Next Generation Converged Headend

The shift from hardware to software based headends and how the challenges of the migration and transitions for Managed Service Providers and Pay TV Operators

‣ David Symons
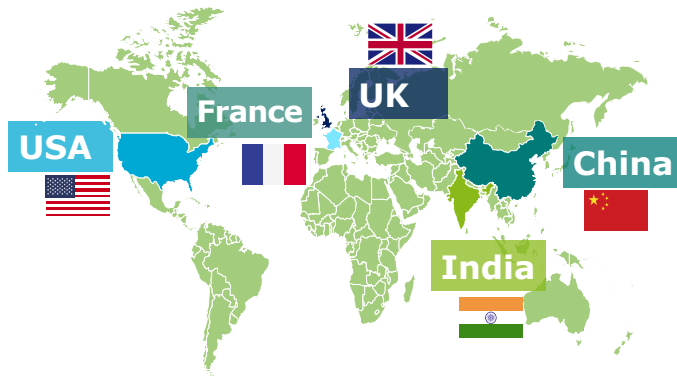‣ Head of Pre-Sales Broadcasters and Indirect Customers
‣ 6th November 2019

Agenda

▸ MediaKind Update

▸ Time to Shift – HW to SW Video Codec improvements

▸ Reinvent – Using Cloud in the video headend

▸ The Platform – Optimizing video across broadcast and OTT networks

▸ What's next?

Overview

MediaKind
everyone. everywhere.

Who We Are

› **Global leader** in providing media processing, delivery, and TV service platforms for Broadcasters and Cable, Satellite, Telco, and OTT TV operators
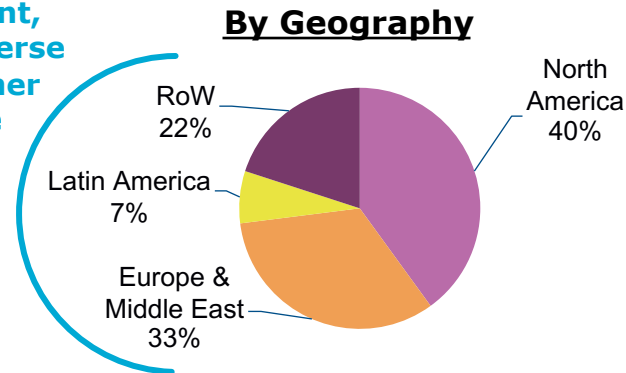
› **Approximately 1,000 HC in R&D**

What We Offer

TV Platforms	Media Processing
› MediaFirst › Mediaroom	› H/W Compression › S/W Encoding

Media Delivery	Other
› VSPP — Adaptive BR delivery — Cloud DVR	› Content Mgmt. System › Multiscreen Mgmt. Platform

Segments We Serve

› **TV Platforms**
— 75+ Telco & Cable Operators with 19M subscribers

› **Media Processing**
— 2,000+ Broadcasters, Pay TV & OTT operators

› **Media Delivery**
— 60+ Cable & Telco Pay TV operators

› **Product Delivery & Support Services**

Key R+D Locations

UK
France
USA
China
India

Sales

Global footprint, with diverse customer base

By Geography

- North America 40%
- RoW 22%
- Latin America 7%
- Europe & Middle East 33%

Ca. $350M revenue in 2017 with growth in 2018

A Global Leader in Media Technology

Commercial in confidence

The 2020 Consumer

MediaKind
everyone. everywhere.

~1/4 of all viewing will be done on a smartphone

~1/2 of all viewing will be on-demand

~1/3 of consumers will be VR users

BASE: Population aged 16-69 watching TV/Video at least weekly and having Broadband at home in Brazil, Canada, China, Germany, India, Italy, Russia, South Korea, Spain, Sweden, Taiwan, UK & US

