

Media cloud connectivity

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IP SHOWCASE

Media cloud connectivity



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Come and catch up on the Sony stand C10901 in the Central Hall

Technical points for consideration



Media data flows

Media timing

System timing

Industry initiatives

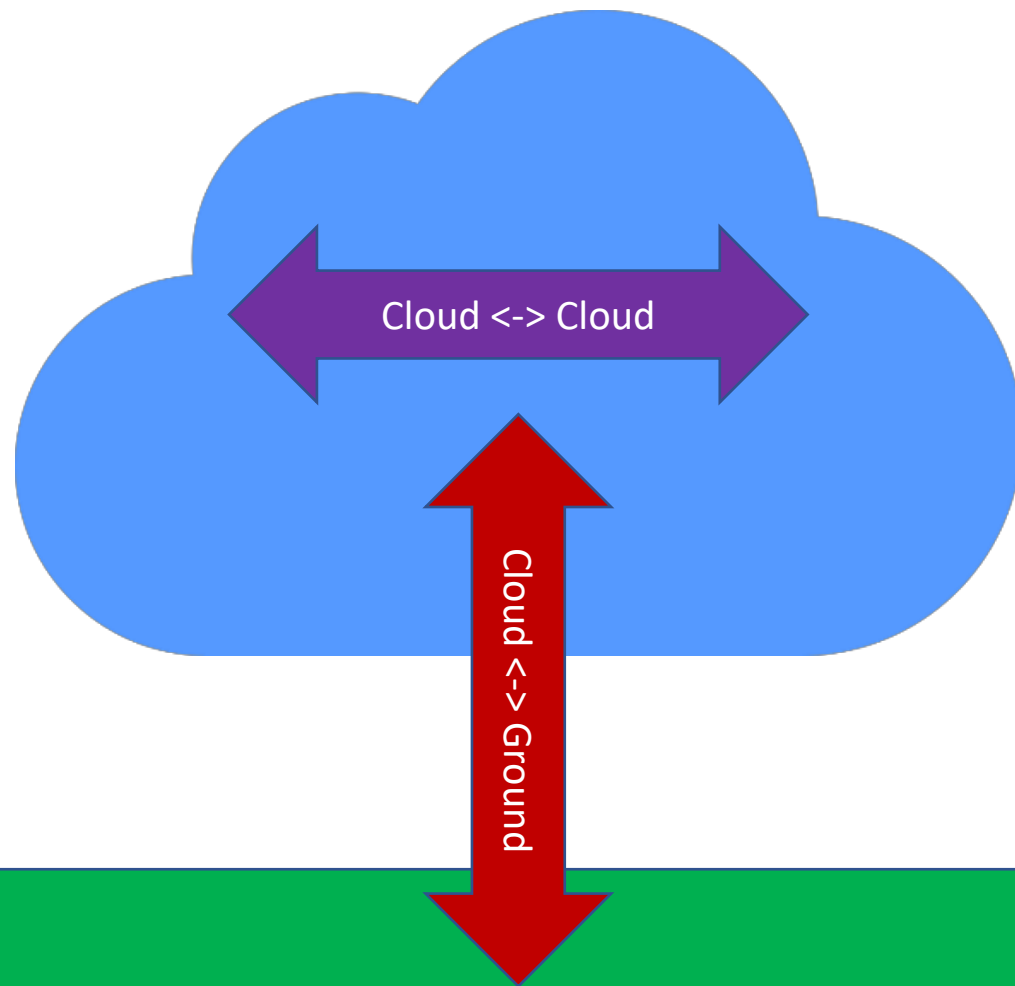
Flow control

Processing instantiation

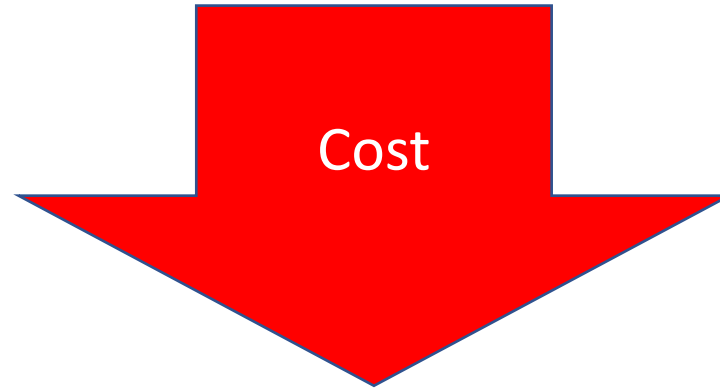
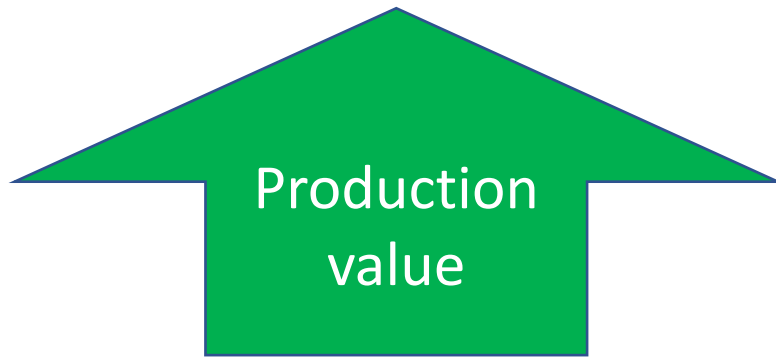
Connectivity control

