

LEADING THROUGH CHANGE

Leadership Theories, Styles, and Approaches

By Alexis Shoemaker

Leading through change crystalizes the need for effective leadership practices. In the previous column, I described leadership fundamentals and change theories as a foray into addressing how leaders can begin to establish “purpose, vision, and direction.”¹

Throughout the following discussion on leadership theories, styles, and approaches, the acknowledgement and acceptance of *the incomplete leader* should not be overlooked.² Leaders are humans with strengths and weaknesses. Understanding these strengths and weaknesses is a powerful tool.

In general, leaders are responsible for “sensemaking – interpreting developments in the business environment, relating – building trusting relationships, visioning – communicating a compelling image of the future, [and] inventing – coming up with new ways of doing things.”³ To effectively execute these overarching responsibilities, “the incomplete leader knows when to let go, when to ask for support, and how to do so in a productive and alliance-building way.”⁴ The inclusive nature and optimistic framing of the incomplete leader—that is, focusing on nurture over nature—focuses leaders on perpetual learning and improvement over innate ability.

As you read the following column (and all other columns in this series), consider your own leadership practice and how it maps onto the discussion. What is your leadership environment? How do you currently approach

that environment? What are new practices you may want to incorporate into your leadership repertoire? What are your strengths? What are your shortcomings? Who complements your shortcomings, and how can you involve them and learn from them in the future?

LEADERSHIP THEORIES

Underlying the practice of leadership are generalized theories intended to be situationally adaptable. In other words, there is no “correct” theory for all situations. Rather, the theories are intended to be used, exchanged, revised, and tailored to the most natural state of leadership for the practitioner, the team with which they are working, and the institutional landscape in which they function.

Leadership theory has undergone three evolutions since its inception. *Trait theories* were among the earliest in this field. These theories hold that the qualities of a good leader are fundamental aspects of an individual’s personality.⁵ Early on, it was held that leaders are “better than the average person in terms of intelligence, alertness, insight, responsibility, initiative, persistence, self-confidence, and sociability.”⁶ Due to the difficulty involved in altering these traits, “trait theories imply that leaders are born not made; that is, leadership is not something

that can be taught or learned.”⁷ This narrow view creates difficulties in practice that the second evolution of leadership theory seeks to ameliorate.

In the twentieth century, in pursuit of a fuller picture of leadership theory, we see the emergence of *skills theories*. These theories hold that “effective leadership depends less on what the leaders are and more on what they are able to do.”⁸ In the mid-twentieth century, it was suggested that “effective leadership depends on the leader possessing skills in three areas: technical—knowledge of the job, profession, or task; human—the ability to work with people; and conceptual—the ability to understand ideas and principles.”⁹

As leadership theory continued to develop, behaviors emerged as associated with effective leadership. The Ohio State University produced some of the most famous studies on *behavior leadership* theory. “These studies identified two basic types of leader behaviors: *task behaviors*—actions that relate to the work to be done; and *relationship behaviors*—actions that focus on the feelings of subordinates.”¹⁰ The University of Michigan revealed very similar categories labeled “*production orientation* and *employee orientation*.”¹¹

These evolutions in leadership theory leave us with a valuable framework of traits, skills, and behaviors. Falling out from these overarching leadership theories are leadership styles and approaches.

LEADERSHIP STYLES

Leadership styles are the amalgamation of trait, skill, and behavior theories. The following classification system offers a high-level perspective on leadership styles and their impact on an organization or team.

“Organizations that are high on production (task) and low on relationships are said to have *authority-obedience management*. Essentially, they are dictatorships, although they may be productive. Those high on relationships and low on concern for production are described as having *country club management*.

They may be great places to work, but get little or nothing accomplished. Organizations that are low on both concern for people and production exhibit *impoverished management*. This would create a dreadful and uninspiring environment, and employee retention would be a primary challenge. The ideal type, showing high concern for both people and production, is called *team management*.”¹²

These classifications don’t just offer a vocabulary for leadership styles; they drive home the impact of leadership on a team and organization. There are, however, other theories that color in the details of leadership styles and offer insights into how leaders are accomplishing their styles.

Circumstances often dictate the type of leadership style needed to inspire morale and induce productivity. These *situational theories* hold that adaptability and the ability to read a situation or environment and develop a style tailored to the observed needs are hallmarks of an effective leader. Taking this a step further, *contingency theories* provide a way of matching leader styles to defined situations. “The situation may be favorable or unfavorable to the leader, depending on three variables: leader-member relations (e.g., the degree of trust, cooperativeness, and friendliness between the leader and followers), the task structure (whether the job to be done is clear and specific or ambiguous and uncertain), and the position of power of the leader (i.e., the formal position of authority the leader holds).”¹³

According to these findings, task-oriented leaders do best when conditions are very favorable or very unfavorable, while relationship-oriented leaders do best in the intermediate circumstances. This highlights the need for reflexivity of oneself as a leader and one’s environment on both a micro and macro scale. Contingency theories add a level of sophistication to the previously discussed trait, skill, and behavior theories and help us begin to understand why some styles of leadership are successful in certain circumstances while others are not.

