



AIMS

Alliance for IP Media Solutions

AIMS Members Meeting

Las Vegas, NV

April 23, 2022

Agenda

- Introduction & AIMS Update
- CFO's Report
- Technical Work Group Report
- Education Work Group Report
- Marketing Work Group Report
 - Audio Sub-Group
 - ProAV Sub-Group
- Member Feedback Session

AIMS Leadership Team

Board



Steve Reynolds, Chairman
(Imagine)



Andreas Hilmer, CFO
(Lawo)



Terry Holton, Vice Chairman
(Yamaha)



Chuck Meyer
(Grass Valley)



Andrew Starks
(Macnica)

Marketing Working Group



Andrew Starks
(Macnica)



Reena Mathews-
Rutherford
Deputy Chair
(Imagine)



Terry Holton
Audio
Sub-Group
(Yamaha)



Samuel Racine
ProAV
Sub-Group
(Matrox)

Technical Working Group



John Mailhot
Chairman
(Imagine)

Education Working Group



Alun Fryer
Chairman
(Ross)

AIMS Administrators



Tina Lipscomb



Jessy George

Our Mission

To foster the **adoption** of one set of common, ubiquitous,
standards-based protocols for **interoperability over IP**
in the media and entertainment industry



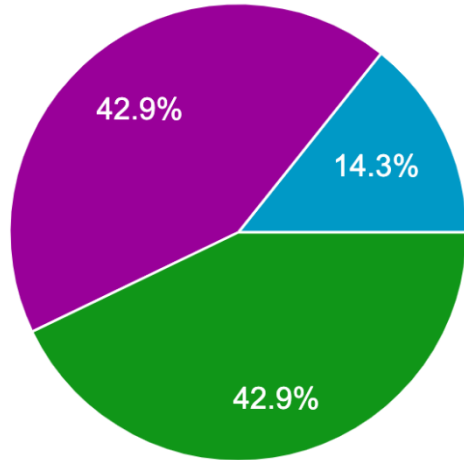
AIMS Members List



Question 1: Importance of AIMS

On a scale of 0 to 5, how important is the AIMS Roadmap to your company?

21 responses

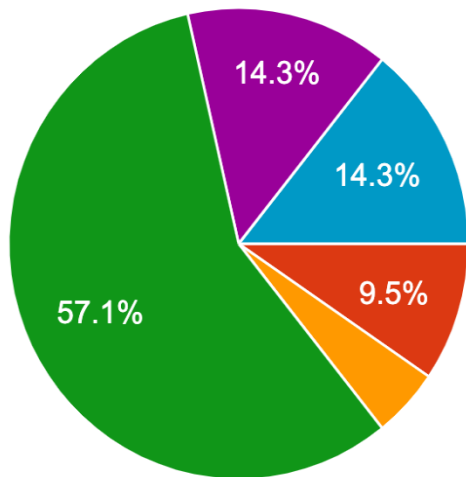


- 0 (Not aware of AIMS Roadmap)
- 1 (Not at all important)
- 2 (Not very important)
- 3 (Moderately important)
- 4 (Very important)
- 5 (Fundamentally important)

Question 2: IPMX

On a scale of 0 to 5, how relevant is IPMX to your company?

21 responses



- 0 (Not aware of IPMX)
- 1 (Not at all important)
- 2 (Not very important)
- 3 (Moderately important)
- 4 (Very important)
- 5 (Fundamentally important)

