Society of Motion Picture and Television Engineers®

Fact Sheet

The Oscar® and Emmy® Award-winning Society of Motion Picture and Television Engineers® (SMPTE®), a professional membership association, is the preeminent leader in the advancement of the art, science, and craft of the image, sound, and metadata ecosystem, worldwide. An internationally recognized and accredited organization, SMPTE advances moving-imagery education and engineering across the communications, technology, media, and entertainment industries. Since its founding in 1916, SMPTE has published the SMPTE Motion Imaging Journal and developed more than 800 standards, recommended practices, and engineering guidelines.

More than 6,000 members — motion-imaging executives, engineers, creative and technology professionals, researchers, scientists, educators, and students — who meet in Sections throughout the world sustain the Society. Through the Society's partnership with the Hollywood Professional Alliance® (HPA®), this membership is complemented by the professional community of businesses and individuals who provide the expertise, support, tools, and infrastructure for the creation and finishing of motion pictures, television programs, commercials, digital media, and other dynamic media content.

SMPTE strives toward its goal through its Three Pillars:
- Membership   Promoting networking and interaction
- Standards   Developing industry standards
- Education   Enhancing expertise through the *Motion Imaging Journal*, conferences, seminars, webcasts, and Section meetings

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Mobile App Available for iOS, Android, and Kindle:
smpte.mobapp.at

Virtual Press Kit:
www.smpte.org/media

When You See High-Quality Motion-Imaging Content, You See SMPTE®

Have you ever seen the color bars television test pattern? Watched a live sports broadcast in high definition, or a movie in 3D? Downloaded or streamed content your device? Gone to see a live sporting or music event? Or, used closed captioning?

Then you've most likely seen the Oscar® and Emmy® Award-winning Society of Motion Picture Television Engineers® (SMPTE®) in action!

SMPTE standards touch nearly every piece of motion-imaging content consumed by billions of viewers around the world, ensuring that content is seen and heard in the highest possible quality on any display screen. Our standards also enable repeatable workflows and profitable business models for content creators and distributors, as well as the manufacturers who support them.

Whether you're watching on a TV at home, video online, in a theatre, or on a smart device, SMPTE is there.

With nearly 100 years of motion-imaging standards leadership, SMPTE is the innovator of some of the most iconic standards for high-quality content, as well as those that are facilitating the transition to an IP-based multiscreen world.

SMPTE Standards are recognized across the world. SMPTE is accredited by the American National Standards Institute (ANSI) and recognized by the International Standards Organization (ISO). Among its many roles on the international stage, SMPTE is the Secretariat for the ISO Technical Committee on Cinematography, TC-36.
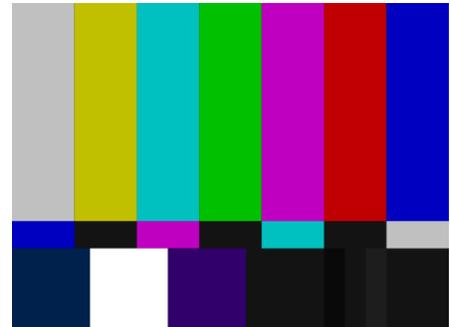
SMPTE: 800 Standards, 64 Countries, and 6,000 Members Strong

Since its founding in 1916, SMPTE has developed more than 800 standards (ST), recommended practices (RP), and engineering guidelines (EG), and it continues to innovate at a rapid clip, generating an average of 50 new standards annually focused on film and digital cinema, television, and Internet video.

By providing structure, organization, and interoperability, SMPTE has helped advance the motion-imaging industry through all of the major transitions, from the advent and

integration of sound and color to the shift from celluloid and analog to digital formats, including digital cinema, high-definition television (HDTV), and 3D TV.

In addition to thousands of individual professionals globally, more than 220 organizations from around the world support SMPTE, with sustaining members representing leaders across the media and entertainment industry.

SMPTE Diamond-level Sustaining Members include CBS, Inc., Disney/ABC/ESPN, Dolby Laboratories, Inc., Fox Entertainment Group, Microsoft, NBC Universal, Paramount Pictures, Sony Electronics, Technicolor, Inc., Telstra, and Warner Bros.

SMPTE continues its intensive global expansion strategy, with sections spanning the globe. In India (Mumbai), Ujwal Nirgudkar chairs an enthusiastic Section from one of the most prolific movie-making areas of the world. In the U.K., Chris Johns chairs a Section with more than 400 members. Australia, Canada, and Italy all have very active Sections as well.

Enabling the IP-Based Content Revolution

Massive change is sweeping across the motion-imaging industry, driven by the proliferation of IP-based video, video-capable consumer display devices, and exciting new bandwidth-hungry display technologies, such as ultra high definition (UHDTV).

The rapid pace of change introduces the potential for standards development to fragment across multiple organizations, corporations and individual efforts. Never has SMPTE's standards work been more vital – or timely. SMPTE standards are helping members of the motion-imaging industry to achieve interoperability, accelerate time to market, and pursue new revenue streams with confidence.

