



nanoStream Cloud & H5Live Player

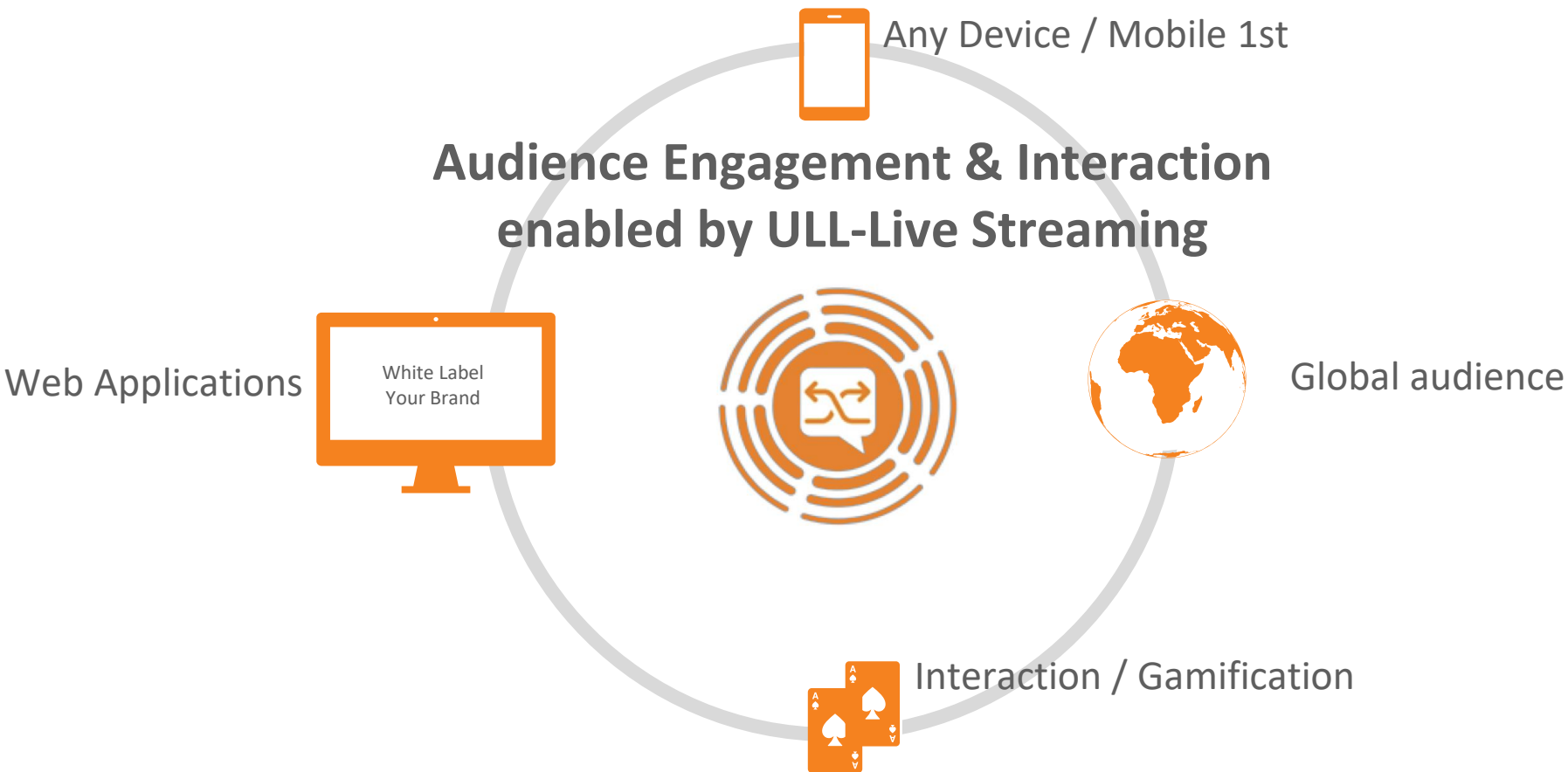
Engage your audience with
True interactive live streaming

With ultra-low latency (ULL)

Oliver Lietz, Founder & CEO, nanocosmos



Trends for audience engagement with live video streaming?



What are the applications and use cases for audience engagement?

Interaction / Engagement / Monetization



Example Application: Webcast

Live Conferencing



- Video Presentation / Screen Sharing
- Plugin-free: HTML5 Cross-Platform / Web Application / Firewall-sensitive
- Ultra-Low-Latency: around 1 second end-to-end
- Global scale to large audiences (10k-50k-100k viewers)

