Nevion's Alternative Broadcasting Show - the show is finished but we are carrying on!

April 2020

Andy Rayner Chief Technologist

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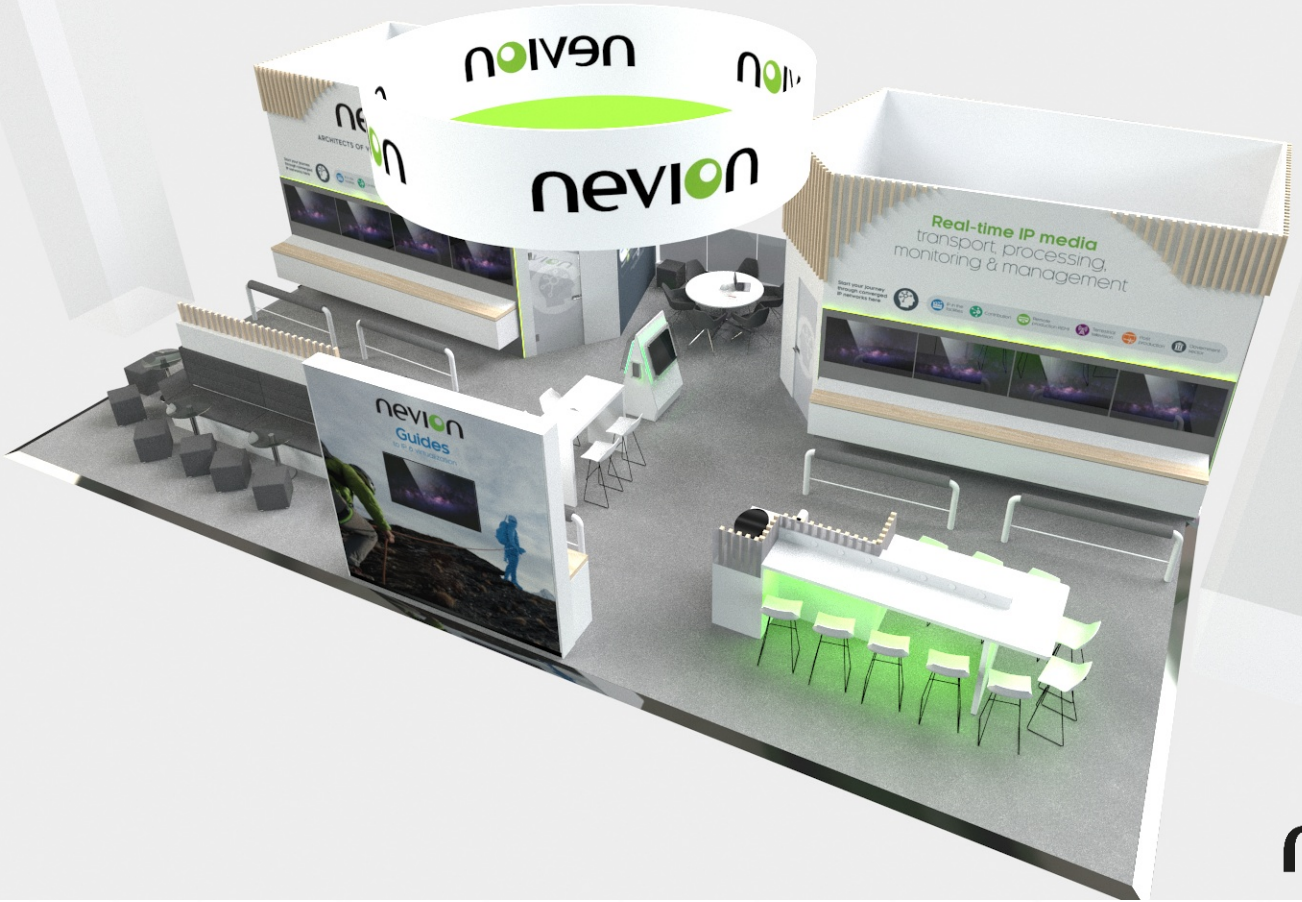
ARCHITECTS OF VIRTUALIZED MEDIA PRODUCTION

Did you enjoy NAB?



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Greetings again from the UK


At home with the architects
moving to a virtual
media production workflow

The Notices:

Last weeks Webinar is on nevion.com/youtube

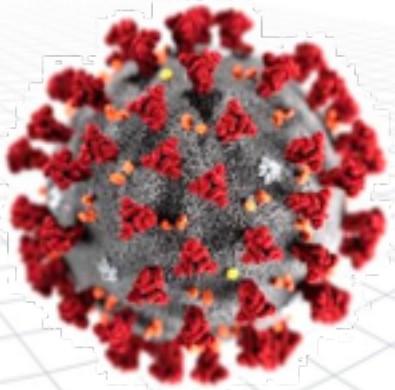
Next CTO webinar in two weeks time
– ‘Don’t forget the audio!’

Do book an ‘at home’ meeting with us if you haven’t already had one
- via your usual sales channel (or email me!)

Who has most successfully driven your ‘at home virtualisation production’ strategy?

CEO

CTO



COVID-19

Credit: I found it somewhere on Linkedin!

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Passionate about **open standards**

- **Defining** *standards*
- **Implementing** *standards*
- **Testing** *standards*
- **Promoting** *standards*

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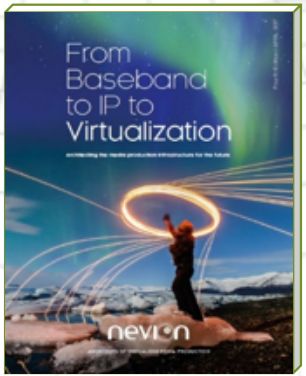
VideoIPath