Other popular leadership style theories include *path-goal theories*, which “emphasize how leaders can adapt their behaviors to motivate followers and enhance satisfaction and performance.”¹⁴ Additionally, there are *leader-member exchange theories*, which “view leadership in terms of interactions between leaders and followers.”¹⁵

To effectively deploy this knowledge, leaders should look at their immediate team, the department and/or organization, and the organization’s position in the larger landscape. By evaluating these circumstances with varying cadence (that is, examining the microenvironments more frequently than the macros), a leader is positioned to proactively address issues before they arise. This ultimately improves team morale and enhances work productivity.

LEADERSHIP APPROACHES

Intertwined with leadership theories and styles are leadership approaches. One such approach that has gained a following is *servant leadership*.¹⁶ This approach is defined by envisioning oneself as a steward and facilitator for the team, working for and with them rather than above them. This flips the traditional hierarchy on its head and creates an ethos of collaboration and camaraderie.

A key aspect of this approach is shared success. In other words, servant leadership emphasizes balancing individual success with group success and using one’s position as a leader to bring greater visibility to the work of the team.

Another approach is *charismatic leadership*. This approach is defined by a leader who does the following: “advocates a vision that is different from the status quo but still acceptable to followers; acts in unconventional ways in pursuit of the vision; engages in self-sacrifice and risk taking in pursuit of the vision; displays confidence in his or her own ideas and proposals; uses visioning and persuasive appeals to influence followers, rather than relying mainly on formal authority; [and] uses the

capacity to assess context and locate opportunities for novel strategies.”¹⁷

To achieve this approach, the practitioner cannot become too familiar with their team. Balancing the need and human desire to be close to those with whom one works while simultaneously holding oneself apart can be quite difficult. It is important for leaders to understand the risk involved in estranging oneself from one’s team to maintain mystery and separateness. That is, too much separation can cause factious behavior in the team and can result in the leader losing touch with the quotidian experience. As they say, it’s lonely at the top.

CONCLUSION

Leadership is a complex and amorphous undertaking. However, by engaging in reflexive analysis of one’s own leadership practice and mapping that practice onto an existing framework and vocabulary, the leader is more equipped to successfully execute their responsibilities. Leadership theories serve as pillars around which practitioners can build leadership styles and approaches in a contextually aware manner. In my next column, I will discuss guiding principles and visioning for instituting meaningful and lasting change.

NOTES

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Alexis Shoemaker is a Senior Specialist of Technology & Standards at the Consumer Technology Association (CTA). Alexis holds a Bachelor of Arts in Anthropology from Scripps College and a Master of Science in Research Administration from Johns Hopkins University. She is the author of *Leadership in Research Insights and Business Intelligence: A Conceptual Framework and Guide*, published in 2022. (Baltimore, Maryland: Krieger School of Arts and Sciences, Advanced Academic Programs, Johns Hopkins University.)

EMERGING PROFESSIONALS

Six Ways to Learn about Standards as a Young or Emerging Professional

By Carolyn Hull

Beginning a career in standards can be daunting, but it is ultimately rewarding. Standards and conformity assessment help ensure safety, support trade, and contribute to society.

When I started as a standards professional, I had work experience but not specifically in standardization. Based on my experience, here are six ways to learn about standards and conformity assessment to start your career.

Take SES courses

SES is there for you with introductions to standards and other courses that you can take online at your own pace. For me, learning where to find standards (to use just one example) was extremely insightful. There are thousands of standards out there—where can you find them? How do standards support trade and the economy? What is the best way to run a technical committee meeting? SES courses can provide answers.

Network

Take the opportunity to learn from your colleagues who have been developing standards for years *and* who are new to the field. Don't discount colleagues who may also be new to standardization, as you can gain valuable knowledge from those with less or similar experience levels to you. Fresh tools and

cutting-edge technology are being developed every day. Other standards professionals can help you learn about these and upgrade your work experience.

Some organizations, like the US National Committee (USNC) have official mentorship programs. Take advantage of these to learn from those who may have more experience. It can also be helpful to obtain the perspectives of those outside your organization.

Also, know that as someone newer to standardization or conformity assessment, you bring fresh eyes to practices and processes and can see opportunities for change and improvement where necessary.

Take specific standards courses

The American National Standards Institute (ANSI), the International Electrotechnical Commission (IEC), and other organizations have classes available on their specific standards development processes and other related topics. In addition to presentations, many classes include simulations of developing a standard from start to finish that can make the process come alive.