Question 3: Areas for Improvement

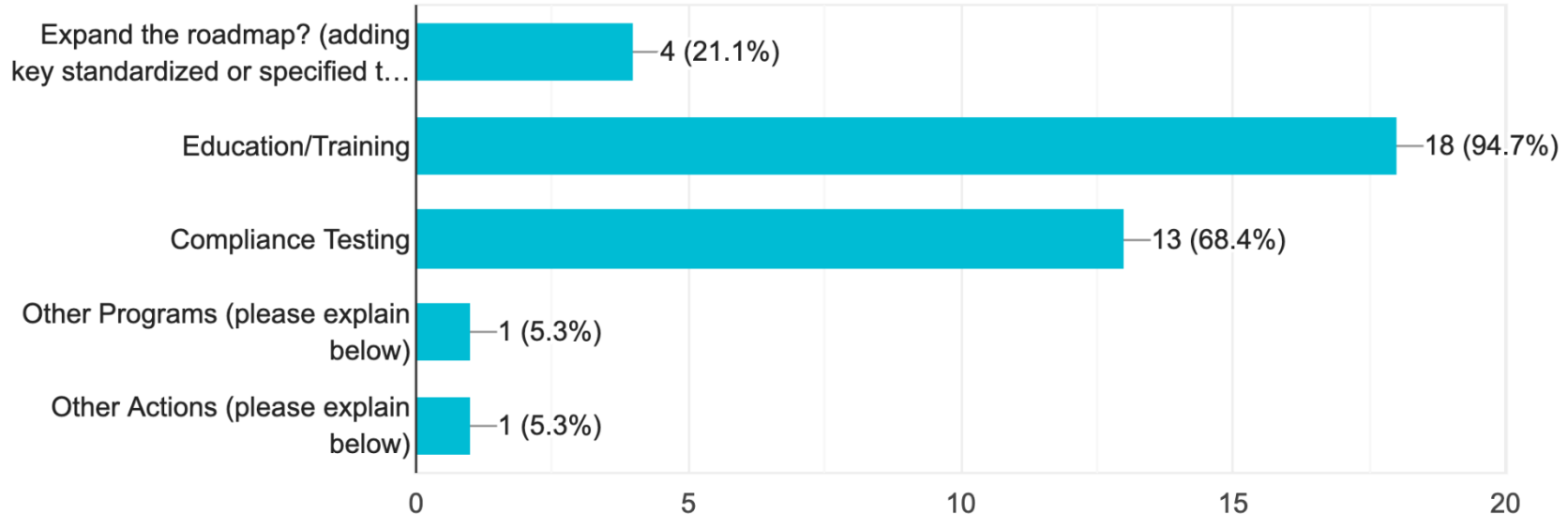
There are numerous successful IP deployments in use every day around the world, in large part due to manufacturers' support of the AIMS Roadmap. Which technology, or technologies, need improving? (For example, ST 2110-10/-20/-30..., NMOS specifications, AES67, etc.) (15 responses)

1. AES67 & ST2110 seem pretty well defined, IPMX & NMOS need improvements
2. NMOS
3. AES67 over Wide Area Networks.
4. NMOS Specifications
5. NMOS Compliance, Consumer/Prosumer edge device integrations
6. NMOS spec, unified control and management of IP streaming
7. Not necessary improvement.
8. Execution, installation, operations, and upgrades need improvement. ST 2110 IP video needs to be easier to manage.
9. NMOS Spec
10. NMOS specifications (falls under the work of the AWMA)
11. NMOS specification need improvement and real standardization. Every company seem to have a slightly different implementation that can cause NMOS to now work as expected and designed.
12. All need continuous attention to ensure the specs and standards are moving forward.
13. -30/-31 as many manu have already implemented compressed streams in -30. Unfortunately this is adding confusion. Could combine -31 into -30 and deprecate -31.
14. Ease-of-use related technologies (like NMOS); lower bandwidth codecs with support for 4:4:4 PC desktop content used in combination with camera content; cybersecurity standards leadership in communications and control and essence (payload) layers
15. NMOS implementation/interpretation still varies between manufacturers and remain an integration obstacle in new deployments. Either the specification is too loose- or we need to do a better job of educating developers.

Question 4: Fostering Adoption

What could AIMS be doing to broaden the base of users and customers for the technologies on our current roadmap? (Tick as many boxes as appropriate)