Current technologies

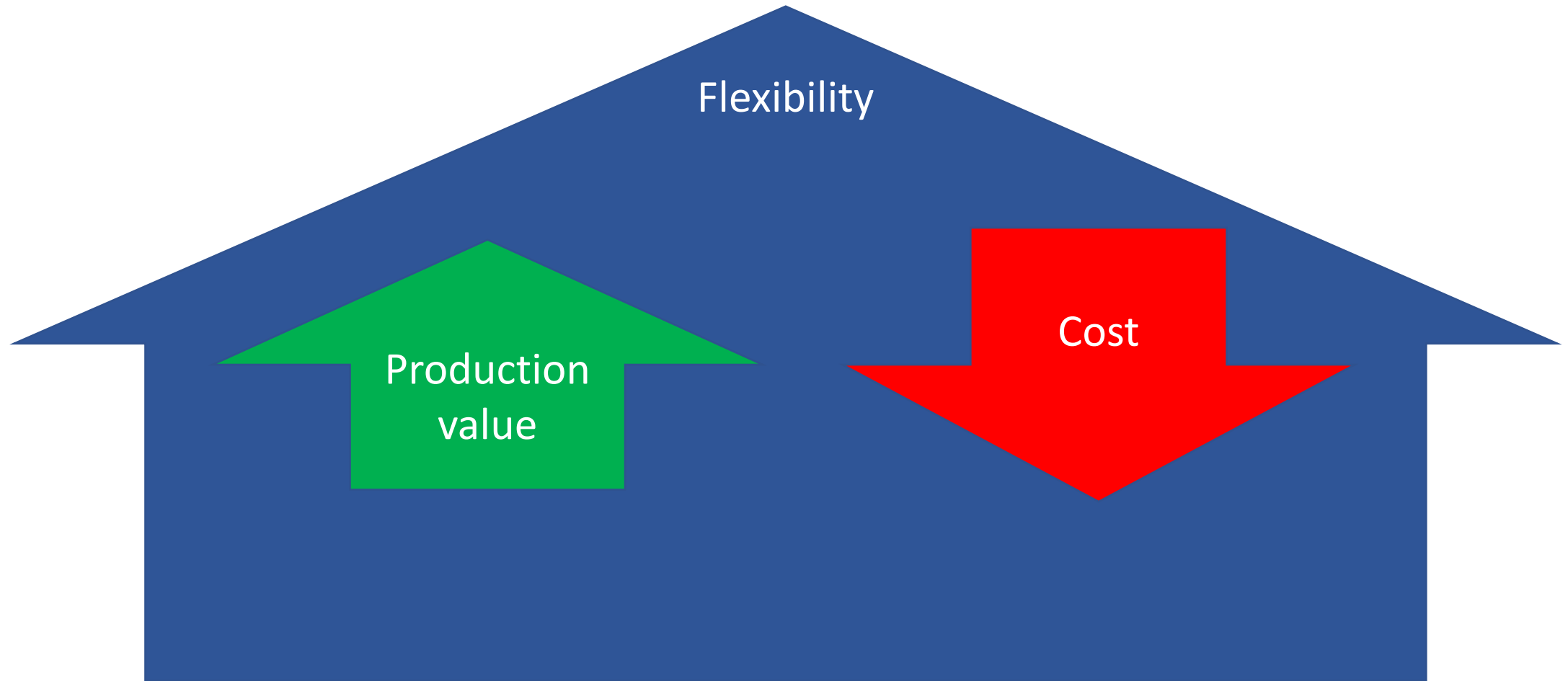
Cloud connectivity



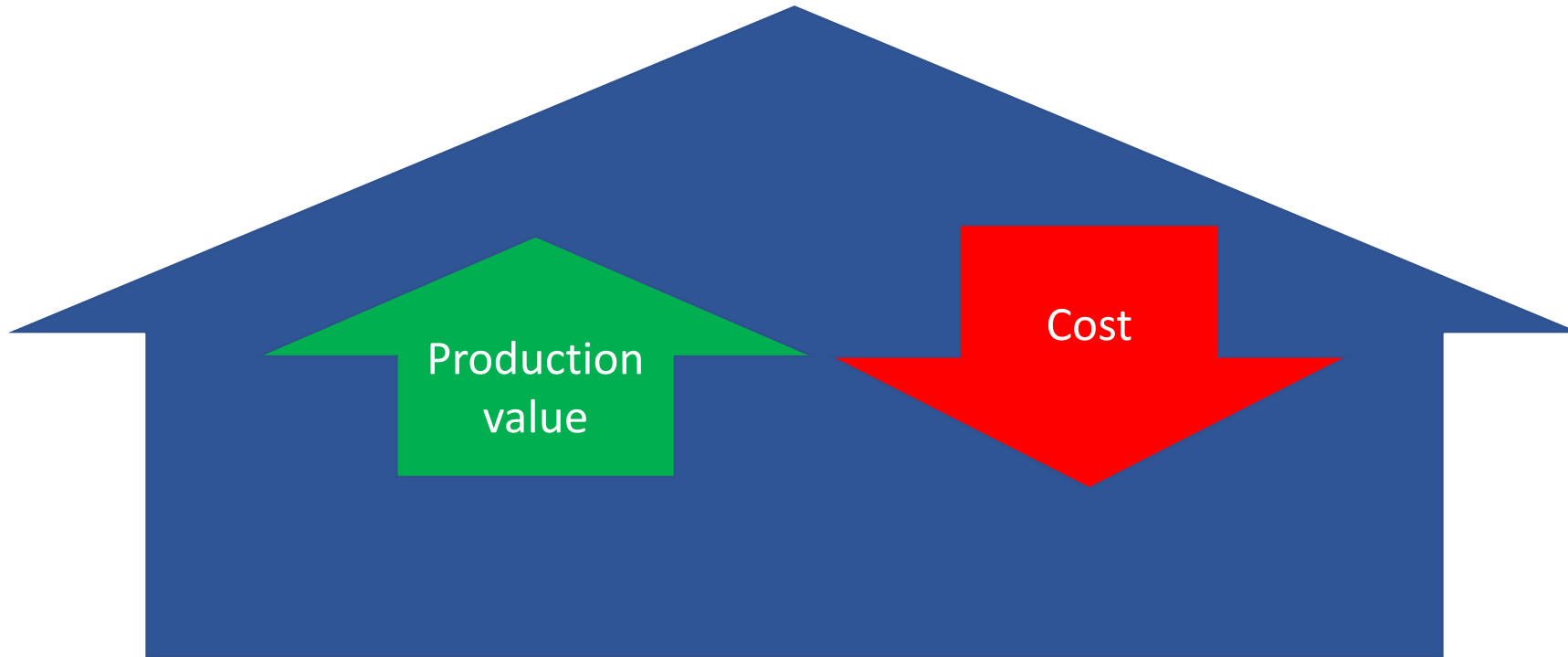
Content producer desires



Content producer desires

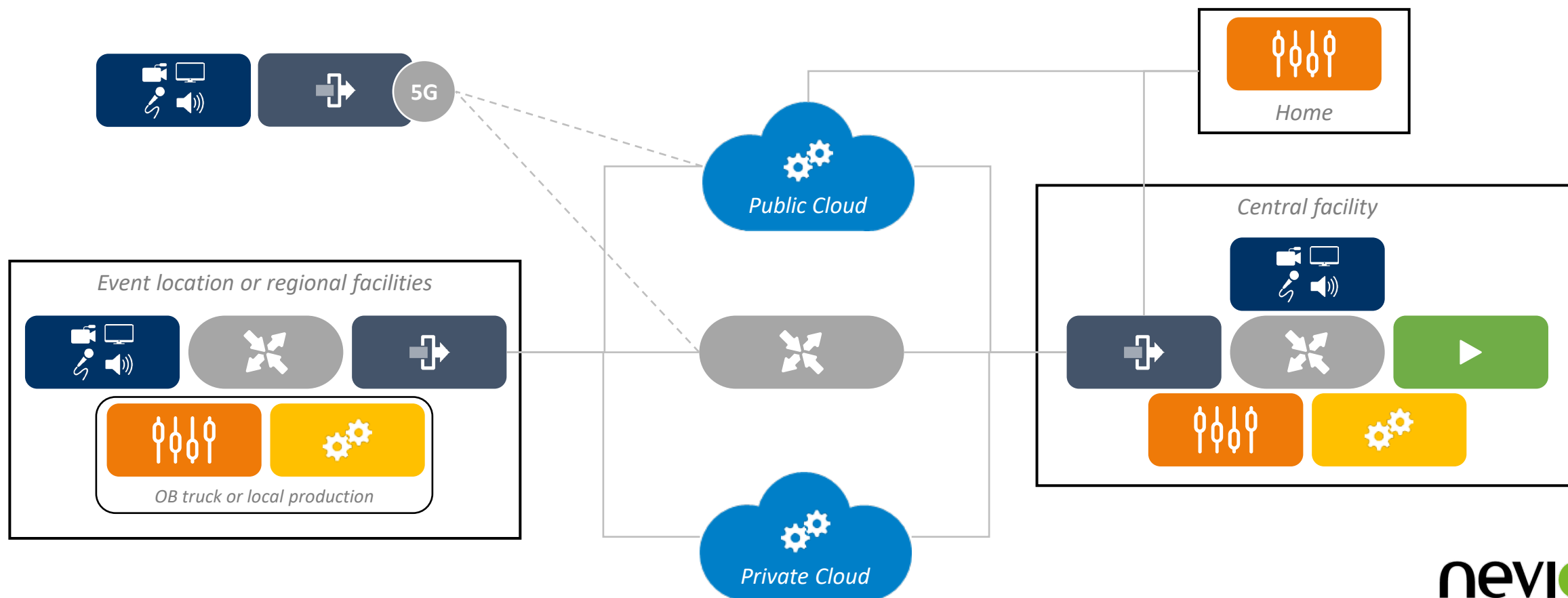


Content producer desires

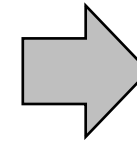
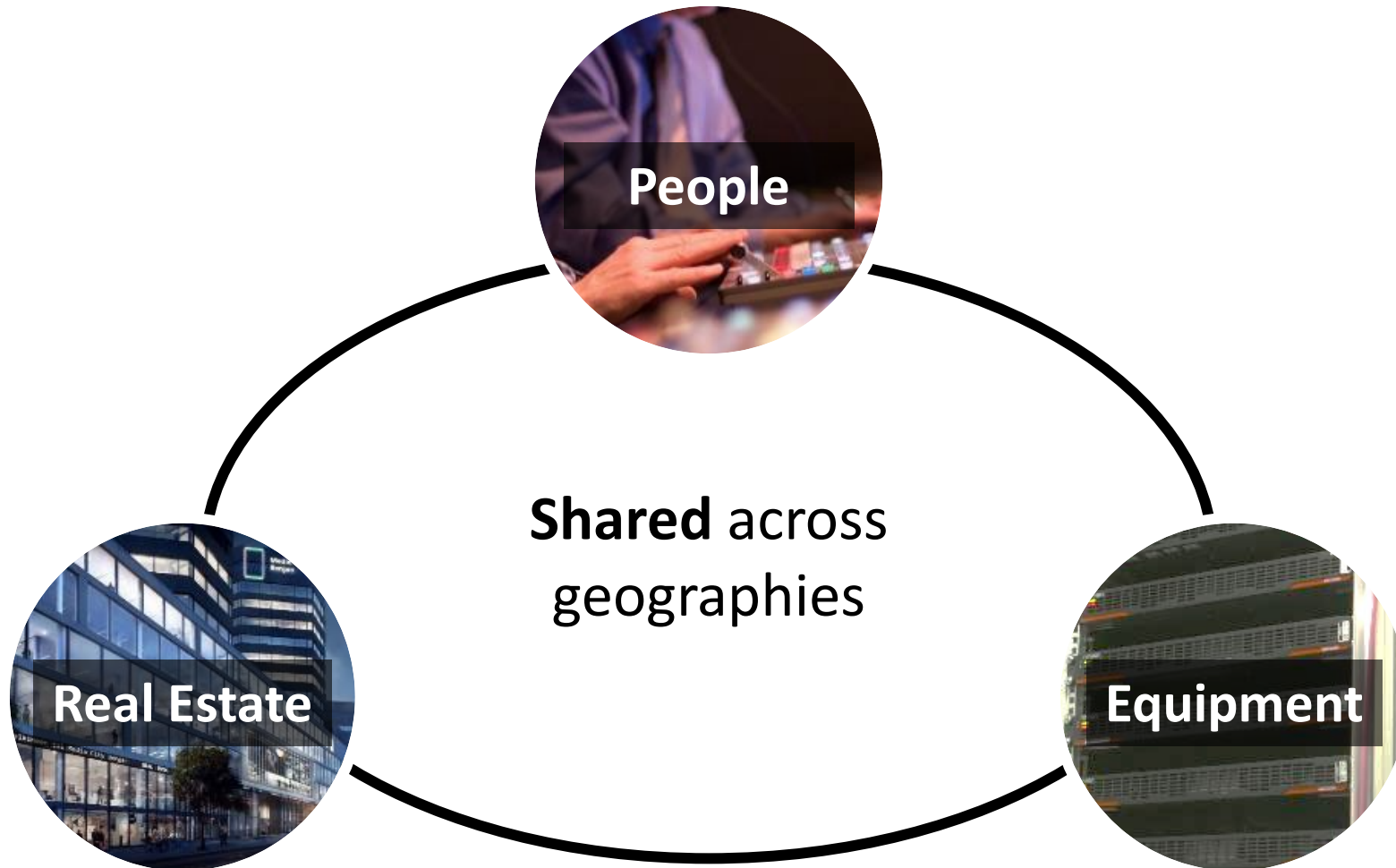


Distributed production

Management

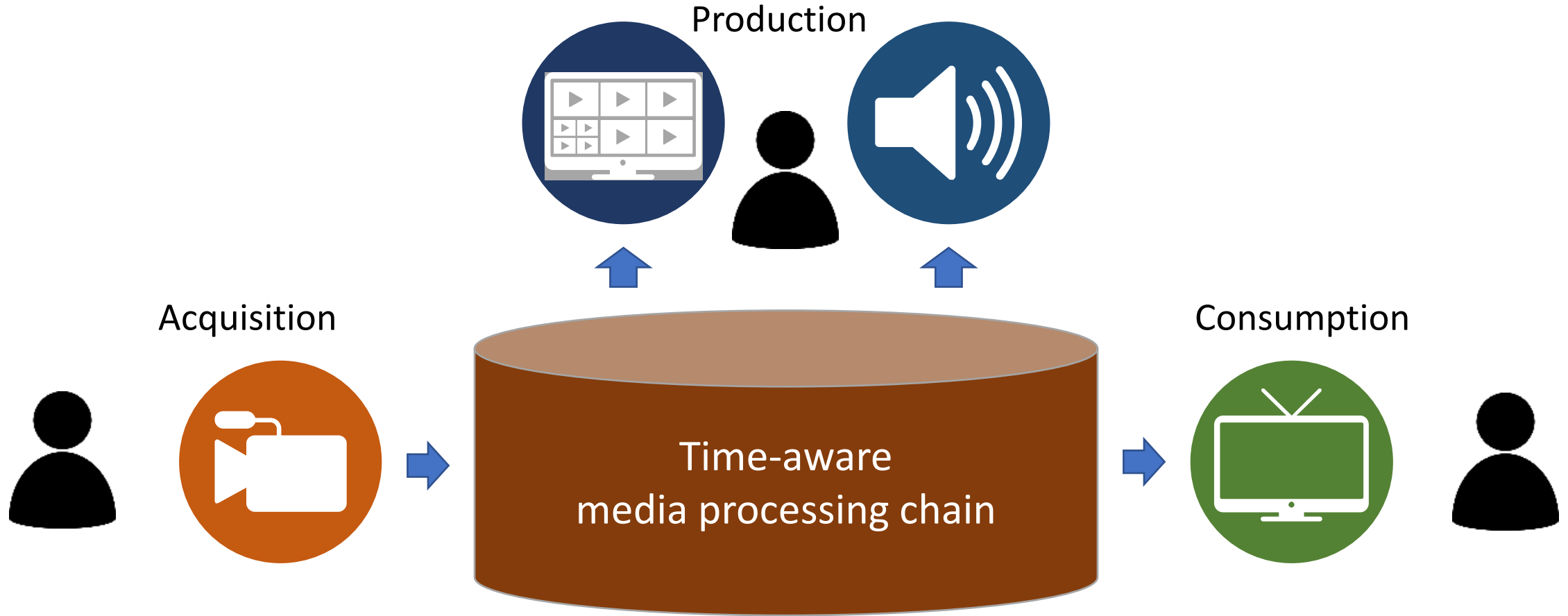


IP is transforming production workflows



**Nimbler and
more cost-
effective
production,
using the very
best resources**

The broadcast live production end game



Technology trends in IP production



From the bespoke to the generic

Leveraging IP & IT



The journey of IP production flexibility



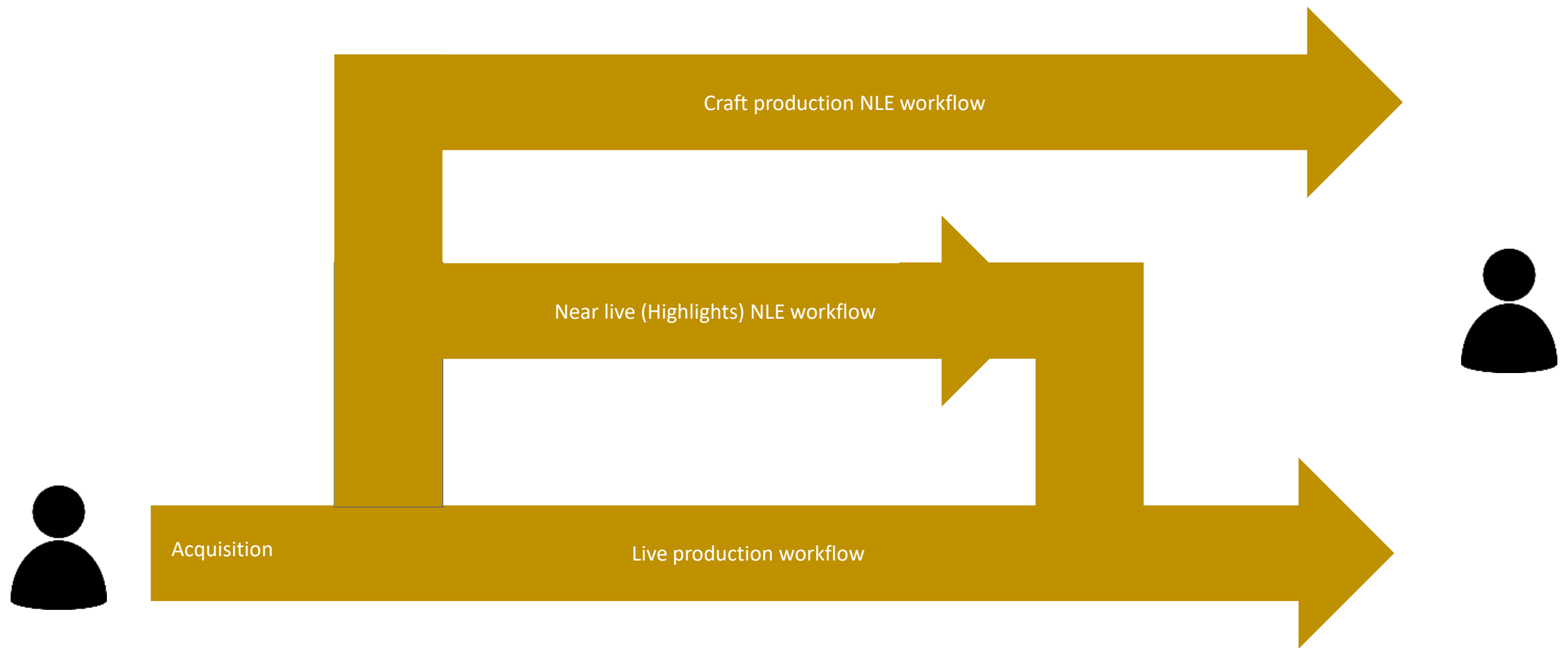
**IP WAN
infrastructure:**
Leverage ubiquity
Resilience
Flexibly routing
Service continuity

**IP facility
infrastructure:**
Resilience
Spatial resolution,
Temporal resolution,
Bit depth,
Colour gamut,
Audio channels,
Metadata,
Gallery-Studio flex

**Complete IP
end to end:**
Resource sharing
Anything-anywhere
Gallery-studio-truck
flex
Shared processing
People anywhere
Service continuity