Management & Orchestration

Virtuoso

Software-defined media node



JT-NM TESTED SMPTE ST 2110 08 / 19

JT-NM TESTED AMWA NMOS JT-NM TR-1001-1 08 / 19

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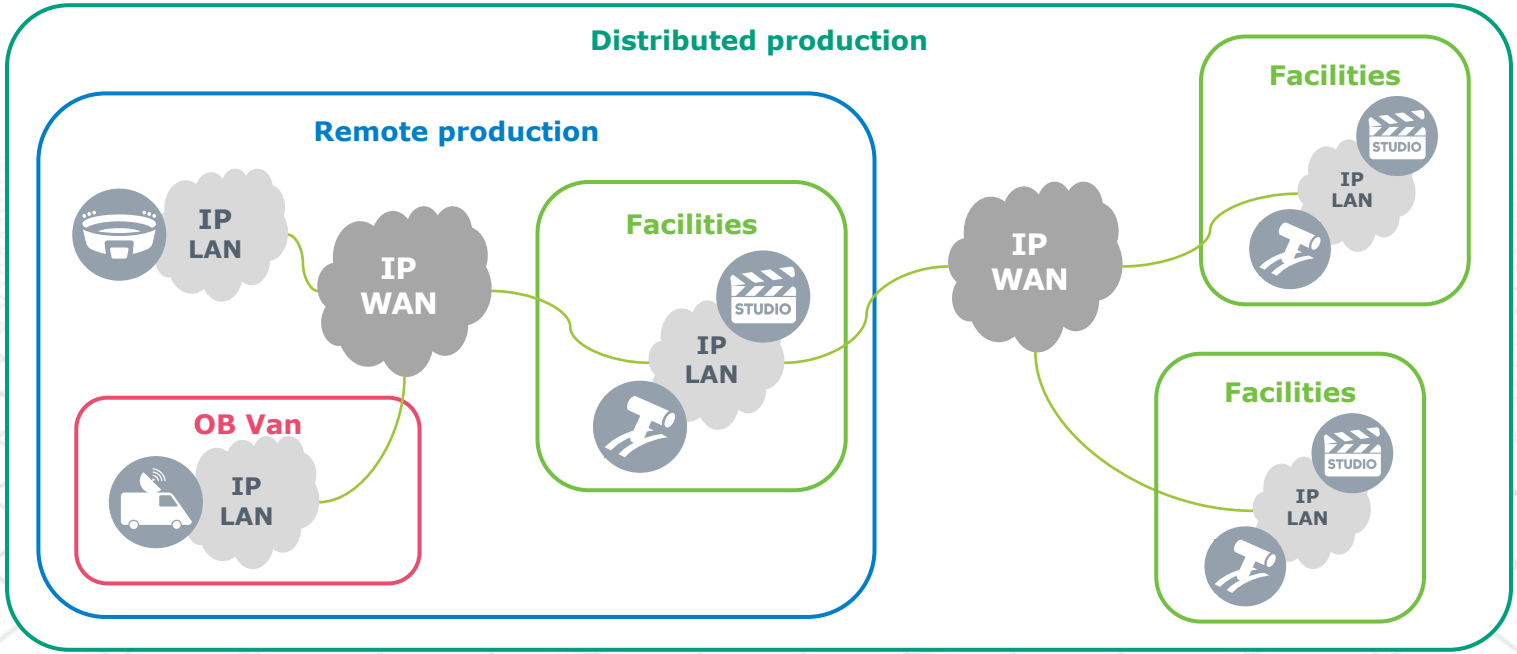
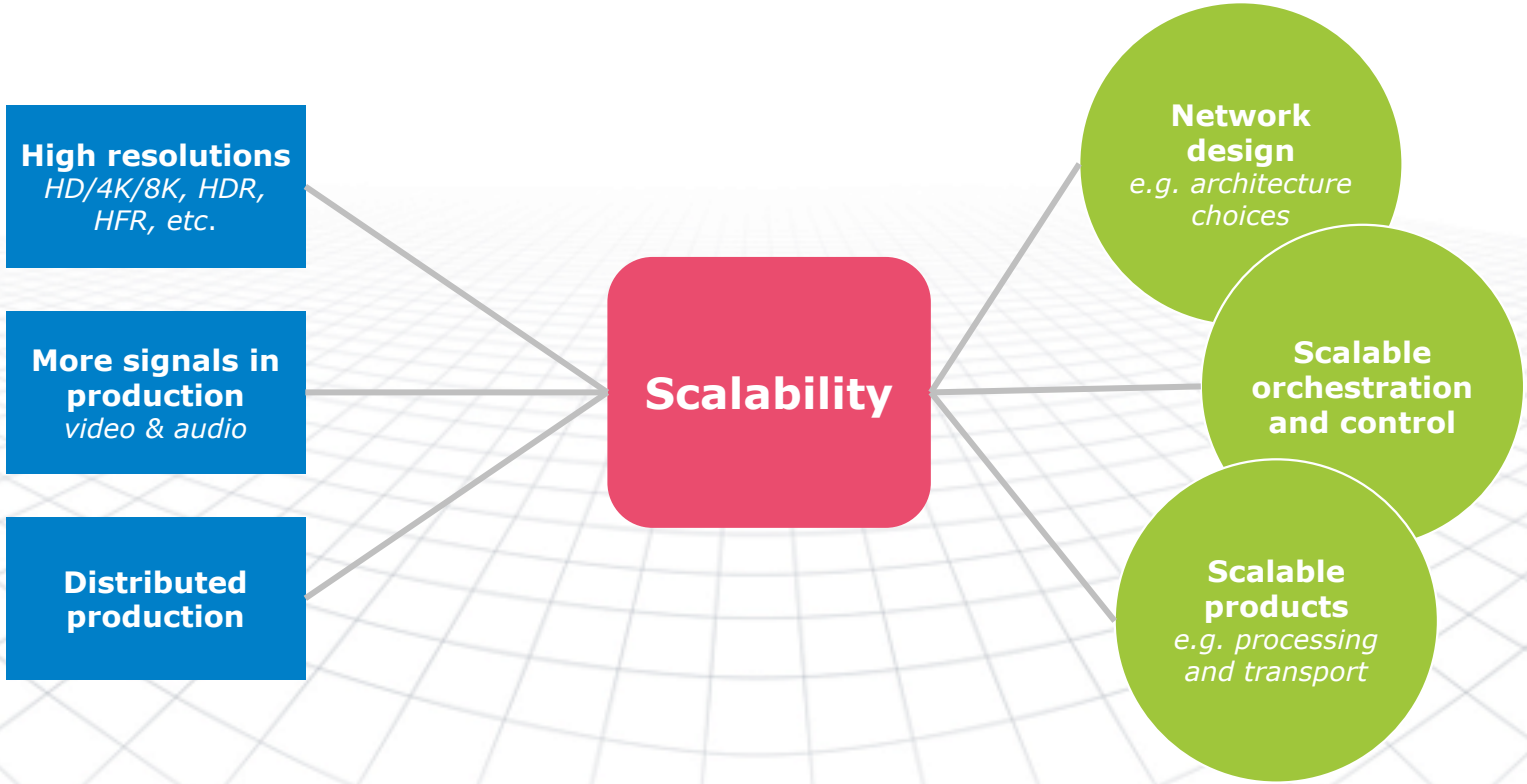
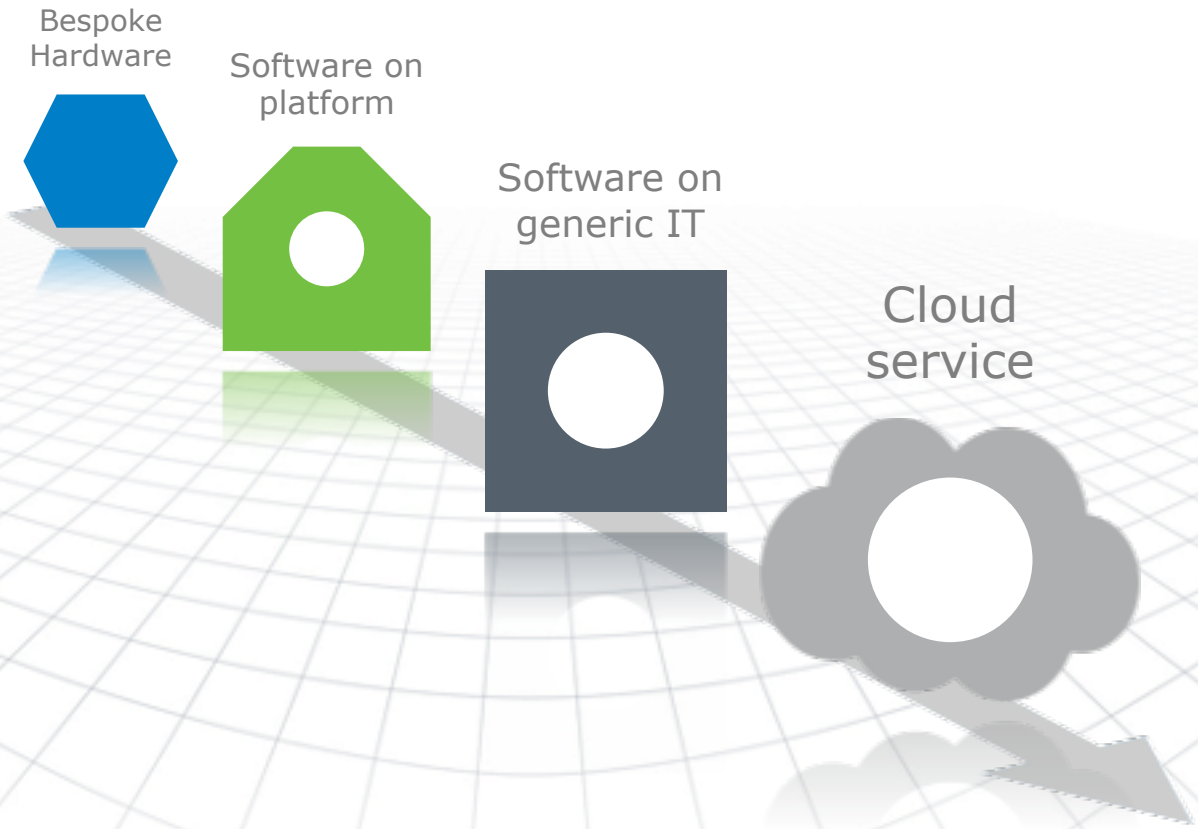

Distributed production
Remote production
IP
LAN
IP
WAN
Facilities
STUDIO
IP
LAN
OB Van
IP
LAN
IP
WAN
Facilities
STUDIO
IP
LAN
Facilities
STUDIO
IP
LAN

Leveraging IP benefit


High resolutions
HD/4K/8K, HDR, HFR, etc.
More signals in production
video & audio
Distributed production
Scalability
Network design
e.g. architecture choices
Scalable orchestration and control
Scalable products
e.g. processing and transport

Nevion VideoIPath


Bespoke Hardware
Software on platform
Software on generic IT
Cloud service

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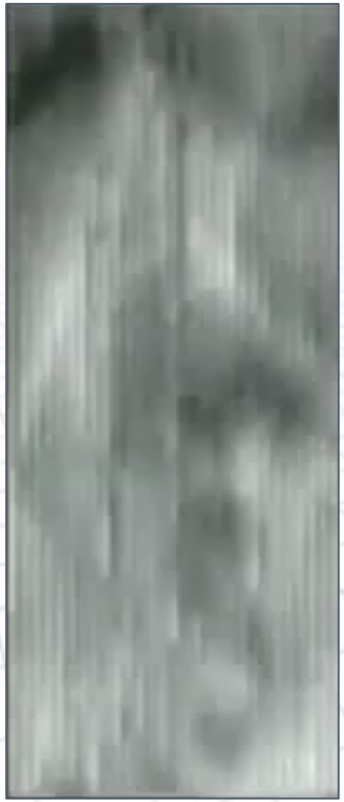
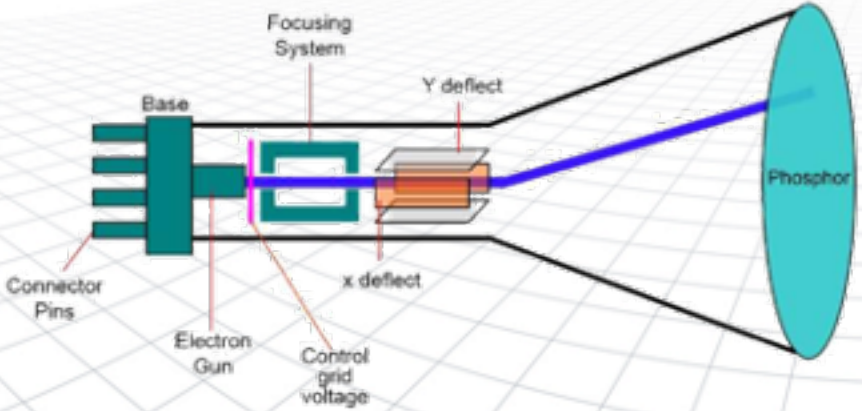
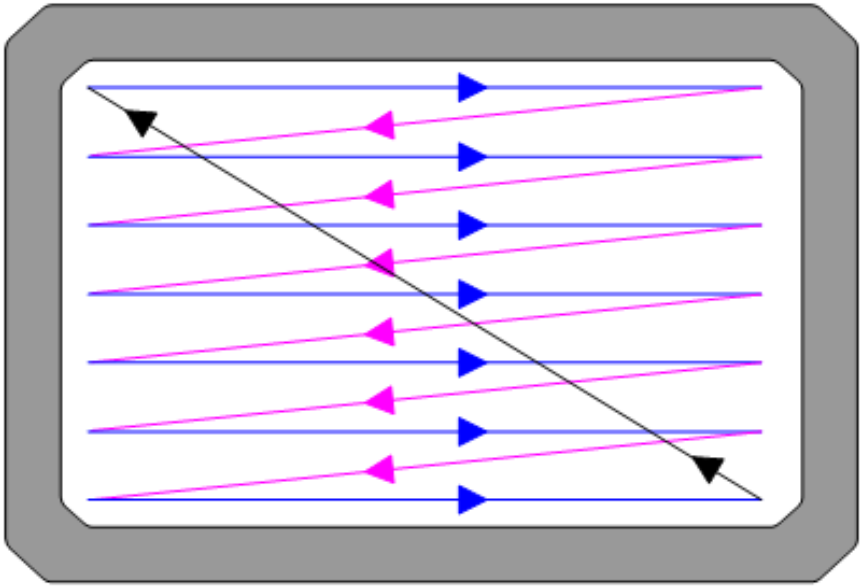
In the beginning……1932

