SMPTE Technology Series Webcast

Powering the multi-platform distribution media factory

OTT and Streaming End-to-End

SMPTE Technology Webcast Series Sponsored by:

AJA VIDEO SYSTEMS

Your Host

Joel E. Welch

Director of Education
SMPTE

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

SMPTE Technology Webcast Sponsors

- *Thank you to our sponsor for their generous support:*

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

SMPTE Technology Webcasts

- Series of monthly 60- to 90-minute online, interactive webcasts covering a variety of technical topics
- Free professional development benefit for SMPTE members
- Sessions are recorded for member viewing convenience.

Housekeeping

- Please indicate you want to ask verbal question by indicating such in the chat box
  - If you do not have a microphone, please submit your questions via text
- SMPTE provides a PDF of select slides used during webcasts in exchange for your feedback
  - Once your feedback is submitted, you will automatically be redirected to the PDF for downloading
- Please feel free to post or blog about today's webcast on your social media platform of choice

@smpteconnect

#SMPTEWebcast

Views and opinions expressed during this SMPTE Webcast are those of the presenter(s) and do not necessarily reflect those of SMPTE or SMPTE Members.

This webcast is presented for informational purposes only. Any reference to specific companies, products or services does not represent promotion, recommendation, or endorsement by SMPTE

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Who we are…

Bea Alonso
Director Product Marketing
Dalet

Wauter De Bruyne
Pre-Sales Engineer
Dalet

Who are we, too!

Filippa Hasselström
VP Streaming Solutions at Net Insight.

Ted Olsson
CTO Streaming Solutions at Net Insight.

Who we are…

Bea Alonso
Director Product Marketing
Dalet

Wauter De Bruyne
Pre-Sales Engineer
Dalet

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

DALET OOYALA

mission

ENABLING **MEDIA ORGANISATIONS** TO MAXIMISE THE VALUE OF THEIR ASSETS BY PROVIDING **SOLUTIONS & SERVICES** TO BETTER **CREATE, MANAGE & DISTRIBUTE** CONTENT

vision

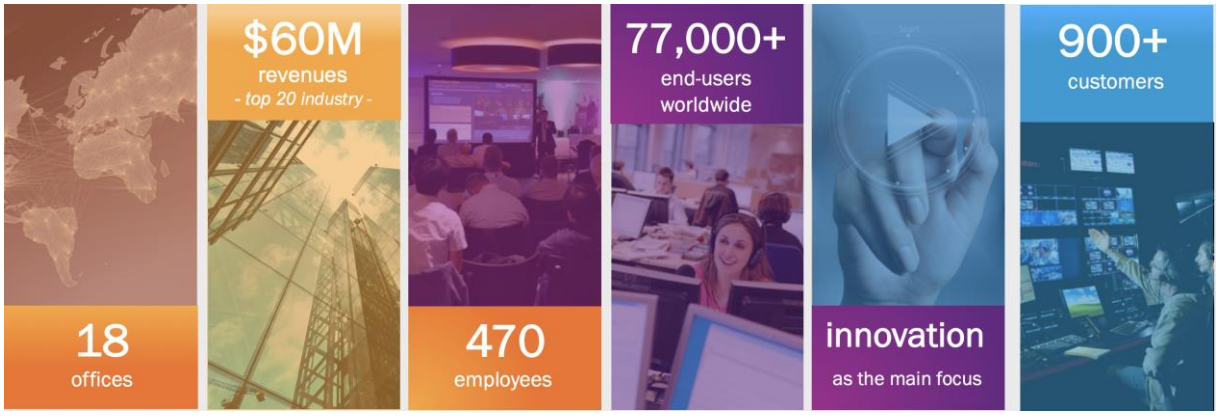
EMBRACE **CHANGE** & **ADAPT CONTINUOUSLY**

FOSTER **COLLABORATION** & **EFFICIENCY**

ENABLE **AGILE BUSINESSES** BUILT ON **OPEN PLATFORMS**

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Dalet at a glance



10

OOYALA

THE OOYALA FLEX MEDIA PLATFORM

Ooyala's flexible and **configurable content supply chain platform** resolves the **multi platform delivery** needs of today's **content creators and distributors.**

The **Ooyala Flex Media Platform - Your Media Factory**. It orchestrates thousands of video workflows, manages assets and metadata across multiple systems, and analyzes bottlenecks within the entire content supply chain.

WORLD-CLASS CUSTOMERS

HBO
Audi
sky sports
NBCUniversal
FOX SPORTS
SUPER RTL
FIVB
clip
turner

TRUSTED PARTNERS

Microsoft
Google
TELSTRA

11

What we'll cover

- How is the OTT content supply chain different?
- Streamlining Multi-Platform Distribution
- Automation and ROI
- Case Study Enhance TV Australia
- Ask questions at any time

