How AES67 & RAVENNA enable innovation

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Full-Stack Proprietary Technology Solutions

✔ Pros

❌ Cons

Proprietary technology offer advantages such as **ease-of-use** and the avoidance of interoperability issues.

But do these technologies always offer the right tool for the job?

- What if I need to manage both audio and video signals simultaneously?

- Or what if I require encryption?

Dante

CobraNet

Ether **ES** Sound

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Different markets have different requirements

LATENCY & SCALE

SUPPLY CHAIN RESILIENCE
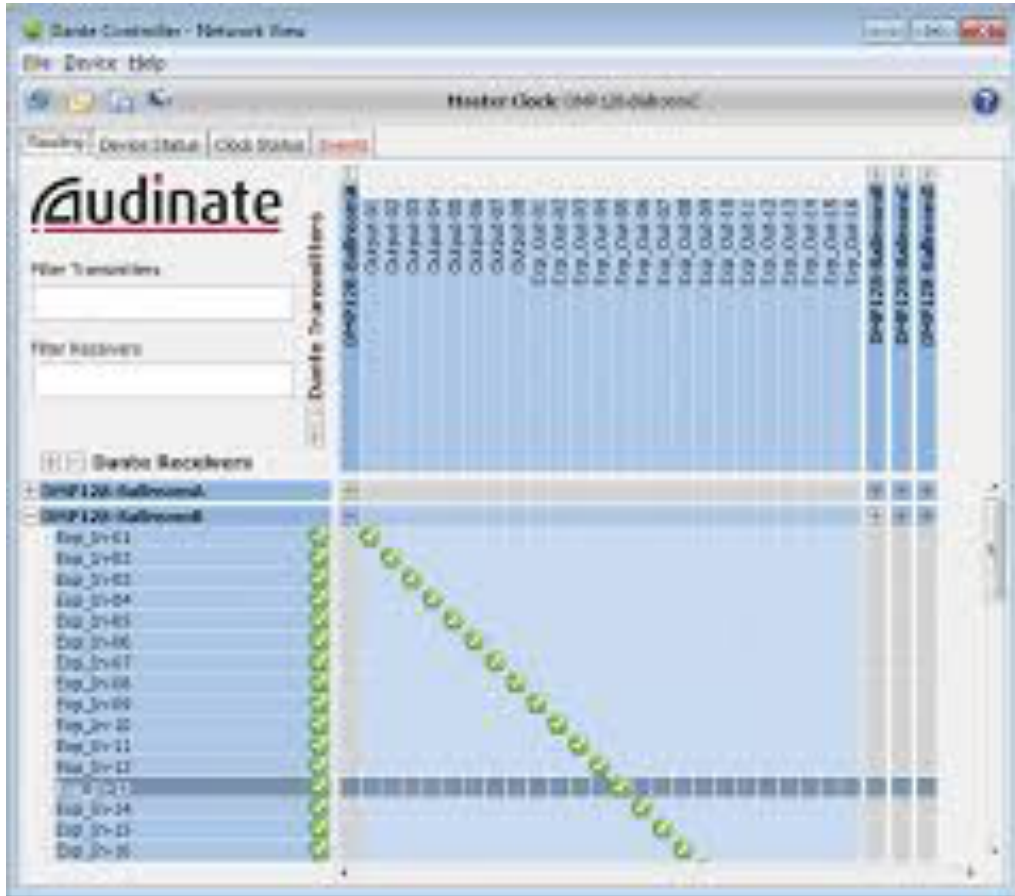
SIGNAL MIX

SECURITY

USER SOPHISTICATION

Is one tool always the right tool for the job?

SOLUTION: Let Free Markets Innovate

Monopolies

- Stifle Innovation

- Reduced set of applications addressed

- Benefits accrue to small number

Free Markets

- Address a wider set of needs and applications

- Drive greater innovation

- Can be counted on to develop the right tool for the job

How?

The AES67 & RAVENNA ecosystem features multiple vendors innovating using core networking technology from multiple suppliers, such as Ross Video, Archwave, Merging or their own internal solutions.
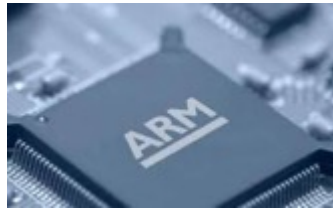
Analogy: Linux vs. Windows OS

- 25 years ago, when Linux was still in its infancy, it was hard to use and limited in capability.

- But it was open and free to innovate

- Who guessed then how Linux would evolve?

Linux Innovation in Action

AOIP TECHNOLOGY PAVILION

INTERNET of THINGS

US ATC 24,000 flights/ day

ARM

Top 10 Supercomputers

85% of smartphones

50% of global fin. transactions

Google

amazon web services™

AES67/ RAVENNA Innovation Examples

The Challenge:

- Broadcasters want to transport audio across a continental network
- Network latencies up to 80msec

Innovation:

- Implementation of a network latency compensation mechanism leveraging the larger WAN buffers in fully compliant AES67 solutions

Innovation: Uncompromising Performance

The Challenge:

- Quickly transition very wide product range to IP
- Help navigate the complicated multi-format IP Landscape in audio (Dante, AES67, AVB, …)

Innovation:

- Highest-performance, robust and extremely flexible audio networking solution
  - 512 channels, 96kHz, 125 µs packet time and up to 80 channels per stream

Innovation: 128 x 128 Dante to ST 2110 Router

The Challenge:

- Support a standards-based SMPTE ST 2110 solution on existing products.