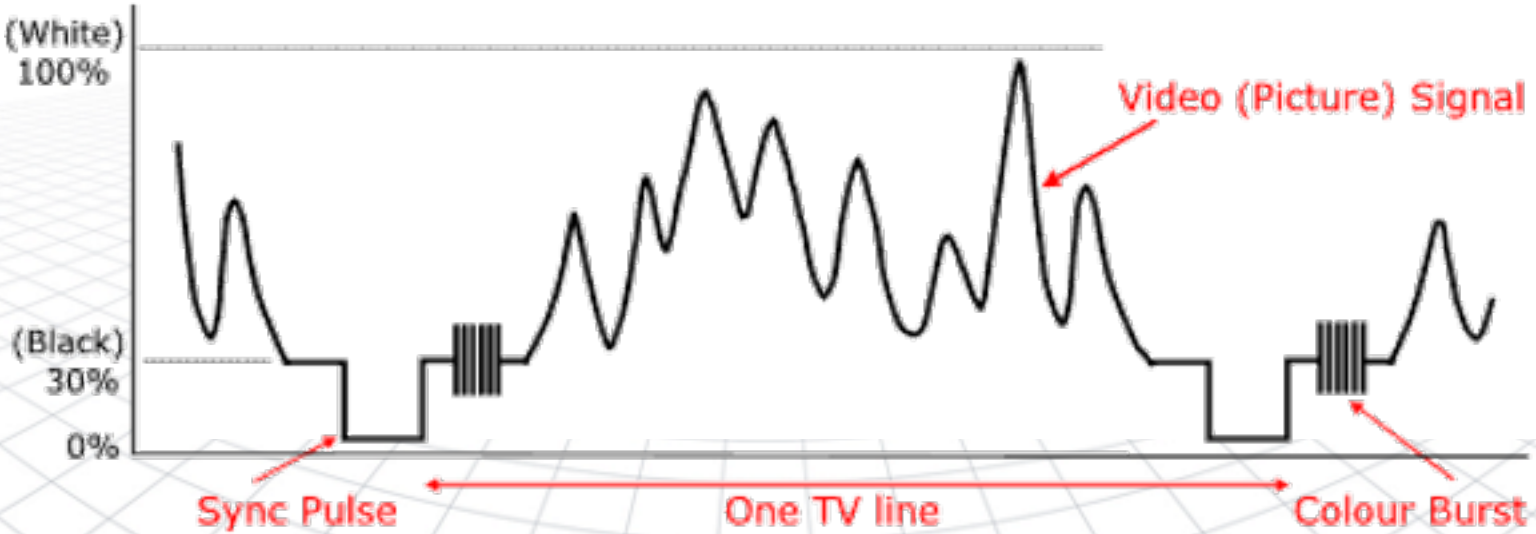
Betty Bolton



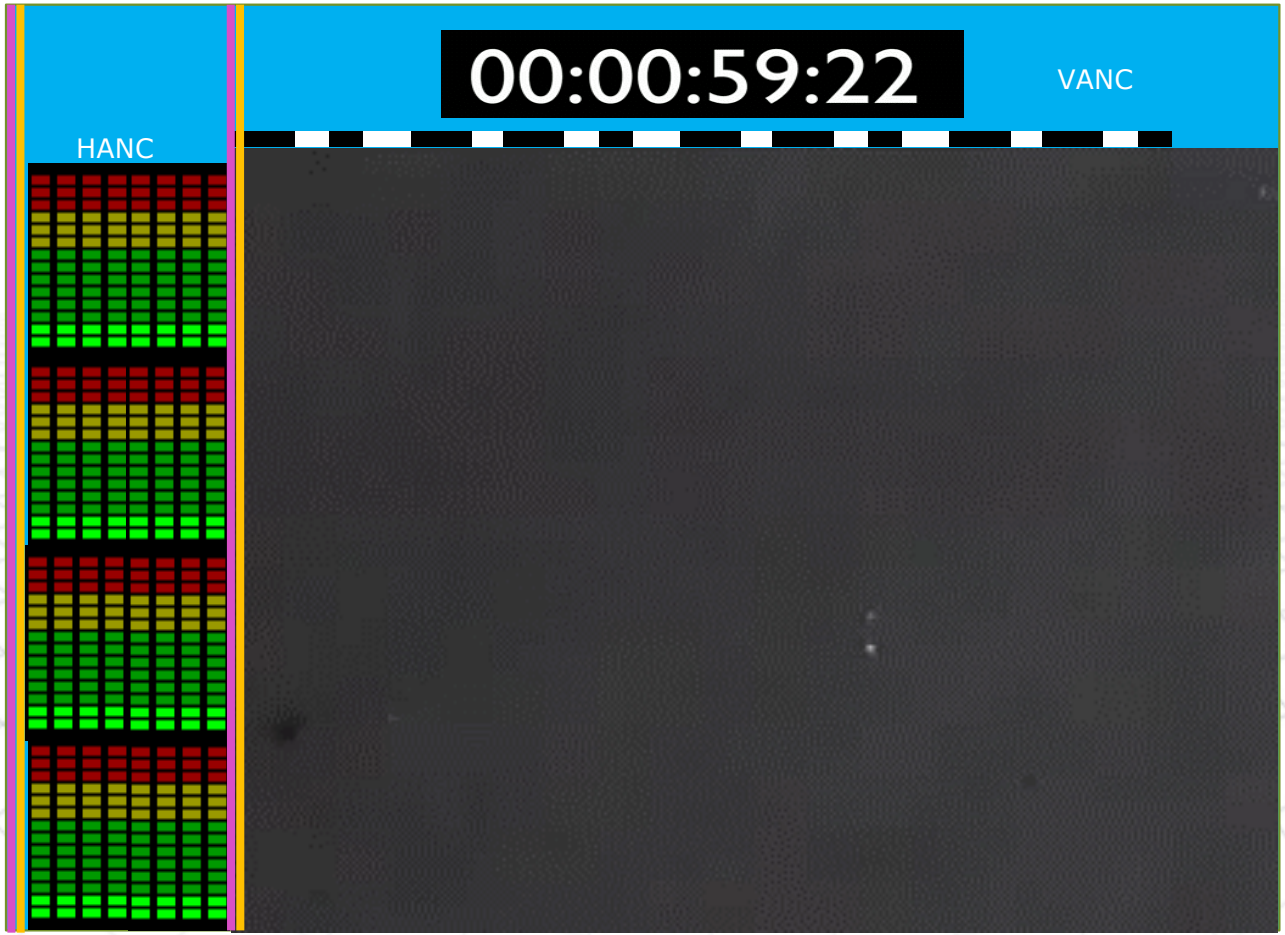
The raster scan






(White)
100%
(Black)
30%
0%
Video (Picture) Signal
Sync Pulse
One TV line
Colour Burst

SDI 1988



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The serial digital video interface **evolution**

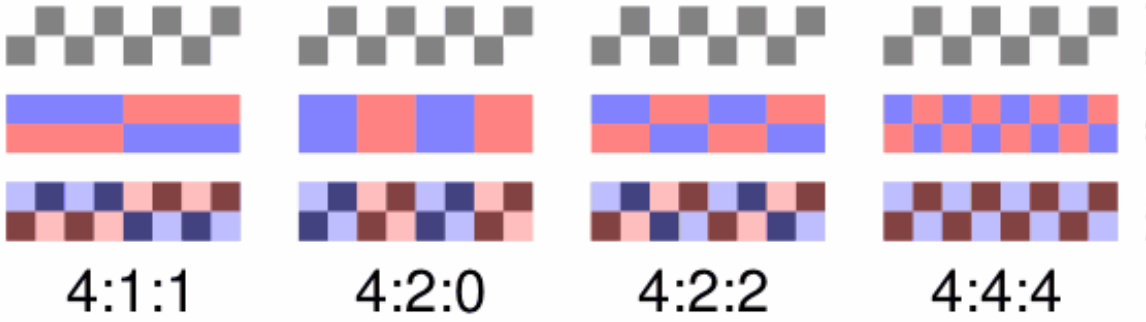
SD-SDI
- 270Mbps (1989)

HD-SDI
- 1.5Gbps

HD-SDI dual-link
- 2x1.5Gbps

3G-SDI
- 3Gbps

6G SDI & 12G SDI
- 6/12Gbps (2015)



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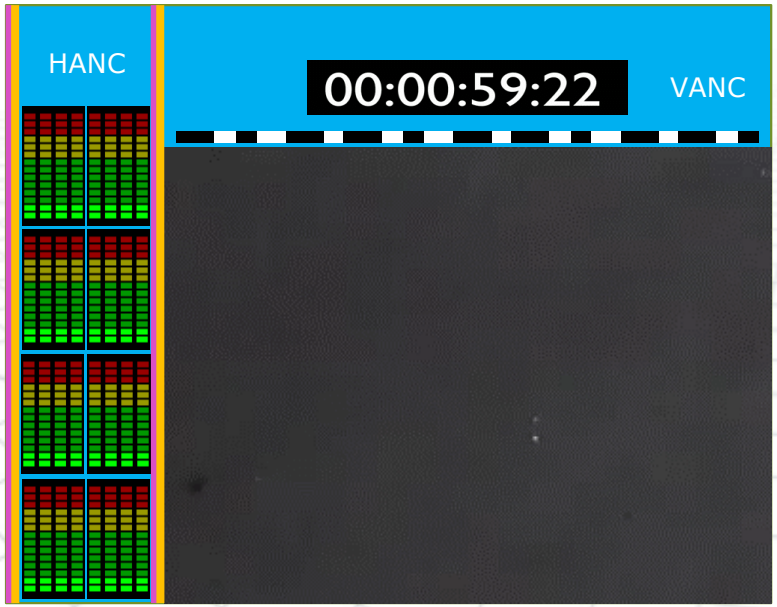
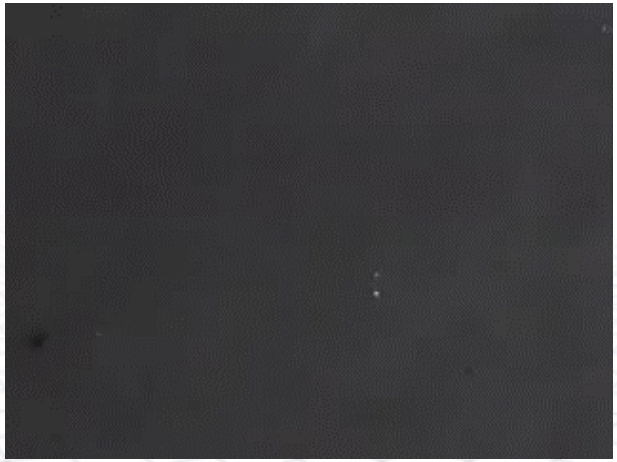
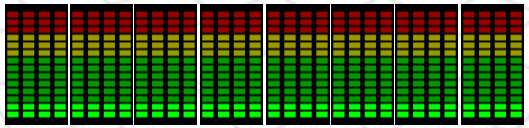
‘Composite’ SDI → **Essence** in production