Apply to programs for young and emerging professionals

The IEC and other similar standards organizations host programs for young and

emerging professionals. I highly recommend taking advantage of these! The IEC Young Professionals program includes attending the General Meeting and provides detailed courses on IEC standards and conformity assessment processes, as well as extensive relationship-building opportunities.

Attend the SES Annual Conference

The yearly conference is a wealth of learning and networking opportunities. For instance, the last conference addressed informative topics such as information on new and emerging electric vehicle technologies, building consensus as a committee chair, and the potential for drafting standards using GitHub. The SES Annual Conference has been invaluable in my career in delivering classroom-style learning, inspiring new ways

of working, and building connections in the field.

Get started!

Maybe you are already participating in standards or conformity assessment activities. However, if you are just starting out, do not be afraid to dip a toe in the waters. Observe a committee or volunteer in some capacity.

The best way to learn about standards, as with many things, is to participate. Our industry is welcoming and supportive of those new to standardization, so do not be shy. Before long, you will participate confidently in the process and represent your organization's views.

Do you have other ideas for learning about standardization? Share them at SES Connects, our new online forum. <https://connects.ses-standards.org/home>



Carolyn Hull is the General Secretary of the DICOM® Standard at the Medical Imaging and Technology Alliance, a Division of the National Electrical Manufacturers Association.

RESEARCH ARTICLES

Gender-Responsive Standards

In May 2019, the International Standards Organization (ISO) and the International Electrotechnical Commission (IEC) signed the United Nations Economic Commission for Europe (UNECE) declaration on gender-responsive standards and standards development.¹ As part of their gender action plans, the respective technical management boards of the ISO and IEC formed a joint working group on gender-responsive standards in February 2020. The mandate of the working group is to create tools for ISO and IEC committees to ensure that standards and standards development are gender responsive.

Fifteen members—from the U.S., Canada, Norway, Japan, France, Sweden, and Great Britain—are active in the work. The group consists of experts on gender issues, standards developers, and employees from standardization bodies.

I have had the privilege of co-leading this group from the ISO side. During the two years we have worked together, it has been clear that the level of awareness within the standardization community is low, but also that there is an interest in finding out more.² The focus of the group has therefore been to develop tools and checklists that can be used by people involved in developing standards. The first tools have only recently been made available to the ISO and IEC communities. As a next step, we will develop training materials and include the knowledge on how important

gender responsiveness is when writing standards in the trainings of committee managers and chairs.

The working group has held seven meetings since its formation; in June 2022, the group's mandate was extended for another two years. The extension was key, as there is still a lot to be done. While the initial outputs (a checklist and a report, available through ISO and IEC) are a first step, we will be refining these tools and hope to add training materials for our technical communities. This summer, In September of this year the group added new members, and by doing so added representation from more countries and other backgrounds.

Early on in our work, we defined a gender-responsive standard (GRS) as a standard that reflects an understanding of physical differences and gender roles and equally addresses the needs of women and men.³ As our work continues, we hope to provide more tools to address not only product standards but also process and service standards. The final report and the additional materials we hope to develop will be available in late 2023.

PERSONAL THOUGHTS

Having worked with gender-responsive standards both internationally and within the Swedish standardization system, here are some of my personal thoughts on the subject.

We all know that standards have made great contributions to the development of international trade, but they have also made it easier to exchange knowledge, goods, and services. With a standard, the user or buyer knows what to expect from a product, and the producer can produce what the market needs even if the market is on another continent. In the same way gender differences exist all over the world and if the standards don't take gender issues into account, the resulting outcome may not meet the buyer's expectation.⁴

What if there is a difference in the needs of men and women? What if the size, the strength, and the expectations differs if you are a man or a woman? What if the standards do not take these differences into account?

Unfortunately, I do think this has been the case. Many standards do not take the size, strength, or needs of the user into account. Many standards are written for men, not out of malice toward women, but for other reasons. For example, the data input on which the standard is based may not have been sex disaggregated, or no women were present when developing the standard, or no one thought about it.

So, developing gender-responsive standards has a lot to do with awareness and attitudes. We must ask ourselves the right questions and assume that there are gender implications involved with all standards. That's where we need to start.

But what are the biggest challenges, and what can we do about them?

One challenge is defining the problem. What does *gender* really mean? I will not volunteer a definition, but for many, it is not only a question of male and female. I, for one, find it difficult to talk of gender and in the next sentence define it as male and female. In many cultures and countries, gender is so much more than being a man or a woman.

So why are we still looking at gender from a male/female perspective? The answer, I think, is simple—we need to start somewhere, and to reach a common understanding, we must start at the level where most people in

most cultures agree. Once we have started, we can only go further.