**Virtual IP end to
end:**
Dynamic scale
Opex models
NLE live-file
convergence

Media production convergence



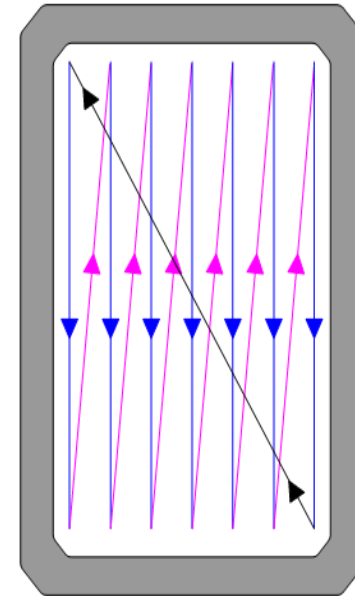
The workflow



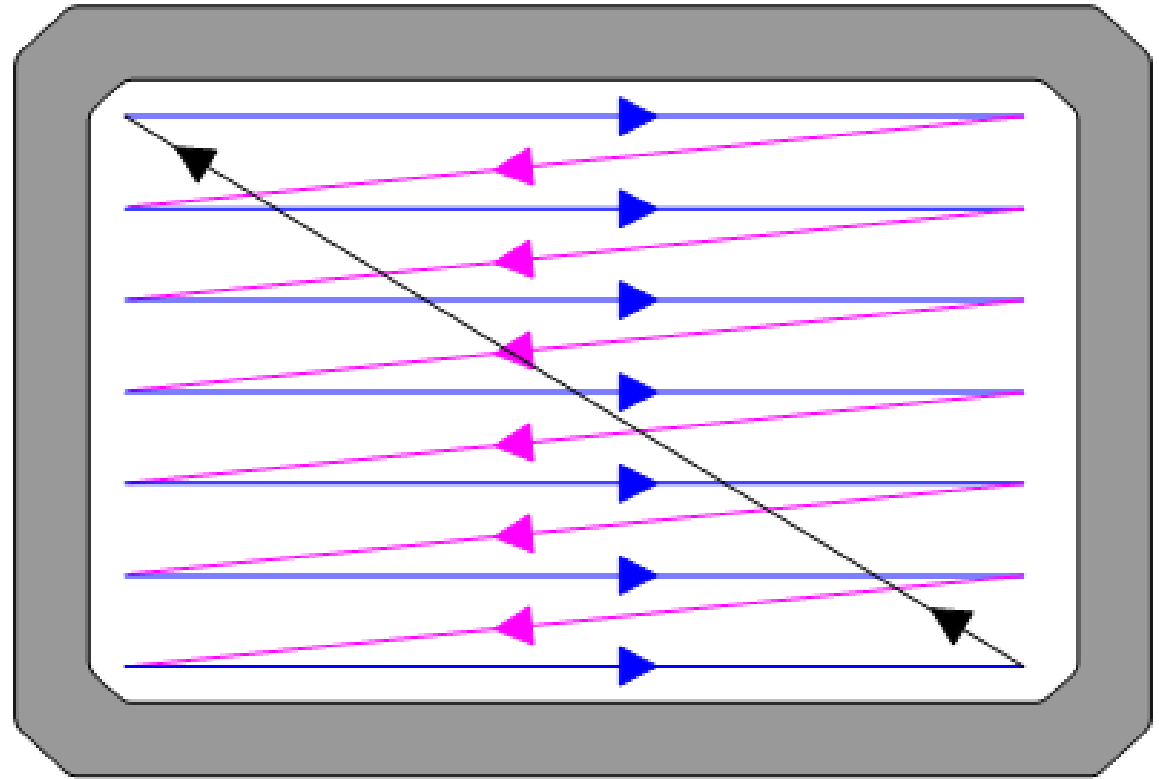
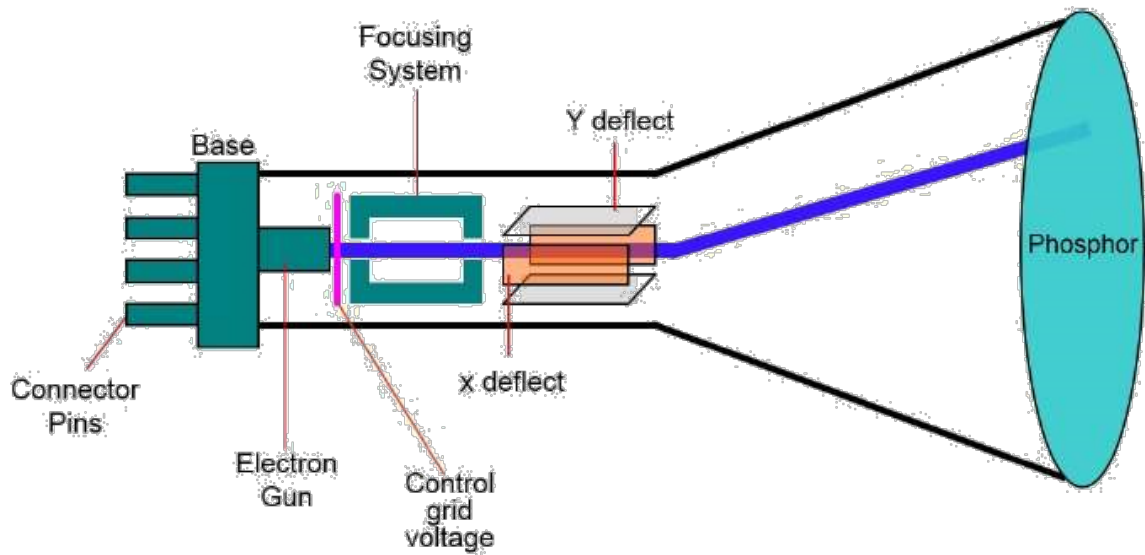
Connectivity in the beginning.....1932