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

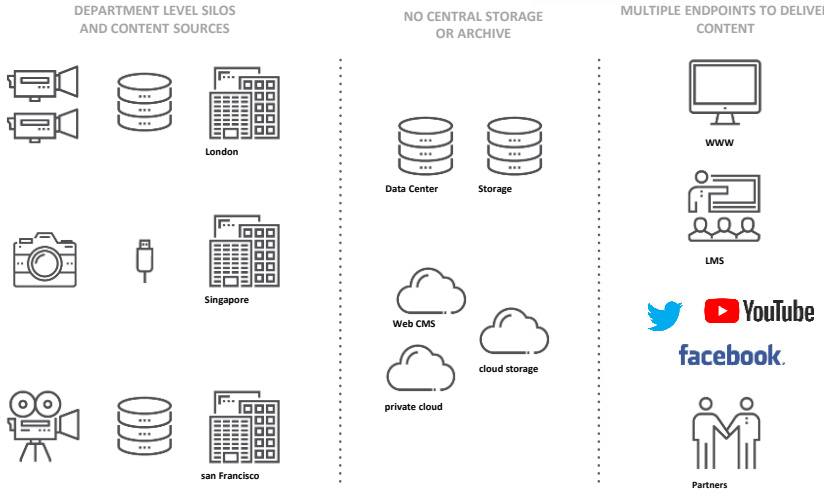
The OTT Content Supply Chain

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Common Challenges

- Multiple departments producing or acquiring content in different formats
- Disconnected storage locations/devices
- No searchable metadata
- Disjointed creation and content import workflows
- Lack of downstream distribution workflows
- Limited visibility into content consumption and distribution



14

Content Supply Chain

Challenge: The traditional Content Supply Chain has been a siloed process, causing lost productivity, mis-management of data and lost revenue opportunities.

15

The OTT Content Supply Chain

16

The OTT Content Supply Chain

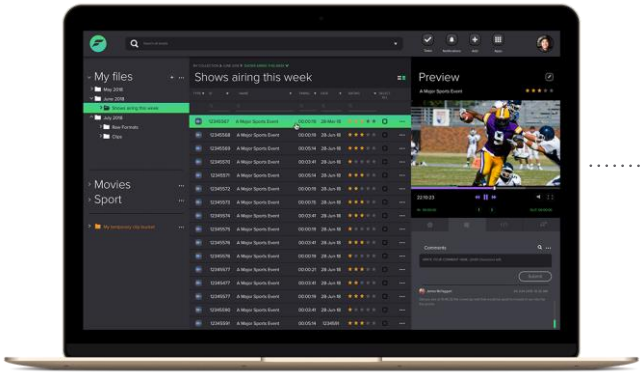
17

SMPTE Technology Webcast Series
SMPTE – Enabling Global Education

Streamlining Multi-Platform Distribution

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

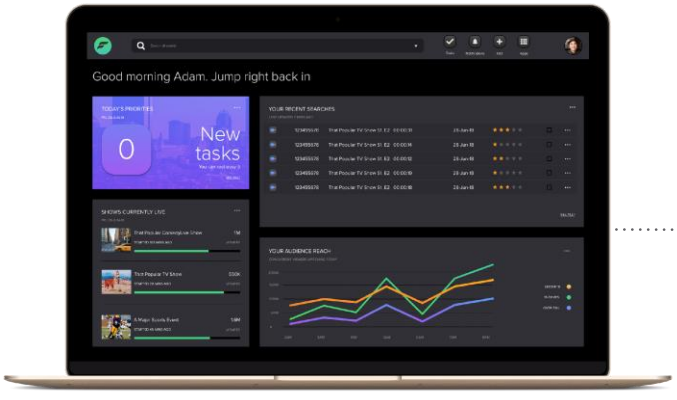
Streamline Operations



- Configurable Workflow Orchestration
- Rich metadata modeling
- Seamless 3rd party integration

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Connected Supply Chain



- Modular approach: apply to the most challenging stages of your content supply chain and maximize value
- No need to replace your entire operation - integrates with existing technology
- Powerful Insights
- Reduce costs
- Unlock new revenue possibilities

20

SMPTE Technology Webcast Series

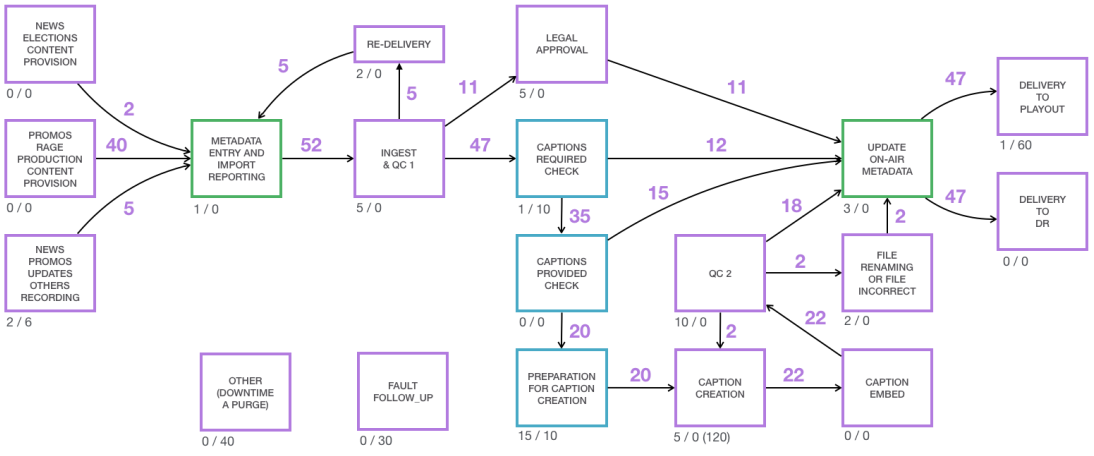
SMPTE – Enabling Global Education

Automation… ROI?