Interaction/Engagement:
Q&A, Polls, Surveys,
Feedback
Control Room

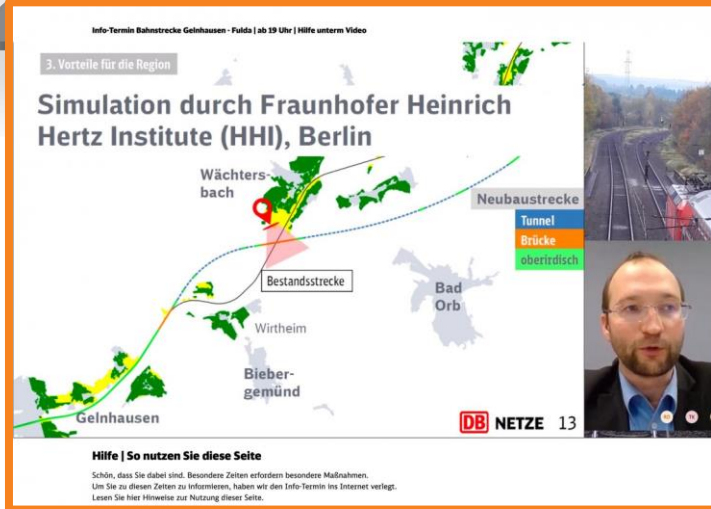
Example Application: Panel Discussions



Source: slido

Example Application: Citizens' Participation in Public Services

- Deutsche Bahn: Planning phase, public podiums



Interaction/Engagement: Q&A

Nutzer-17 19:14
sind zwischen Geln
Lärmschutzmaßnah

Nutzer-49 19:14
Wie sieht die Lärmentwicklung tagsüber aus?

Hess 19:15
Halte die Brücke über Kinzigtal unmittelbar an der westlichen Bebauung von Wächtersbach für in keiner Weise hinnehmbar. Querung sollte in jedem Fall weiter südwestlich in Richtung "Strauß" vorgenommen werden oder besser in Tunnel-Lage unter bestehender Strecke und Kinzig verlaufen. Gruß

Klicken und Frage eingeben

Klicken und Frage eingeben

Video Meeting + Live Streaming



Video Meeting (Zoom / Jitsi)

meeting/ conference
shared with a larger
audience

New Opportunities for using
Remote Meetings for Audience Engagement!

Live Streaming to
nanoStream Cloud



Example Applications : Live Auctions and Sales



Interaction: Sales/Bids

- Auction: e.g. real estate venue, art, retail
- Global audience, real-time bid
- Ultra-Low Latency: around 1 second end-to-end
- Global scale to large audiences
- Monetization and gamification of business applications

Example Applications : Live Sports Betting



Interaction: Bids, Chat

- Live Sports Betting: e.g. horse racing
- Ultra-Low-Latency: around 1 second end-to-end
- Global scale to large audiences
- Monetization and Gamification of business applications
- 24/7 Service

nanoStream Cloud – Our Solution

Interaction enabled by latency Cross-platform HTML:
nanoStream Cloud & H5Live Player



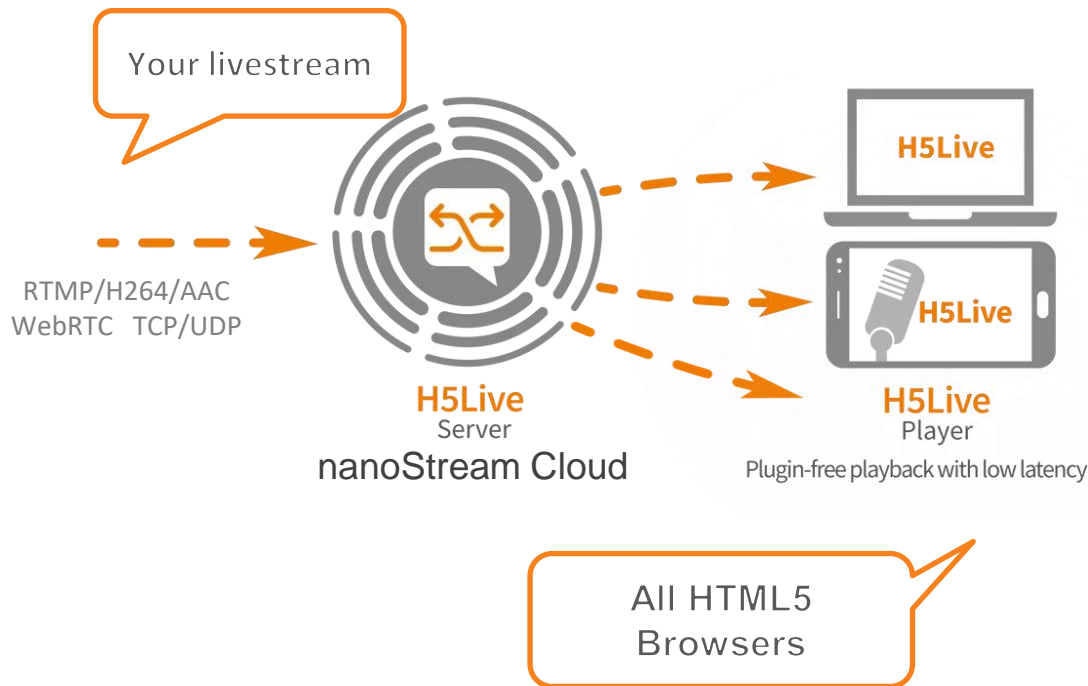
Latency Demo: 1s glass-to-glass, „hand-wave“