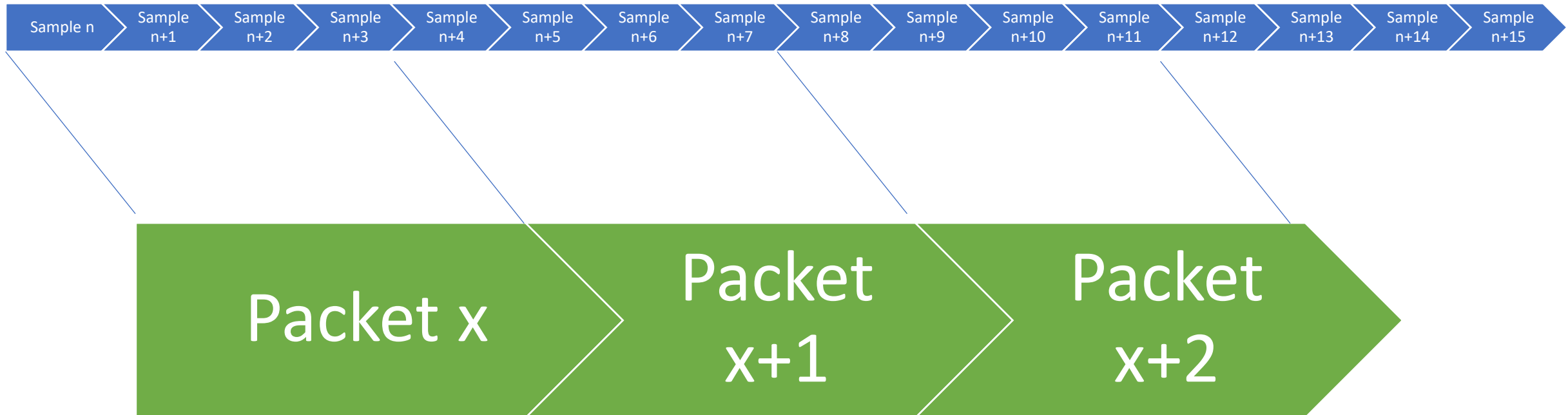
Betty Bolton



The legacy of the raster scan - up to and including ST2110



Linear stream flows – our raster & hardware heritage



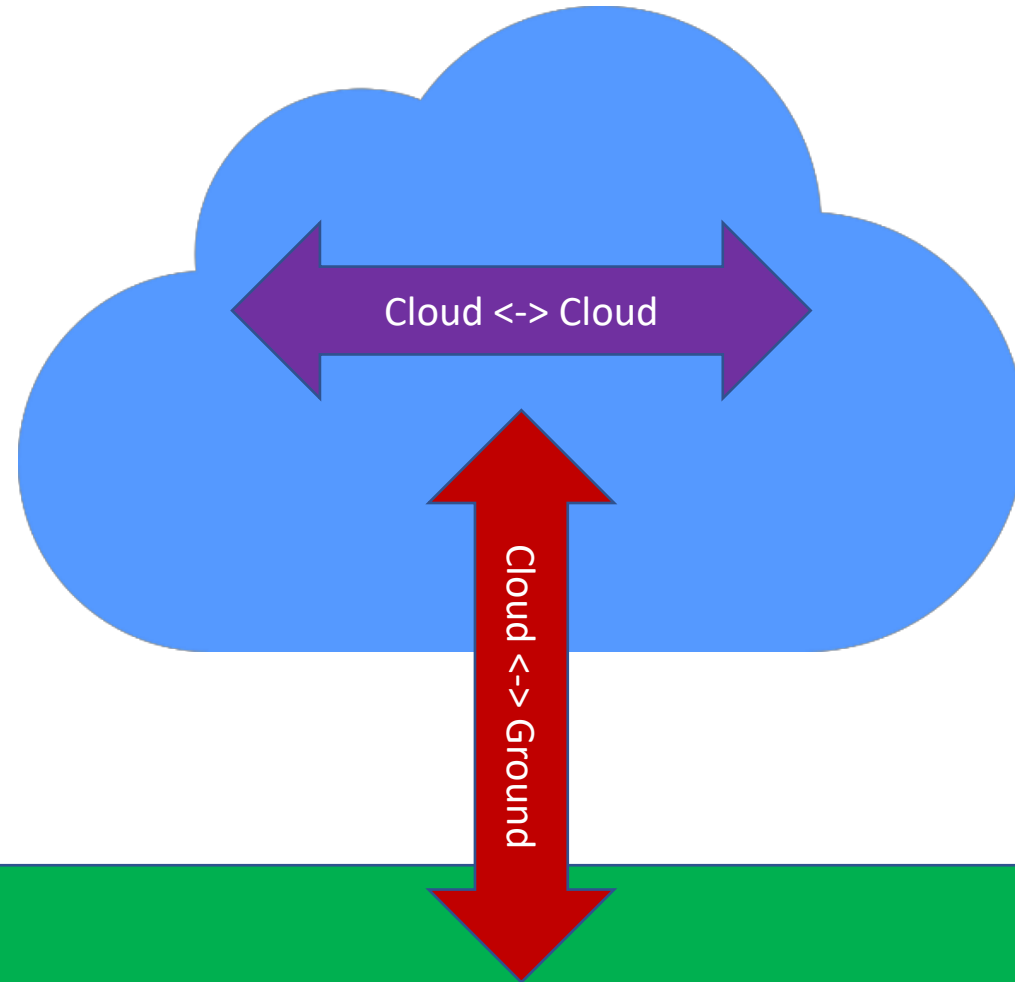
The ST2110 suite & NMOS

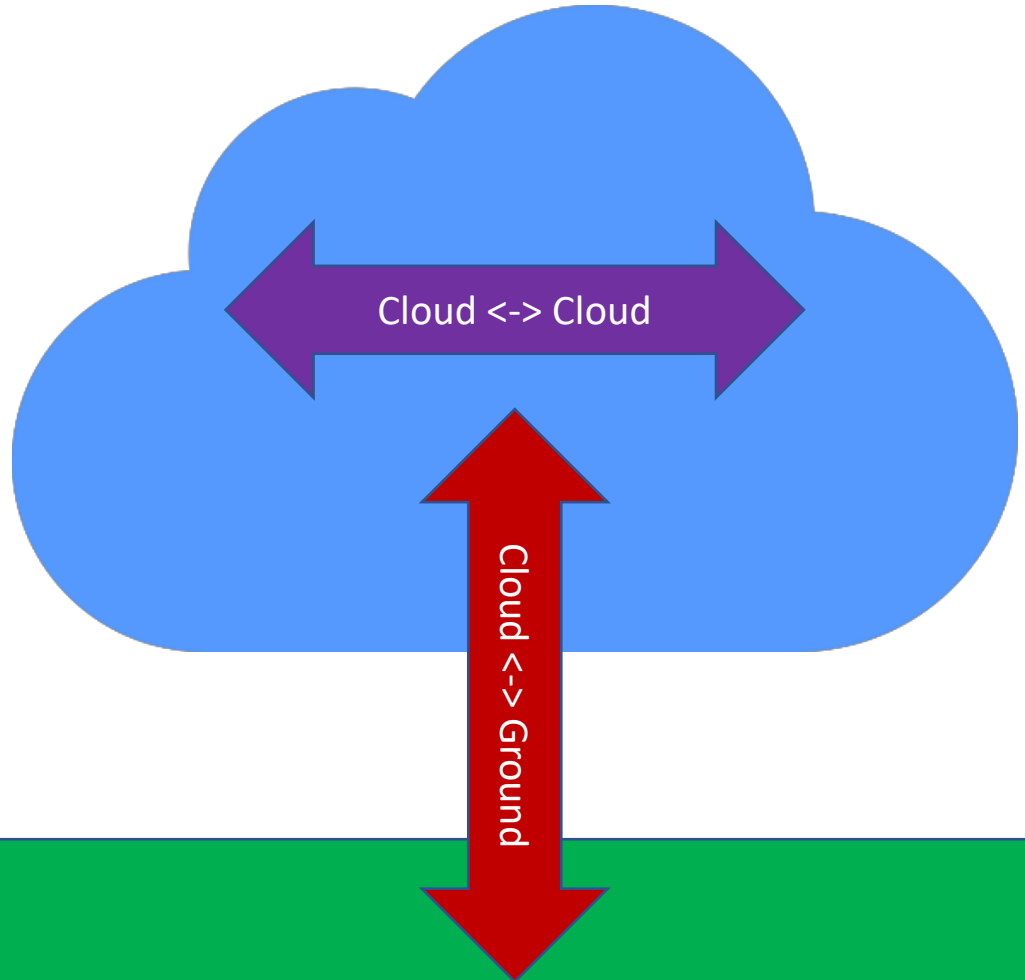


SYSTEM -10 	VIDEO -20 	AUDIO -30 	AES3-32 bit AUDIO -31 	ANCILLARY DATA -40 	TIMING -21
COMPRESSED VIDEO -22 	MULTI-PART VIDEO -23 	SD VIDEO -24 	FAST METADATA -41 	FMX -42 	2022-8 COMPOSITE
BCP-003-0x Security suite 	IS-04 Discovery and Registration	IS-05 Connection Management	IS-07 Event and Tally	IS-08 Audio Channel Mapping	IS-09 System



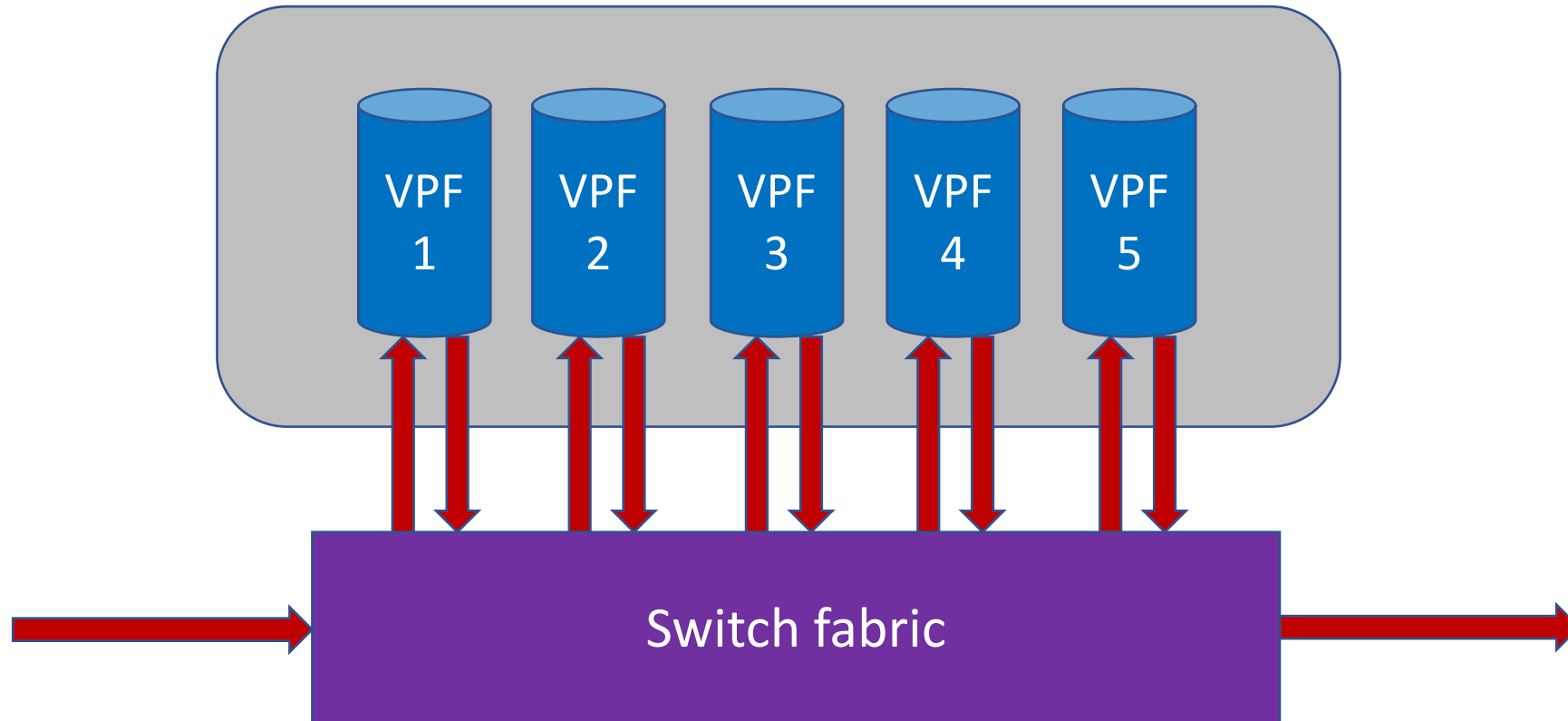
Native compute connectivity



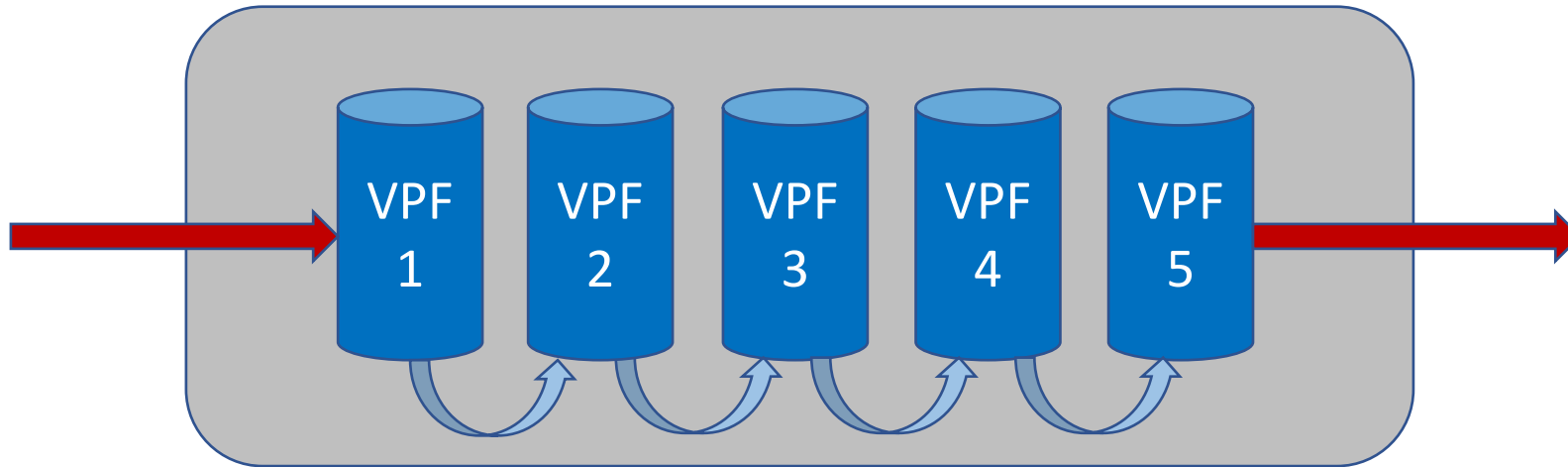


Check out: GCCG Activity Group & previous presentation here (Sunday 13:00 – watch on replay!)

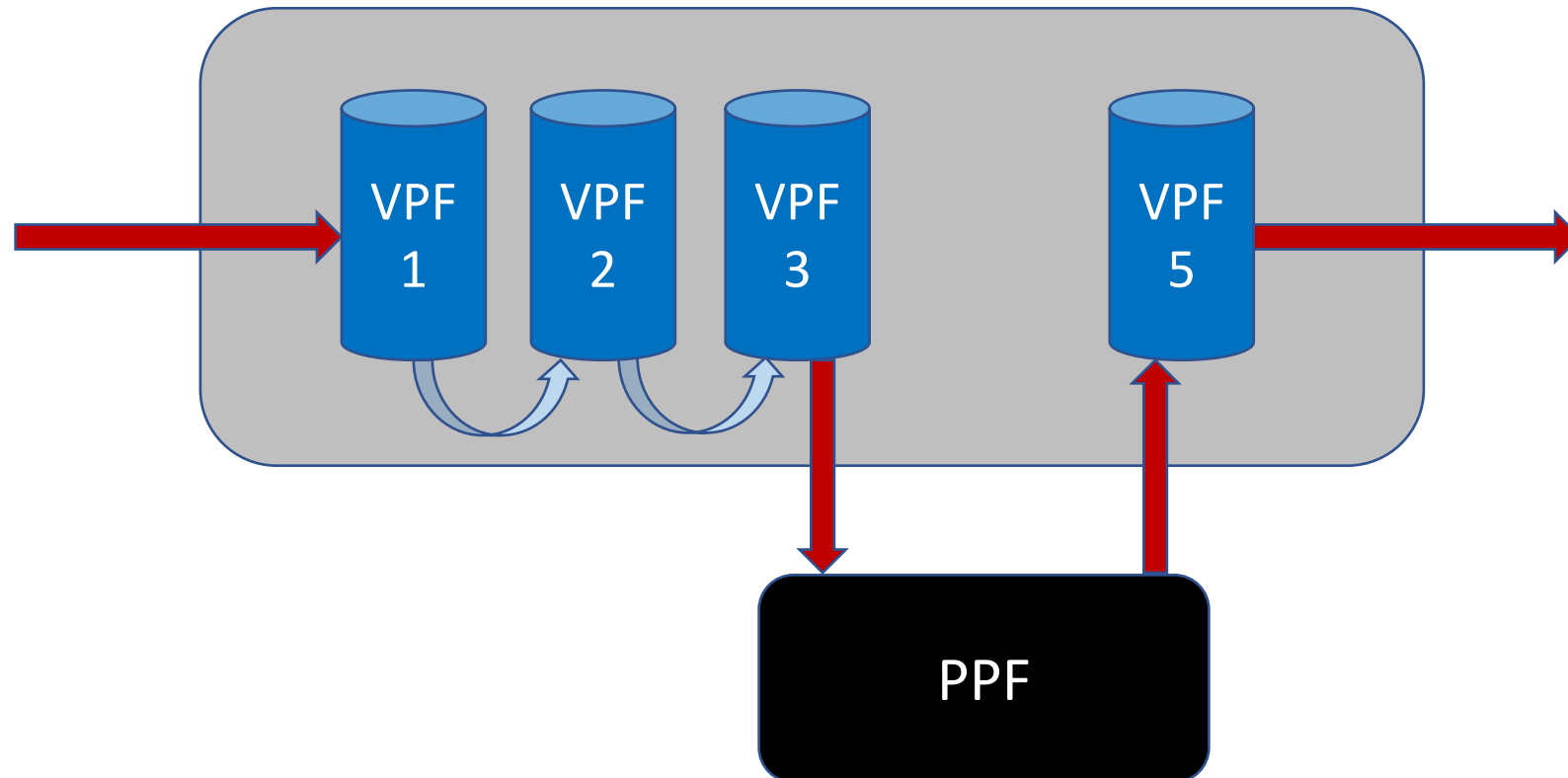
Separate virtual processing functions connected in 'real time IP' via external fabric