00:00:59:22

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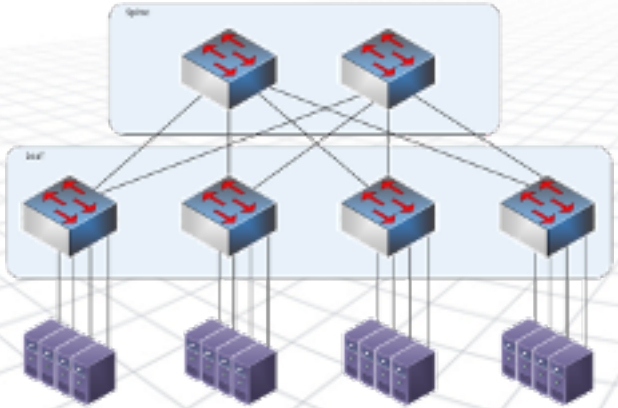
networked media
NMOS
open specifications

SMPTE

nevion

Broadcast leveraging IT



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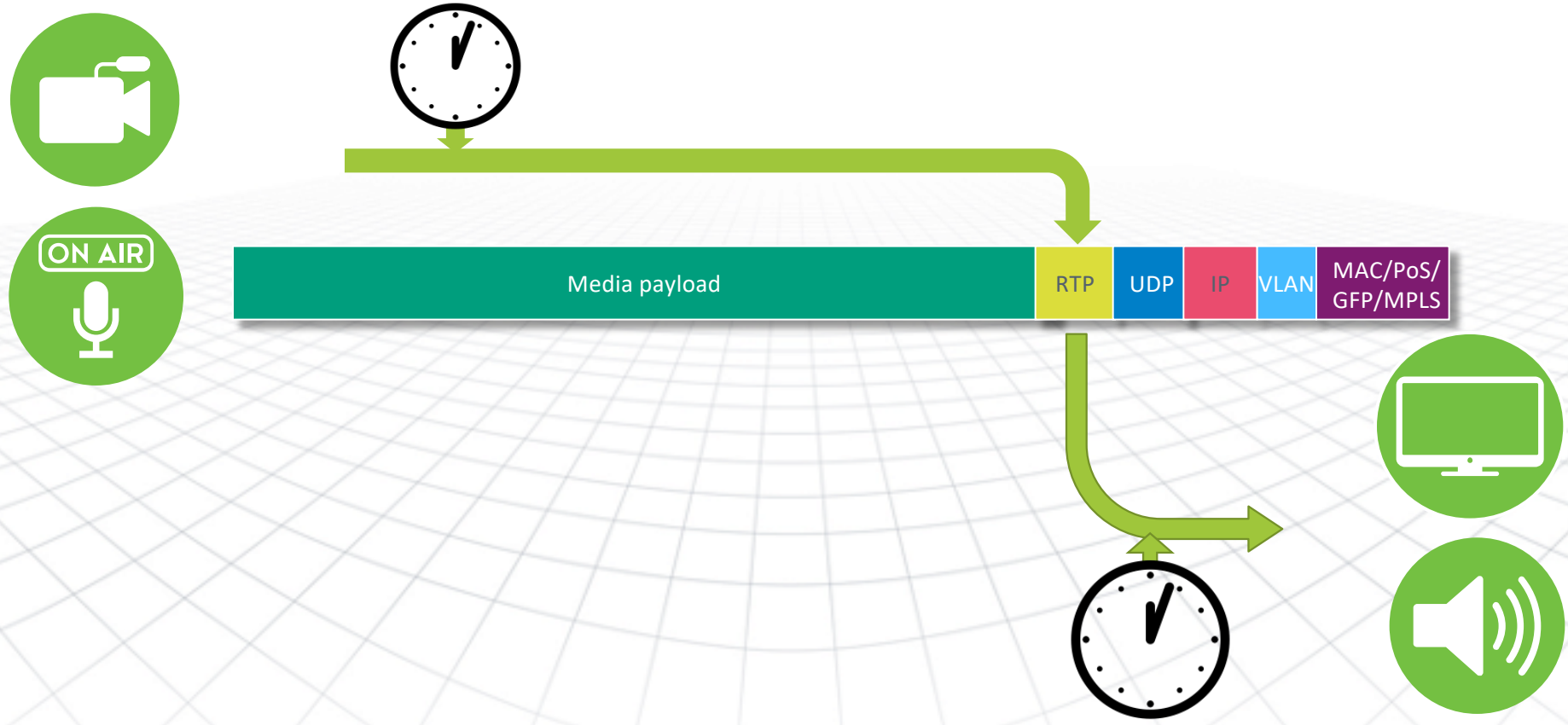
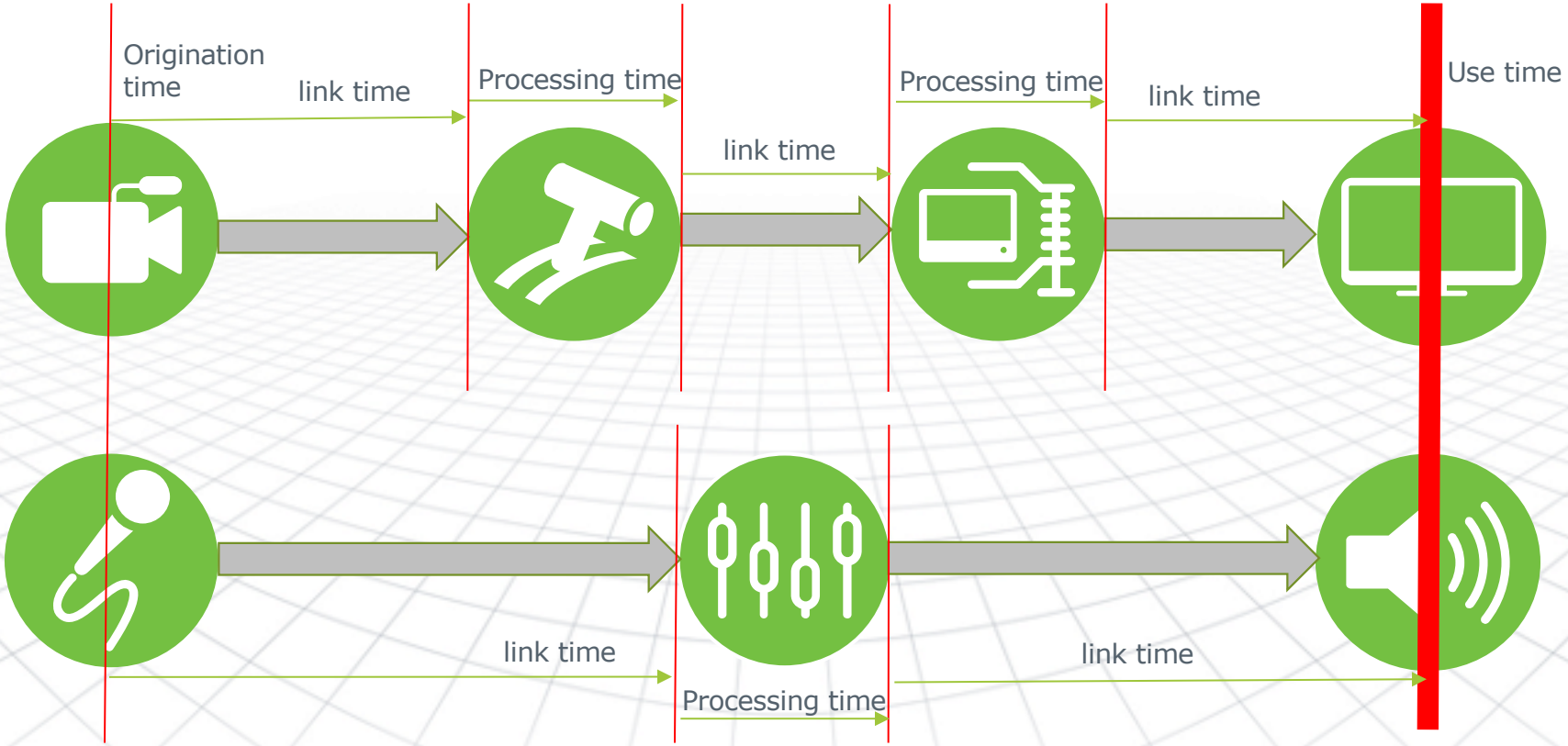
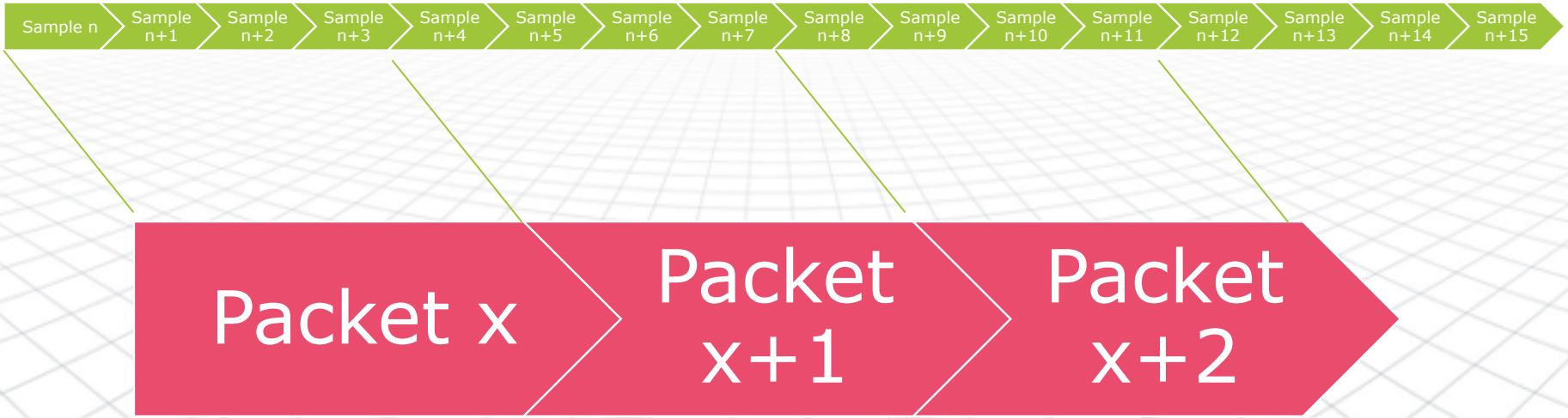
For real time IP transport, UDP/RTP is king!!!