Having said this, gender is also a question of inclusivity. An inclusive standard that caters to all needs and embraces the idea of design for all will be relevant to all, regardless of how you define gender.

Another challenge is that gender issues tend to be catered to by experts or “missionaries” in the field. In not one of the groups that I work with do men comprise more than 5% of the membership, and all the participants are already “believers.” To have an impact and make change happen, we need to be more inclusive and speak so that the “unconvinced” will listen and understand.

This is not a criticism of gender experts—I strongly believe that we need to involve them—but the key here is to mix them with “non-experts.” So, when moving forward, I suggest you involve someone who doesn't care about this topic or doesn't believe that standards need to be gender responsive. The ones that do not understand the need for gender responsiveness will help us understand what and how we need to communicate for the greater audience as the need to be convinced first.

A third challenge is that, when developing a standard, data is often used. I am sure you have heard the reasons why size matters in standards (the most common example is that of personal protective equipment or seat belts⁵). From now on, we need to find less obvious examples, cases where the product itself is “neutral” but the needs of male and female users differ, or where the service functions better (or only) for one sex.

As for the data, do we know whether the data we are using is disaggregated, or is the data biased? I have started collecting examples from all the committee representatives I meet. If we keep asking questions, the examples will come.

Then there is the issue of representation. At the Swedish Institute for Standards (my employer), we have not focused on representation. While we believe in diversity,, we do not

think that more women in our groups would automatically lead to more gender-responsive standards (even if there are more male experts than female experts on our committees). Some fields/subject matters are not, in and of themselves, diverse. We would probably have to look hard to find a female mining engineer. And having found her, we cannot take for granted that she will want to carry the flag for gender responsibility or knowledge within the group.

I believe that we need to consider the attractiveness of our groups. Making them more diverse will probably lead to “better” standards, but it is not a given that broader representation will lead to gender-responsive standards.

With today’s information overflow and global challenges such as climate change and political unrest, it is hard to get attention. In this context, how or why would writing gender-responsive standards be important? What difference would they make? Why should we prioritize gender-responsive standards when so many other issues are “burning,” for women and humanity in general? I have no answer, but I think standards as mutual agreements are a cornerstone for equality when they truly cater to all needs.

Even sustainability might be seen as a challenge. I would argue that the involvement of women, the possibilities for women, and the rights of women are critical to all the sustain-

ability goals, and many studies indicate the same.⁶ If true equality existed, so many of the other goals would come naturally. That is why I think working on gender-responsive standards is working on sustainability, and even one of the key success factors.

Right now, there are many organizations and institutions working on gender issues and developing materials to help raise awareness. This is great but is also important that we cooperate with each other. Building knowledge by sharing knowledge will be essential. We need to spread the word on how vital the work on gender-responsive standards is.

I am involved in many of these groups, and I hope that all these joint efforts will continue and even grow. Can I count on meeting some of you there?

NOTES

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4. <https://www.iso.org/benefits-of-standards.html>
5. Read more in Standards Council of Canada’s excellent report <https://www.scc.ca/en/about-scc/publications/general/when-one-size-does-not-protect-all>
6. <https://www.imf.org/Publications/fandd/issues/2019/03/closing-the-gender-gap-dabla>



Karrin Lindmark (she/her) is the head of technical policy and standardization services at SIS, Swedish Institute for Standards. She is also the contact point for gender issues at SIS and especially focuses on the processes around gender responsive standards. Karin has been at SIS since 2016 and has more than 20 years of experience from different management positions. She studied mechanical engineering at Chalmers University of Technology. Karin is also the co-convenor of the ISO/IEC joint advisory group on Gender Responsive standards since February 2020 and a member of the CEN-CENELC Informal Co-ordination Group for Gender Responsive Standards. Karin is married with three grown children and lives in Stockholm.

RESEARCH ARTICLES

Emmy Award-Winning Advertising Standards

Although no one wants to watch commercials, digital ad insertion technology generates billions of dollars in revenue each year. This article explains the origins of ad insertion technology, the transition to digital ad insertion technology, the problems the technology solves, how the standards were developed, and how they have evolved over time.

The original SCTE standard “Digital Program Insertion Cueing Message” defined how to insert cueing messages into MPEG-2 transport streams. Two later standards, “Real-time Event Signaling and Management API” and “Event Scheduling and Notification Interface (ESNI),” standardized out-of-band metadata communication between a content provider and their distributors to communicate business rules around content blackout, substitution, and ad insertion. As a result of the revolutionary nature of these standards and the worldwide adoption of them, the three core SCTE standards on ad insertion technology have each received Technical Emmy Awards.