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

21

Map the desired workflow



Build the “As Is” spreadsheet

Activity	Current Process		
	Role or Resource	Time in Minutes	Cost
Task description	Human Resource	X mins	$x.xx
Action description	Machine Resource	X mins	$x.xx
Delay description		X mins	$x.xx
Quality Control 10% failure rate	Human Resource	X mins	$x.xx

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Add the "Will Be"

Activity	Current Process			Intelligent Media System		
	Role or Resource	Time in Minutes	Cost	Time	Cost	Assumptions
Task description	Human Resource	X mins	$x.xx	Y mins	$y.yy	Fully automate
Action description	Machine Resource	X mins	$x.xx	Y mins	$y.yy	Same
Delay description		X mins	$x.xx	Y mins	$y.yy	Reduced
Quality Control 10% failure rate	Human Resource	X mins	$x.xx	Y mins	$y.yy	Reduced failure rate

24

Summarise

Previous manual process	Time in minutes per Project 1,899	Approx Cost per Project USD $1,189	Quantity of Projects per Year 500	Total HR cost per year USD $594,746
Intelligent Media System	Time in minutes per Project 548	Approx Cost per Project USD $288	Quantity of Projects per Year 500	Total HR cost per year USD $143,972

25

The Media Factory – tangible benefits

- Typical broadcast / distribution company

58%
time reduction in project execution

REDUCED TIME PER PROJECT

3 – 4x
more projects with same personnel
(493/yr up from 145)

INCREASED PRODUCTIVITY

71%
direct cost reduction
(~$733,900/yr)

REDUCED COST PER PROJECT

1/2
time to onboard new projects

FASTER ON-BOARDING

Reduced time per project, more content, better quality output, less human error

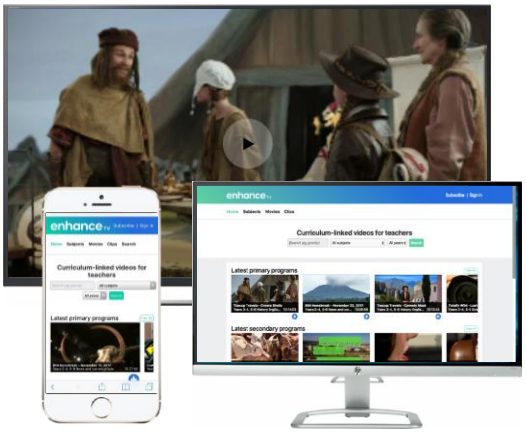
INCREASED CUSTOMER REVENUES AND AUDIENCES

Case Study: EnhanceTV Australia

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

enhance TV
Customer Profile



- Enhance TV is an online service providing information on educational broadcasts, a store for purchasing copied programs, and a web streaming service – EnhanceTV
- Access to EnhanceTV can only be made by institutions with a Screenrights licence.
- EnhanceTV is a subsidiary of Screenrights, which is a not-for-profit organisation that licenses the use of educational audiovisual content in Australian schools, universities and TAFEs.
- The product provides streaming technology combined with powerful search, sharing and storage functionality making it the perfect tool for integrating multimedia in the education sector.
- Digital Logistics, local system integrator that architected and pulled multiple technologies together to implement this solution for Screenrights.

28

enhance TV
Customer Requirements and Challenges

To build a foundation for a very modern video portal for better user VOD-experience

- Australian schools and universities subscribe to the service, providing their teachers and students with a platform to search or create their own inventory of clips and download specific sections.
- Requires a highly scalable backend system to cater for business expansion to support the better portal

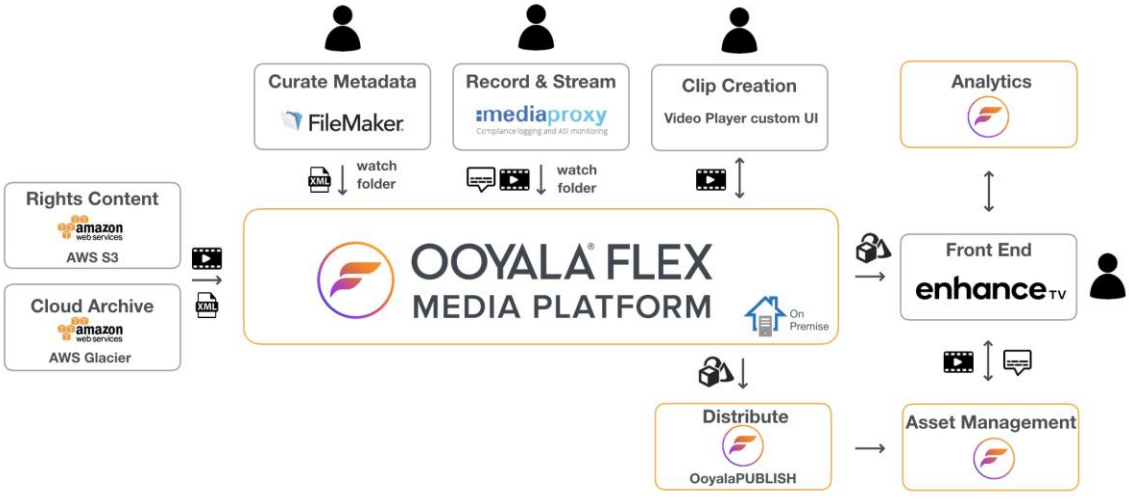
To simplify complex processes, automate repetitive tasks, and provide content recommendations

- Complex business rules for content capture, editing, metadata enhancement and delivery
- Legacy system with 35,000 hours of content and complicated hierarchical metadata schemas
- Screenrights do not know anything about the backend themselves - they only want to interact with the Front End website developed for them.
- Digital Logistics, an Ooyala partner and reseller in Australia, manage Ooyala Flex Media Platform and the other back-end components.

