

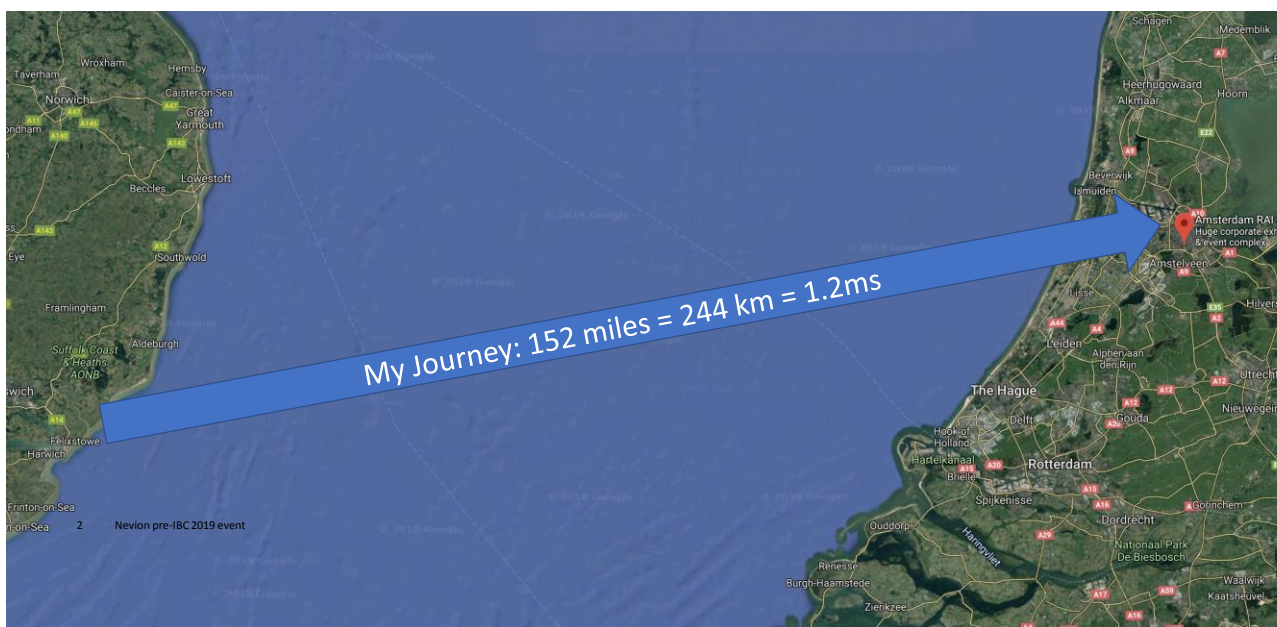


ST2110 over WAN Activity Working Group update

Andy Rayner, Chief Technologist
Nevion



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Key Activity Group Objective & timings

”To enable effective transport of ST2110 media flows and associated control data across Wide Area Networks *in an interoperable manner.*”

ST2110 → WAN

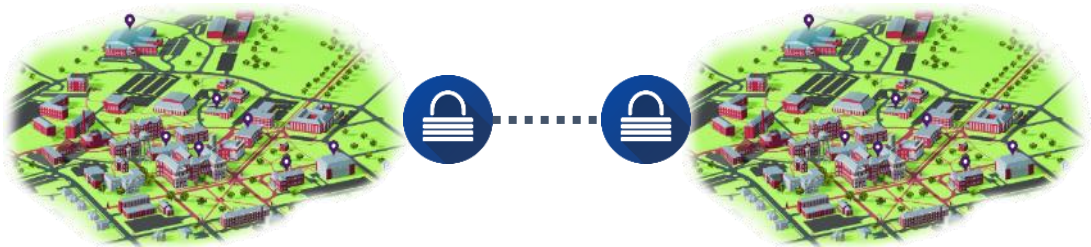
Now almost there! Initial draft complete



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So what is this all about?