Concatenated virtual processing



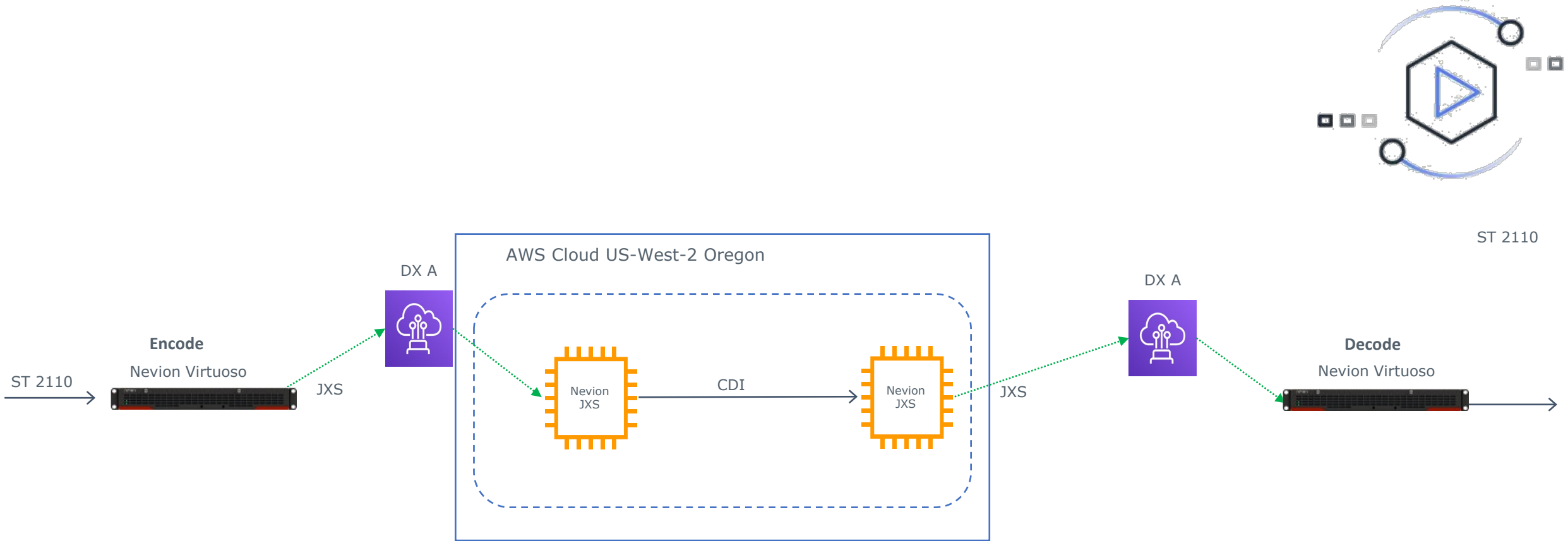
A hybrid of virtual and physical processing functions



Deterministic media data transfer - timebound and with integrity



JPEG-XS + CDI E2E Live - June 2020 –world first

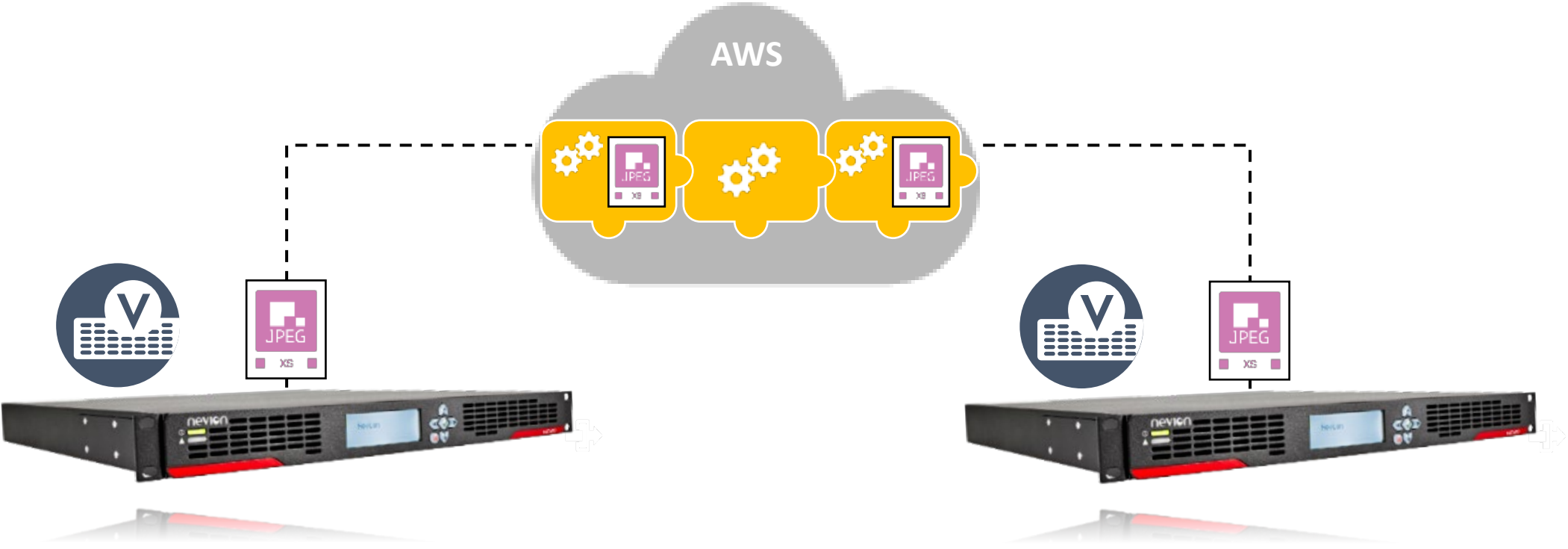


CDI launched by AWS in September 2020

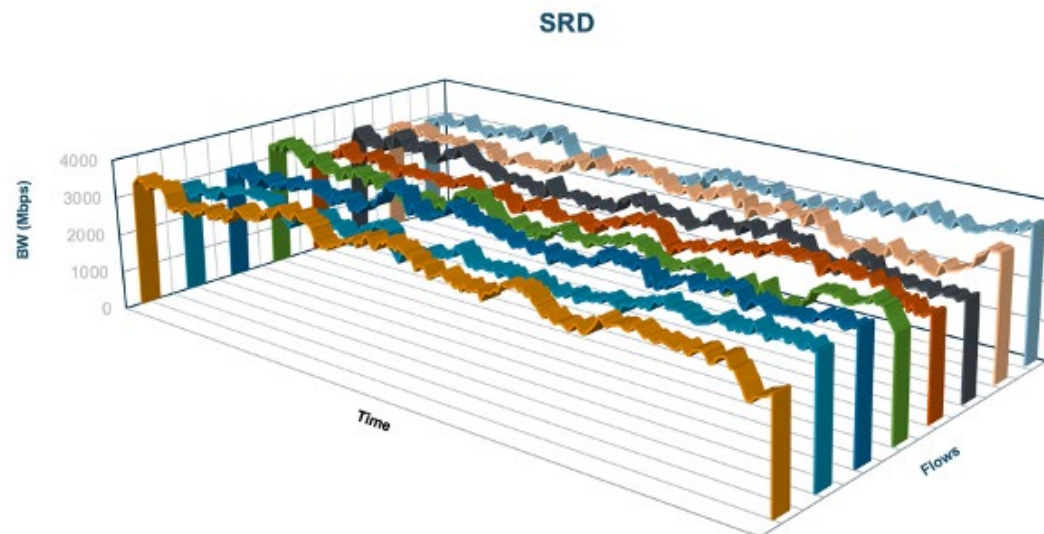
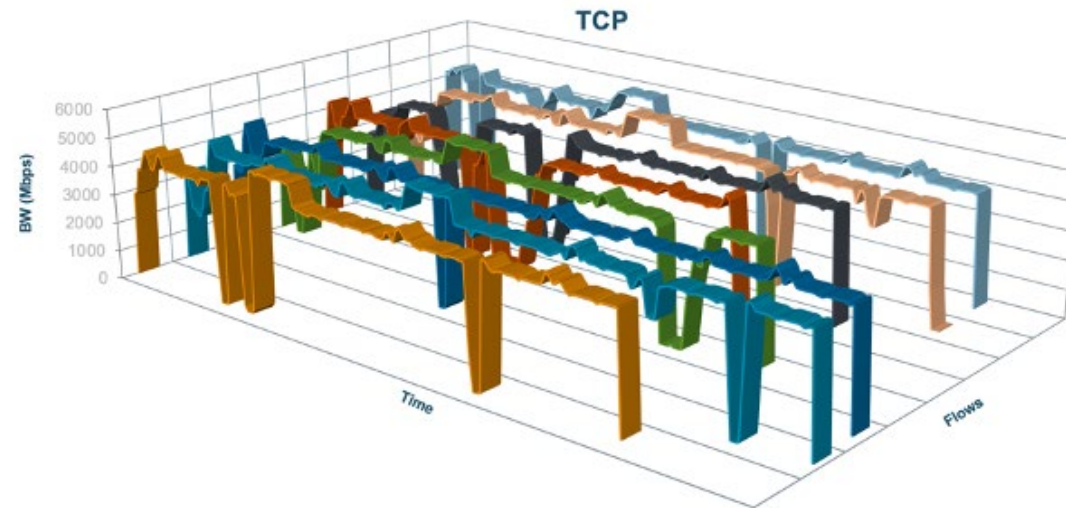
GCCG – Ground to Cloud, Cloud to Ground



Orchestration and SDN control



Underlying deterministic transport - example

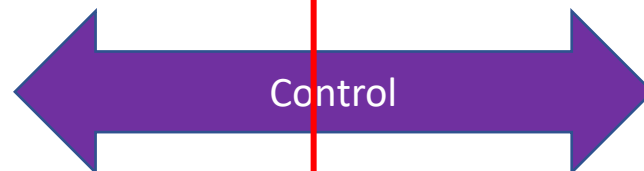
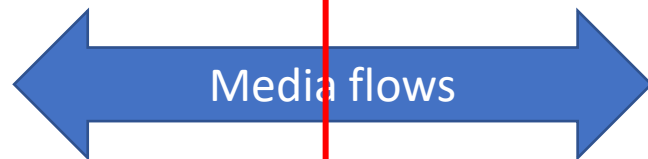
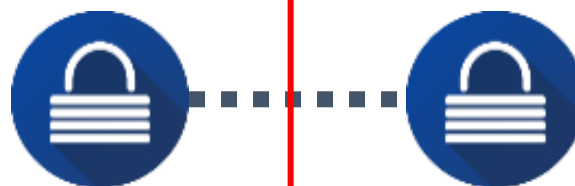


Source: aws.com

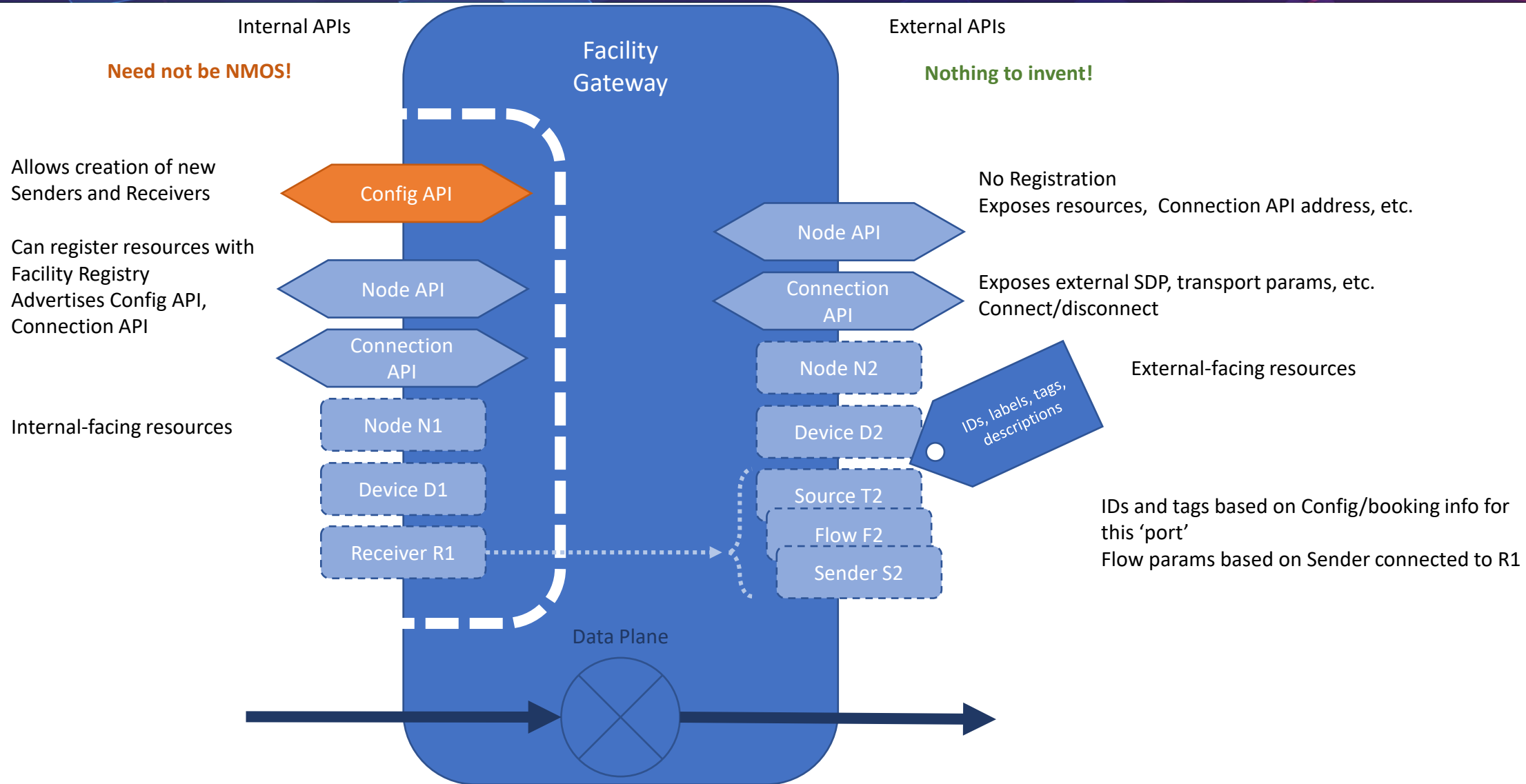
VSF ST 2110-WAN: "To enable effective transport of ST2110 media flows and associated control data across Wide Area Networks in an interoperable manner."