H5Live Player working on all browsers
Ultra-Low Latency 1 second end-to-end

Our solution: nanoStream H5Live Player, part of nanoStream Cloud

- Unique Technology created by nanocosmos
- Ultra-Low-Latency (ULL)
- Plugin-free / All Browsers, including Safari on iOS
- Light-weight, easy to embed
- instant live streaming, global scale with nanoStream Cloud



HTML5 Player - on your own web page

CDN
(nanoStream Cloud)



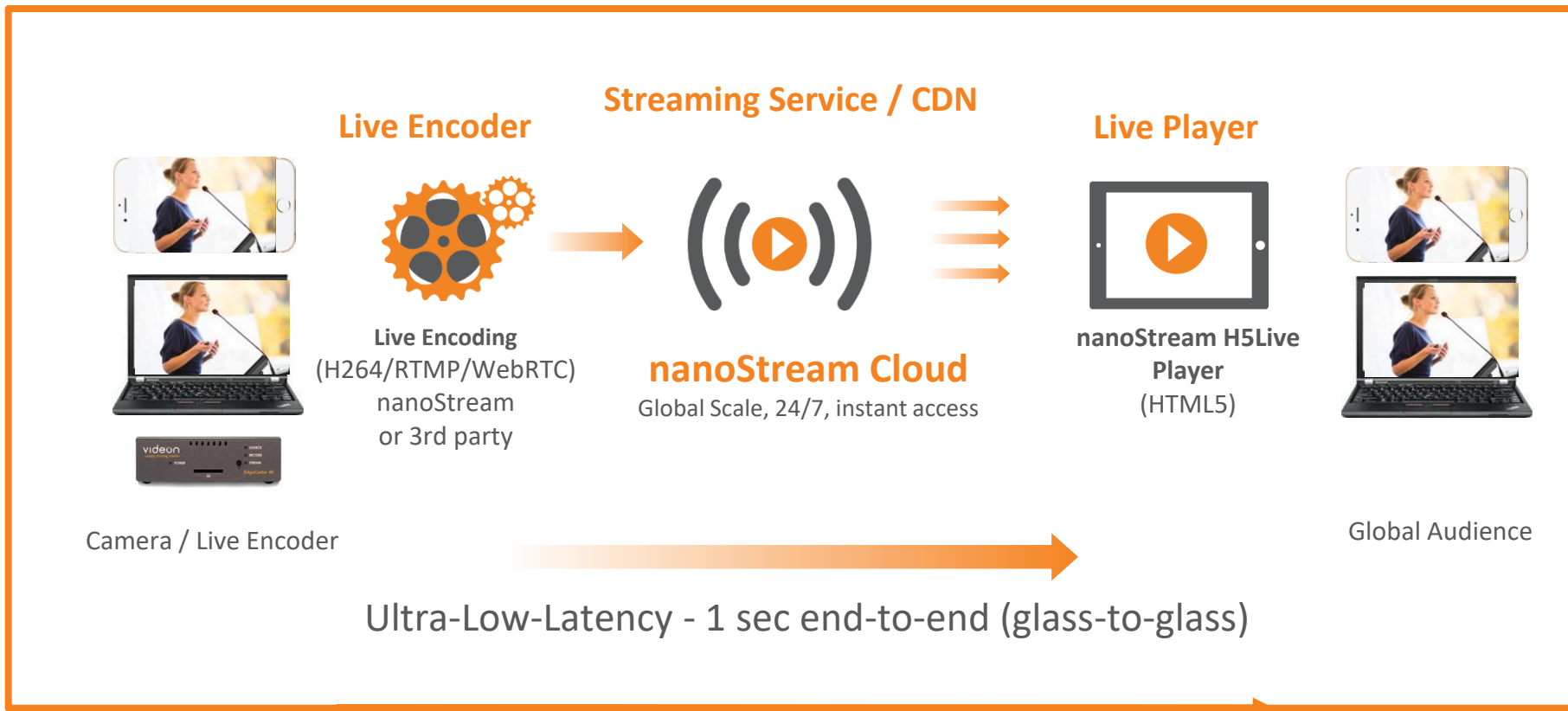
Easy to embed on HTML5
(light-weight Javascript-Client)

```
player.setup( {  
  "source": {  
    "stream": "123-456"  
  }  
});
```

H5Live Player working on all HTML5 browsers:

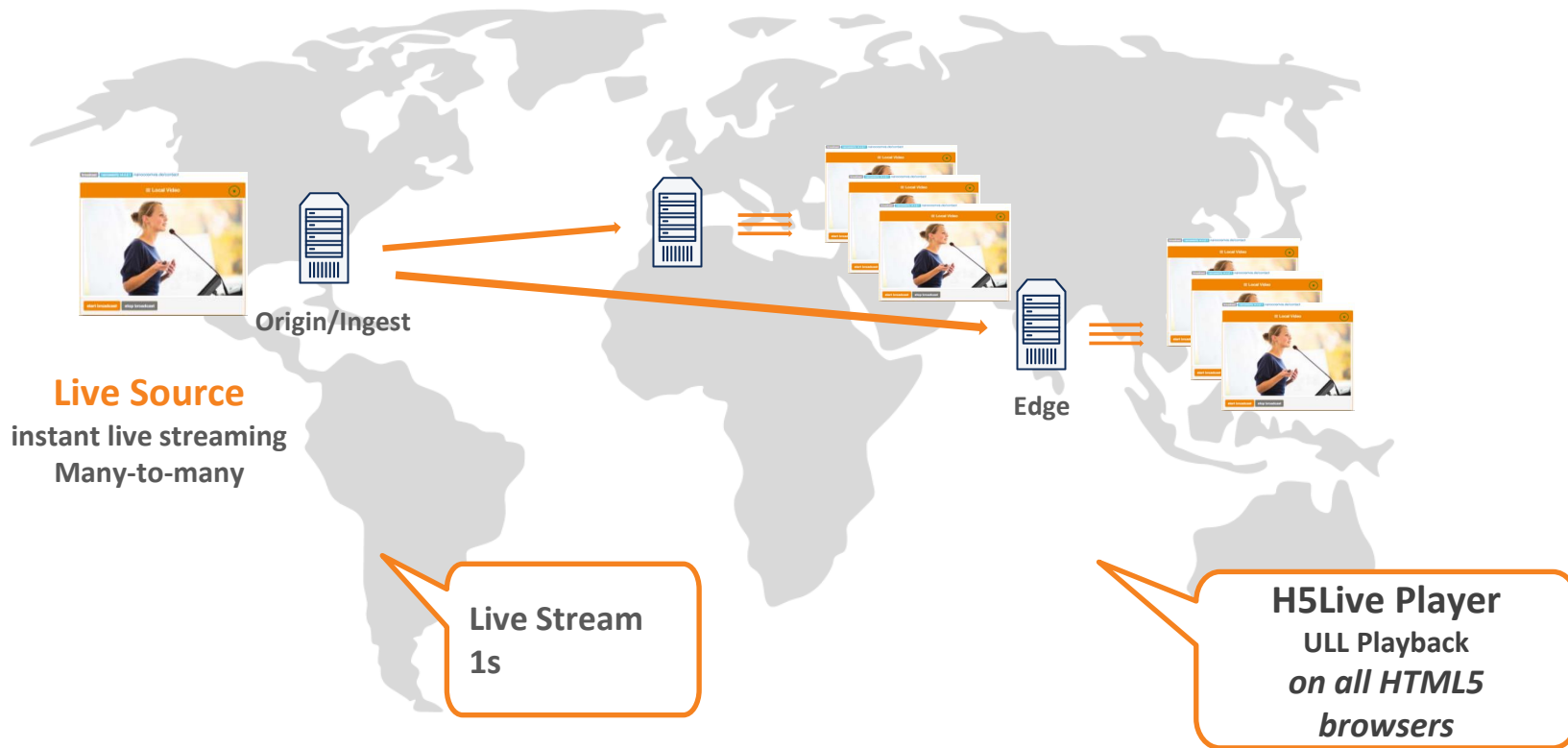
Desktop and Mobile, Windows, Mac, iOS, Android, Chrome, Firefox, Safari, Edge, IE, ... !