4

November 19

MediaKind Universe

Contribution & Distribution
CYGNUS

Consumer Delivery
AQUILA

Consumer Experience
ORION

Services & Support
VEGA
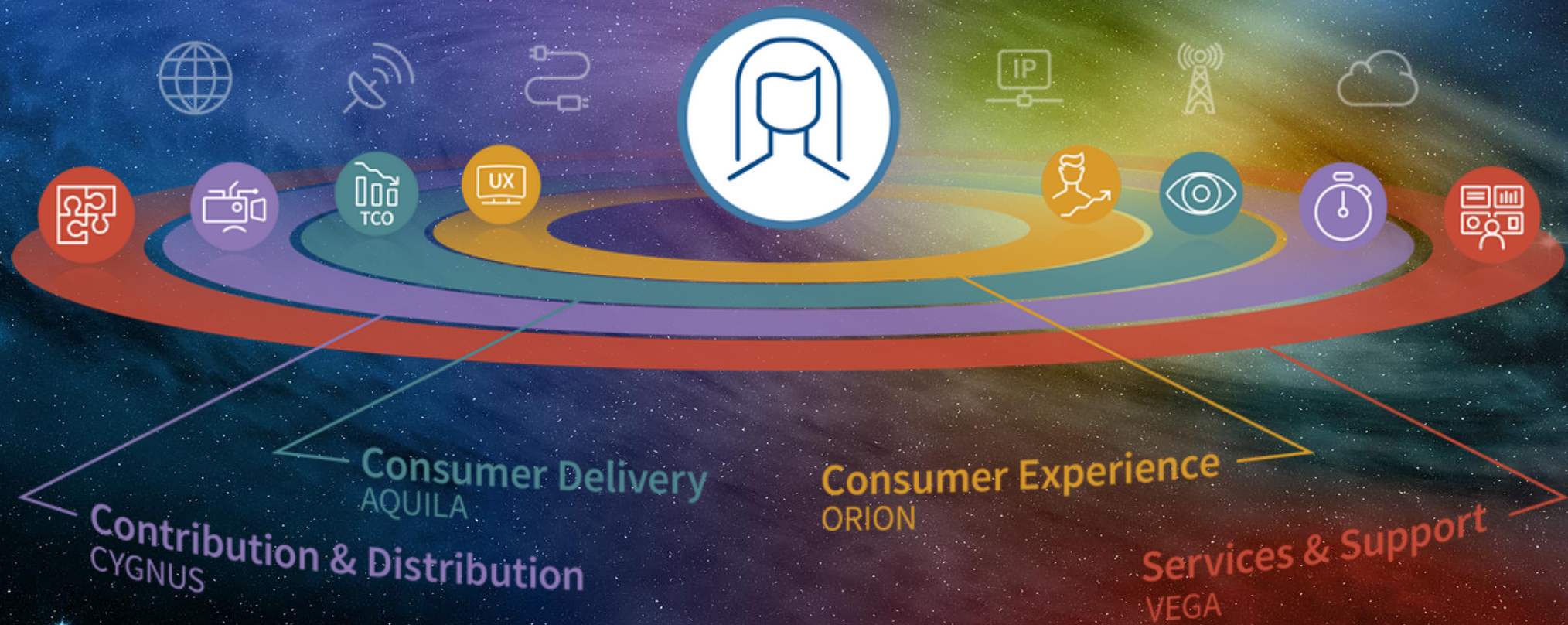
Portfolio evolution

An offer designed for all video markets and applications

Purpose Built

- Standalone solutions achieving specific functions: Compression HE, Cloud DVR, TV Platform
- Services and tiered Support Levels, with defined SLA
- CAPEX, permanent licence

Cloud Native

- SW suite of solution designed for the Cloud and sharing common Analytics, Orchestration and Management
- DevOps Engineering, Service Center
- SW subscription with access to all releases

As a Service
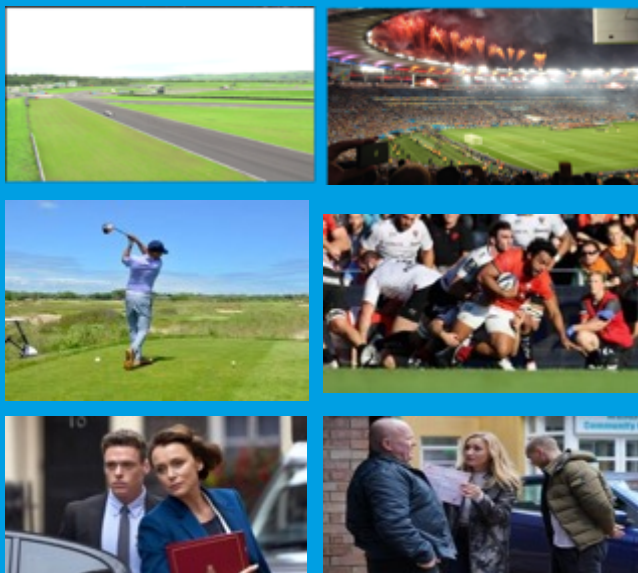
- Services managed by Mediakind, running from public Cloud, with defined KPIs
- Training and integration capabilities
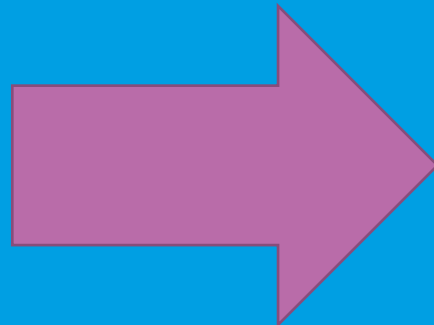- Service subscription model, based on consumption / active devices

TIME TO SHIFT

Aquila - Driving PQ YoY Customer Example

Four Sport

&

Two Entertainment

H.264 HD

45 Mbit/s

Four Sport

&

Eight Entertainment

Cloud – a fog of terminology

MediaKind
everyone. everywhere.