IETF RFC3550


ON AIR
Media payload
RTP
UDP
IP
VLAN
MAC/PoS/
GFP/MPLS


Origination time
link time
Processing time
link time
Processing time
link time
Use time
link time
Processing time
link time

Linear stream flows –
our raster & hardware heritage



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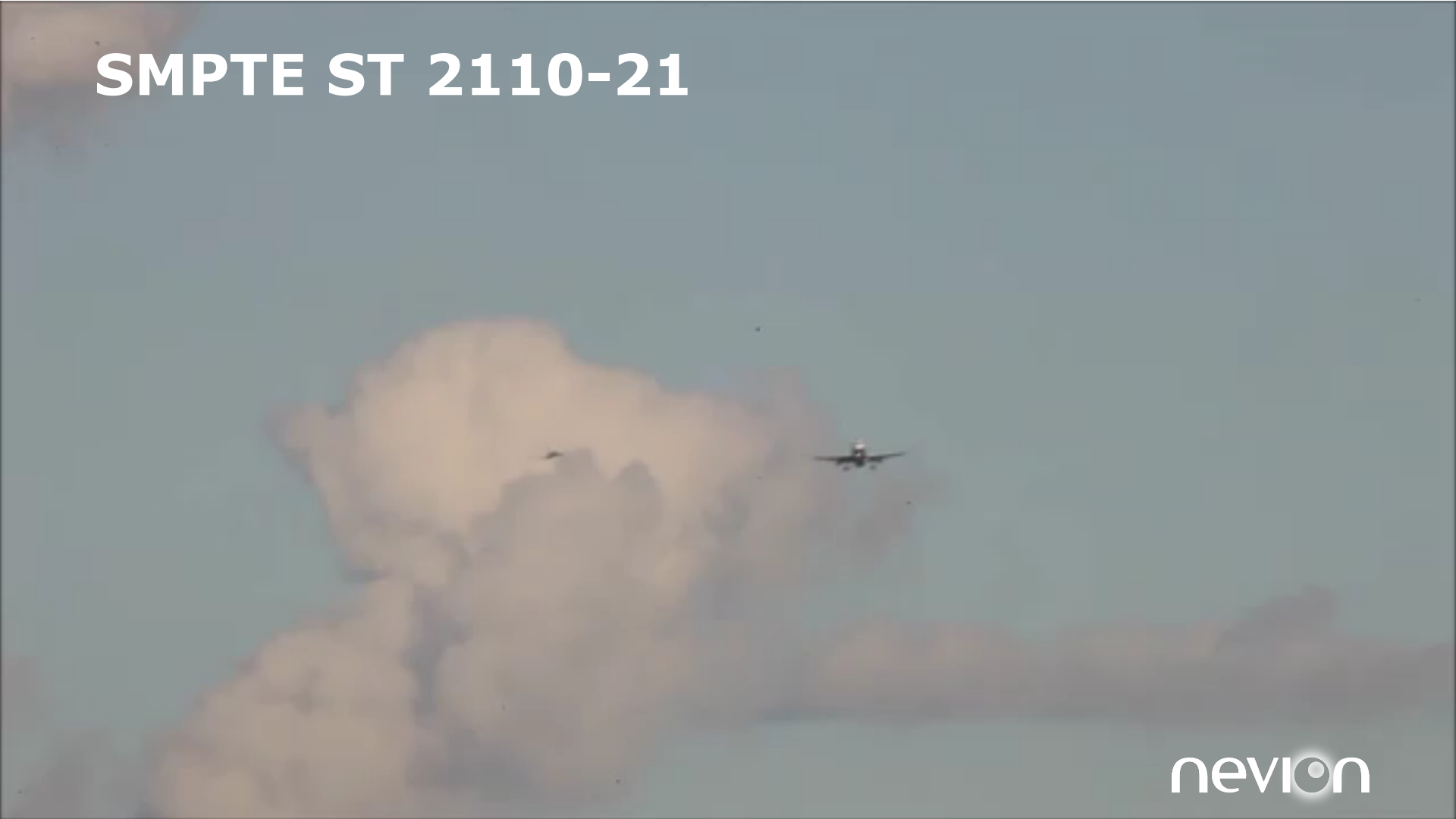
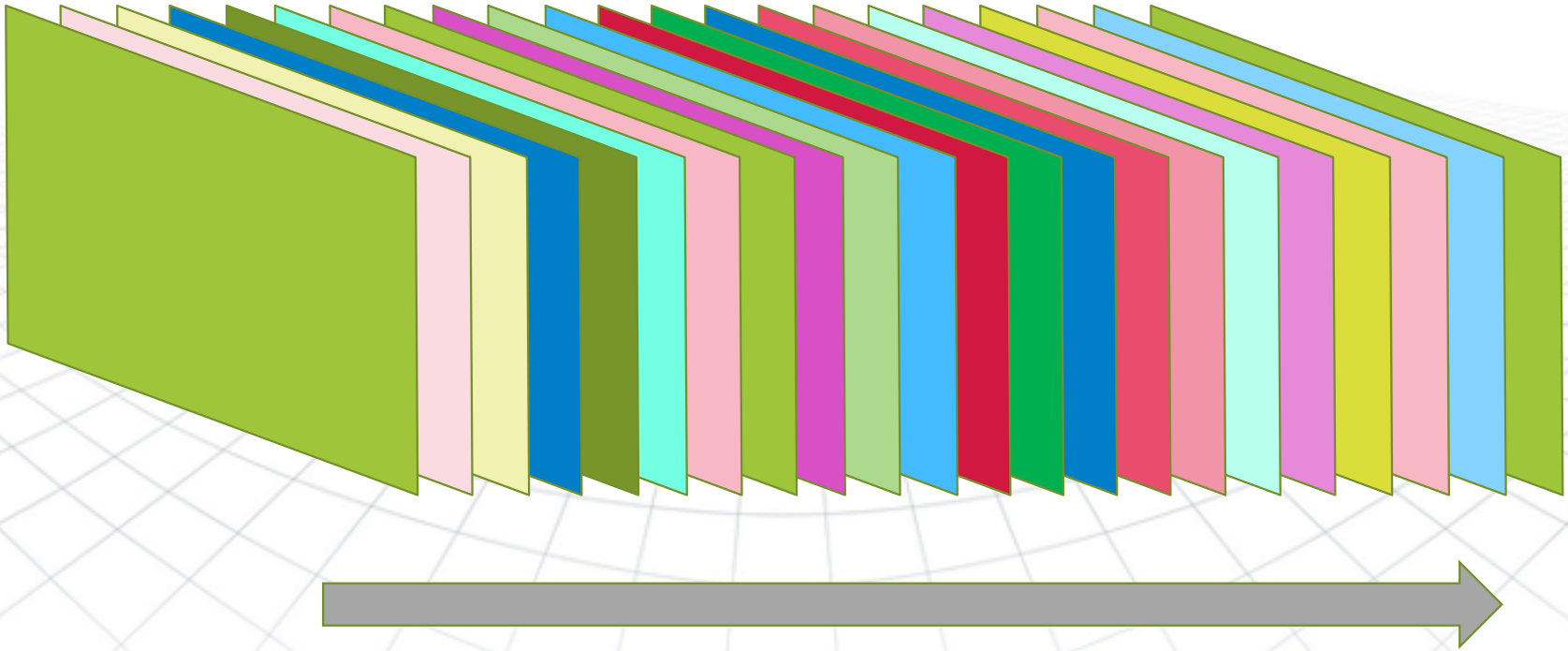
SMPTE ST 2110-21