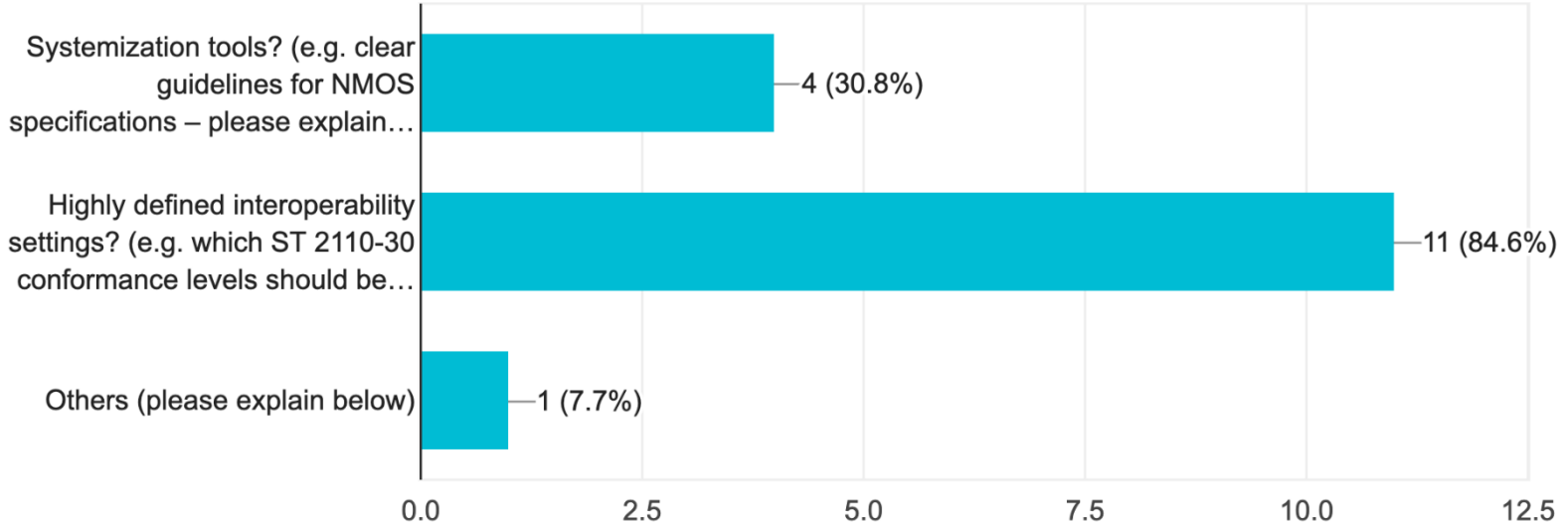
19 responses



Question 5: AIMS Roadmap

What else is the AIMS Roadmap missing? And for these items, are there standards and/or specifications that AIMS can consider? (Tick as many boxes as appropriate)

13 responses



Question 4 & 5: Details

1. SW CODEC for IPMX (especially for decode)
2. A testing protocol for all NMOS system to meet the same base standard
3. NMOS has too many paths to find the same data different vendors use different paths It would be nice to have a doc that says receivers look here sources look at this path. I. E. To use the same path same points.
4. Guideline for NMOS implementation.
5. NMOS specification need improvement and real standardization.
6. 1- "Profiles" for developers to adhere to in order to guarantee minimum baseline guaranteed interoperability of networking and essence (including uncompressed and with ratified codecs) and to provide far more meaningful starting points for new projects to accelerate uptake and improve user experiences; 2- high compression codecs (including 1Gb/s codec for subframe latency PC desktop and camera content workflows in 4K p60 4:4:4) -and- including codecs for high node count / long-distance applications (including H.264 or HEVC or other); 3- cybersecurity focus to assist more developers more easily pursue certifications across a spectrum of industries; 4- USB, PTZ, and other - to deal with I/O in standardized way
7. Each manufacturer still deploys product with unique limitations for audio configurations (channels per multicast stream) or ST 2110-40 data streams. Particularly a users begin to experiment with the possibilities of -40, we will benefit from expanded "minimum requirements" to improve multi-vendor interoperability.

Question 6: Industry Interfaces

How can AIMS better interface with the industry Standards Development Organizations (e.g. SMPTE, AES, AMWA, VSF) to create more value for our members? (7 responses)

1. Keep an eye on emerging standards in other markets - e.g. AV, Industrial etc.
2. Seems to be going well so far
3. More interoperability testing venues
4. Working together with these other organizations on education and training for the industry.
5. As AIMS is marketing effort, work in parallel with with body to market / educate to the industry their works/projects/progress.
6. 1- Better partnership with specific enclaves that already wish to leverage SMPTE ST-2110. For example: MEDICAL (with DICOM-RTV). 2- JT-NM? or AIMS? or one of the groups should further evolve a "testing" program and a "logo" program to help industry validate "PROFILES" (see answers above) and to help guarantee minimum baseline interoperability of networking and essence (including uncompressed and with ratified codecs)
7. The standards group develop deep technical reference materials. AIMS can help streamline the messages for initial consumption. The AIMS Education Working Group may help with this.



Question 7: What's Next?

What is the most important thing AIMS can do to provide value for your membership? (15 responses)

1. Free access to industry trends and technology adoption statistics
2. Keep building ST2110 and IPMX branding and awareness. Drive open standards in AV and Broadcast.
3. Marketing & Education of relevant standards & technologies, visibility of company engagement
4. Keep us up to date on the roadmap and adoption so we can plan to make compatible products.
5. Keep doing what you are doing. Congratulations for keeping the momentum going
6. It is very important to have an up-to-date list of products and manufacturers that are compatible with standards and among them.
7. Stay in touch with the marketplace and what end-users need.
8. Same as above
9. Work more closely with adopters of IP Media Networking to understand the challenges they have faced and what can be done to improve their experiences.
10. See previous statement.
11. Educate and create an environment where end users can eliminate the "fear" of moving to a ST2110 eco system.
12. Continue to offer value in the Monday AM marketing sessions by offering roadmaps, milestones, challenges, opportunities, etc.
13. be the liaison between SMPTE, EBU, VSF, ITU, IETF, JPEG, MPEG to ensure the roadmap makes sense and is progressing forward to where the professional and AV industry need to evolve towards
14. Successful adoption of ST-2110 in a growing base of enclaves in more industries. The cross-pollination of ST-2110 with other industry innovations (beyond just Broadcast) will be invaluable to the viability and expansion of ST-2110 and to help increase access to complimentary and even disruptive technologies from other markets. This can only be good for Broadcast - which benefits directly from new means to keep innovating and to keep punching above it's weight class in an increasingly competitive and machine-enhanced market.
15. Act as a curator of information, with surveys like this and open forums, to connect the dispersed membership.