Live Streaming with nanoStream Cloud



nanoStream Cloud / CDN / Global Scale

Around the world in 1 second



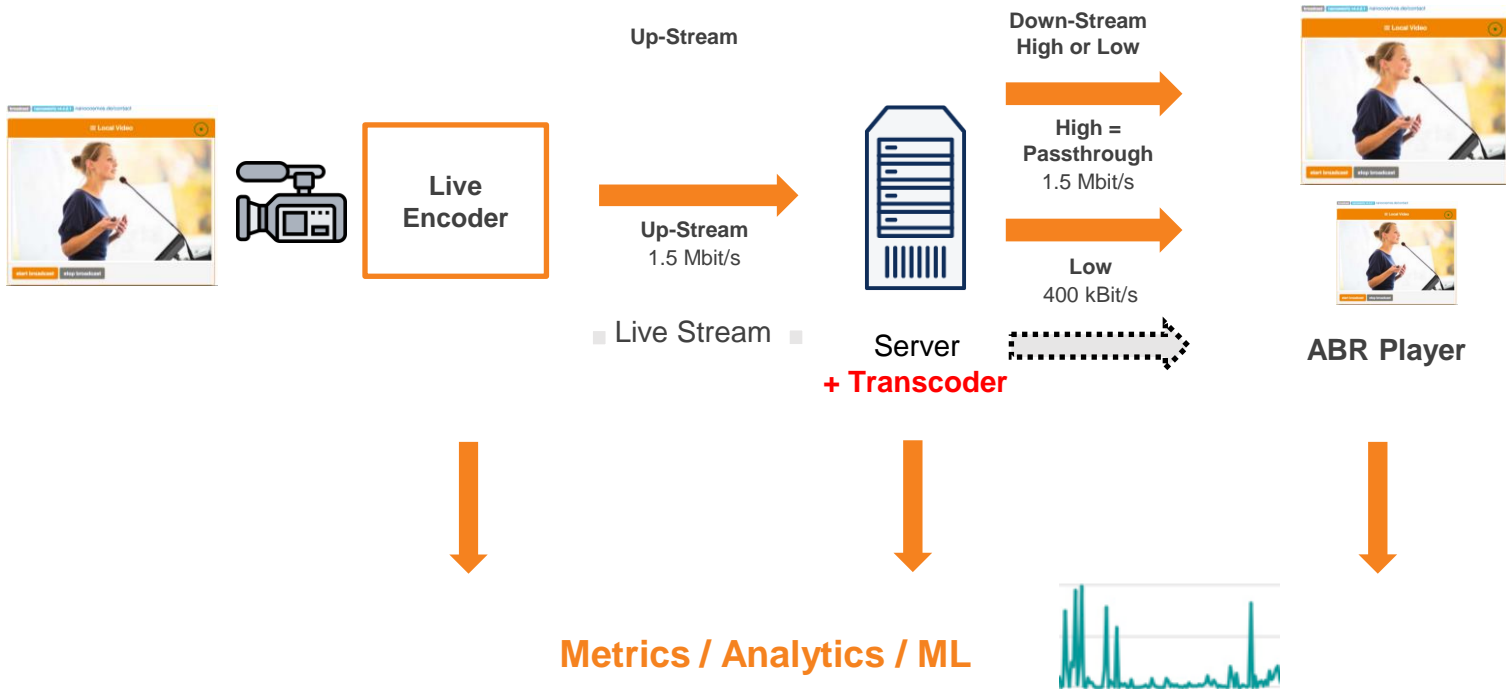
Enhanced Features: Adaptive Bitrate



- Multiple Bitrates
- Live Transcoding
- Adaptive Bitrate Player
- Ultra-Low-Latency
- Metrics/Analytics
- QoS / QoE – increased engagement