Key user scenarios:

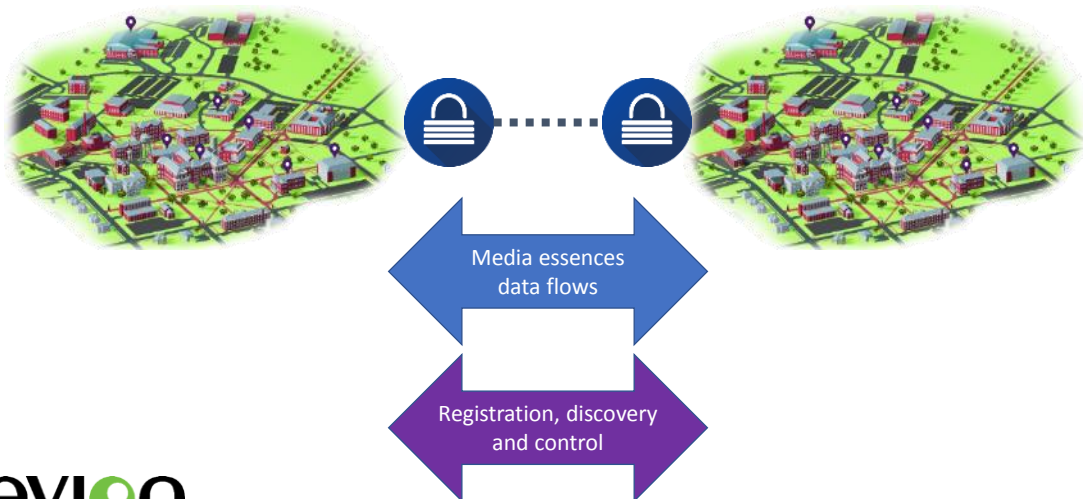
- Event remote production connectivity
- Intra-company facilities connectivity
- Inter-company facilities connectivity



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Two layers of focus – data and control



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Differing levels of federation



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Activity Group Team represents:

- Vendors:

Nevion, Imagine, GV, Evertz, Netinsight, Matrox, Medialinks, Mellanox, Packetstorm, Intopix, Sony, Artel

- Users:

Disney DTCL, BBC, ESPN, AT&T, Century Link, Zayo, IRT, AWS



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ST2110 over WAN - tasks



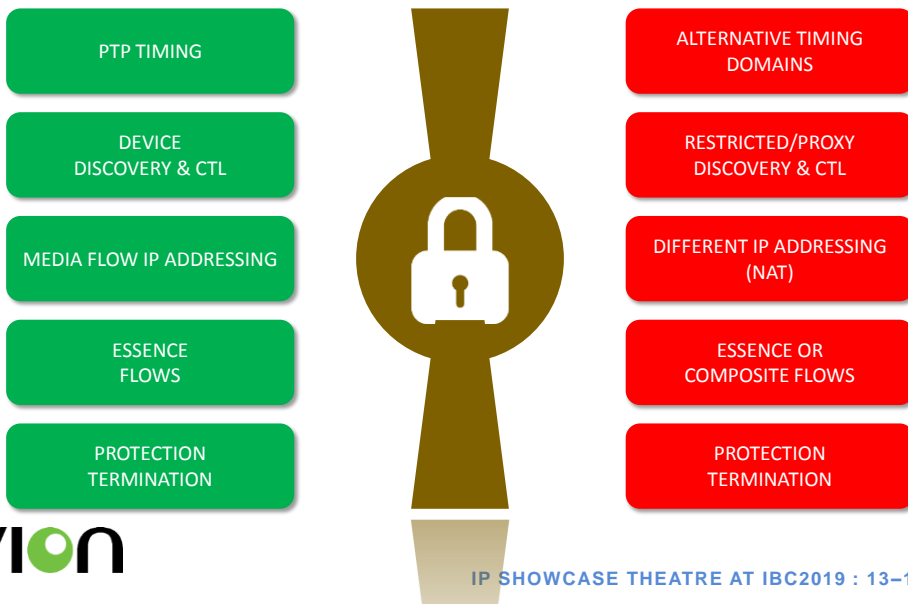
- Flow protection ✓
- Flow trunking ✓
- Essence alignment ✓
- Low latency handling ✓
- Compression ✓
- Protection of other data flows ✓
- Security ✓
- Wan timing ✓
- Associated control (NMOS) filtering and border proxying ✓