LIFE BEFORE AD-INSERTION STANDARDS

Television is a huge part of most people’s lives, and it’s safe to say that most consumers would prefer to watch television without commercials interrupting their programs. However, the reality of television and of video services in general is that commercials pay the bulk of the cost to create and distribute

content. Without commercials, there would be very little content, because the costs to create the content would be higher than consumers would be willing to pay to watch the content.

In the 1970s and 1980s, a large percentage of the population began to watch television through cable services instead of using an antenna. Cable TV provided superior video and audio quality and allowed consumers to watch many more stations than they could receive with antennas. Cable had another major advantage: Unlike a TV transmitter, which sends the same signal in every direction, a cable network is able to send different signals to different parts of the area being served.

Consequently, advertisers could now target various cities or sections of cities with ads created specifically for the demographics of the targeted region. It was a wonderful new world for advertisers! A cable program would typically contain a national ad, which would run in every cable region that was not being targeted, but in areas being targeted, the national ad would be replaced with a targeted ad.

Those old enough to remember watching television before the year 2000 might remember those local ads. You could tell that something “weird” was going on, because you’d often see a second or two of the national ad before it suddenly and abruptly got replaced by a local ad. Then, when the local ad was over, there would be another abrupt change back to the national program. Sometimes the last

second or two of the national ad would be seen after the local ad ended. Other times, the local ad could overlap the beginning of the program content, much to the displeasure of the audience!

To avoid overlapping part of the program with the end of the local ad, additional black screen time was sometimes added to the national feed at the end of the national commercial. This had the unfortunate result of forcing users to look at several seconds of a blank screen with no sound at the end of the ad break. It was clumsy, but it did bring in the money!

One more important aspect of local ad insertion was that the machine doing the ad insertion needed to be told when to insert the ad. The cable companies would have ad insertion equipment in line with the national program content, waiting for the “cue” to insert the next local ad. The cue to insert the ad was often a fast series of touchtones in the audio stream. Viewers would frequently hear four fast, dual-tone, multi-frequency (DTMF) tones (like someone was dialing a four-digit phone number really fast) before and/or after the ad. Those tones triggered the ad insertion equipment. The insertion was crude and relatively inaccurate, but it got the job done.

SCTE 35 TO THE RESCUE!

In the late 1980s, the Society of Cable Telecommunications Engineers (SCTE), a non-profit professional association for the advancement of technology, standards, and workforce education related to cable telecommunications engineering, began to develop voluntary standards. For the first decade, the SCTE developed standards documents for the design and maintenance of basic cable networks, but without any specific accreditation. Around 1993, the SCTE Board of Directors agreed that the standards program should seek American National Standards Institute (ANSI) accreditation for the SCTE standards program.

The ANSI Executive Standards Council granted accreditation on August 7, 1995. In 1996, the Digital Video Subcommittee (DVS) was formed as a consensus body within the ANSI-accredited SCTE Standards program and began developing standards related to the carriage of digital video over cable networks.

One of the first topics to be tackled was ad insertion technology. Cable operators and customers wanted a better method to control the insertion of ads on cable networks. Ultimately, SCTE 35, “Digital Program Insertion Cueing Message”¹ was born. The new standard was first released in 2001 and was revolutionary for cable networks.

SCTE 35 was designed to work in MPEG-2 transport streams, which was how most video arrived at the cable networks during that time. The Scope statement of the 2001 standard contained this descriptive text:

“This standard supports the splicing of MPEG-2 streams for the purpose of Digital Program Insertion, which includes advertisement insertion and insertion of other content types. An in-stream messaging mechanism is defined to signal splicing and insertion opportunities...”

The new SCTE 35 standard defined the concept of “Splice Points” in the MPEG-2 transport stream:

“Splice Points in an MPEG-2 transport stream provide opportunities to switch from one program to another. They indicate a place to switch or a place in the bit stream where a switch can be made. Splicing at such splice points may or may not result in good visual and audio quality. That is determined by the performance of the splicing device.”

The fact that Splice Points could be used for ad insertion and insertion of other content types was revolutionary. The SCTE 35 standard quickly became the de facto world-wide standard for inserting all types of signaling information into MPEG-2 transport streams.

SCTE 35 was soon joined by SCTE 104, “Automation System to Compression System Communications Applications Program

Interface (API),² which defines the communications API between an automation system and the associated compression system that will insert SCTE 35 private sections into the outgoing transport stream. SCTE 35 and SCTE 104 are still used worldwide and are still being updated every year or two to add additional features.

In recognition of the global impact SCTE 35 and SCTE 104 had on digital video systems, the SCTE received a Technical Emmy® Award in 2011 for the creation of the SCTE 35 and SCTE 104 standards.