Summary and Key Takeaways

- The new Education initiative seems to be in alignment with the priorities of many members
- Members appreciate the value that AIMS provides through the sharing of the latest information, both technical and from a business perspective
- The need for more highly defined interoperability settings was highlighted by a number of members
- NMOS specifications are in need of improvement, in either the specifications themselves or in the implementations by vendors
- Compliance testing is important to many members

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- Andreas to provide

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Activities of the AIMS TWG

- Maintain and extend the AIMS roadmap
 - AMWA IS-08 could be added but we have not added it
 - Should we develop some guidelines around standard (minimum) designs?
 - NMOS capabilities, Audio stream capabilities & flexibility, etc.
 - How can we improve systemization to reduce project-specific integration work ?
- Other Technical Tasks related to moving the roadmap forward
 - Q: what can we do to help move IPMX forward alongside Broadcast use cases?
 - Q: what does “finished” look like in IPMX, or broadcast in general?
- Review Current Progress and developments in the related organizations
 - SMPTE (2110 suite “one-year-reviews” ready for publication)
 - AES (AES67 added PICS, AES-67-over-WAN project happened)
 - IETF (payload format for JPEG-XS is finished/published)
 - VSF (developed TR-07/08 (JPEG-XS system spec) and TR-09 (2110-over-wan))
 - AMWA (BCP-006 “NMOS for other things”, MS-05-xx “NMOS Control Arch”)

State of the Standards on the AIMS Broadcast Roadmap

- SMPTE ST 2110-x Stable minor updates coming soon
- AMWA IS-04/05 Stable minor updates
- JT-NM TR-1001-1 Stable minor update in 2020
- System Resource Stable published as AMWA IS-09
- AES67 Stable revised (non-breaking) 2018
- PTP (IEEE 1588v2) Stable IEEE 1588:2022 (non-breaking)

SDI over IP Baseline	Audio over IP	Standardized Transport of Audio, Video, & ANC Elements	System Environment & Device Behaviors
SMPTE ST 2022-6 SDI Over IP	AES67 Audio Over IP	SMPTE ST 2110-10 Timing & Definitions SMPTE ST 2110-20 Uncompressed Video SMPTE ST 2110-21 Packet Pacing SMPTE ST 2110-30 AES67 Audio SMPTE ST 2110-31 AES3 Compressed Audio SMPTE ST 2110-40 Ancillary Data	PTP, DHCP, LLDP, DNS-SD Network Environment AMWA NMOS IS-04 Discovery & Registration AMWA NMOS IS-05 Connection Management System Resource Critical System Parameters

SMPTE
ST 2022-6

AES67

SMPTE ST 2110

JT-NM TR-1001-1



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EWG Mission Statement

- *To define what is needed to establish a foundation of shared knowledge and practical experience in the area of IP media networking.*
- *We seek to remove barriers to entry, improve training, expand educational opportunities, and collaborate with industry organizations and others that might be developing classes, programs or certifications.*
- *Our goal is to rapidly expand the base of qualified professionals to meet the growing demand for IP media networking expertise*

Activities of the AIMS EWG

- Group kicked-off in December 2021
- Activities:
 - Set goals and mission statement
 - Definition of different audiences (or *personas*)
 - Creation of the AIMS Education library
 - Currently a collection of AIMS event presentations
 - Content has been organized into topics
 - Refinement of the library is ongoing
- Upcoming Work:
 - Generate searchable / filterable metadata tags
 - Integrate content from partner organizations

Activities of the AIMS EWG

How to get involved:

- Zoom meetings every other Friday
- Let us know what type of learning material you'd like to see
 - What education and training would be most valuable to you?
 - What skills are lacking in the broadcast & ProAV industries?
 - What information is hard to find or not presented well?
- Any feedback is welcome!