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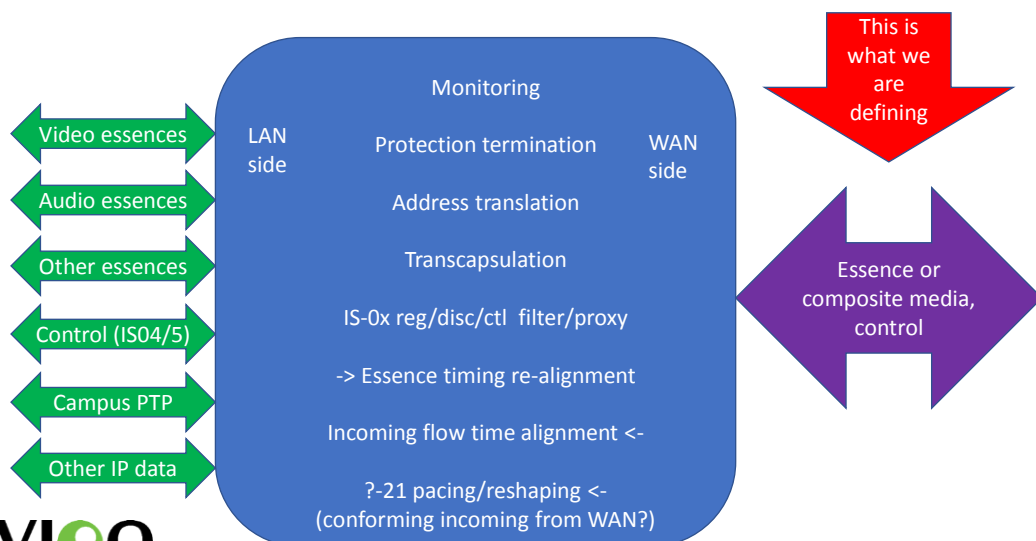
The IP facility media edge



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What we are talking about:



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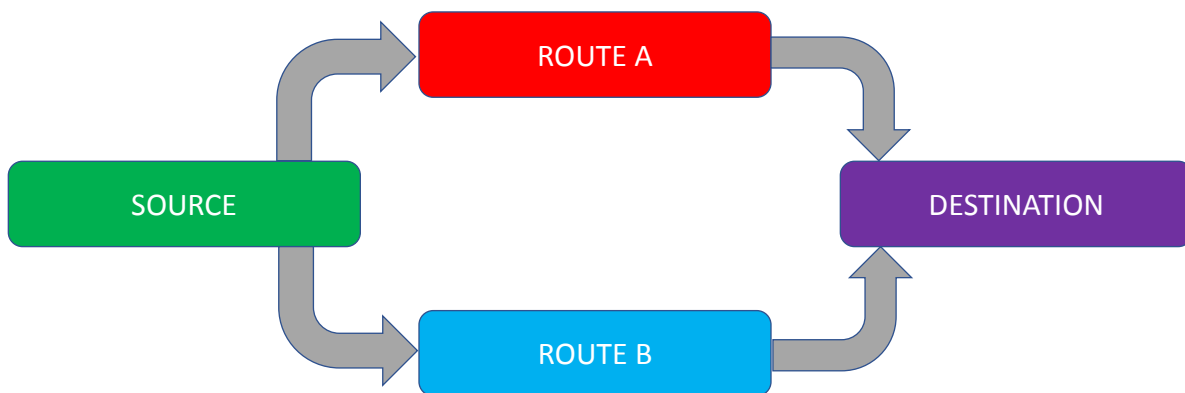
SMPTE ST 2110 suite – so far!



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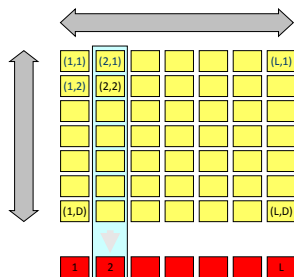
Flow protection #1 - SMPTE2022-7 based



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Flow protection #2 FEC – ST2022-5 based constrained to LxD product of 100 maximum



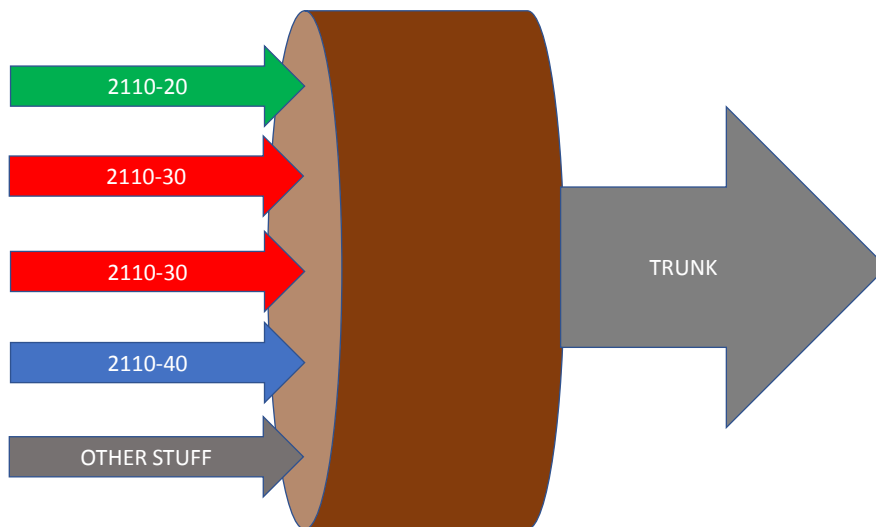
n	n+1	n+2	n+3
n+4	n+5	n+6	n+7
n+8	n+9	n+10	n+11
n+12	n+13	n+14	n+15
n+16	n+17	n+18	n+19
n+20	n+21	n+22	n+23
n+24	n+25	n+26	n+27
n+28	n+29	n+30	n+31
n+32	n+33	n+34	n+35
n+36	n+37	n+38	n+39
n+40	n+41	n+42	n+43



