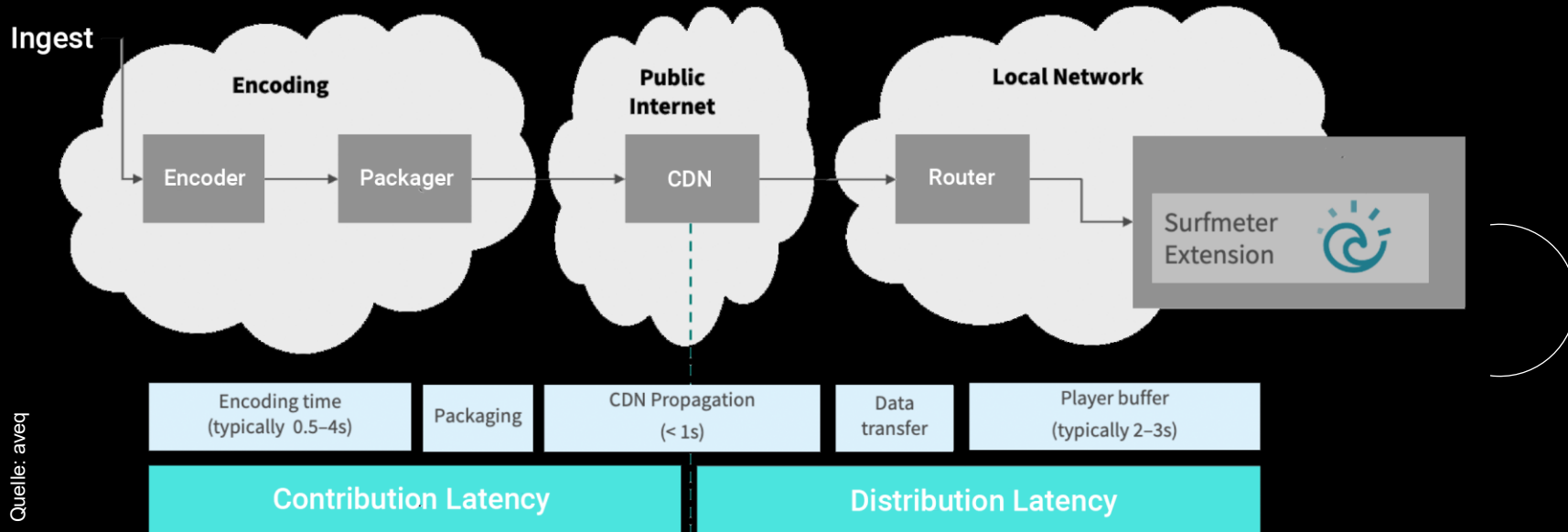
- User ID
- Asset ID
- Deployment environment

Quelle: aveq

VOD Probing



CONTRI-/ DISTRIBUTION LATENZ



Device Test Automation

The screenshot displays the OutTest interface for device test automation. The main area shows a virtual TV screen with a header bar displaying 'xfinity 7:47a'. Below the header is a row of streaming service logos: xfinity stream, peacock, NETFLIX, YouTube, prime video, Disney+, hulu, apple tv+, and YouTubeTV. The main content area features a grid of program thumbnails, including 'FOX Weather First', 'LiveNOW from FOX', 'The Price Is Right', 'America This Morning', 'The Marvels', 'Abbott Elementary', 'Halo', and 'Suncoast'. A green button labeled 'Live stream' is overlaid on the 'LiveNOW from FOX' thumbnail. To the right of the TV screen is a virtual remote control with various buttons, including a directional pad, 'OK', 'INFO', 'P+', 'P-', 'SMART', and a numeric keypad. A green button labeled 'Virtual remote control' is overlaid on the remote. At the bottom left, a console log displays real-time network and console logs, including timestamps and log messages such as 'Pressed: < [\"RIGHT\", \"NAV\", false]'. A green button labeled 'Real-time network and console logs' is overlaid on the console log.

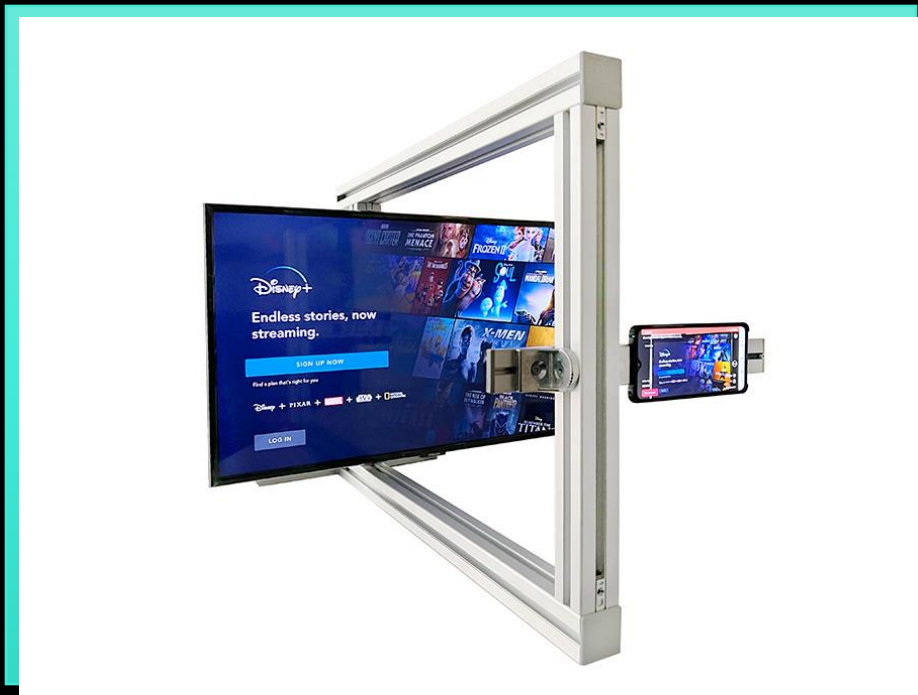
Quelle: Suiftest

Real-time network and console logs

Virtual remote control

Device Test Automation

Quelle: Suitest





WAS KÖNNEN
WIR FÜR SIE TUN?