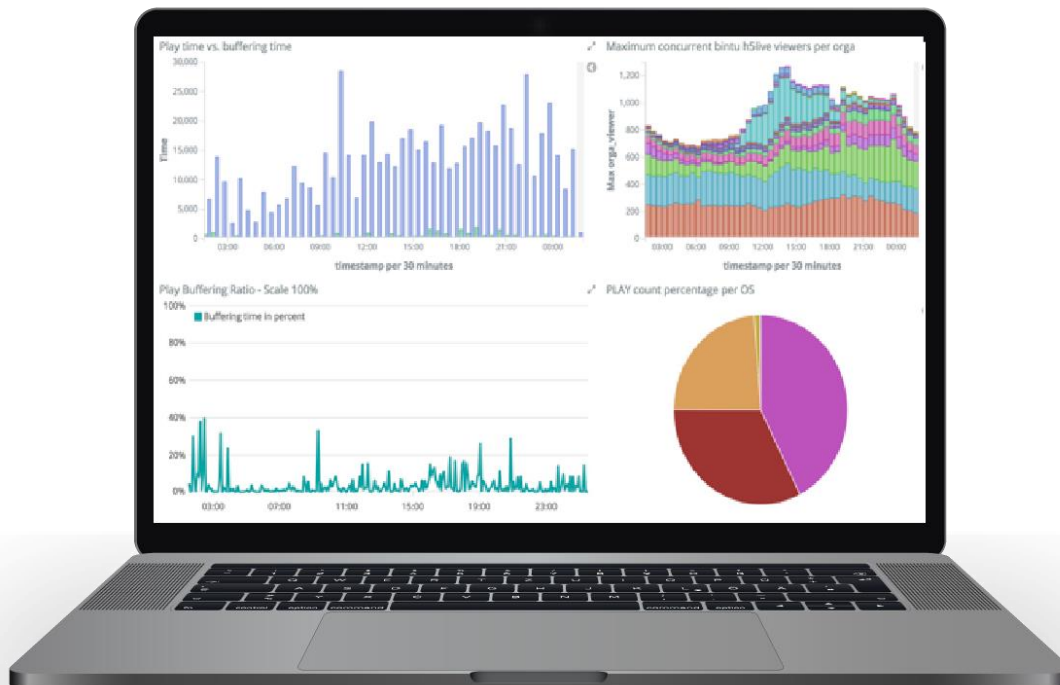


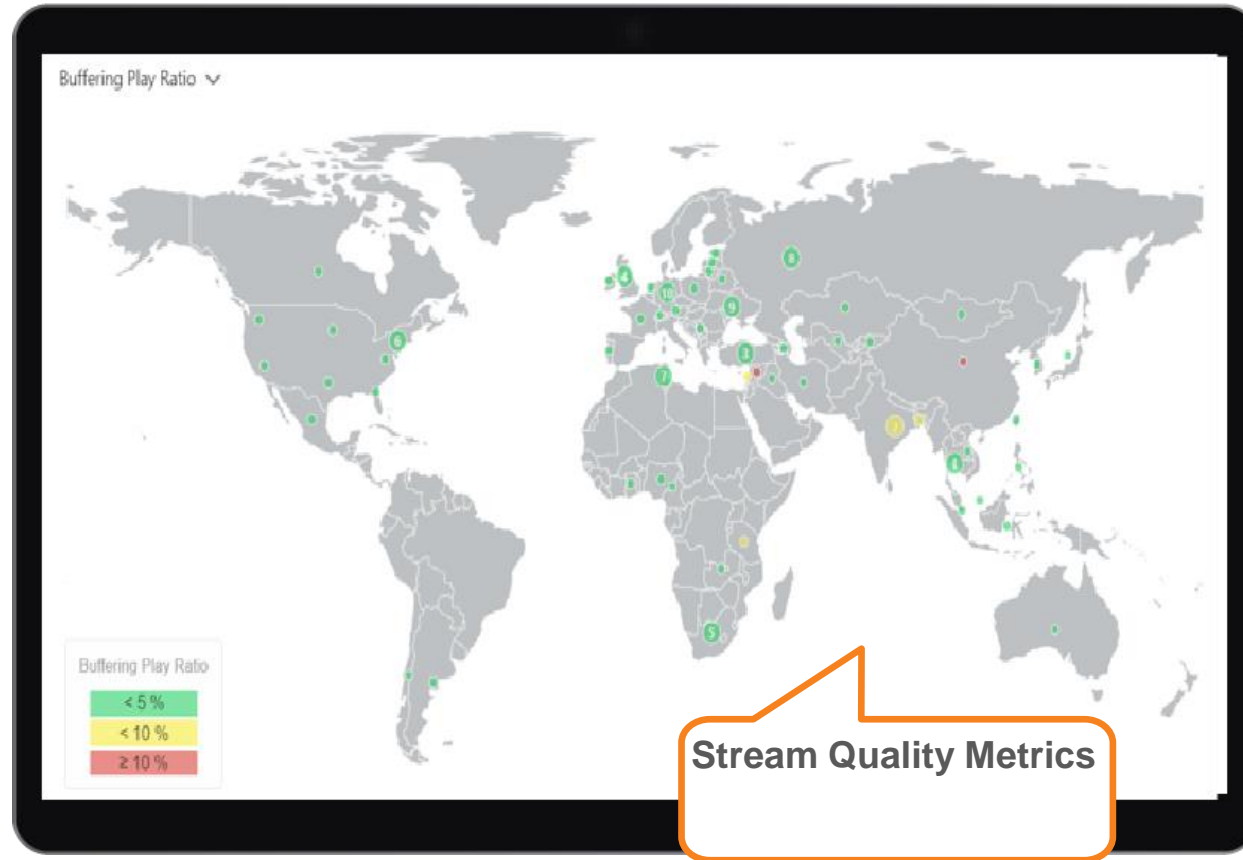
2 Streams: 1 Passthrough, 1-n Transcoded



Live Stream Metrics / Analytics

End-to-end QoS / Engagement Insight / Business Intelligence
Full control of the whole workflow / glass-to-glass





nanoStream Cloud

Engage your audience at a global scale!

- Cross-platform: ALL HTML5 browsers, incl. iOS
- End-to-end: Live Encoding / Playback / ULL CDN
- Light-weight: instant live streaming and playback
- White Label / API / SDK (browser based and native)
- Integrate with existing Live Encoding setups
- Metrics & Analytics (end-to-end)
- Reasonable Pricing
- Our solution: nanoStream Cloud & H5Live Player
- **Go Live Around The World in 1 Second!**