29

enhance TV

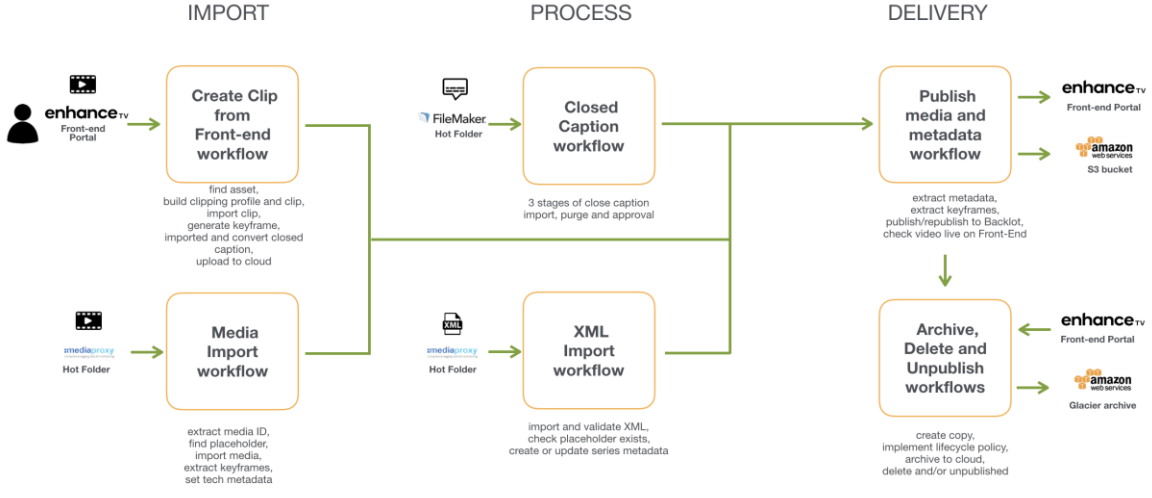
Solution Architecture



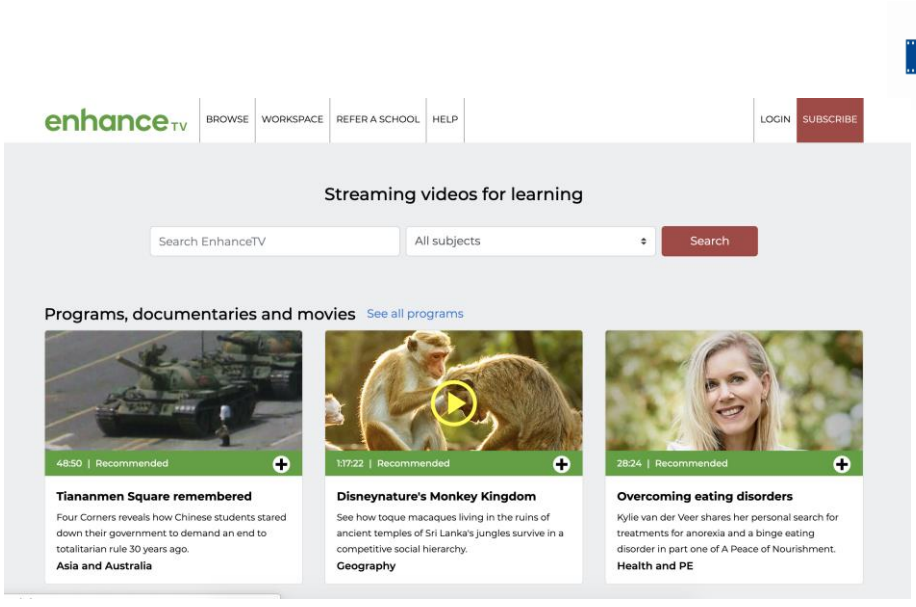
30

enhance TV

Workflows



31



SMPTE - Enabling Global Education

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

32

enhance TV
Achieved goals

- **Increased engagement and usage** from their subscribers. They can now **drive subscriptions aggressively** and scale the service **without incremental support costs.**
- Delivered **increased capabilities with reduced costs.** Helping a small team **deliver big results**
- **Flexible architecture** to react to future challenges.
- **Automated and scalable process** to manage and publish content from their contributors
- **Reduced human error** and duplication

Highly efficient and flexible backend to a new B2C portal, delivering increased efficiency and ability to scale

33

Questions?

Bea Alonso
Director Product Marketing
Dalet

Wauter De Bruyne
Pre-Sales Engineer
Dalet

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

SMPTE Technology Series Webcast

SMPTE Technology Webcast Series Sponsored by:

AJA VIDEO SYSTEMS

netinsight

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Who are we?

Filippa Hasselström
VP Streaming Solutions at Net Insight.