THE NEW PROBLEM: VIDEO OVER IP

For 20-plus years, the bulk of cable programming was distributed over satellite links to cable headends. The satellite signal was received by integrated receiver and decoder (IRD), which would convert the satellite signal to a quadrature amplitude modulation (QAM) signal for transmission over the cable network. The SCTE 35 messages were received by the IRDs and were subsequently processed by the program insertion and distribution systems. As video distribution began transitioning from satellite delivery and QAM distribution to Internet protocol (IP) networks, a new solution was needed.

Many QAM systems were developed to enable programmers to inform and affect the content delivery to subscribers. For example, during a regional sports blackout, a video provider may be required to provide alternate content to a unique geographic area serving a set of subscribers. As distributors migrate to IP-delivered content, systems must be created to replicate the traditional QAM systems in order to create a consistent service capability between QAM and IP video delivery.

THE SOLUTION: ESAM AND ESNI

In 2008, the Open Authentication Technology Committee (OATC)³ was formed to address authentication technical challenges,

as more traditional TV subscribers were trying to access content through devices other than the television. The distribution of linear video signals was growing across a broad cross-section of consumer platforms, including PCs, phones, tablets, smart TVs, and connected devices. Programmers wanted open standards for content over IP and supported the efforts within the OATC. In 2013, the OATC partnered with SCTE to turn their efforts into American National Standards.

The Event Signaling and Management (ESAM)⁴ standard established a foundational method for inter-device communication of timed events. Subsequent development of the Event Scheduling and Notification Interface (ESNI)⁵ allowed standardized out-of-band metadata communication between a content provider and their distributors to communicate business rules around content blackout, substitution, ad insertion, and so on. ESNI is widely used throughout the video delivery infrastructure and enables (1) regional blackout/alternate content selection, market protection, and other content restrictions; (2) advertising breaks, ad replacement, addressable ad opportunities, network digital video recorder (DVR) record times and restrictions and program information; and (3) audit methodology that allows providers to confirm policy execution and verify execution results. A conceptual content ecosystem for ESNI is shown in Figure 1.

The key points to know about the ANSI/SCTE 250 ESAM Real-time Event Signaling and Management API are the following:

*ESAM is an interface that allows a signal acquisition system (e.g., an encoder, transcoder, packager, or stream switcher) to submit signals to a signal decision system and receive relevant instructions for processing the signal or associated content.

*ESAM is about how the scheduler talks to the compression encoder – how to coordinate that an event is coming, start the countdown, and provide internal equipment coordination.

*The signal decision system has the ability to initiate a set of instructions based on a

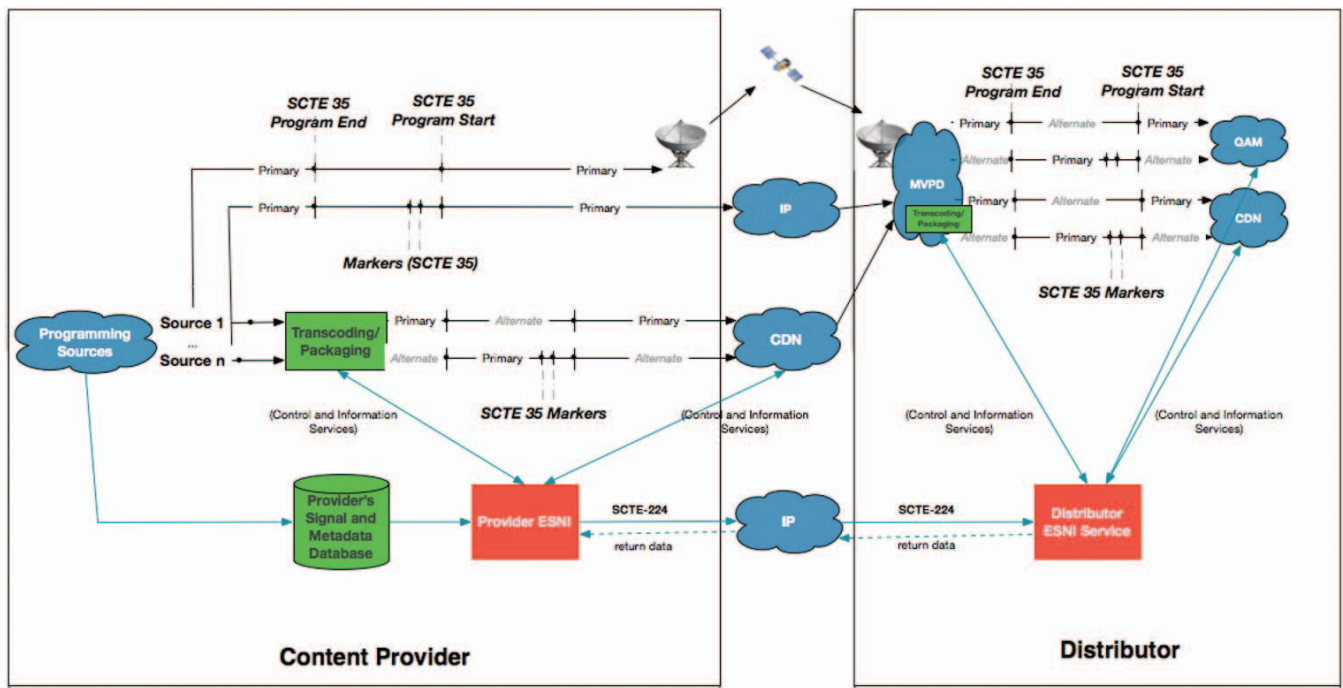


Figure 1. Conceptual Cable Content Ecosystem from SCTE 224.

