

**M+E**

**JOURNAL**

Today's localization challenges are enormous. The opportunities are unprecedented. Is the industry ready for the mayhem?

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The threats to our most valuable assets are many. M+E vendors are on top of it.

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## **SMART CONTENT**

The many ways the industry adopts new technologies to make content smarter.

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# THE INVISIBLE THREAT TO M&E TECHNOLOGY

By Eric Rigney, Vice President, MEDCA

What does the data industry know about filmmaking or broadcast?

No matter how cost effective the technology, whether a virtual production, SMPTE 2110, or even any of today's common digital equipment, processes, and workflows — whether supporting film, television, broadcast, or live events — data is the common denominator and all data travels over a physical foundation.

While every digital box and highway are internationally required to follow data industry standards, when it comes to the design, building, and maintenance of data's foundational layer, the entity that purchases the hardware, software, and plugs everything together, is not obligated to know or implement the data industry standards developed to support the purchaser. The disconnect between user and data industry standards in supporting the user's digital infrastructure is the threat currently invisible to media and entertainment (M&E).

Digital infrastructure is not governed by audio-visual (AV) standards bodies such as the Society of Motion Picture and Television Engineers (SMPTE) and the Audio Engineering Society (AES). A facility's or service operation's digital infrastructure standards are governed by relevant data industry boards like Telecommunications Industry Association (TIA), Institute of Electrical and Electronics Engineers (IEEE), International Organization for Standardization (ISO) and more.

Relying on an information technology (IT) department or AV engineer to design and build a facility's digital infrastructure or portable micro data center such as a DIT cart or virtual production server rack, demonstrates M&E's lack of awareness as to the extent to which it has entered the data industry's realm of expertise and 100 years of experience. Every digital hardware and software component driving media and entertainment, pre-production, production, postproduction, and broadcast processes are built to meet or exceed data industry standards. Every commercial carrier that connects one studio, service provider, or production to another follows data



industry standards. It's up to every facility and service provider to voluntarily elect to implement data industry infrastructure standards as they apply to their circumstance. Applying well established data infrastructure standards is a choice, not a requirement for any M&E operation.

## COST OF NON-COMPLIANCE

The lack of awareness, experience, and execution of data industry standards in M&E drives up costs: cost to productions, cost to service providers, and cost to manufacturers. Each vertical spends countless hours trouble-shooting problems that are often self-inflicted by M&E's lack of data infrastructure standards education and implementation. Habit and misguided reliance on standards developed outside the realm of the data industry is in large part to blame. For decades, M&E has successfully relied on audio-visual (AV) engineers and information technology (IT) technicians to design, build, and support its digital operations, delivering high quality digital media on time and on budget.

But digital demands are flooding M&E spaces. Currently AV engineers and IT specialists do not normally have the necessary background to design and build



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digital infrastructure, the physical layer that supports all digital processes. The Open Systems Interconnection (OSI) model used by the data industry to build the Internet and most all things data related breaks digital workflows into 7 layers. Layer 1 is the physical, or foundational layer. Layer 1, the Physical Layer, is not the realm of AV engineers or IT techs. Customers work in the Application layer, Layer 7. AV might work between Layers 4 and 7. Relying on AV engineers to set and test AV equipment is a round peg in a round hole. IT technicians, depending on their expertise, might work between Layers 3-5. Relying on IT technicians to set and test digital communication parameters is also a round peg in a round hole. M&E's reliance on AV engineers and IT technicians to design and build their digital infrastructure is a round peg in a square hole. It's worth noting that neither are digital product manufacturers of hardware and software solutions likely able to determine whether a user's infrastructure meets appropriate data industry Layer 1 standards. Layer 1 is not a manufacturer's OSI layer. OSI Layer 1 expertise uniquely rests with digital architects grounded in the standards developed by the data industry and other related boards' responsible for developing digital infrastructure standards.

With the invisible threat of non-compliance comes invisible costs. Non-compliant operations are more likely to experience poor performance, less security, and greater frustration. What does non-compliance feel like? Slower processing and render times, slower downloads and uploads, difficulty making and keeping reliable connections both wired and wireless, greater latency, file corruptions, micro brownouts, greater consumption of power and heating/cooling, and sometimes, just getting "it" to work. Down-time is the greatest cost. With the per minute total production cost to produce a scene on a virtual production volumetric stage ranging on average from \$9,000-\$16,000, excluding talent, how valuable is digital performance?