Linear video



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TV consumption

Linear

On-demand

5G

4K ULTRAHD

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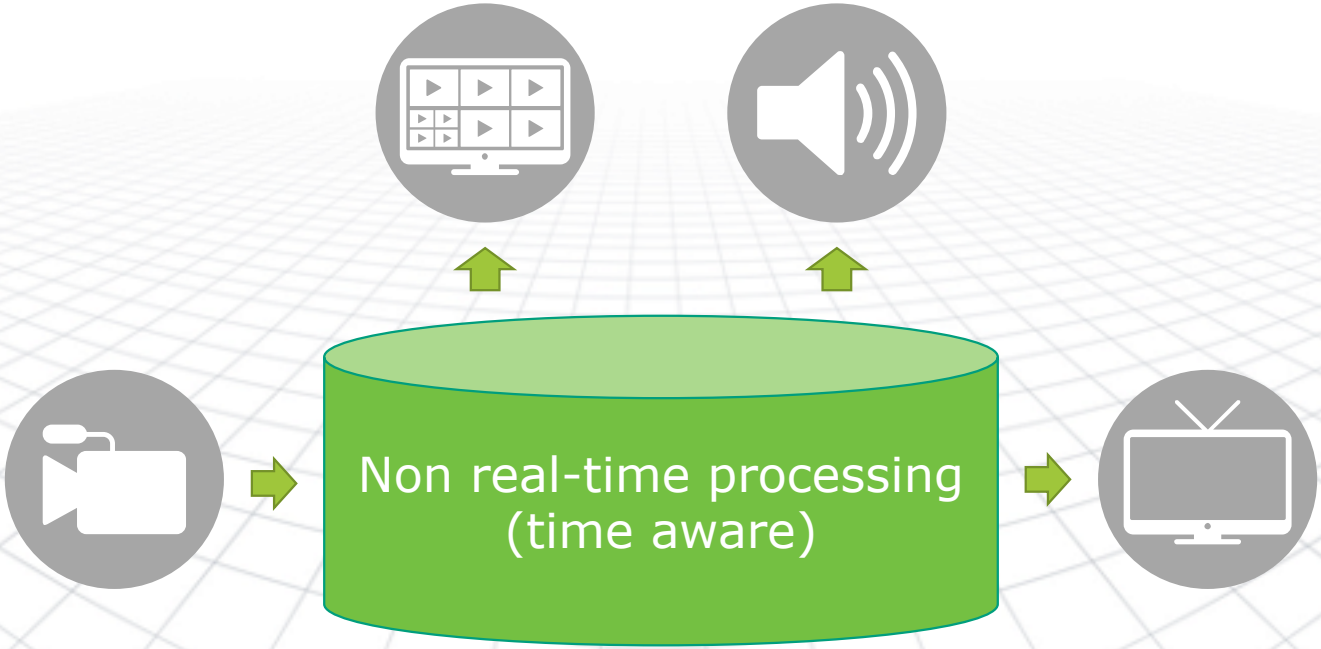
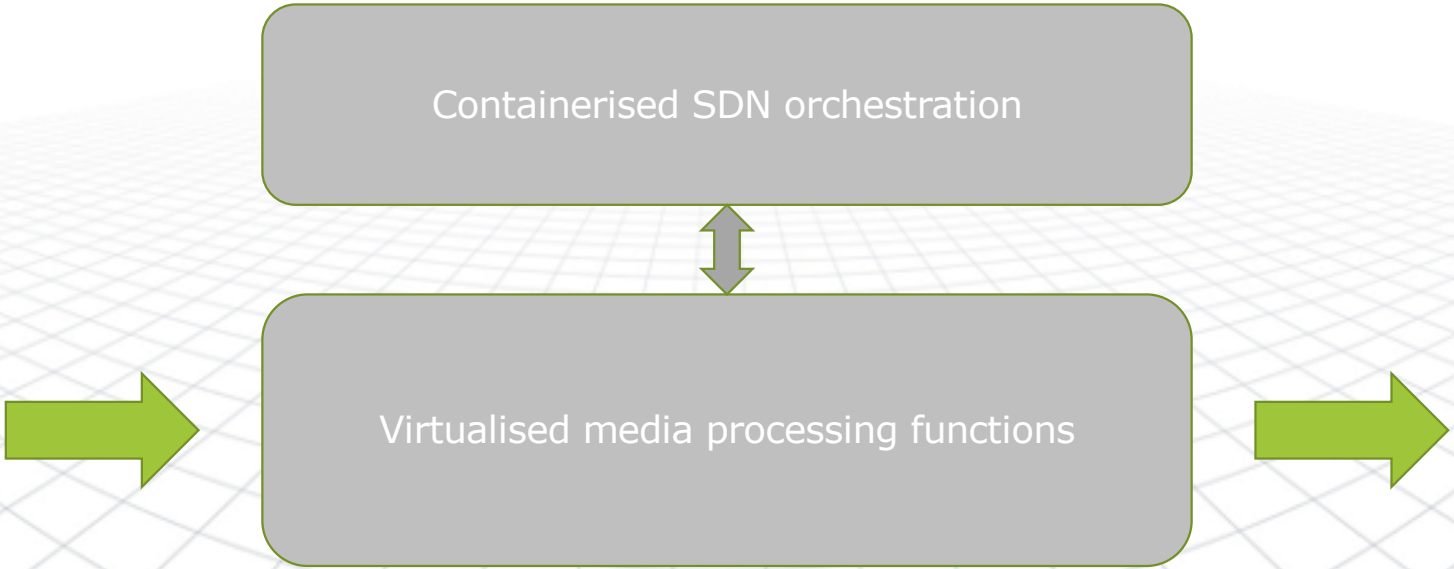
Live video – November 2, 1936

Complete end to end **linear IP workflow**



Control and data plane becomes virtualised



On-prem

Off-prem

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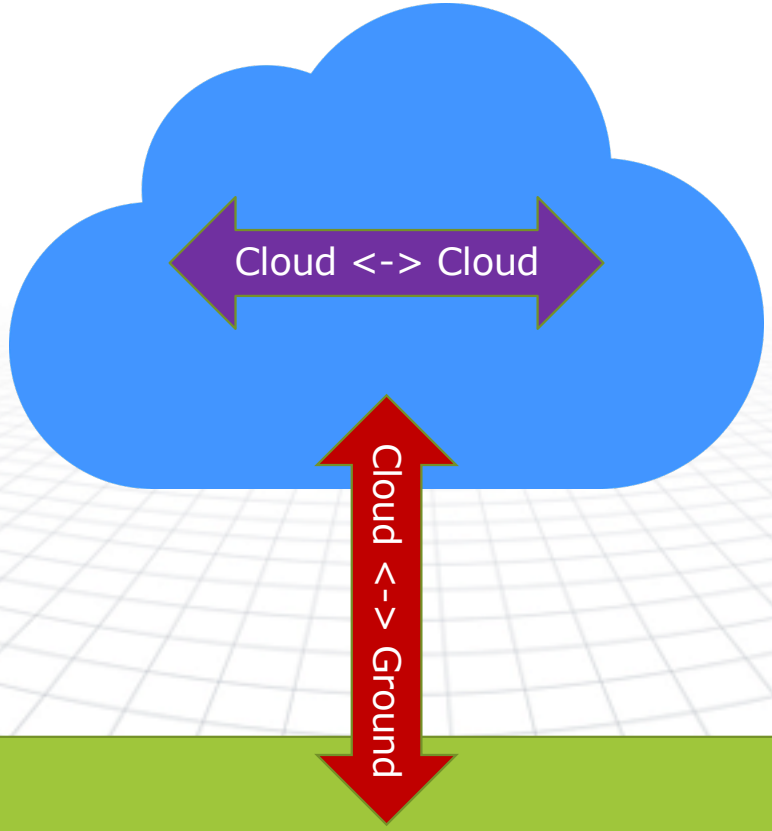
Cloud <-> Cloud
Cloud <-> Ground

Once we get inside a compute environment…..

?

What *is* important?

New AMWA live cloud requirements document

- Ground <-> Cloud
- Cloud<-> Cloud
- Data rates
- Performance
- Timing
- Point-to-multipoint
- Interoperability with ST 2110

Published this week!

35

VideoIPath **architecture** evolution

Master/slave → Cluster → Distributed

One node active at a time (scalability limited by hardware)

Multiple servers active at a time (increased scalability and resilience)