schedule or event that is not signaled in the content.

The key points about the ANSI/SCTE 224 Event Scheduling and Notification Interface (ESNI) are the following:

- *ESNI provides a method to perform out of band signaling – to create a document on the Internet to say what time something needs to happen and what's allowed to happen. It enables communication from a programmer to a distributor.

- *ESNI is a web interface facilitating the transmission of event and policy information.

- *ESNI enables control of content distributed to audiences based on attributes of that audience, including (but not limited to) geographic location and device type.

- *ESNI enables regional blackout/alternate content selection, market protection, and other content restrictions as they may relate to a defined audience.

- *ESNI can also inform the distributor of other events, such as advertising breaks and availability for digital ad insertion, network personal video recorder (PVR) record times and restrictions, or program information.

*ESNI supports an audit method that allows the provider to query the status of policy execution and verify the execution result.

USING ESNI FOR ADDRESSABLE ADVERTISING

The popularity and adoption of SCTE 224, Event Scheduling and Notification Interface (ESNI), is opening new use cases where the protocol is a great fit. One new and exciting use cases is for addressable advertising where content providers and operators can use a static, national ad inventory that is better targeted to viewers and therefore can potentially generate higher ad revenues. Addressable advertisements, in this context, means replacing advertisements sold on broad age/gender demographics with advertising sold on more specific audience definitions.

This evolution in ad availability has both content providers and operators excited for revenue growth potential in this relatively untapped market. According to eMarketer (see Figure 2), U.S. addressable TV advertisement spending is expected to grow 33.1%, 27.4%,

US Linear Addressable TV Ad Spending, 2019-2023

billions, % change, and % of total TV ad spending

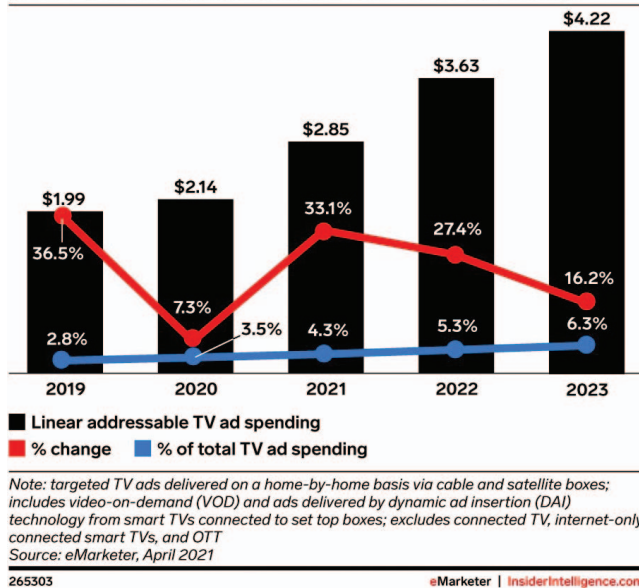


Figure 2. U.S. Linear Addressable TV Ad Spending, 2019-2023.

and 16.2% respectively in 2021, 2022, and 2023 and will eventually represent 6.3% of total TV ad spending.⁶

SCTE 224 has proven itself to be an efficient and effective means for machine-to-machine communication of out-of-band (OOB) linear rights management. Additionally, combining SCTE 224 with SCTE 35 to trigger the in-band signaling allows precision execution of linear rights for content substitution and addressable advertising management.

Ultimately, the benefits of using SCTE 224 to implement addressable advertising are plentiful and could enrich the ad environment for both content providers and operators/distributors. A short list of benefits includes the following:

- *Addressable ad slots can be identified uniquely for different operators.

- *Different ad decisioning systems can be supported by different operators.

- *Inclusion and exclusion rules can be conveyed machine-to-machine.

- *Different inclusion and exclusion rules can be executed for different operators.

*Advertisements can be enriched with scene, actor, or creative metadata in ways that strengthen visual ties and could improve overall effectiveness/CPMs.