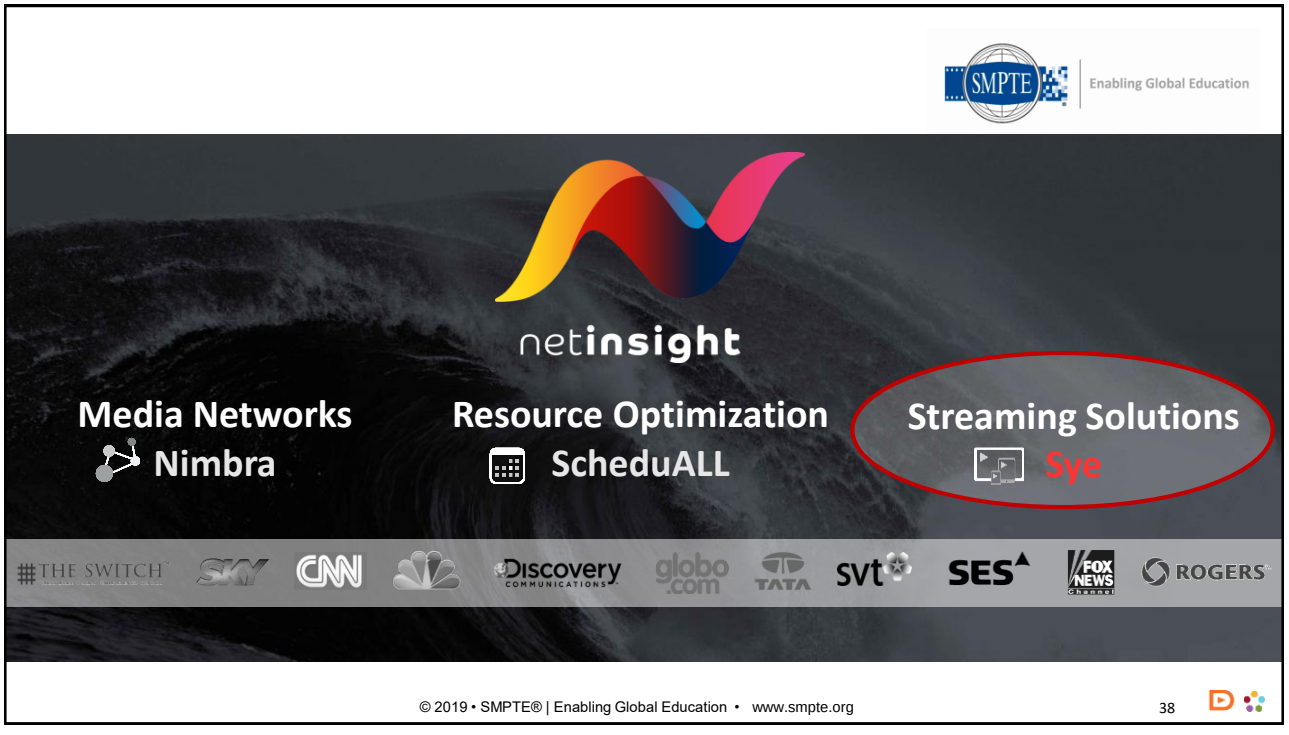
Ted Olsson
CTO Streaming Solutions at Net Insight.