Alun Fryer, EWG Chair: afryer@rossvideo.com



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Events, E-Blasts, Newsletters & Websites

Virtual Events & Promotions

2021

- IP Oktoberfest
- TechFest
- TechFest IP Showcase
- InfoComm Support
- ISE Support

2022

- IP Showcase
- InfoComm (Interoperability Demo)
- ISE (press support)
- AES
- IBC

Web Sites

- aimsalliance.org
- ipmx.io
- ipshowcase.org

E-Blasts

- AIMS Connect



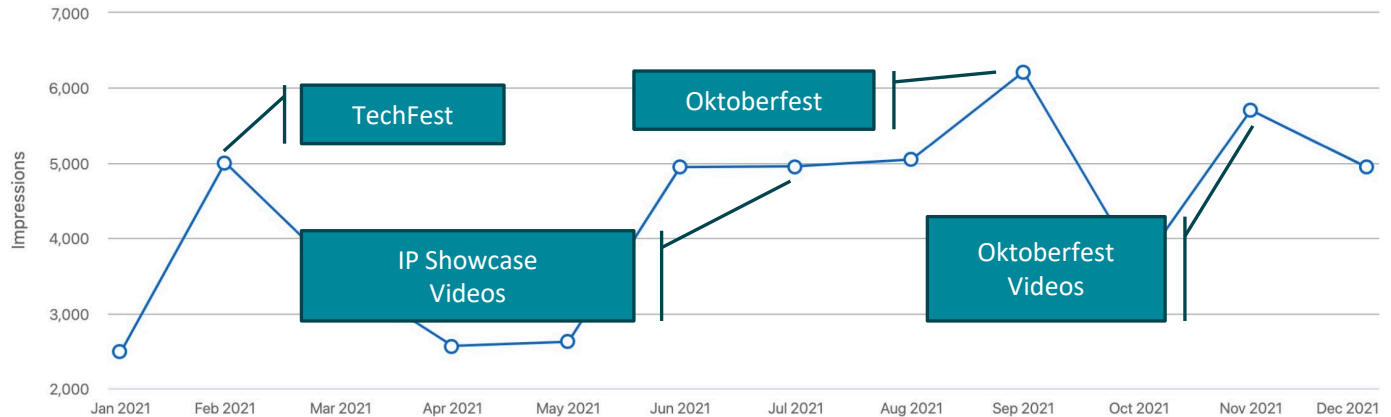
LinkedIn: 2021 Overview & Impressions

Measurement	Total
Total Followers	2,063
New Followers	188
Number of Updates	97
Average Engagement Rate	4.7%



Organic Impressions

51,593 Total
(4,300/month)

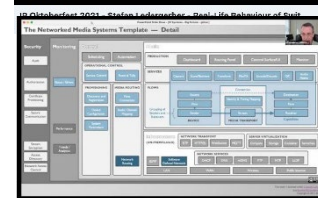
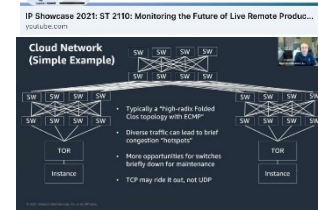


Measurement	Total
Total Followers	2,106
New Followers	44
Average Engagement Rate	4.95%
Page Views	104 (19% increase)



LinkedIn: Most Successful Posts

- Monitoring the Future of Live Production
- Live Video Production in the Cloud
- Real-Live Behavior of Switches
- IP Systems – The Big Picture
- IPMX: The Emerging AV over IP Open Standard