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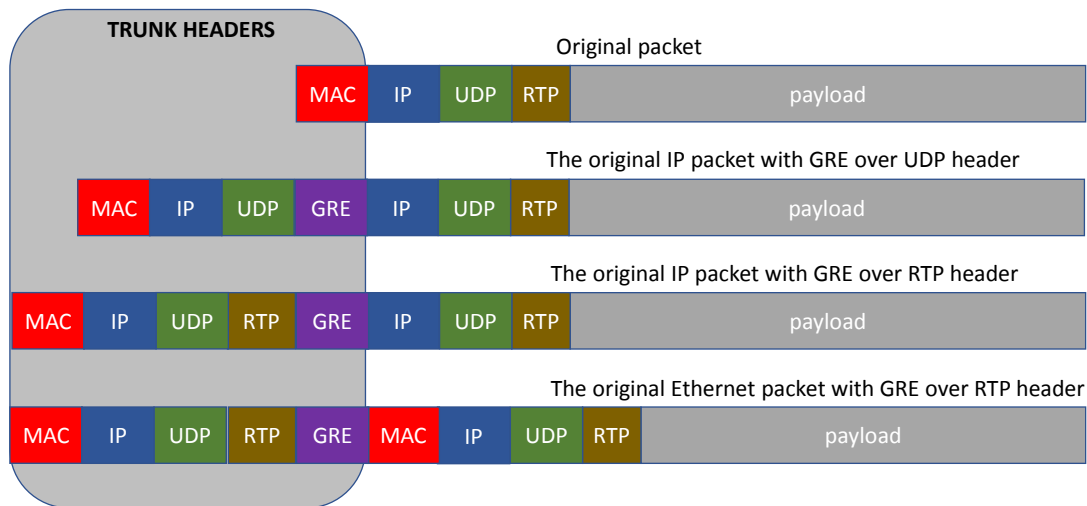
Trunking essences



IP SHOWCASE THEATRE AT IBC2019 : 13-17 SEPT 2019 14



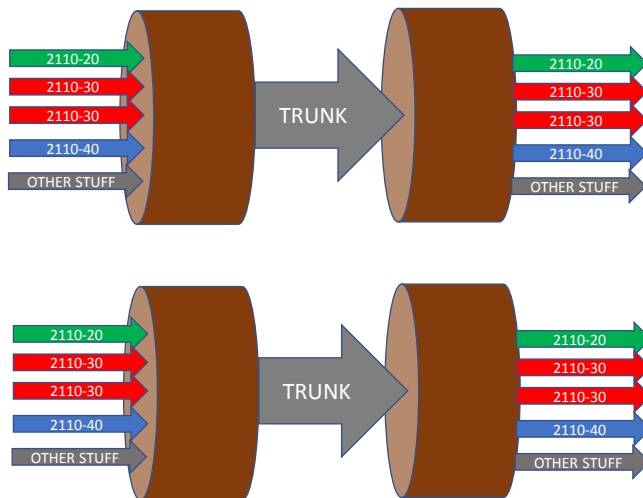
Trunking encapsulation



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2022-7 protection at essence or trunk