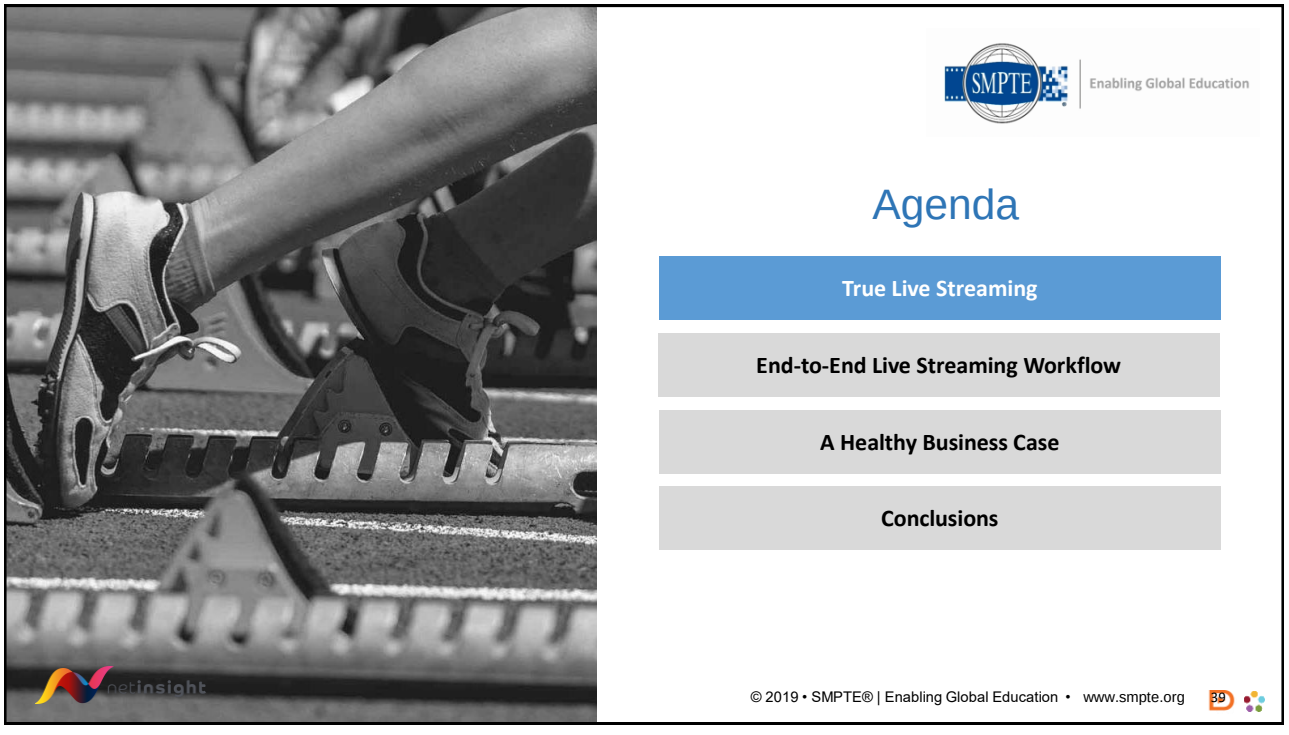
Net Insight

Delivering LIVE and interactive video experiences to anyone anywhere

- Founded in 1997
- +250 employees world wide
- HQ in Stockholm, Sweden

1,3 Billion people rely on Net Insight technology for their daily consumption of TV


SMPTE
Enabling Global Education
netinsight
Media Networks
Nimbra
Resource Optimization
ScheduALL
Streaming Solutions
Sye
THE SWITCH
SKY
CNN
Discovery COMMUNICATIONS
globo.com
TATA
svt
SES
FOX NEWS Channel
ROGERS
© 2019 • SMPTE® | Enabling Global Education • www.smpte.org
38


SMPTE
Enabling Global Education
Agenda
True Live Streaming
End-to-End Live Streaming Workflow
A Healthy Business Case
Conclusions
netinsight
© 2019 • SMPTE® | Enabling Global Education • www.smpte.org
39

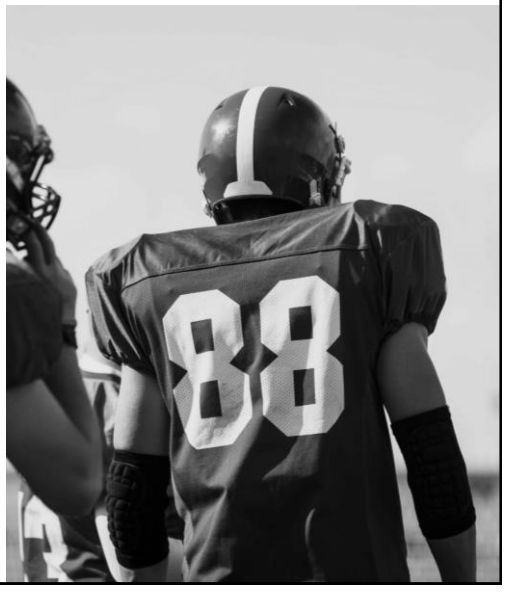
True Live Streaming

Ultra-low Latency
fixed, configurable, faster than broadcast

Perfect Sync
video, audio and metadata across all devices

Broadcast-grade Quality
phones, tablets and 4k big screens

Massively Scalable
flash crowds up to millions live users



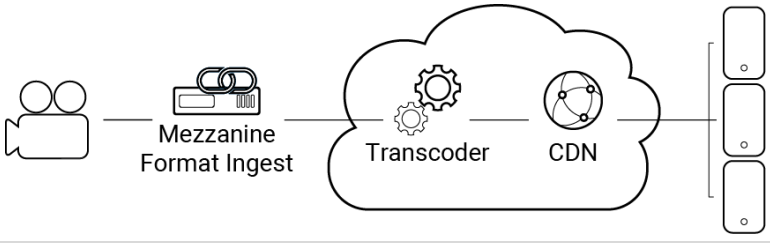
© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Agenda

- True Live Streaming
- End-to-End Live Streaming Workflow
- A Healthy Business Case
- Conclusions

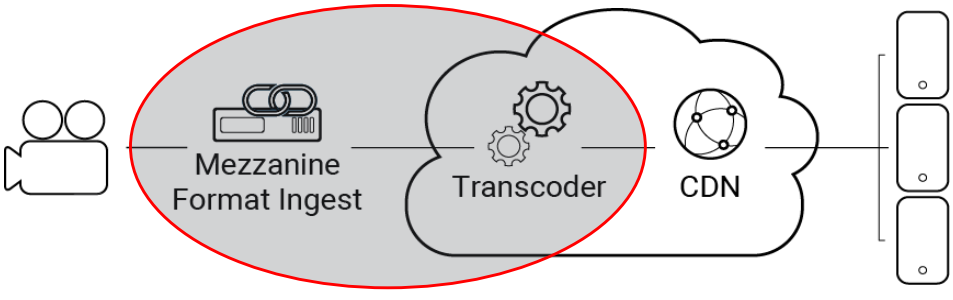
© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

The End-to-End Live Streaming Workflow



How to achieve:

- **Broadcast-grade Quality**
- **Low Latency**
- **Massively Scalable**
- **Perfect Sync**

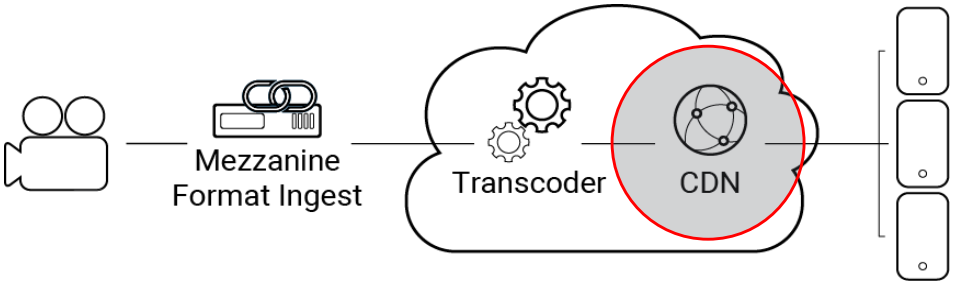


Mezzanine source contribution

Maintaining integrity, low-latency and sync from source to cloud

Transcoding of mezzanine source

Maintaining sync through transcoding stage in a cloud environment
UHD – multi-instance workload distribution