Studios, facilities, vendors, and service providers that design, build, and maintain digital infrastructure to meet data industry standards are rare. A walk around most facilities, one sees that their digital hardware such as computers, servers, and processors, even if behind a closed door, too often work as air cleaners, pulling electro-static dust through them, coating their delicate internal components, and reducing functionality and reliability. Interesting correlation, most camera operators know the importance of a clean lens before shooting and are trained to perform a basic lens clean-

ing. When it comes to optical cabling (fiber optic), most M&E digital technicians are unaware that they too should clean each optical connection before connecting it. And they typically do not know how to perform a quick, basic optical connector cleaning. There are 9 different levels of power protection. What are they and which ones might be important to protect a production? These practices, questions, and more are the realm of digital infrastructure architects and technicians.

The Media & Entertainment Data Center Alliance (MEDCA) advocates for additional awareness and education, supporting M&E's ever greater migration into the digital world of the data industry, making visible what is currently invisible to M&E professionals.

### M&E FACILITIES: DIGITAL INFRASTRUCTURE STANDARDS GOVERNANCE

The M&E production environment is unique in comparison to any other industry. Reduced to data file basics, M&E production workflows capture, process, and deliver digital picture, sound, and/or metadata files. Because governance boards such as SMPTE create standards supporting A/V production data-centric workflows (formats, protocols, applications), M&E facilities managers may incorrectly assume that the same governance boards are responsible for creating digital infrastructure standards. They are not. Only the data industry is responsible for creating and governing digital infrastructure standards and practices. They do so for the entire data-sphere, supporting critical industries such as global banking, national defense, and M&E. Fundamental to any data-sphere is its infrastructure. Data center infrastructure supports all data gear and environments, data centric workflows, from on-prem asset management to the connected stage, visual effects, and other production and post processes, including virtual production and 2110.

### M&E PRODUCT MANUFACTURERS AND DIGITAL INFRASTRUCTURE

Why should companies that offer data application and equipment solutions in the M&E space care to advocate data center standards within M&E? Software and equipment only operate as well as the digital infrastructure that supports them. Digital infrastructure, Open Systems Interconnection's (OSI) Layer 1, is the foundational layer upon which all other data layers are supported. Although the role of IT, AV engineers, and operators do not include Layer 1, they are supported by Layer 1. Promoting M&E facilities and services

to implement data industry standards and practices in designing, constructing, securing, and maintaining the foundational layer of their data driven operations supports a better client use experience for any given data-centric equipment and application solution. Encouraging proper facility digital infrastructure in the M&E space advocates for a better customer experience with digital applications or data equipment, supporting performance, reliability, security, and sustainability.

**MEDCA: BUILD IT AND THEY WILL COME. BUILD IT RIGHT AND THEY'LL STAY**

Digital infrastructure is the foundation of all data transport. Bringing data center infrastructure standards awareness to the M&E industry is MEDCA's mission. Understanding firstly size, that data centers are not only the hyper-scale (cloud) centers seen at AWS, Azure, or Google. Data centers come in all shapes and sizes; inhabiting pre-production, production and postproduction service operations; from production offices, stages, DIT carts, cameras and lighting, to broadcast booths, virtual production equipment, on-prem servers, and more. Without a baseline understanding of the digital world's existing infrastructure standards and practices, reliable

transport of data can suffer and/or can fail completely, in any data driven application. Secondly, support, data center infrastructure is the foundational layer upon which all data-centric workflows rest. A poorly formed infrastructure ensures poor performance.

Data center infrastructure design, construction, and maintenance standards are set by the data industry. Implementation of such data center infrastructure standards and practices provide M&E facilities and service providers technical alignment and performance, interoperability, risk mitigation, and customer service. Lastly, nothing new, the standards and practices that support proper data center infrastructure already exist and are governed within the data industry. Bandwidth demands of M&E technologies are increasing exponentially. Only digital infrastructure built to data industry standards can support digital workflows to their full potential, be it the technologies of today, or of tomorrow. ■



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## Bringing Data Industry Standards to the Land of Make Believe

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