Innovation:

- Fully compliant AES67 ST2110 solution that drops into existing hardware
- 64 channels/ 8 streams, 125μs packet time, NMOS IS-04, Dante/ SAP
- Enabled 128 x 128 Dante to fully compliant AES67 ST 2110-30 router in 1RU

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The Challenge:
- Transport audio with live video and metadata on same wire over IP network

Innovation:
- Another example of full ST 2110 in action: video and audio on same wire
- Key enabler is AES67 PTP synchronization based on 1588v2 that utilizes time stamping

AES67/ RAVENNA Innovations
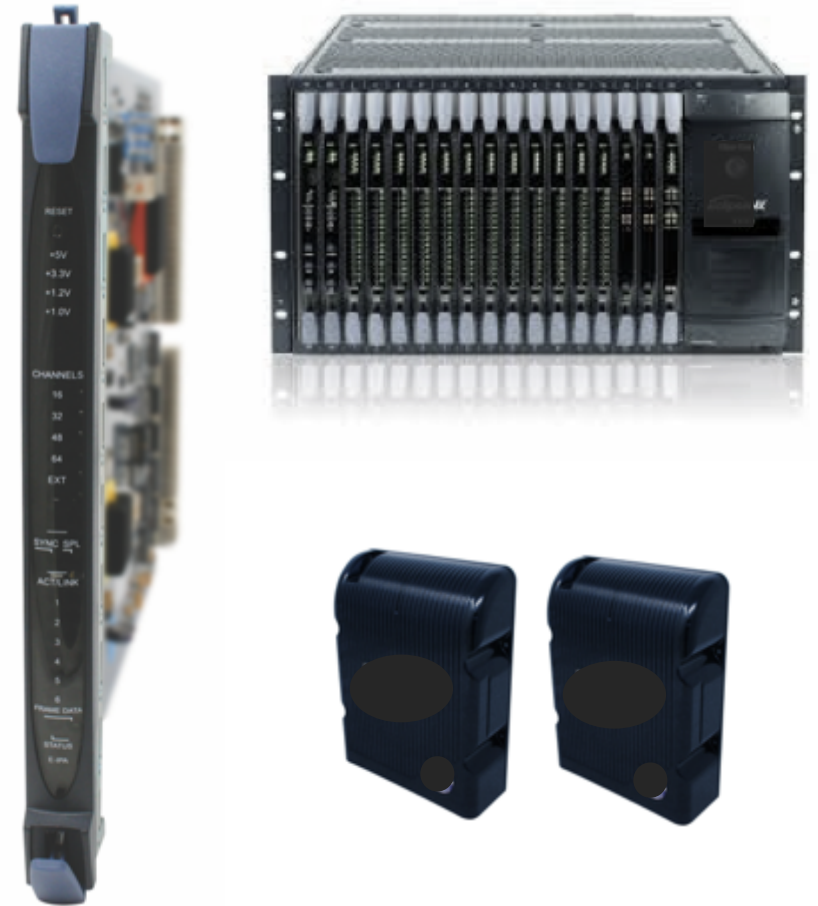# Customizable UI and Workflow

The Challenge:
- An standards-based AoIP solution with open control that is customizable to fit unique workflow

Innovation:
- Open JSON API allowing the use of the customer's UI and control system
- Addition of specific clock signals enabled better internal synchronization of wireless equipment

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Innovation: Greater Integration & Lower System Cost

The Challenge:

- Address more markets with support for LW+, Ravenna, Ember+
- Need small port count AES67 solution with open control
- Replace expensive AES67 partner box w/ solution that supports MADI

Innovation:

- Integrated solution with open control supporting LW+, Ember+, Ravenna
- MADI to AES67 bridge for easy integration into their existing product

The Challenge:

- A simple and open centrailzed audio network manager that is protocol agnostic.

Innovation:

- ANEMAN a simple, open and free controller created by Merging & Digigram
- Works w/ any manufacturer via plug-in
- ANEMAN engine framework will be fully open-sourced to drive further innovation

Innovation: Broadcast-Ready Audio Converter

The Challenge:

- Address a new market by expanding reach of products into broadcast.
- Requirement for a standards-based 2110 solution that Audinate was not going to supply.

Innovation:

- Fully standards compliant 16-channel AES67 ST 2110-30 RAVENNA-based solution via SoC that supports flexible hitless redundancy

Innovation: Futureproofed Roadmap via Standards

The Challenge:

- Need for a cost-effective, low channel count audio networking solution as a value-added feature that works with video now and in the future
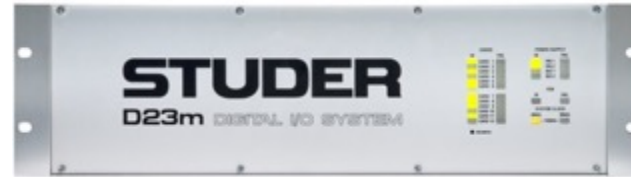
Innovation:

- AES67 standards based 8-channel solution that works with video (HDMI) today and is ready for video and audio over IP in the future

Innovation: Unparalleled performance & flexibility

The Challenge:

- High performance, robust yet flexible AoIP solution running AES67/ RAVENNA/ NMOS
- Support for variable sample rates and data formats including 32-bit AES/ EBU

Innovation:

- 512 ch. 64 streams, 125μs packet time, glitch-less stream and port redundancy (4 x 10GE)
- 16, 24-bits /sample including 32-bit transparent mode for AES transport configurable per stream & not limited to audio but can carry video and control data too.

Innovation: Broad AoIP Interoperablity

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The Challenge:

- A proven audio networking solution based on open technologies that seamlessly interfaces with existing customer broadcast equipment

Innovation:

- A broadly interoperable AES67 AoIP solution that natively works in multiple environments: Dante/ SAP, RAVENNA, NMOS, LW+, EmBER+, and Dashboard
- Same technology used by partner OEM developers
- No supplier lock-in

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