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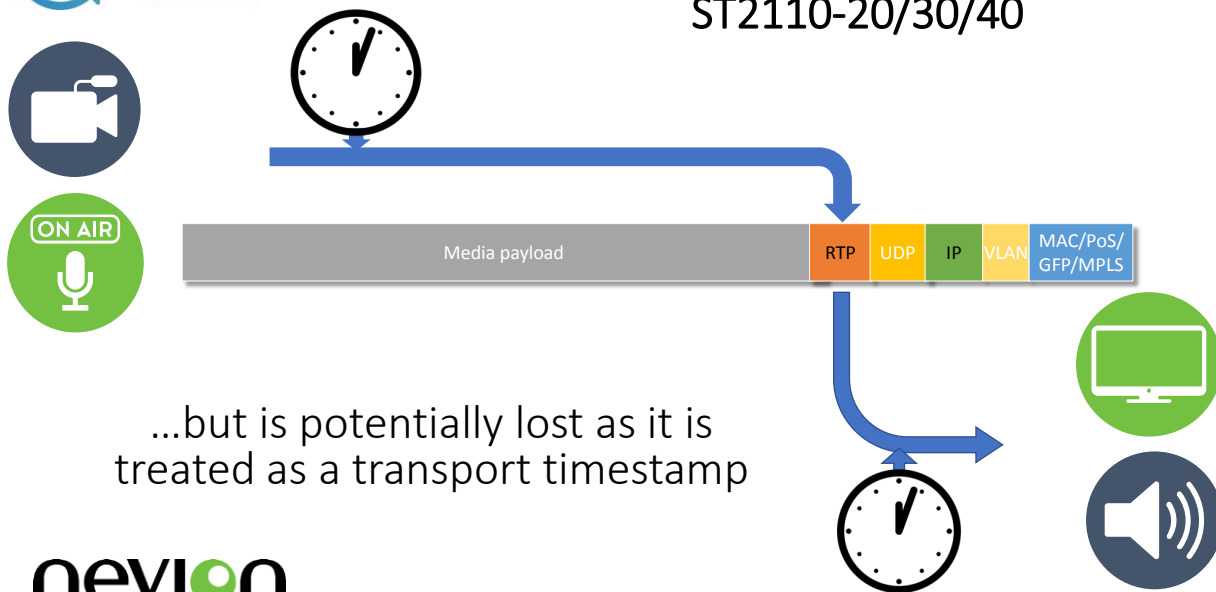
Protection of other data



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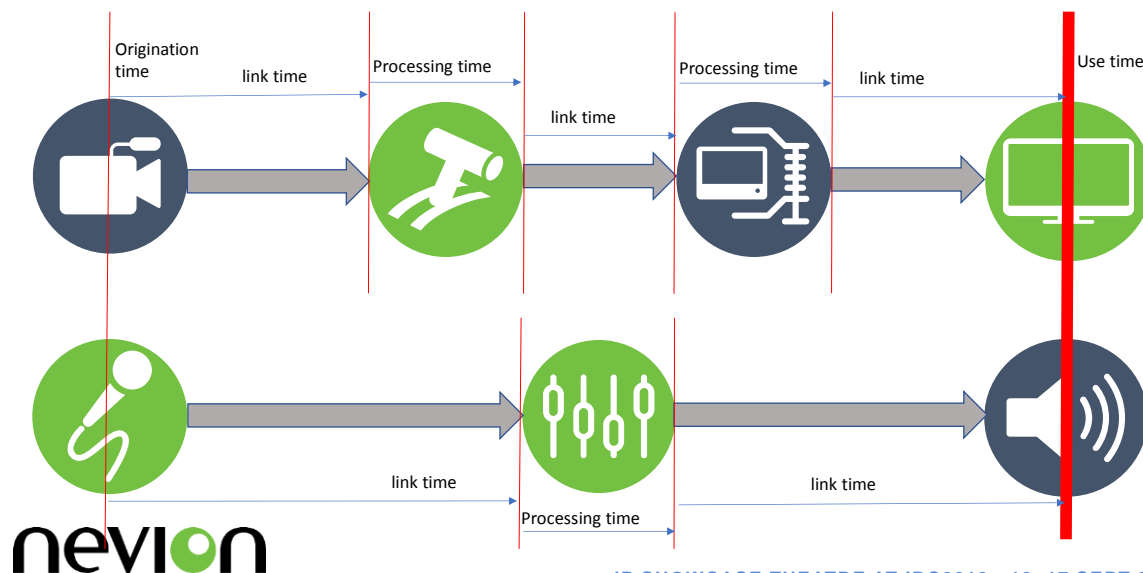
Absolute time of origination is captured in ST2110-20/30/40



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Reconciling essence timings for WAN

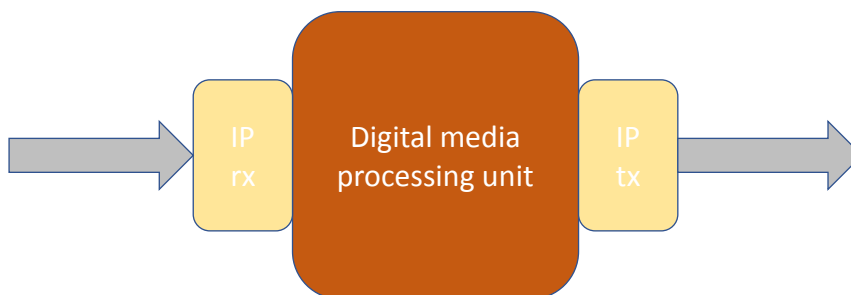


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Why are we in the current approach?