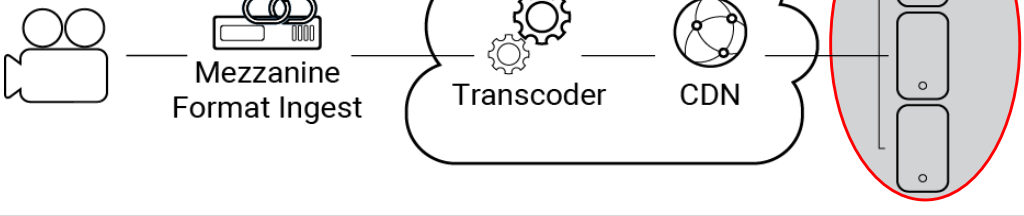
Content Protection

Content Provisioning

Live Recording

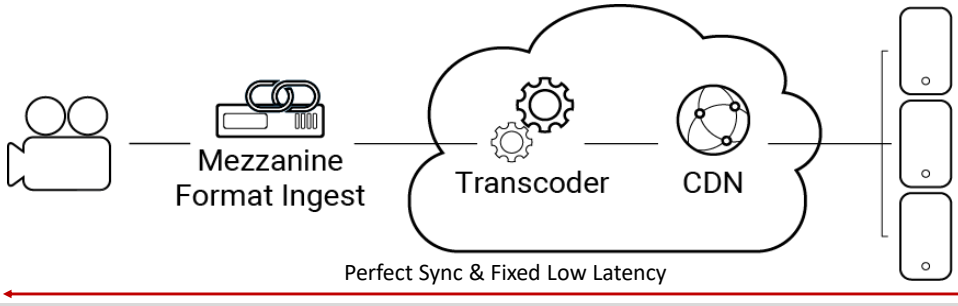
Server-side Ad-Insertion

Redundancy



Flash crowd

Live streaming autoscaling



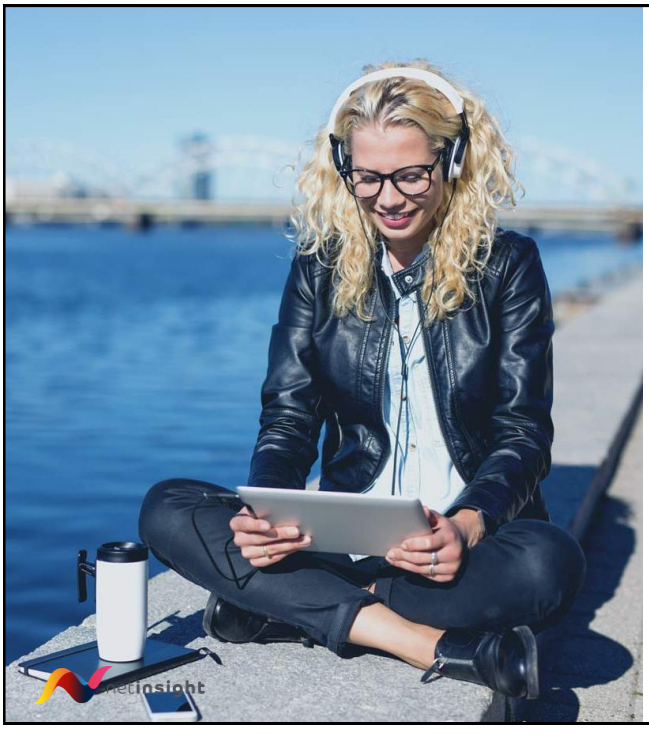
Perfect Sync

Sync across clients and platforms
Local clocks not reliable
Video, audio and metadata

Low Latency

- Encoder quality vs low latency
- Drift vs. Fixed Latency
- Latency depending application
  - Lowest possible
  - Second screen
- Home equipment