All of those benefits come with reduced complexity within SCTE 35, because they all can be realized with a single simple SCTE 35 trigger; the rest is carried in the SCTE 224 Audience, Viewing Policy, and Policy construct. This provides a content provider with control and execution within its linear feed. No more multiple versions of a video are needed just to carry different SCTE 35 markers to different operators or multiple complex SCTE 35 markers into the video, which lead to confusing and problematic interpretations by operators.

WIDESPREAD DEPLOYMENT AND EMMY AWARDS

It's one thing to create a technology solution and create a national standard around it, but for the standard to be successful, it needs widespread adoption. To promote wider adoption, the programmers and distributors who understood the value of the ESAM and ESNI had a day-long forum for other programmers and distributors so that everyone could understand the value and could suggest further enhancements and improvements to the standards. That effort was highly successful. At the moment, Warner Media, Comcast, Charter, Cox, Fox, Disney, NBC and others fully support and promote usage of the ESAM and ESNI standards.

The SCTE was very excited to receive a Technology & Engineering Emmy® Award for its development of the Event Scheduling and Notification Interface (ESNI) standard (ANSI/SCTE 224) at the 73rd Annual Technology & Engineering Emmy® Awards, presented by the National Academy of Television Arts and Sciences (NATAS), on April 25, 2022.⁷

ESNI builds on the Event Signaling and Management API (ESAM) standard

(ANSI/SCTE 250), for which SCTE received an Emmy® Award in 2021. ESNI allows content providers to distribute alternative programming based on geographical region, timing, and other related policies.

This latest win represents the third Emmy® Award earned by SCTE. In addition to the ESNI and ESAM awards, SCTE also received a Technology & Engineering Emmy® in 2012 for developing local ad-insertion standards for cable (ANSI/SCTE 35 and ANSI/SCTE 104), which are used worldwide as foundational standards for ad insertion and program distribution control. Partnering with experts and other industry professionals to develop operational best practices for emerging technologies, the SCTE Standards program is the only American National Standards Institute-accredited developer focused on cable telecommunications.

All three SCTE Emmy® Awards are the result of the work of the SCTE Standards Program's Digital Video Subcommittee's (DVS) Working Group 5 on Digital Program Insertion (DPI). I want to congratulate that group on their excellent work for over 25 years, developing fundamental standards that are used world-wide for program signaling and ad insertion. I especially want to thank Paul Woidke, who has been the chair of DPI for over 20 years, for leading the group's development of all three Emmy® Award-winning standards!

The Digital Program Insertion Working Group is focused on the development of standards and practices that support an important revenue stream for the cable industry: advertising insertion into programs. Affecting both the content providers and the operators themselves, advertising revenue continues to grow in importance and the variety of programming vehicles expands beyond traditional QAM-based "linear television" to include IP distribution.

If you would like to join the SCTE Standards program, visit <https://scte.org/standards> for more information.

ABBREVIATIONS

ANSI: American National Standards Institute
 API: applications program interface
 DCS: digital compression system
 DVR: digital video recorder
 DTMF: dual tone multi-frequency
 DVS: Digital Video Subcommittee
 ESAM: event signaling and management
 ESNI: event scheduling and notification interface
 IP: Internet protocol
 IRD: integrated receiver and decoder
 OOB: out-of-band
 OATC: Open Authentication Technology Committee
 QAM: quadrature amplitude modulation
 SCTE: Society of Cable Telecommunications Engineers
 VOD: video on demand

NOTES

1. ANSI/SCTE 35, Digital Program Insertion Cueing Message
2. ANSI/SCTE 104, Automation System to Compression System Communications Applications Program Interface (API)
3. <https://oatc.streamingvideoalliance.org/>
4. ANSI/SCTE 250, Real-time Event Signaling and Management API
5. ANSI/SCTE 224, Event Scheduling and Notification Interface (ESNI)
6. Using SCTE 224 To Increase Advertising Revenue, Gregg Brown, Comcast Technology Solutions, SCTE CableTec Expo Fall Technical Forum, 2021 ([https://expo.scte.org/download/12773/%22%20rel=%22nofollow%22%3E2109_Brown_3374_paper\(49%20downloads\)%3C/a%3E](https://expo.scte.org/download/12773/%22%20rel=%22nofollow%22%3E2109_Brown_3374_paper(49%20downloads)%3C/a%3E))
7. <https://theemmys.tv/tech-73rd-award-recipients/>



Dean Stoneback is Senior Director of Engineering and Standards at SCTE and is responsible for the development of standards and operational practices for the broadband communications industry. Specific targets include assuring that networks are ready for Data Over Cable Service Interface Specification (DOCSIS) 4.0 deployments; enabling advanced and IP video services and digital advertising; developing Internet of things (IoT) deployment methods; and supporting the migration of networks from coax to fiber delivery. Prior to joining SCTE in 2014, Dean spent 26 years with General Instrument, Motorola, and ARRIS.