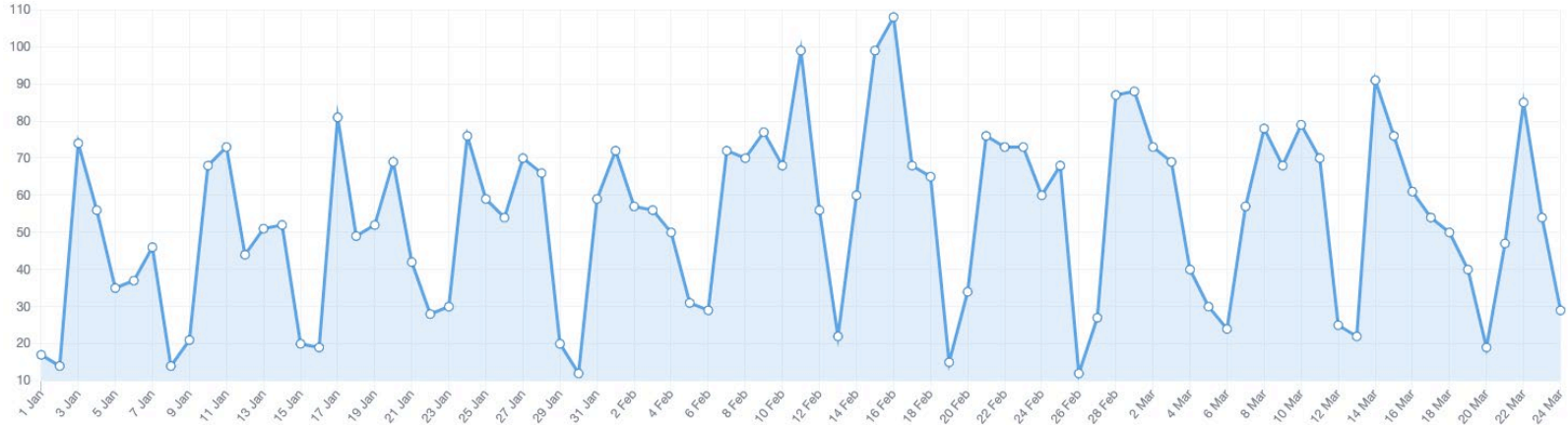
AIMS Website Traffic

- 87k page views (7.25k / month)
- **29.5k Sessions**
- Greater than **2/3rds explore** the site (Less than 1/3 "bounces")
- #1 source is direct link, 8k from direct search
- **Techfest 2021 most heavily visited** (besides home page)
- AES67 Resources is 3rd most popular page
- IP Oktoberfest (unique site): 8.25k additional pageviews
- IPMX (unique site): 8.7k page views, 3.3k users, 2.63 page views / user

AIMS Website Traffic – Q1 2022

Sessions

Pageviews



Sessions

4,421

↑ 13%
vs. Previous 83 Days

Pageviews

19,220

↑ 10%
vs. Previous 83 Days

Avg. Session Duration

1m 21s

↓ -7%
vs. Previous 83 Days

Bounce Rate

9.88%

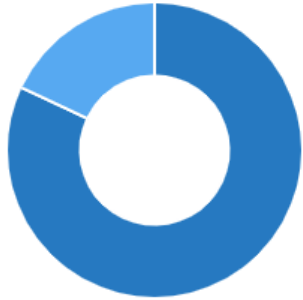
↑ 161%
vs. Previous 83 Days

Nearly 4,000 pageviews and a bounce rate of 0% meaning everyone visiting the site is exploring



AIMS Website Traffic – Q1 2022

New vs. Returning Visitors



● New 82%
● Returning 18%

Top 10 Referrals

Rank	Referral Source	Visits
1.	ipmx.io	108
2.	sportsvideo.org	32
3.	cn.bing.com	18
4.	amwa.tv	17
5.	grassvalley.com	17
6.	ipoktoberfest.com	16
7.	wallstcom.com	15
8.	fva.co.jp	14
9.	linkedin.com	11
10.	en.wikipedia.org	9

The top 2 referral sites are IPMX and Sports Video Group!

Press Activity 2021-2022 Q1

- 12 Press Releases
- 202+ Editorial Mentions in global B2B publications
- 26 were contributed articles / interviews

Installation

**BROADCAST
THE BRIDGE**
Connecting IT to Broadcast

SVG
SPORTS VIDEO GROUP

scn
SYSTEMS CONTRACTOR NEWS



thedaily

**systems
integration** asia

TVB EUROPE
Business, Insight & Intelligence for the media & entertainment industry

BROADCASTPRO
MIDDLE EAST



SOUND & COMMUNICATIONS
COMMERCIAL AV TECHNOLOGY AND APPLICATION

**SOUND & VIDEO
CONTRACTOR**



Momentum for Open Standards AV over IP



The excitement around IPMX is everywhere...



2018 Pro AV WG Starts ST2110 + NMOS + additional functions



[IPMX] will give AV integrators virtually **limitless freedom** to customize AV-over-IP systems...

Integrated Systems Europe



IPMX brand launched at ISE 2020 Show (Feb 2020)

If you're in AV, IPMX is an acronym you **need to know**.



- AIMS Pro AV Working Group dramatically increases promotion



- VSF and AMWA become involved in new technical specifications

MAGEWELL®

joined AIMS for IPMX (June 2020)



IPMX offers a range of advantages to professional A/V...



More general acceptance of the need for IPMX by InfoComm 2021 attendees and exhibitors (Oct 2021)



ANALOG WAY®



joined AIMS for IPMX (Mar, Aug 2021)

infocomm



Multi-vendor Interop at InfoComm 2022 (June 2022)



joined VSF for IPMX (Feb 2022)



joined AIMS for IPMX (Apr 2022)

[IPMX] will be transformative.