Multiple autonomous sub-systems can operate as one large system

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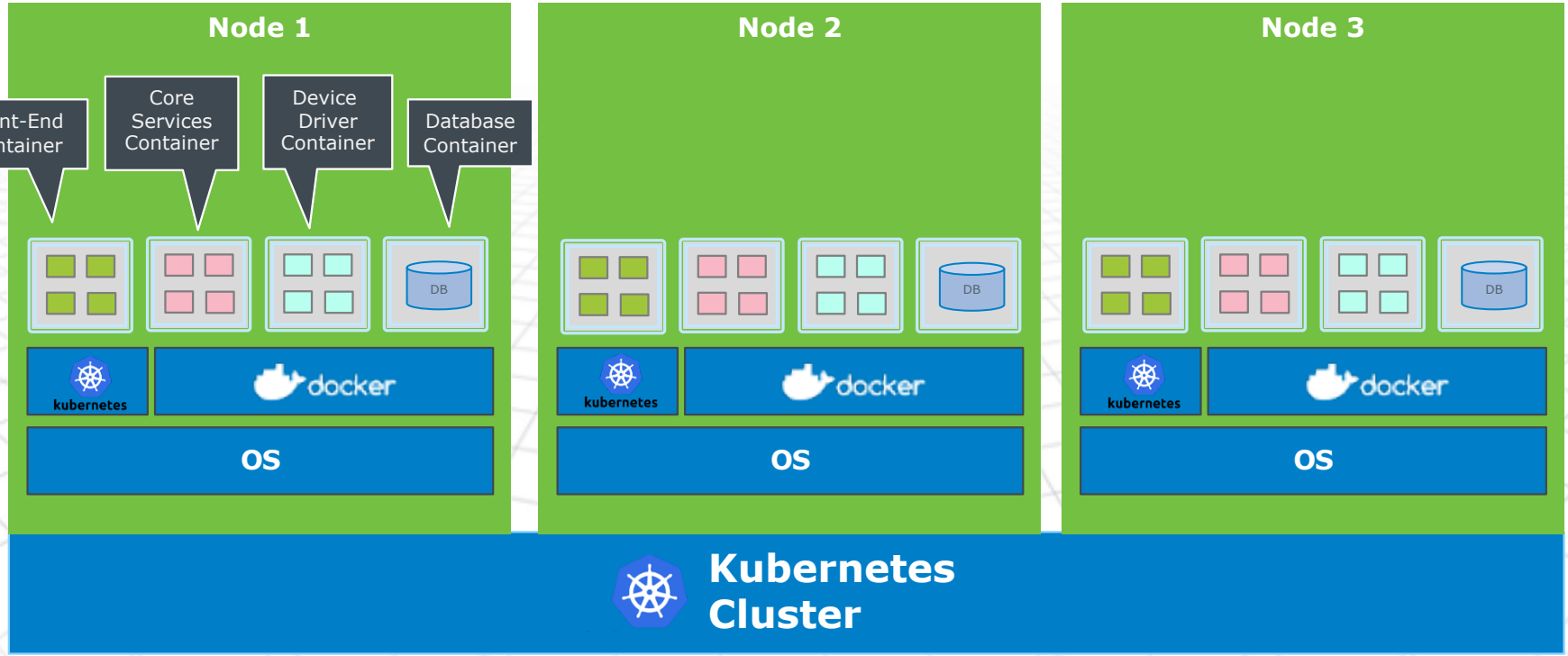
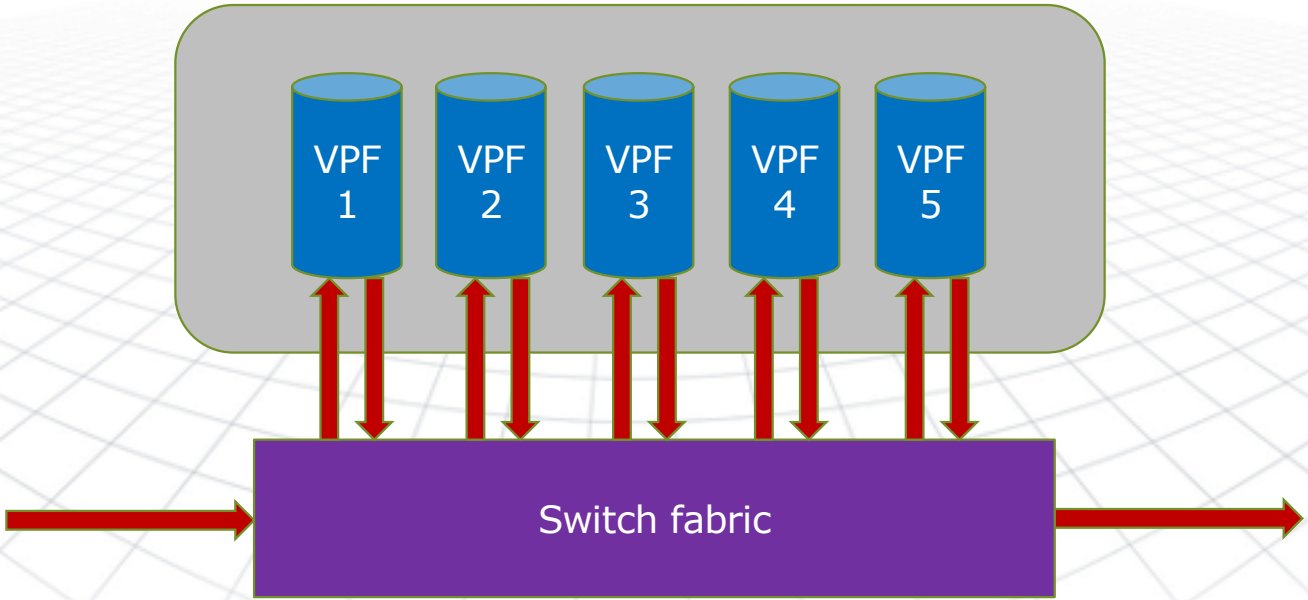
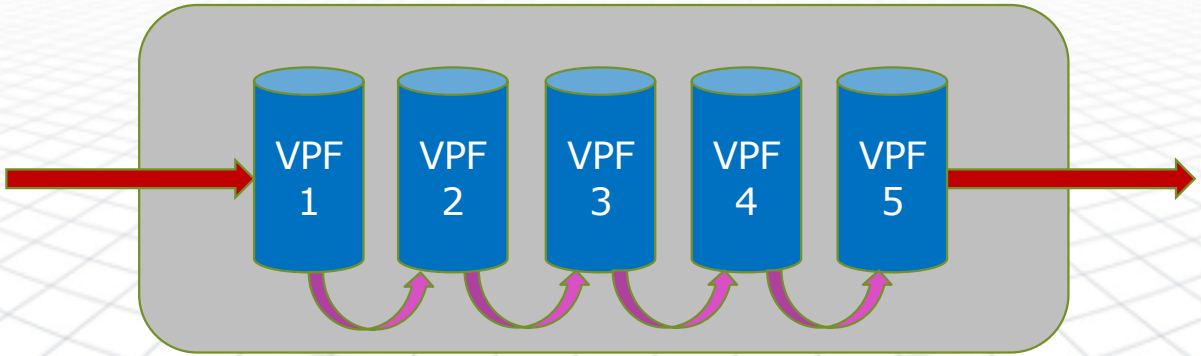
Cluster architecture



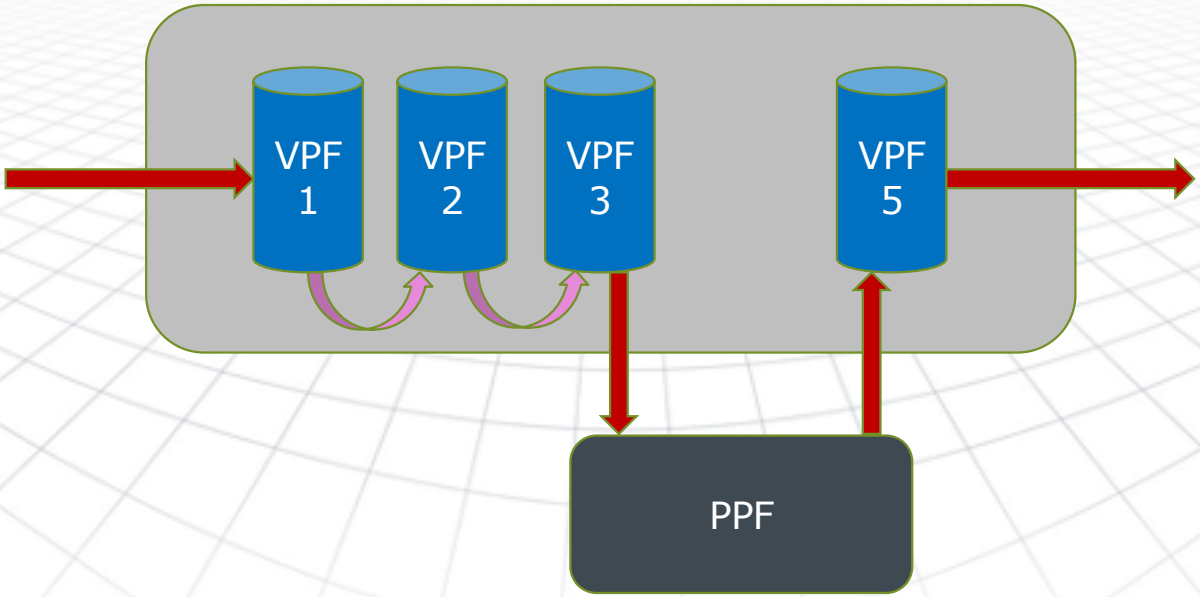
Separate virtual processing functions connected in ‘real time IP’ (e.g. ST2110) via external fabric



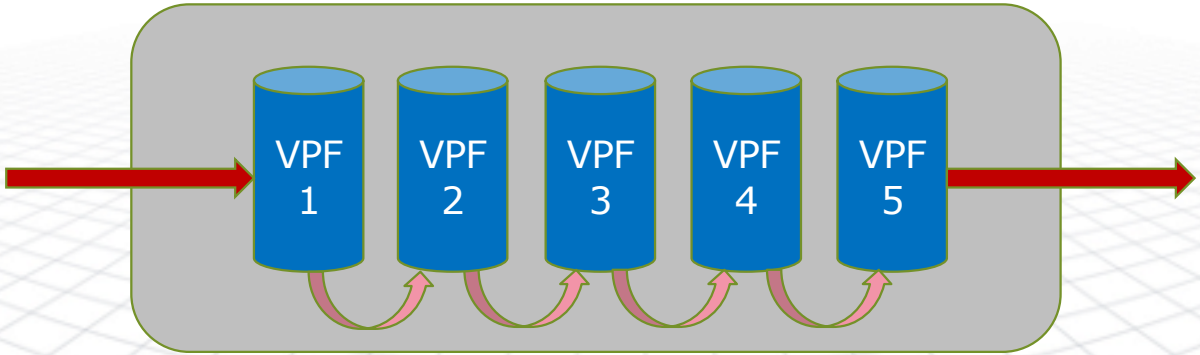
Separate virtual processing functions connected internally using ‘time bound and full integrity’ IP interconnect