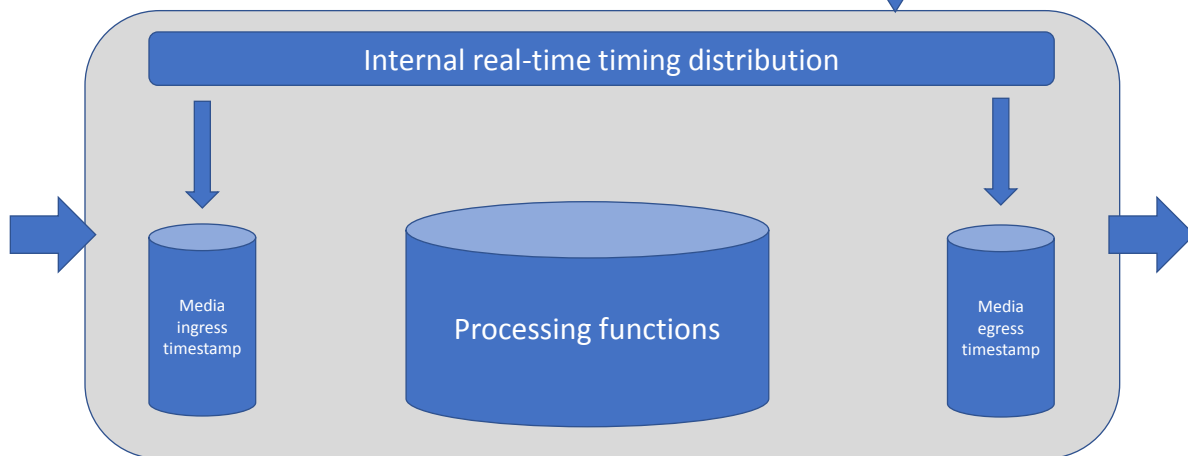
- ST2110 doesn't (yet) actually specify using timing for end2end - but change is coming!



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Device internal architecture tracking moments of time through a system