ST2110 → WAN



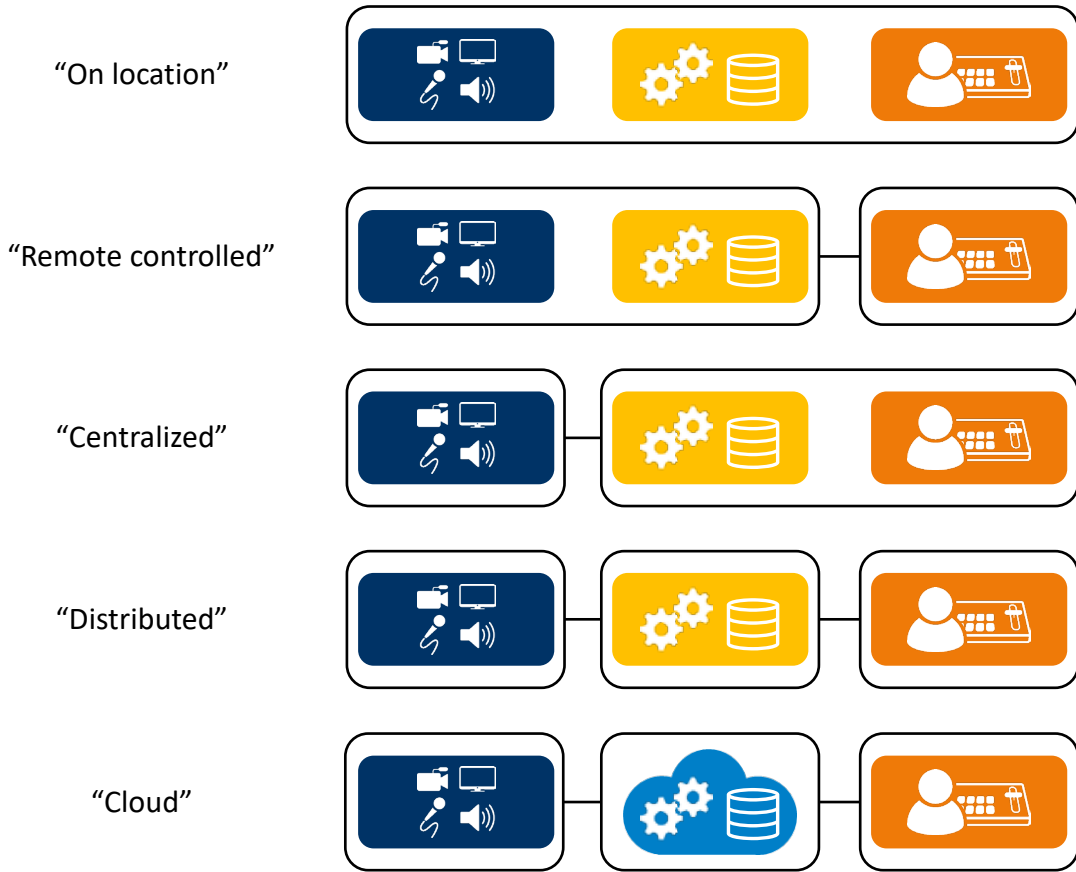
Inter-facility resource sharing – using NMOS



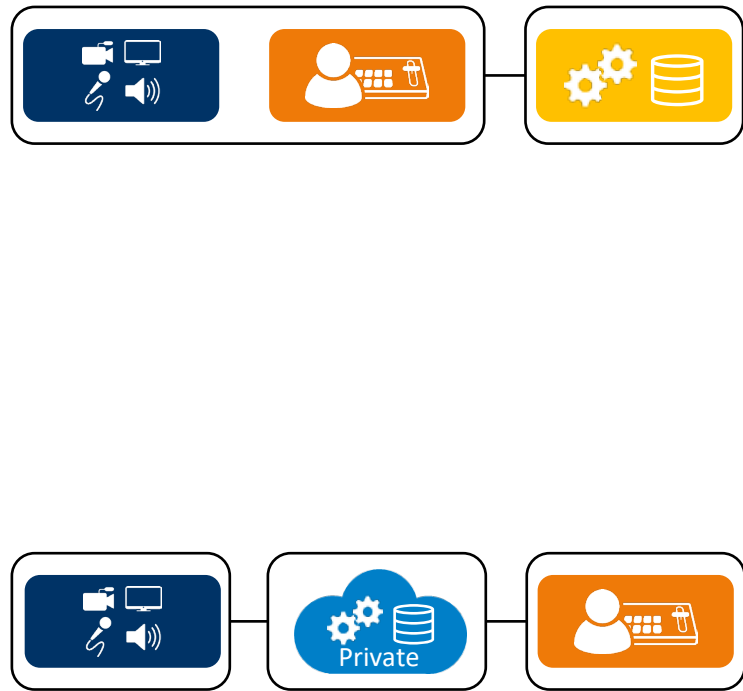
Remote/distributed production models



DPP models

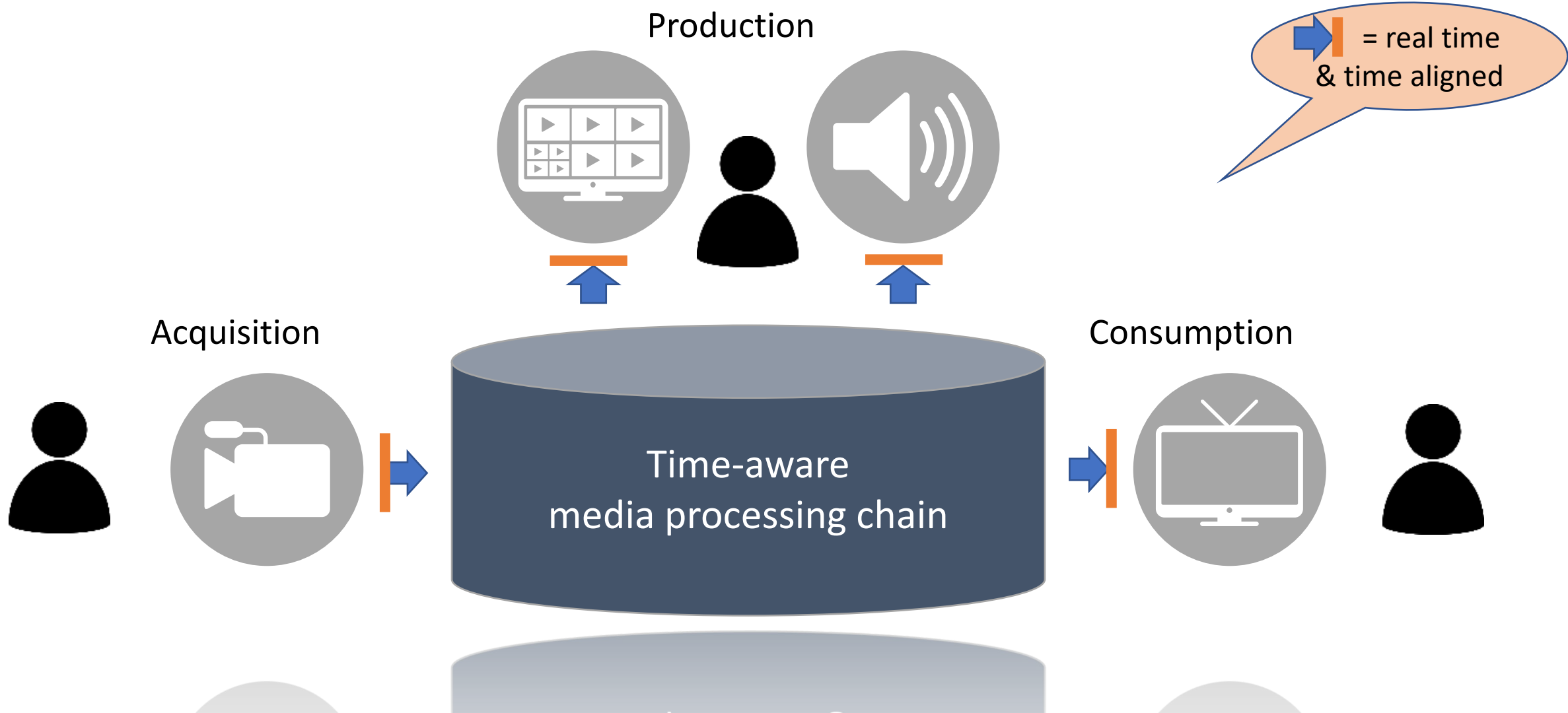


Additional Neviion models



Source: thedpp.com/glr

The broadcast soft end game



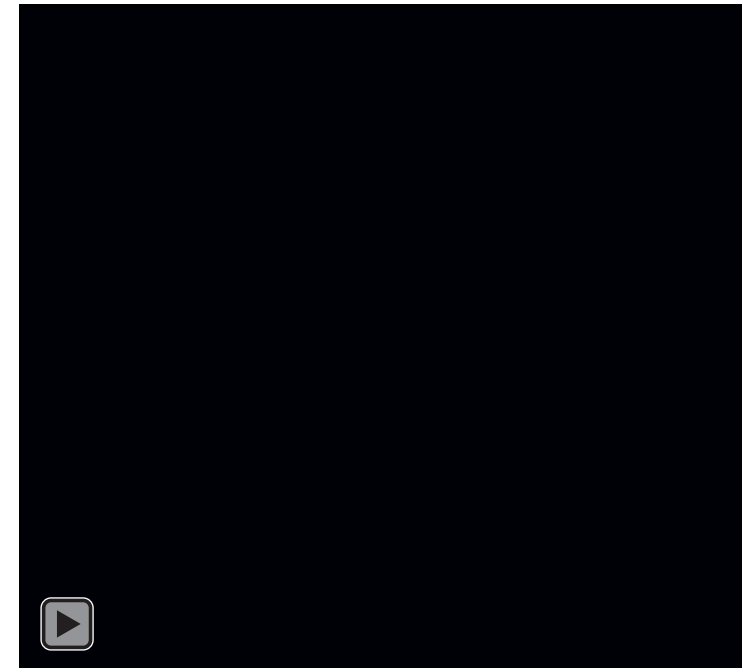
Timing requirement examples



Audio-video lip sync
~5ms

Coherent audio
sync ~20us

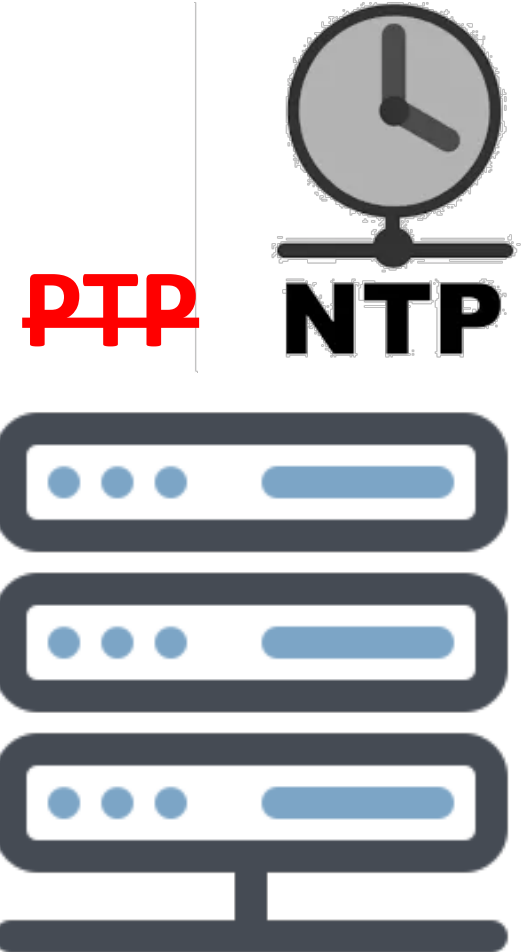
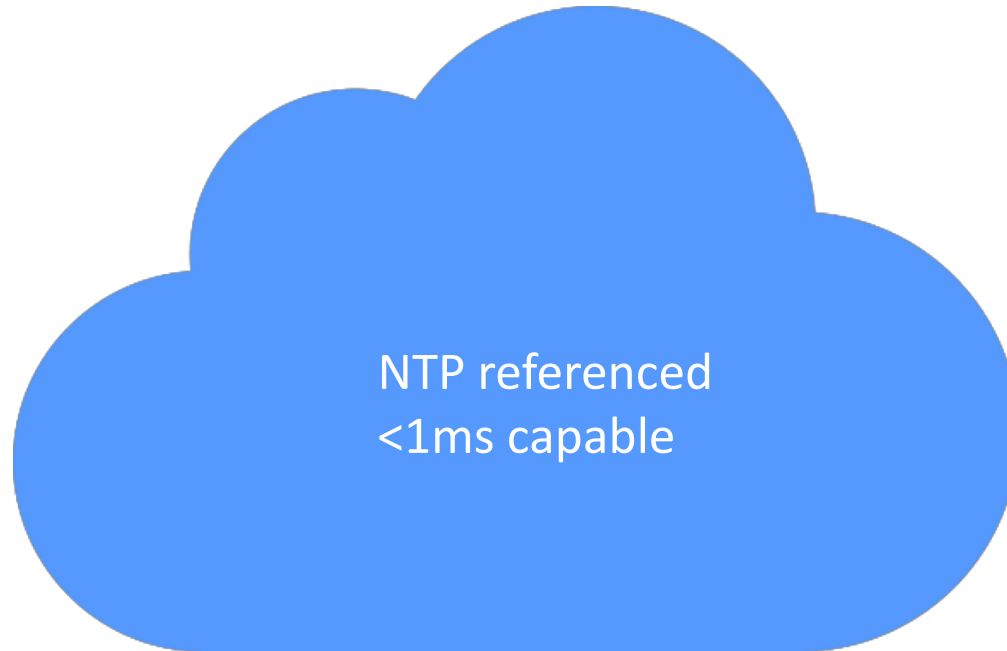
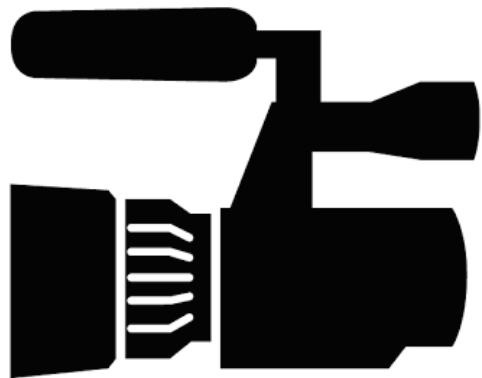
Absolute time
delivery ~20ms