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Purpose

- Provide a forum within AIMS to focus on issues and activities that are specifically related to audio

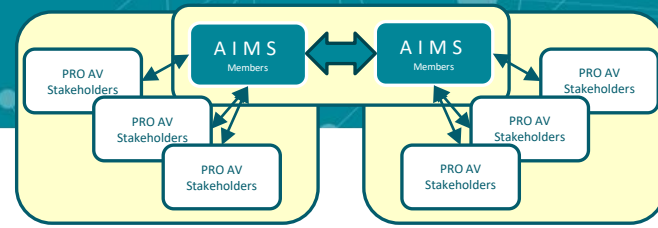
Recent Activities

- “AES67 Beyond the LAN” (AES-R20-2021) – lead by N. Sturmel
 - Educating the industry about best practices for using AES67 over WANs and in the Cloud
- IPMX requirements for audio devices
 - Working with ProAV Group to clarify requirements for audio devices in IPMX systems, ensuring interoperability w/ AES67 and SMPTE ST 2110-30-compliant devices
- AIMS Education Library
 - Reviewing and curating the AIMS archive of audio presentations to provide the most useful material for the Education Library

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Pro AV Working Group



Background

- Functions as a subgroup of the AIMS Marketing Working Group
- Video conference meetings held every two weeks

Mission

- Provide a forum for AIMS members to discuss and propose actions specifically related to education and promotion of IP networking open standards in Enterprise AV/IT (a.k.a. “Professional A/V or Pro AV”)
- Broaden AIMS member and Pro AV market feedback loop on major AIMS initiatives such as IPMX (Internet Protocol Media Experience)

IPMX Progress Report (Pro AV Working Group perspective)

Hardware and Software

- ✓ IPMX HW ⇔ IPMX SW Interop
- ✓ IPMX ⇔ ST 2110 Native Interop
- ✓ R&D (Non-Broadcast Developers)

✓ Developer Kits Shipping

✓ Networking Equip. Vendors
Adding IPMX Profiles

Already Mature

Shipping and Live Operation
(Last 3+ Years)

Completed Technical Recommendations

Definition and Standardization for:

- Simplified Asynchronous Timing (optional PTP)
- Dynamic connections (EDID, HPD, Display ID, InfoFrames)
- Copy protection (HDCP/HKEP)
- ProAV Audio Formats
- HDR10 and HDR 10+
- Uncompressed Video
- NMOS

AES 67

Audio Over IP

SMPTE ST 2110-10

Timings & Definitions

SMPTE ST 2110-20

Uncompressed Video

SMPTE ST 2110-21

Packet Pacing

SMPTE ST 2110-30

AES 67 Audio

SMPTE ST 2110-31

AES3 Audio Transport

SMPTE ST 2110-40

Ancillary Data

Timeframe

Complete by Summer 2022:

TR10-1

With AMWA at the moment

TR10-5

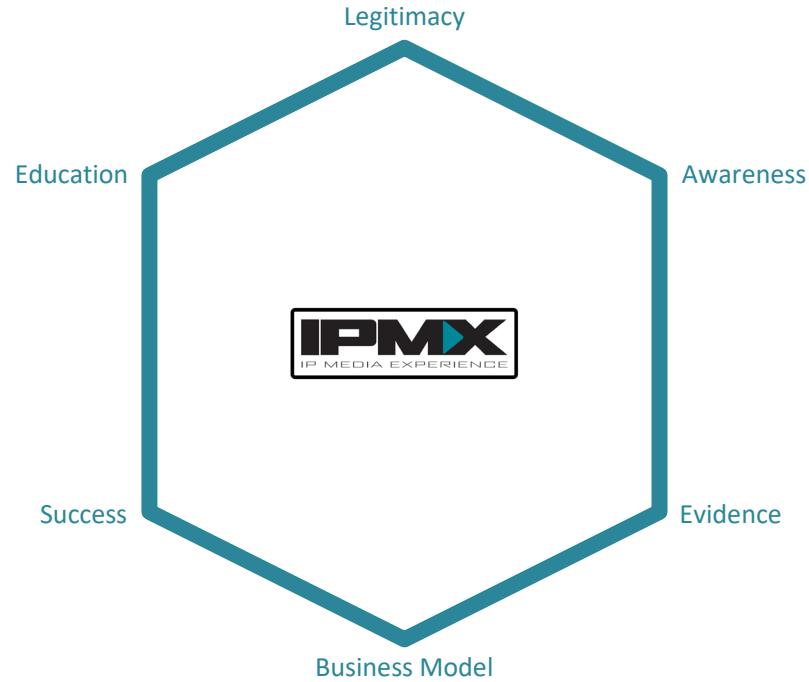
TR10-3 (Submitted)

TR10-XX (In progress)