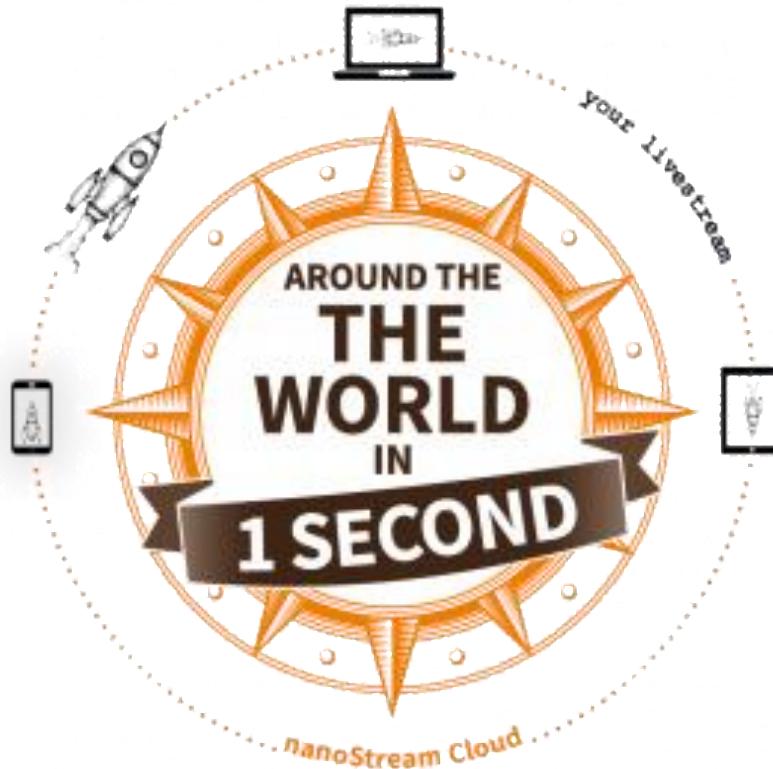


Try nanoStream Cloud
for your interactive content *now !*
nanocosmos.de/demo

Questions & Answers

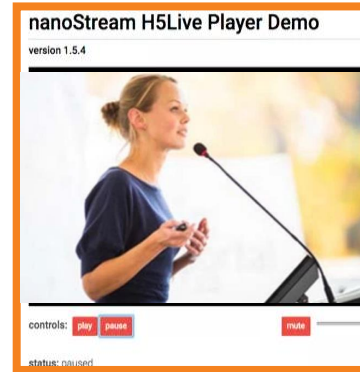
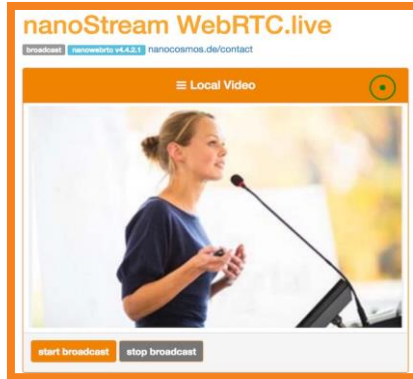
Oliver Lietz / sales@nanocosmos.de

Thank You!



Supplemental slides

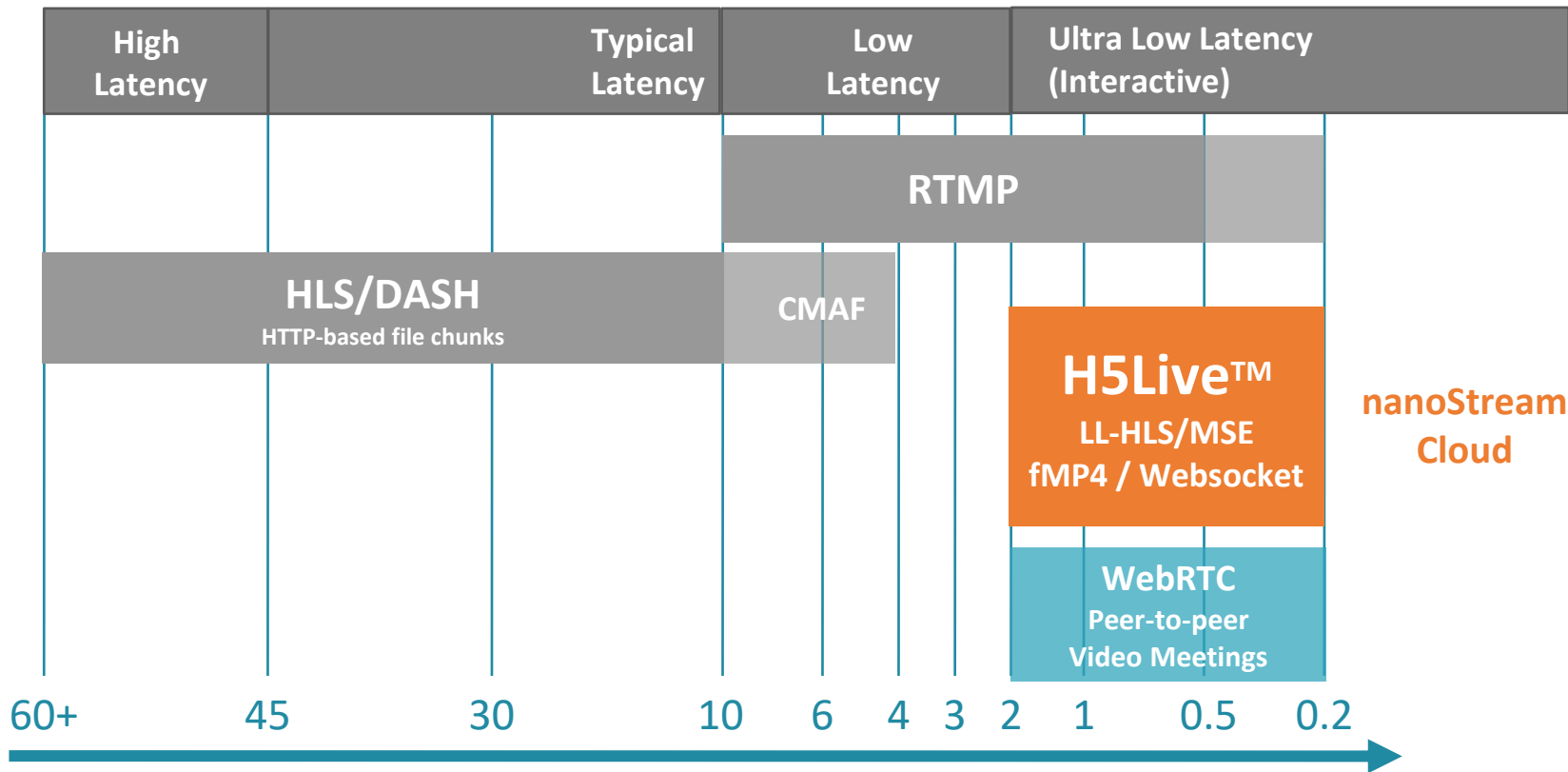
nanoStream Cloud – End-to-End - Browser Based Webcaster broadcast - H5Live Playback



```
rtc.startBroadcast ( {  
  "output": {  
    id: "12345-67890"  
  } );
```

```
player.start ( {  
  "source": {  
    id: "12345-67890"  
  } );
```