Time on ground and in cloud



- Physical and synthetic sources on ground
- Synthetic sources in the cloud



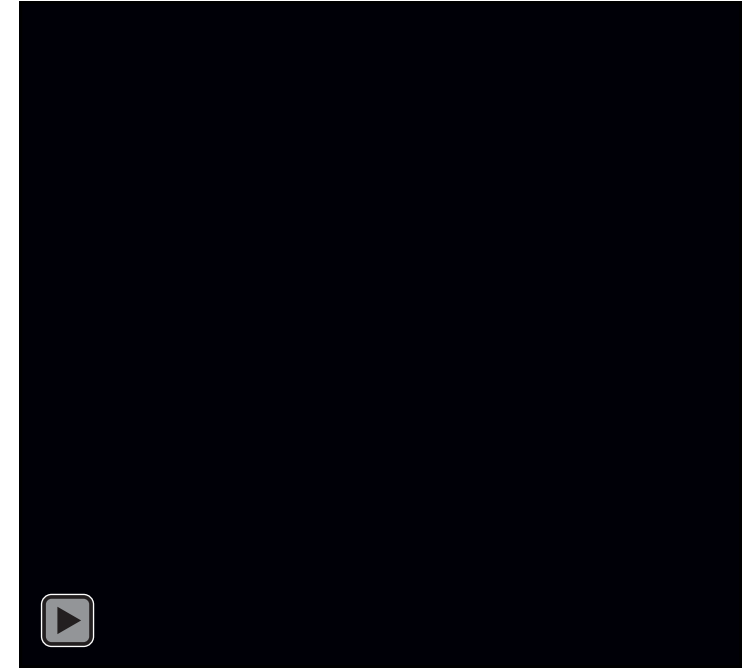
Which time matters?



Relative time

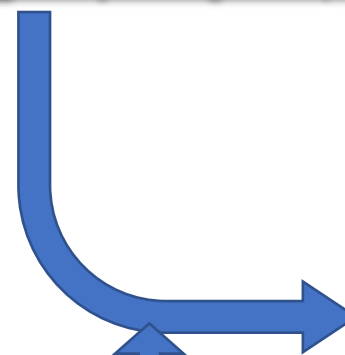
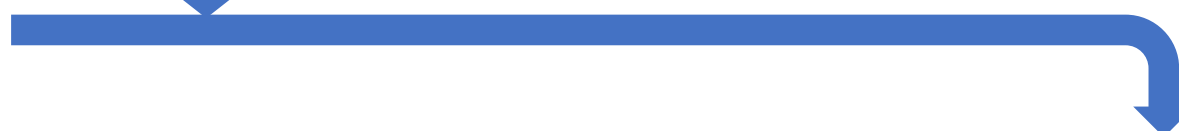


Production time



Wall clock time

Absolute time of origination is captured in ST2110.....

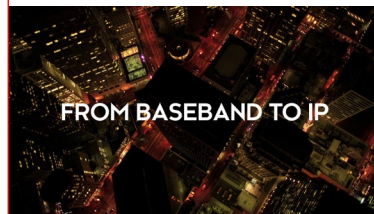


An image at a moment in time



e.g. 20ms

ST2110-20 freezes
RTP timestamp!