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Compression



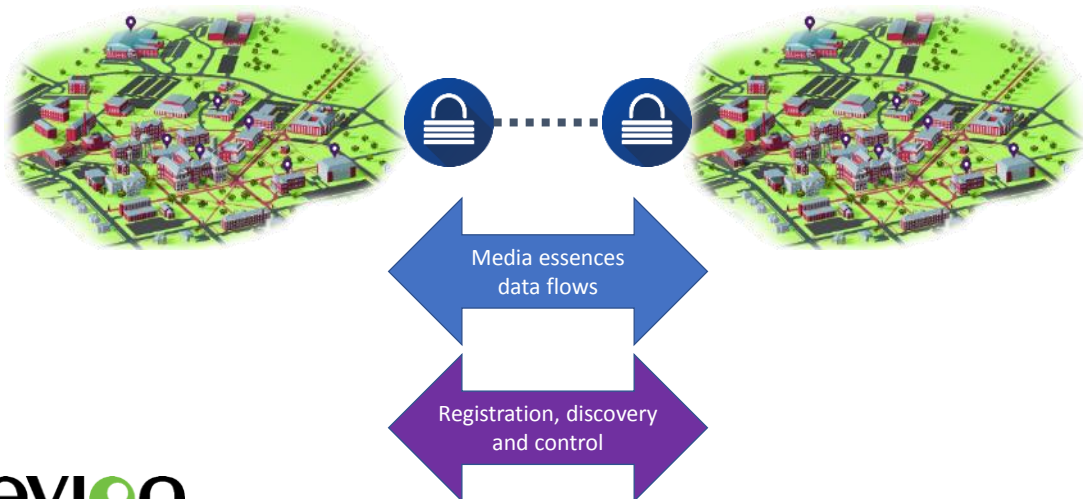
JPEG2000 TR01
JPEG XS as 2110-22



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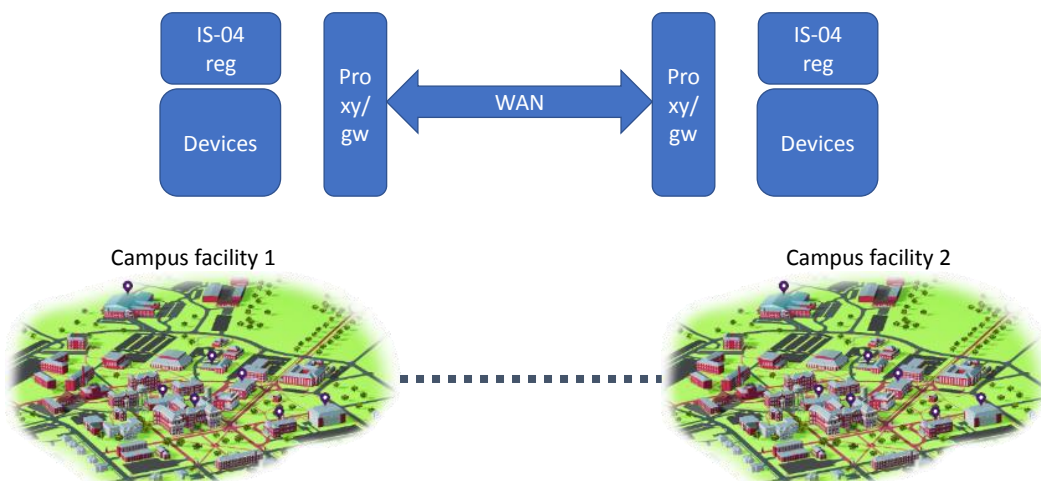
Two layers of focus – data and control



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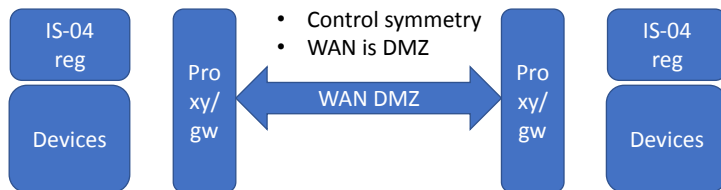
THE CONTROL BIT: IS-04/5 discovery/registration/control transport proxy



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Control layer

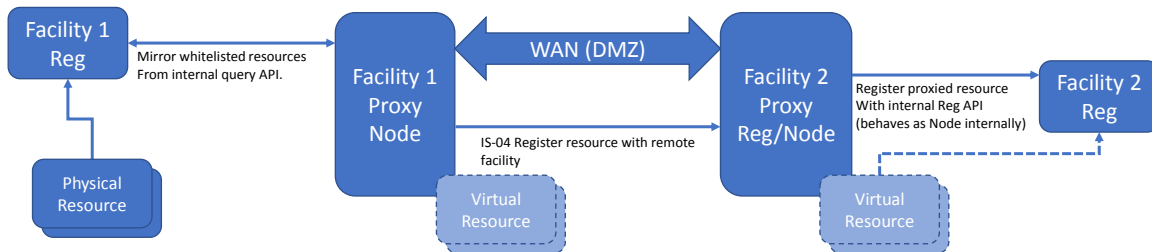


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Single resource example – IS-04