Orchestration
Virtual Machines
PaaS
Public Cloud
Openstack
Hypervisor
Containers
Serverless
Virtual Private Cloud
AWS
Hybrid Cloud
Kubernetes
Unikernel
Docker
Elastic Compute
Azure
Cluster
Private Cloud
Hypervisors
IaaS
Microservices
NFV
GCP
SDN

Broadcast Challenges

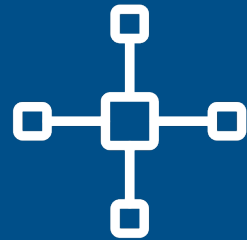**Industry-specific interfaces**
- Impedes ability to scale and grow operation efficiently
- How to maintain broadcast specificities: latency, reliability and uptime

Separate Broadcast & IT infrastructures
- Increases opex and inhibits flexibility
- How to remove technical and cost barriers for scaling and evolving

New entrants able to offer compelling services, faster to market
- How to leverage virtualization and other agile processes
- How to enable larger variety of commercial models

THE PLATFORM

Distribution in the Cloud

Flexibility of IP and Cloud

MediaKind
everyone. everywhere.

- SRT
- HEVC
- VVC

Production

Remote
Production

Edge
Processing

Mezzanine

Compression

Storage

Mezzanine

Region

Region

Region

Region

- SRT
- JPEG-XS
- Uncompressed
- TICO
- ST2110 & NMOS or SMPTE 2022-6

Cloud
Director

- Managed Cloud Distribution
- Point to Multipoint, cross cloud
- Content Protected and Secured
- Resilient links

Sources

Edge

Core Network

Optimized Broadcast Solution

Delivering personalized TV experience for broadcast

MediaKind
everyone. everywhere.

- Targeted Advert Insertion
- Regional content
- Niche channels
- Ultra HD/360

Content Targeting

- Up to 40% better bandwidth efficiency on existing codecs
- New codecs HEVC, UHD and HDR
- Advertising markup
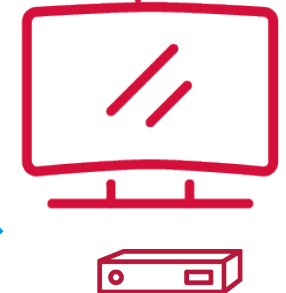- Advanced statmux

Edge Processing

IP

5G

- Configurable Heuristics & Analytics
- Client side ad & regional insertion
- Local ad storage

Scheduling and rights

Origin

Compression

Stat Mux

ABR

DASH

- Ad replacement
- Local content

Content Regionalization

Transport Stream

Transport Stream

HbbTV

Private / Public Cloud

Edge

Access

Home Network

Optimized AV Solution

Delivering the best personalized TV experience

- E2E QoE Measurement
- A/B testing and heuristics adjustments
- Ad views and audience metrics

- Configurable Heuristics & Analytics
- Client side ad insertion
- Low latency protocols
- Metadata and additional Media rendering

Analytics

Compression

CDVR / Origin

Multi rate Mezzanine

Content Targeting

Edge Processing

FIXED

LTE

5G

CPE

Multicast/Unicast Delivery (TS, ABR)

- Frame accurate content boundaries
- CVQ : 30% network and storage savings
- Embedded video metrics
- Common format and encryption (CMAF, CENC)
- Additional metadata and media

- Targeted ad insertion / replacement
- Packaging to other ABR formats
- Multicast efficiency
- Low latency protocols (HTTP2, Quic, etc.)

Commercial in Confidence   **Core Network**   **Edge**   **Access**   **Home Network**

MediaKind
everyone. everywhere.

Looking Ahead, What's Next?

Innovation and Portfolio Development

Smart Cities

eSports coverage with 360 video

Advanced Compression:
AV1, MPEG5, VVC

ABR optimization: constant video quality, shared encoding, selective storage

Machine Learning for image enhancement: Upconversion ie HD>UHD,
Low bitrate backhaul