In 2014, SMPTE published 56 standards documents, including those related to assuring high-quality content in the IP-based video era

> It would take more than 6 million years to watch the amount of video that will cross global IP networks each month in 2016.
>
> - Annual global IP traffic will reach 1.3 zettabytes (10 to the 21st power or 1,000,000,000,000,000,000,000) per year or 110.3 exabytes per month (10 to the 18th power or 1,000,000,000,000,000,000).
> - The gigabyte equivalent of all movies ever made will cross global IP networks every three minutes.
> - The number of devices connected to IP networks will be nearly three times as high as the global population.
>
> *Cisco Visual Networking Index: Forecast and Methodology, 2011-2016*

SMPTE Innovation
SMPTE was originally founded in 1916, under the chairmanship of famed inventor Charles F. Jenkins. The Society was chartered to develop standards and provide training to streamline the U.S. government's burgeoning use of motion picture products. In tandem, SMPTE addressed the lack of standards in the emerging cinema industry where there was no agreement on film width, image format, perforations, etc., and only a small chance that a specific film could be displayed on a given projector. SMPTE increased its scope in 1950 to embrace the emerging technology of television; The Society has continuously developed standards and educational programs that have made substantive impacts on this industry.

Cinema Standards
SMPTE maintains a multitude of standards for film gauges from 8mm to 70mm, covering all these parameters plus many others such as edge coding, analog and digital sound. SMPTE standards also cover lens mounts, spools, film processing and storage, cinema sound, and a plethora of other areas needed to ensure interoperability in a complex, global industry. The use of film is declining as it is supplanted by electronic imagery in both acquisition and display, however SMPTE film standards continue to form the foundation for the industry, and a level of performance that is the benchmark for digital cinema.

SMPTE Digital Cinema standards — from those for higher frame rate capture and production, with high-performance, fast compression, and pristine projection, to others supporting efficient, interoperable workflows, better security, and a consistent and engaging movie-going experience — ushered in the era of digital cinema and are enabling its rapid expansion.

Digital Cinema has been SMPTE's ongoing opportunity to play a key role in the reinvention of a 100-year old industry. Early digital projectors proved the concept, while revealing a tremendous gap between the norms of existing electronic imagery and the demands of cinematographers. Lengthy investigations, and tests sponsored by The Entertainment Technology Center at the University of Southern California (ETC@USC) and Digital Cinema Initiatives (DCI) supported developments in the SMPTE D-Cinema Technology Committee. This committee represented all industry sectors, had participants from more than 20 countries, and included experts on all aspects of the associated arts and sciences.

The result is a suite of more than 30 SMPTE standards and engineering guidelines that have enabled a rapid and successful deployment of digital cinema, and a more engaging cinema experience. When interest in 3-D peaked, SMPTE D-Cinema standards were ready to support it. The standards have subsequently been enhanced to support higher frame rates (HFR), as used in the *Hobbit* movies, and work is proceeding to add support for immersive sound systems.

SMPTE's Cinema Sound Systems Technology Committee (TC-25CSS) is charged with the creation of SMPTE standards and recommended practices to address opportunities created by the many technical advances since cinema sound standards last were created, nearly 30 years ago. Through this work, the committee is striving to improve the quality and consistency of cinema sound, so that no matter which cinema you view a film in the experience is as close as possible to that of the mixing stage.

Digital Picture Exchange (DPX) is a common file format for digital intermediate and visual effects work (VFX). DPX provides a great deal of flexibility in storing color information, color spaces and color planes for exchange between production facilities. Multiple forms of packing and alignment are possible. The DPX specification allows for a wide variety of metadata to further clarify information stored within each file. DPX is the format chosen worldwide for still frames storage in most digital intermediate postproduction facilities and film labs.

SMPTE Digital Cinema Packaging (DCP) The cinema industry is currently in stage of transition. The current DCI Specification, version 1.2, recommends utilization of SMPTE DCP, particularly in regard to captioning, object-based audio, stereoscopic 3D, and higher frame rates (HFR). The SMPTE DCP also supports higher bitrates, dynamic 3D subtitles, Material eXchange Format (MXF), fully encrypted subtitles and auxiliary data.

Video Related Standards

SMPTE has created video standards for many years, initially for North America and other countries adopting like standards. In the 1980s, following close cooperation with SMPTE on development of the first international digital standards, the European Broadcast Union (EBU) decided to continue the close cooperation, and to rely on SMPTE to publish standards for all areas of the world. SMPTE has progressed in both analog and digital formats, and many of its standards have been used as the basis for ITU Recommendations. In the mid 2000's Japan's National Broadcaster, NHK, asked SMPTE to standardize the basic parameters of a family of Ultra-High Definition Television (UHDTV) formats, to provide a consistent basis for those doing development work in the field.