Latency values: „Glass-to-glass“ or „hand-wave“ latency



Latency / seconds

nanoStream Live Streaming

Live Encoder



Upstream
1 Mbit/s

Live Server



Streaming Server
nanoStream

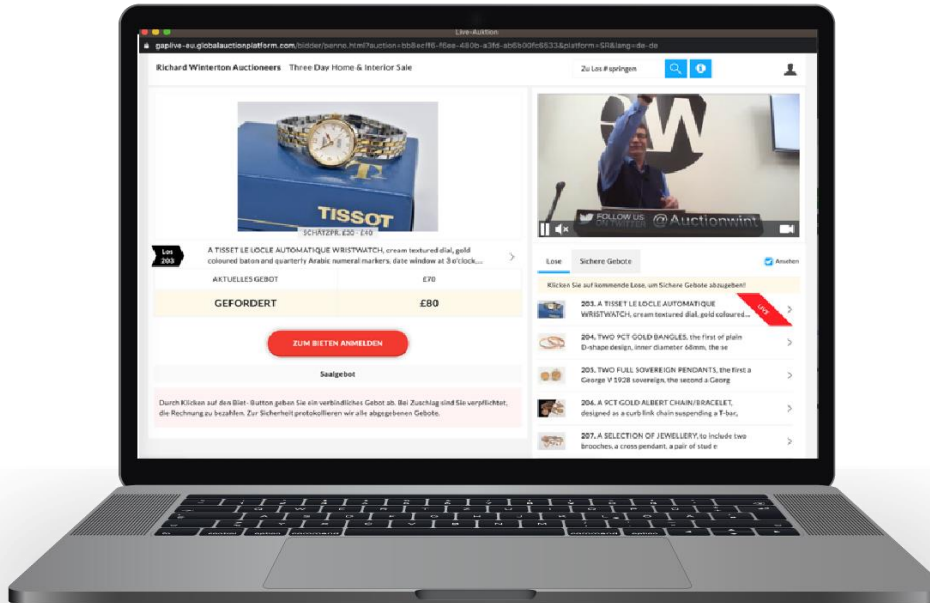
Live Player



Downstream
N x 1 Mbit/s



nanoStream H5Live Player
HTML5 Browsers
Ultra-Low-Latency



Latency Demo: 1s glass-to-glass, „hand-wave“

JVC Connected Cam
RTMP Live Encoder / Upstream directly from the Cam



JVC: H264/RTMP



nanoStream Cloud
ULL-CDN
global audience



H5Live Player working on all browsers
ULL



Interactive Live Video Streaming with Ultra-Low Latency

Live Encoding



Live Encoder
Hard- or Software
RTMP/WebRTC/SRT

nanoStream, OBS,
Videon, Teradek, JVC, ...

Live Streaming / Delivery



nanoStream Cloud

ULL: 1 second

2-way Interaction / Feedback

Live Playback



**nanoStream
H5Live Player**

HTML5: All Browsers



- Audience: worldwide distribution, scalable (100 - 1000 – 10000 – 100000 - ...)
- Cross-platform: any device, all browsers, plugin-free (HTML5)
- Integration / Ease of use / End-to-end solution / Instant adhoc streaming
- Metrics/Analytics for high QoS: End-to-end

Live Video Streaming – current standards: HLS / DASH

Live Encoding



Live Encoder
RTMP

Live Streaming / Delivery



HLS/DASH: Long Latency!

Live Playback



Live Player
HTTP Segments
(HLS, DASH, fMP4)

- HLS/DASH: HTTP Segments/Chunks and buffering create long latency (6-30s)
- Suitable for OTT/Broadcast, but not for interactive live streaming (1s)

Use Cases for Interactive Live Streaming

- Live Meetings
- Enterprise Webcasts
- Education
- Screen Sharing
- Auctions
- Gambling / Quiz Shows / iGaming
- Monitoring/Security
- Search and Rescue
- Social Media
- Influencers
- VR/360

Audience Engagement / Gamification
„Vertical“ Use Cases: Going beyond OTT/broadcast

Mobile First!

Many to many

<https://www.nanocosmos.de/blog/use-cases/>