TR10-2

TR10-8

IPMX Pro AV Market Feedback Loop Priorities

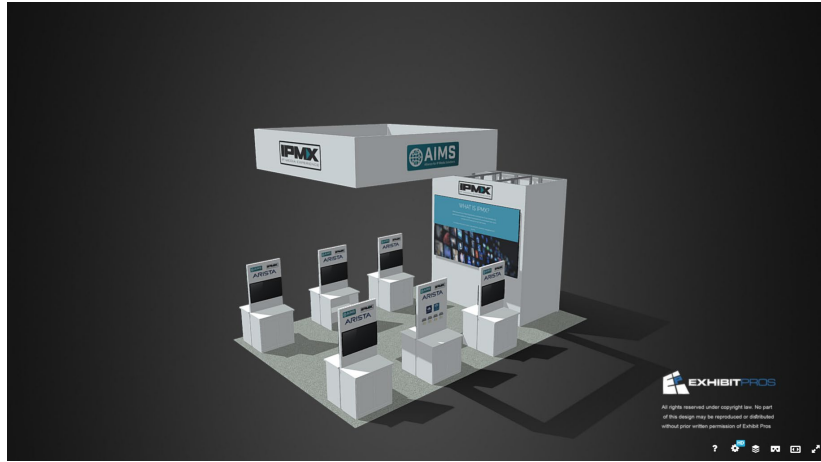


AIMS InfoComm June 2022

First big public multi-brand interop on IPMX & ST 2110



InfoComm 2022 AIMS Marketing Demonstration in Pro AV

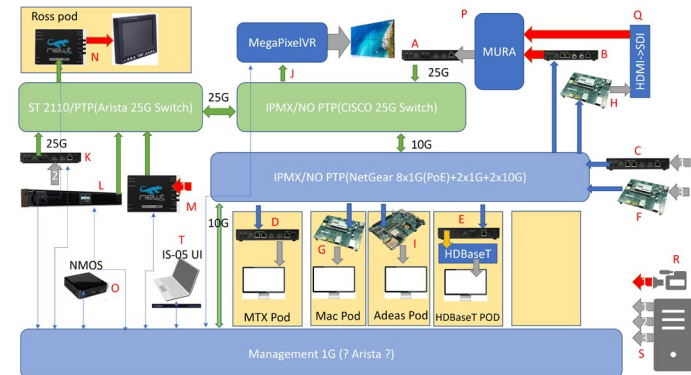


PRELIMINARY PLAN FOR STAGING AT MATROX v. 2 (DISCUSSION STAGE)

			NETWORKS			
			25 Gb ST 2110	25 Gb IPMX	JPEG-XS IMPX	HDMI / HDBaseT
Staging started	InfoComm	Partners				
ok	<input checked="" type="checkbox"/>	Arista	<input checked="" type="checkbox"/>			
In progress	<input checked="" type="checkbox"/>	Ross NEWT	<input checked="" type="checkbox"/>			
In progress	<input checked="" type="checkbox"/>	Ross IGGY audio	<input checked="" type="checkbox"/>			
TBC	<input checked="" type="checkbox"/>	Intel	<input checked="" type="checkbox"/>			
ok	<input checked="" type="checkbox"/>	Matrox Vero	<input checked="" type="checkbox"/>			
ok	<input checked="" type="checkbox"/>	Matrox ConvertIP	<input checked="" type="checkbox"/>			
In progress	<input checked="" type="checkbox"/>	Cisco		<input checked="" type="checkbox"/>		
In progress	<input checked="" type="checkbox"/>	MegaPixelVR		<input checked="" type="checkbox"/>		
ok	<input checked="" type="checkbox"/>	Matrox ConvertIP		<input checked="" type="checkbox"/>		
In progress	<input checked="" type="checkbox"/>	IntoPix			<input checked="" type="checkbox"/>	
In progress	<input checked="" type="checkbox"/>	Mácnica HW			<input checked="" type="checkbox"/>	
In progress	<input checked="" type="checkbox"/>	Mácnica SW (sender)			<input checked="" type="checkbox"/>	
ok	<input checked="" type="checkbox"/>	Netgear			<input checked="" type="checkbox"/>	
ok	<input checked="" type="checkbox"/>	Nextera (Xilinx)			<input checked="" type="checkbox"/>	
ok	<input checked="" type="checkbox"/>	Matrox ConvertIP RX				<input checked="" type="checkbox"/>
ok	<input checked="" type="checkbox"/>	Matrox ConvertIP TX				<input checked="" type="checkbox"/>
HDMI only (for AIMS InfoComm booth)	<input checked="" type="checkbox"/>	StageTec				<input checked="" type="checkbox"/>
Not started	<input checked="" type="checkbox"/>	HDBaseT (Brand X) TX				<input checked="" type="checkbox"/>
Not started	<input checked="" type="checkbox"/>	HDBaseT (Brand X) RX				<input checked="" type="checkbox"/>

Not Final ; Booth Wiring Diagram In Construction

- ✓ Multi-brand ST 2110 and IPMX interop
- ✓ Passing 4K content between devices on ST 2110 PTP Network to devices on non-PTP IPMX network
- ✓ New companies (non-Broadcast) implementing IPMX
- ✓ Hardware ⇔ Software nodes working interoperably
- ✓ Developer kits



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Questions?
Comments?
Suggestions?