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org



Quality of Experience

Intelligent ABR
Bandwidth estimation

Stateful ABR
Maintaining quality during channel switching

Resilience
Stalls reduction

Distance
Cloud super-POPs

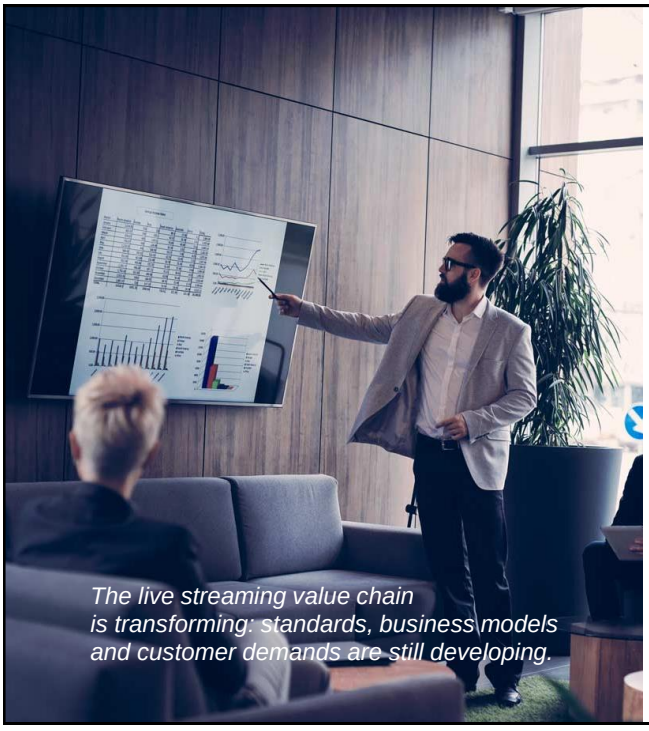
Overhead
Quality bits

Very high bitrate and frame rate
4K UHD at low-latency

Agenda

- **True Live Streaming**
- **End-to-End Live Streaming Workflow**
- **A Healthy Business Case**
- **Conclusions**

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org



Trends

CDNs compete on price and managed services

There is still a certain premium on live, but price/GB drops 25-30% per year.

There is a price premium for Value Added Services

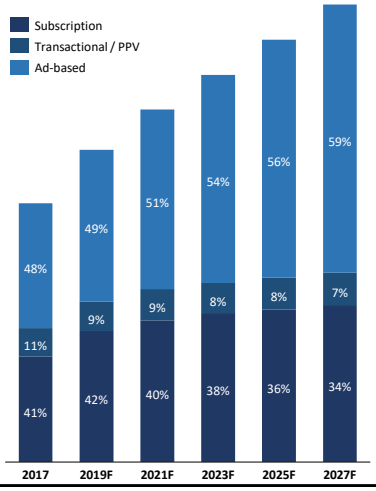
The highest premium potential lies in **server-side ad-insertion**

There are current trends towards new revenue models and differentiation

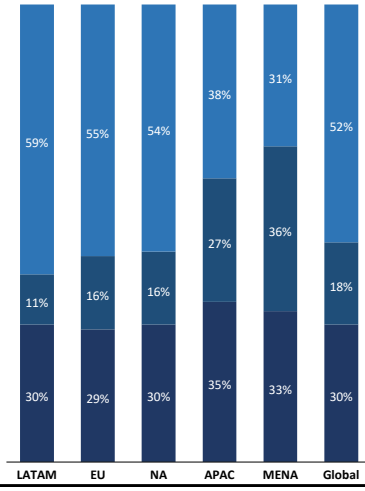
© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

The largest OTT revenue stream is advertising, which is expected to continue to grow. 52% of consumers globally prefer ad-supported live streaming today

Revenue streams for online video market (global, %)



End user payment model preference for live streaming content by region (2018, %)



Live streaming comments

- 52% of consumers globally prefer free ad-supported live streaming
- 64% of viewers act on seeing an ad during a live video stream: Brand recall, clickthrough, and site visitation are the primary actions provoked
  - Pop ups, pre-roll, and sponsored-by ad units are the ads most visible to consumers
- Live streaming subscription services are often bundled with, or part of, larger OTT offering

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Value Added Services becoming more important

Server-side Ad-insertion

- 1:1 personalized ads
- National and regional ads
- Policies
- Seamless codec switching

Metadata

- Notification messages
- Correlations streams

Live recordings

Time-shift
Catch-up

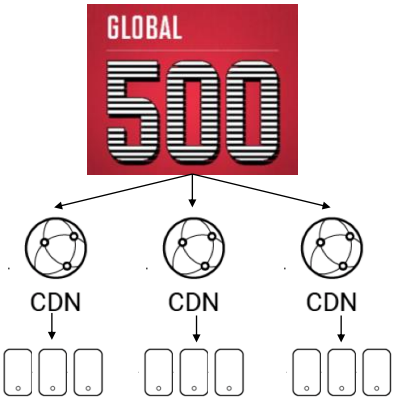
And don't forget Quality of Experience

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Customer Examples

Replacing Broadcast



New Interactive Experiences

"The unique combination of ultra-low latency streaming and synchronized audio, video, and metadata, makes it possible for us to create live and interactive trivia shows and to bring new and more immersive app experiences to our audience around the globe"
Daniel Weilar | *Co-founder of PrimeTime*

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Agenda

- **True Live Streaming**
- **End-to-End Live Streaming Workflow**
- **A Healthy Business Case**
- **Conclusions**

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Conclusion

1

Quality of Experiene is key when transitioning to OTT, especially for Live

It's not only about sync and latency, it is about delivering a TV like experience over OTT

2

There is no current live standard that delivers a broadcast grade live streaming experience

New initiatives are being introduced but they are still not ready for commercial deployment.

3

Live is extremely challenging and costly especially for CDN's

Take into consideration the entire business case, including value added services – making sure that your solution enable monatization

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Who are we, too!

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

Who are we, too!

Wauter De Bruyne
Pre-Sales Engineer
Dalet

Bea Alonso
Director Product Marketing
Dalet

Filippa Hasselström
VP Streaming Solutions at Net Insight.

Ted Olsson
CTO Streaming Solutions at Net Insight.

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org

SMPTE Technology Webcast Sponsors

- *Thank you to our sponsor for their generous support:*

AJA® VIDEO SYSTEMS

© 2019 • SMPTE® | Enabling Global Education • www.smpte.org