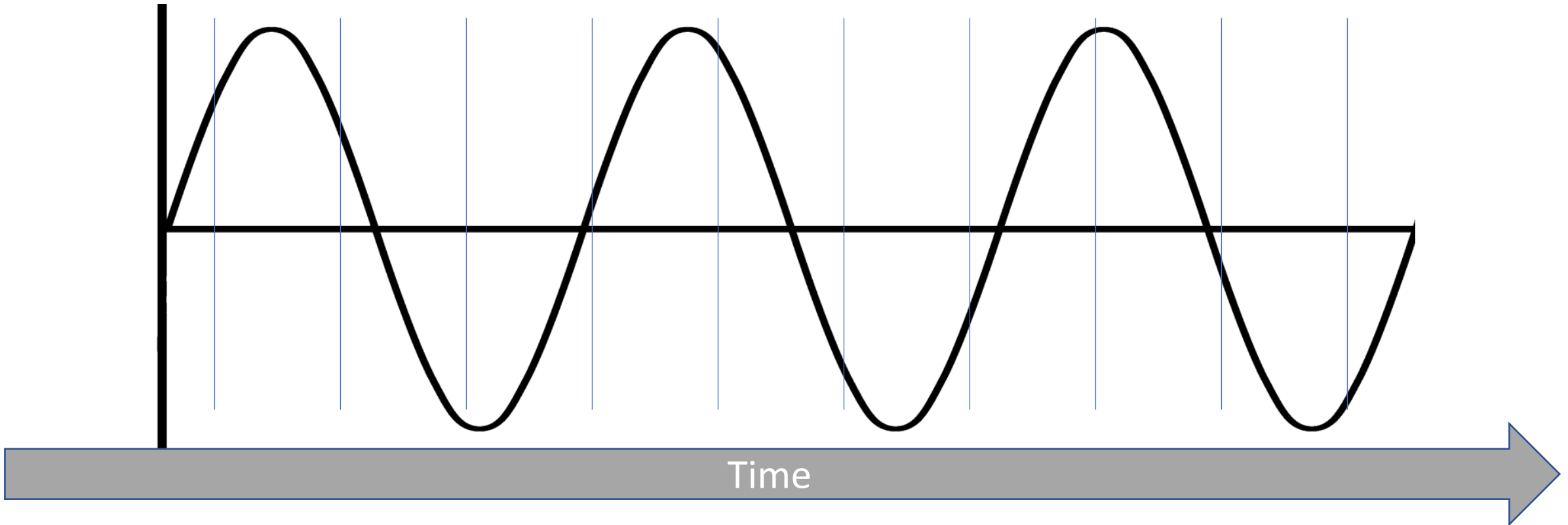
Time



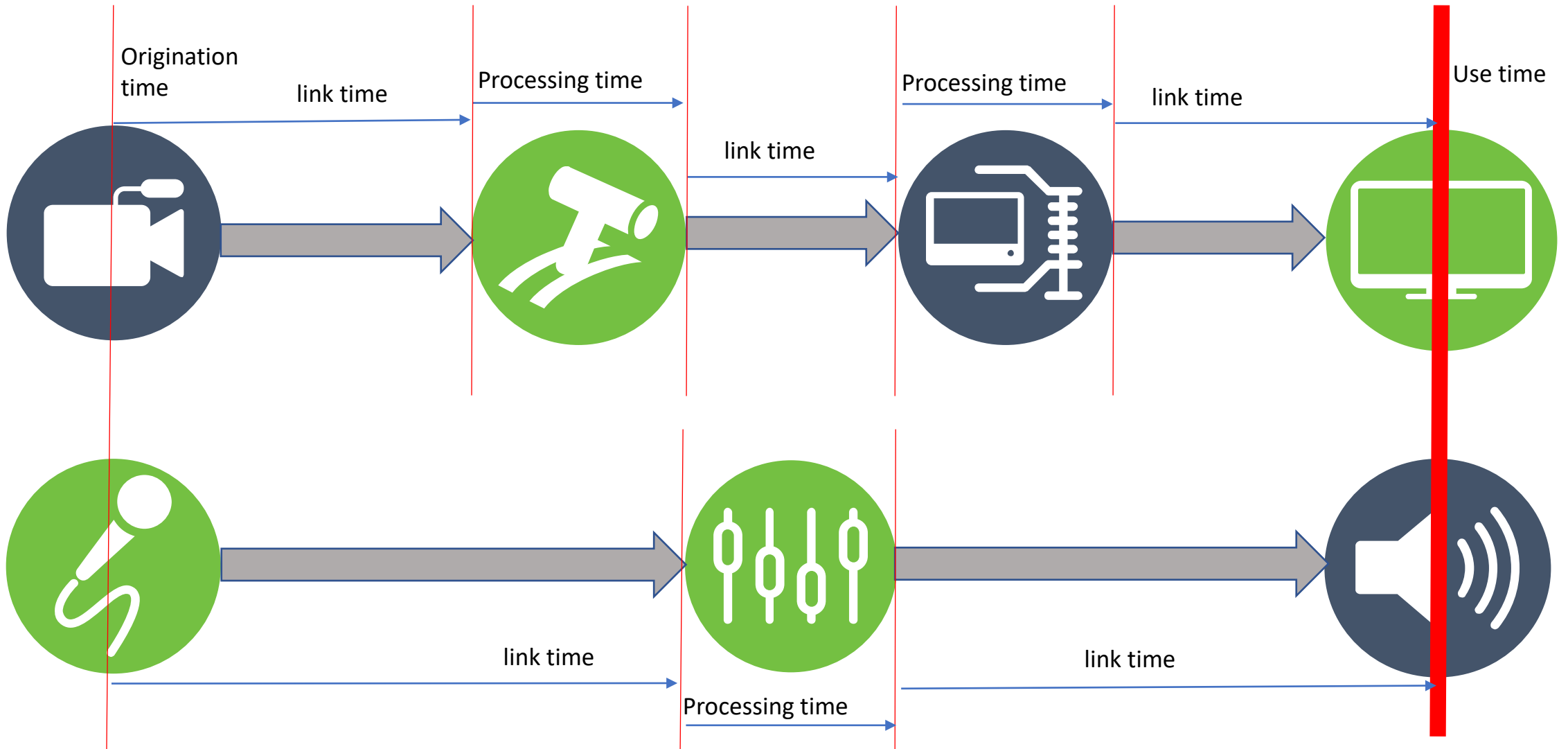
Audio per-sample timing



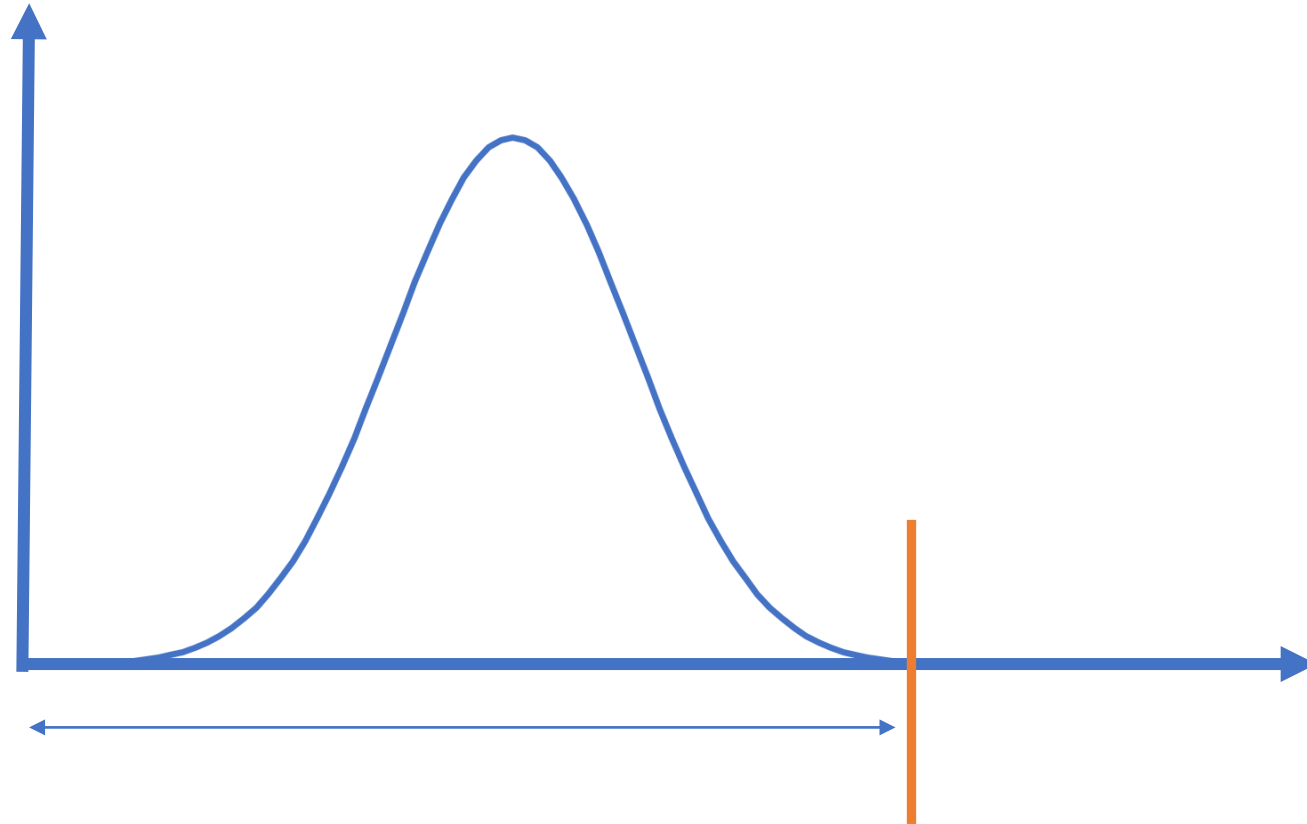
TS=n TS=n+1 TS=n+2



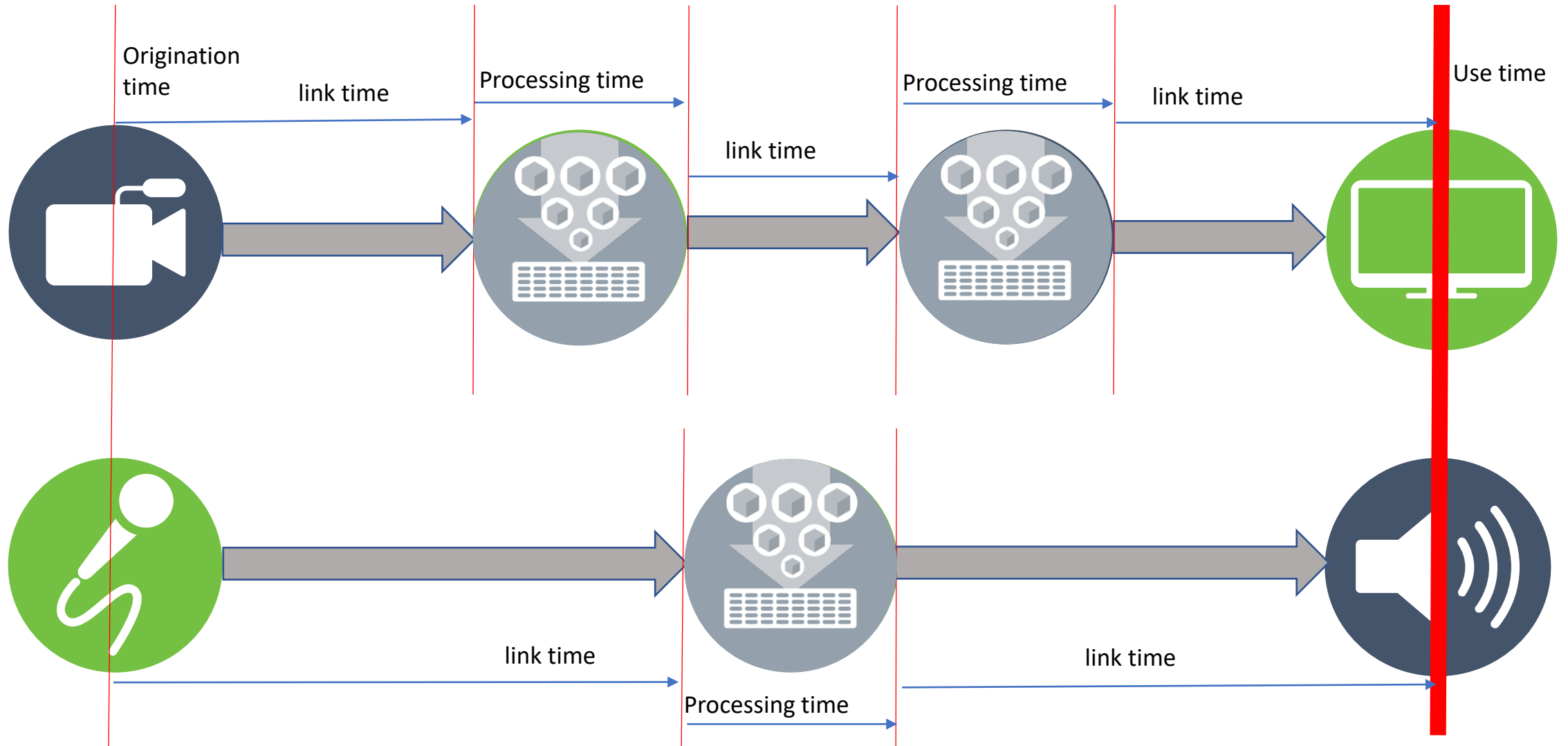
Reconciling media essence timings



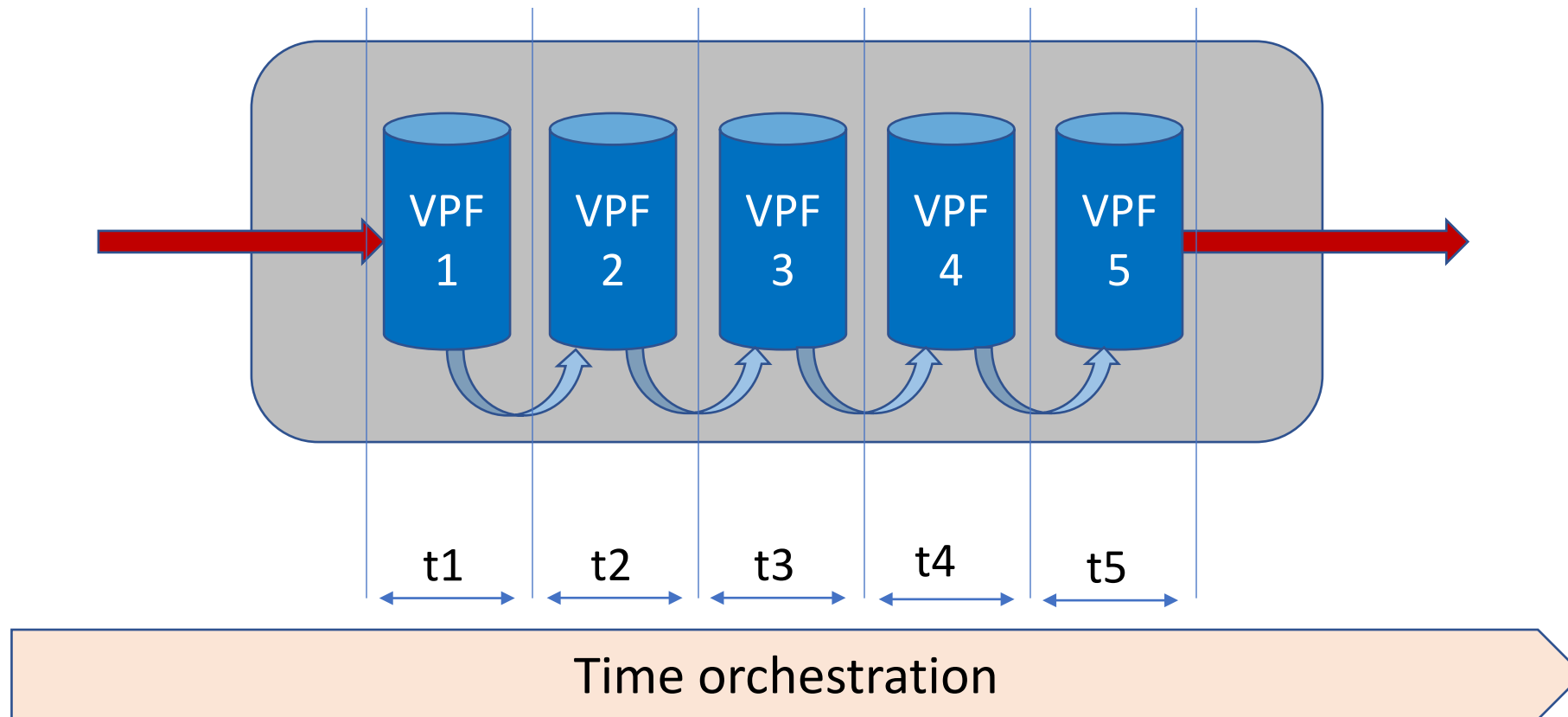
Software procession execution time



Same principles apply in virtualized world



Concatenated virtual processing



Orchestrating cloud



Management & orchestration

*Virtual
Instantiation
& teardown*

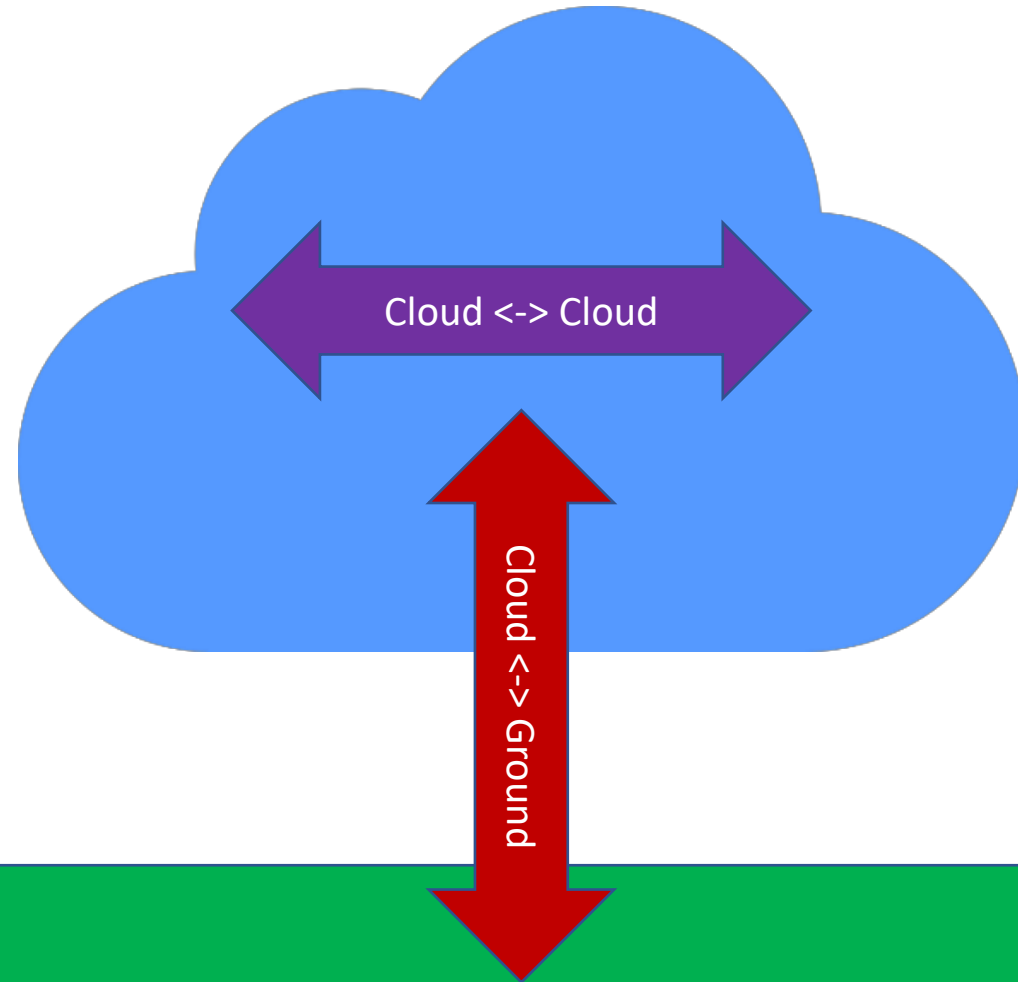
*Resource
management*

*Time
domain
management*

*Flow
control*

*Connectivity
control*

Cloud connectivity



Thank you!



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Chief Technologist

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nevision
A Sony Group Company

Come and catch up on the Sony stand
C10901 in the Central Hall

Any Questions?

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