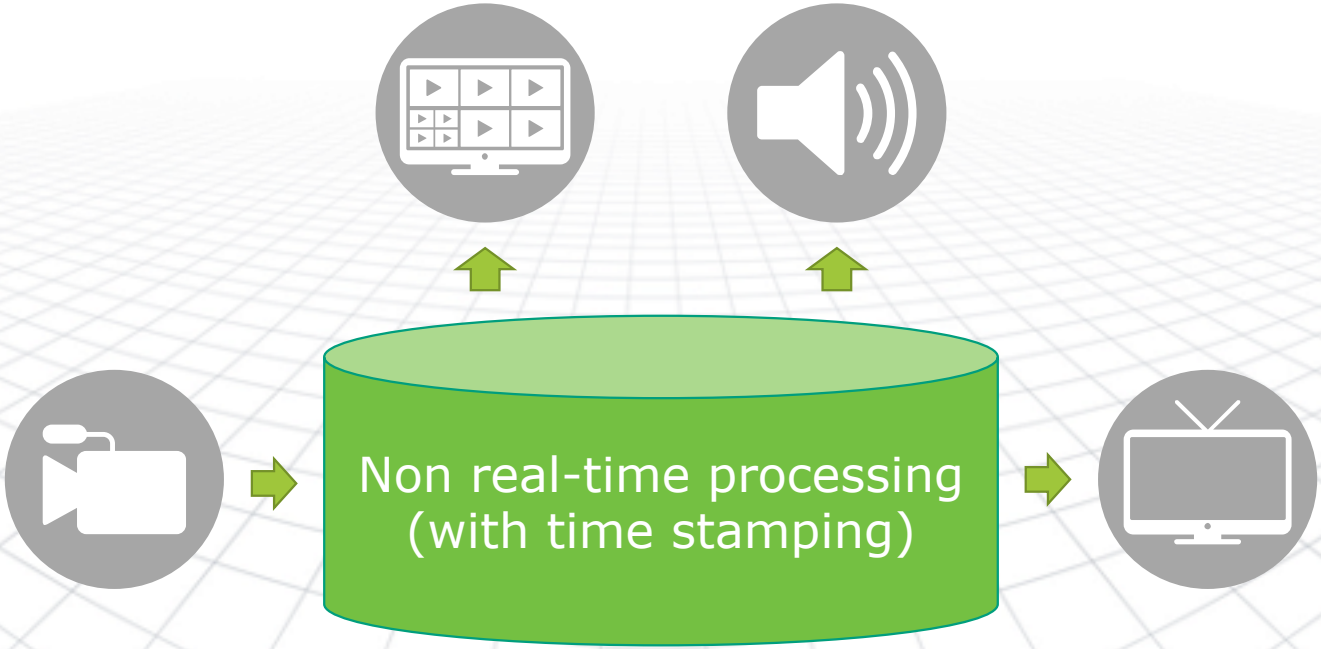
A hybrid of virtual and physical processing functions



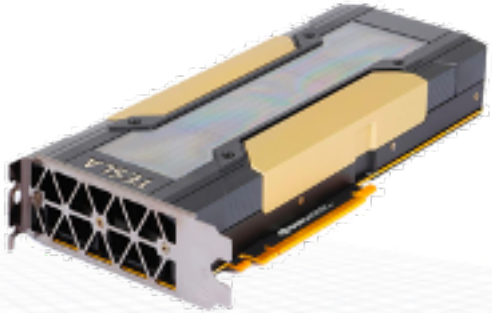
Time orchestration



Complete end to end **linear IP workflow**



GPU & FPGA Acceleration



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Security

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Time on ground and in cloud

TaaS

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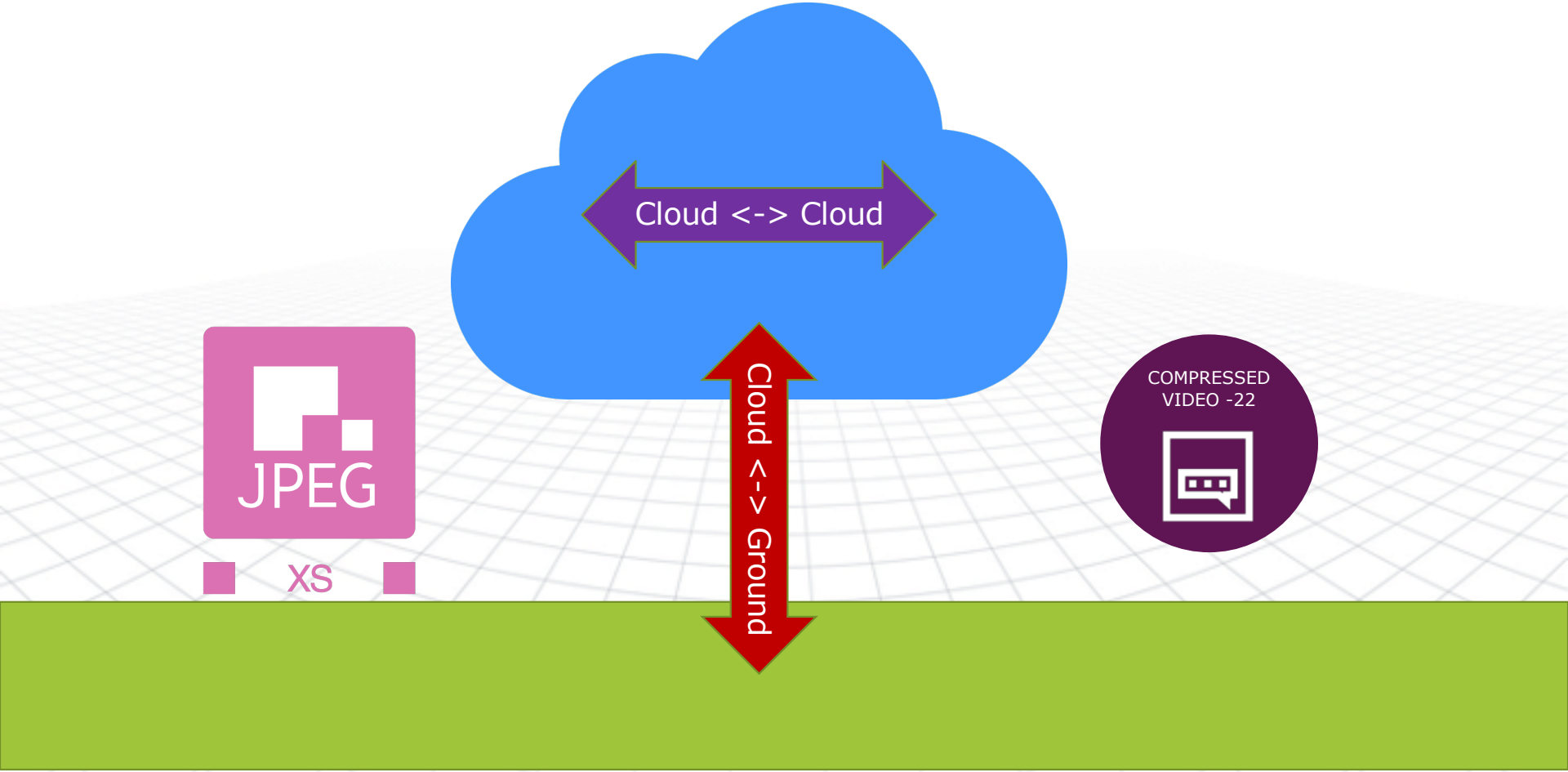
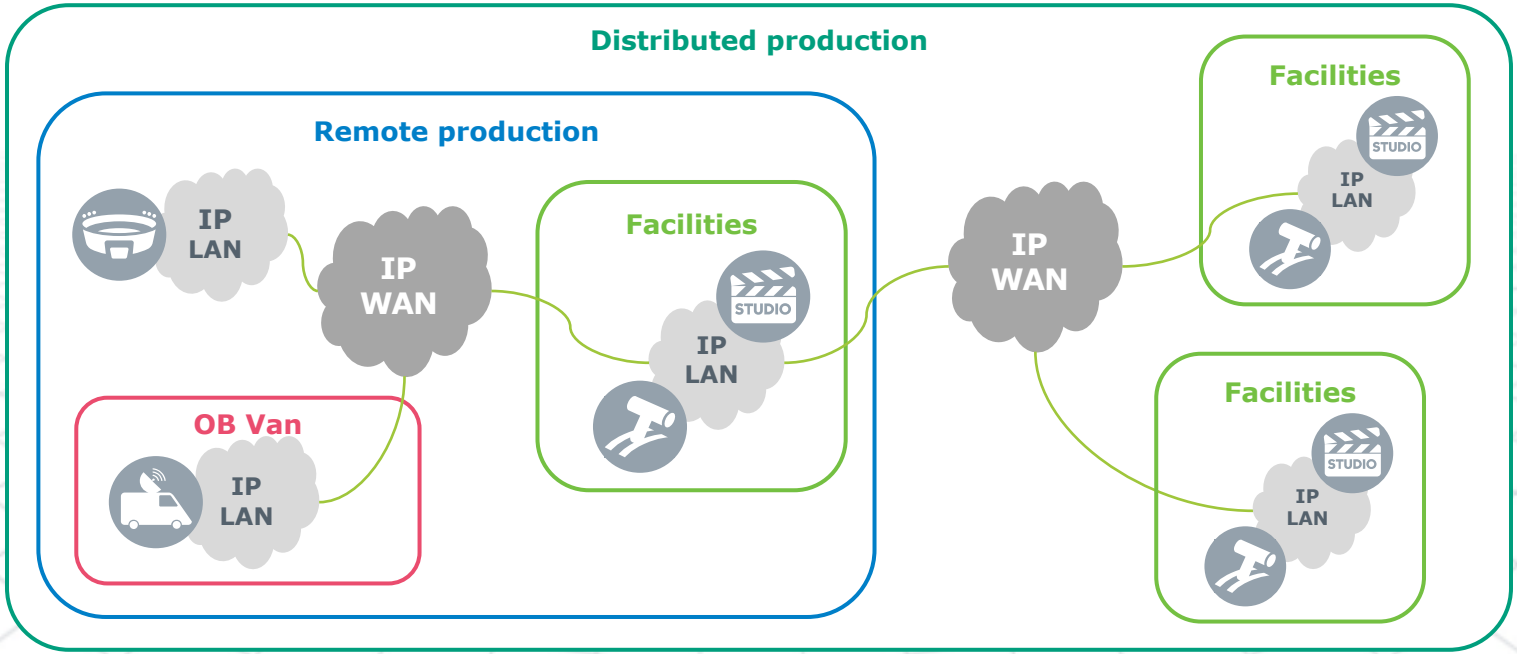

Cloud <-> Cloud
Cloud <-> Ground
JPEG
XS
COMPRESSED
VIDEO -22


Distributed production
Remote production
IP
LAN
IP
WAN
Facilities
STUDIO
IP
LAN
OB Van
IP
LAN
IP
WAN
Facilities
STUDIO
IP
LAN
Facilities
STUDIO
IP
LAN


VIP
V
V
VIP

Thank you!

Andy Rayner Chief Technologist
arayner@nevion.com +44 7711 196609

ARCHITECTS OF VIRTUALIZED MEDIA PRODUCTION