Example – sharing a resource from Facility 1 into Facility 2

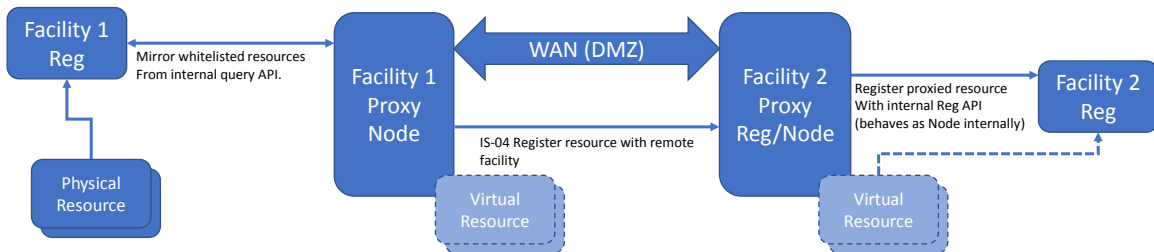


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WAN considerations

- Authentication
- Address translation

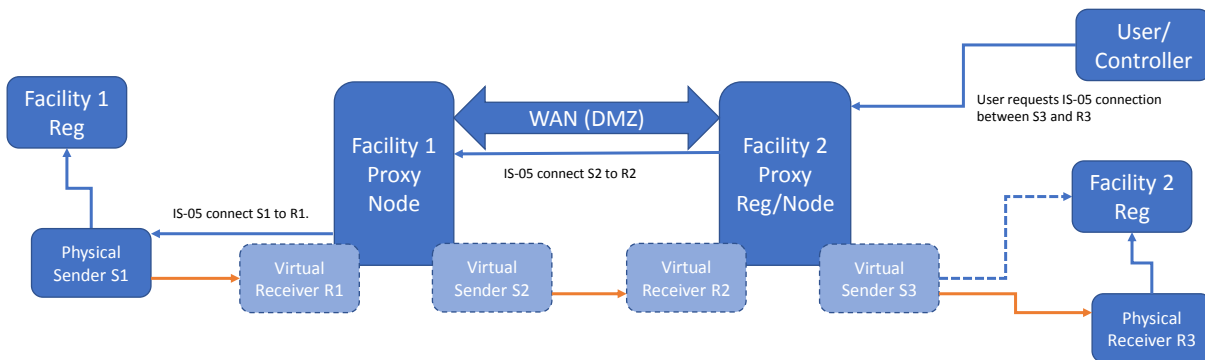


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Single resource example – IS-05

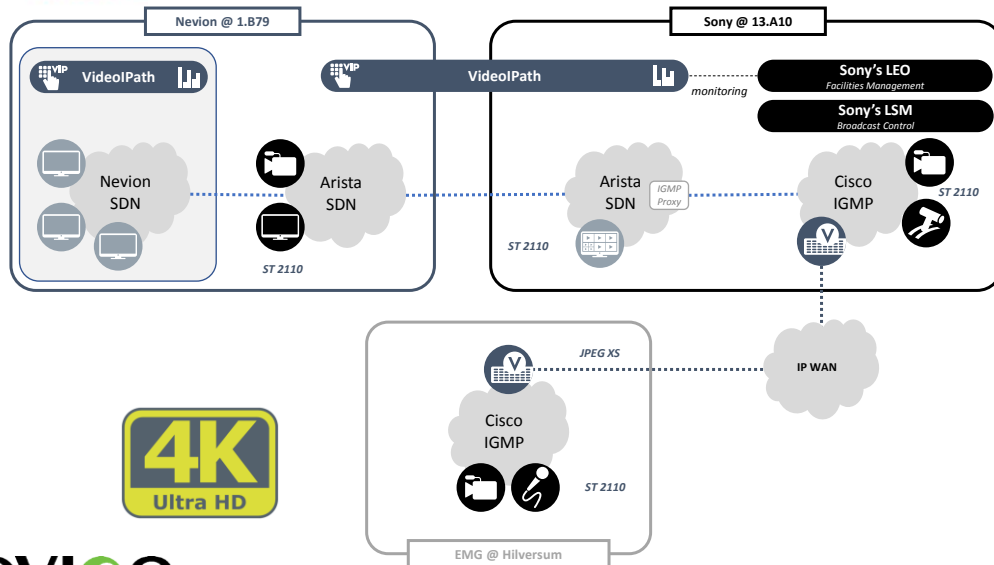
Example – controlling a sender in Facility 1 from Facility 2



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2110 over WAN with JPEG-XS @ IBC 2019

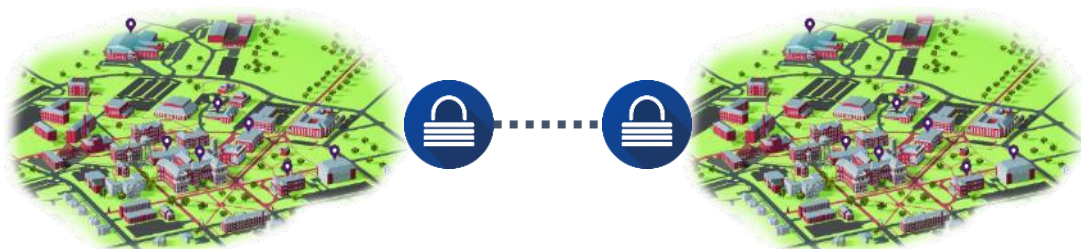


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Summary

ST2110 → WAN



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Thank you to those who have been involved
There is still time for final input



vsf.tv

http://vsf.tv/SMPTE_ST_2110_over_WAN.shtml



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You are welcome to come to Hall 1 B79
for the best cup of tea @ IBC 😊



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Thank you

Andy Rayner, Nevion
arayner@nevion.com +44 7711 196609

Thank you to our Media Partners



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