SMPTE Color Bars[©] **Television Test Patterns** have set THE consistent reference point for more than four decades to ensure color is calibrated correctly on broadcast monitors, programs, and on video cameras and displayed beautifully for consumers. Using color bars allows video, RGB, LCD, and Plasma displays, as well as duplication, television and webcast facilities, to maintain the intended chroma and luminance levels.

SMPTE Time Code© gives every frame of video its own unique identifying number, makes digital editing possible, and enables the association of other data to make audio and video even more meaningful, accurate, and repeatable, whether in post for a major studio release, in hard news environments or live sports production. It even synchronizes music and is often used to automate lighting, pyrotechnics, video, and other effects in live event production.

SMPTE Timed Text© is accelerating the transition of broadcast content to the Internet and makes it more easily accessible to tens of millions of people in the U.S. with disabilities. SMPTE Timed Text is also the basis for subtitles and captions in the Digital Entertainment Content Ecosystem's UltraViolet™ format for commercial movie and television content and is used by several video services and Internet video players.

> In 2012, the FCC declared the SMPTE Timed Text standard a safe harbor interchange and delivery format. As a result, captioned video content distributed via the Internet that uses the standard will comply with the 21st Century Communications and Video Accessibility Act, a landmark U.S. law designed to ensure the accessibility, usability, and affordability of broadband, wireless, and Internet technologies for people with disabilities.

Electro-Optical Transfer Function (EOTF) and High Dynamic Range (HDR) that viewers will see a wider range from the brightest whites to the darkest blacks providing a substantial enhancement to HD or UHDTV pictures. SMPTE standards cover the electro-optical transfer function and associated metadata. Studies are underway to determine requirements for the complete HDR and UHDTV ecosystems.

Serial Digital Interface (SDI and HD-SDI), a well-established standard in the broadcasting industry, is a family of digital video interfaces used for broadcast-grade video. High-Definition SDI (HD-SDI) is used to transfer uncompressed high-definition video. These standards are used for transmission of uncompressed, unencrypted digital video signals (optionally including embedded audio and time code) within television facilities. SMPTE was awarded an Emmy® statuette for HD-SDI in 2013. HD-SDI is a 1.5 Gb/s interface; already SMPTE has published a 3 Gb/s version, and the committees a close to completing work on the 6 Gb/s and 12 Gb/s versions needed for UHDTV and other advanced imaging applications.

Interoperable Master Format (IMF) Did you know that there are often more than 35,000 possible versions of a film based on every possible version, including cinematic exhibition, home viewing, broadcast, cable, in flight, multiple languages, varying aspect ratios, and Internet distribution? IMF is a solution that solves the issue of multiple versions and is now being deployed using SMPTE standards documents. The concept is that, rather than storing a vast number of versions, all the individual assets (such as the various possible video elements, the different audio and subtitle tracks, etc.) are stored individually, and represent the inventory required to produce any required version. For each version, an extensible markup language (XML) composition playlist (CPL) specifies how the appropriate segments of each asset should be assembled to create the required program version. Automated systems can invoke the CPL to assemble any version on demand. A new version may be created at any time by writing a new CPL.

Material eXchange Format (MXF) Is a very flexible file transfer format defined by a number of SMPTE Standards. It permits interoperability of content among various applications used in the television production chain, and enhances operational efficiency and creative freedom. It has become the universal solution in file-based television operations, and has also been adopted as the foundation for D-Cinema distribution.

SMPTE Transport of High Bit Rate Media Signals over IP Networks creates a standardized framework for the transport of video over Internet Protocols (IP) networks. This framework is vital for future-proofing content creation and distribution infrastructures as the media and entertainment industries undergo massive transitions to the IP-based enterprises that facilitate multipoint transmission, a critical enabler in monetizing content and advertising in new ways across multiple screens, such as computers, smart phones, and tablets.

Compression Systems - SMPTE has standardized five VC standards: VC-1 to VC-5 to provide well-reviewed documentation and enhanced interoperability. The latest of these is the VC-5 standard family that provides documentation and reference software for the video compression used in GoPro systems and workflows. SMPTE also has a new project to document the Apple ProRes codec.

Coding of Tactile Essence: Want to feel the roar of the engine while watching a car race? Tactile essence will make this possible! Tactile/ haptic or motion enabled broadcasts and transmissions can be described as the end to end use of technology to capture, insert and/or encode into the broadcast or transmission, transmit, decode and conversion of the tactile or haptic "feeling" and "impact" of a live event and so that a remote viewer can receive and experience not only audio and video but the haptic or tactile "feeling" and "impact" of that event, regardless of the transmission means whether cable, satellite, over-the-air, or Verizon FiOS®.

Cross-Industry Standards

SMPTE standards are developed principally to meet the needs of the media industry, however modern technology allows much wider utilities, as we have seen with SMPTE Time Code being embraced by live production and the music industry, among others.

Archive Exchange Format (AXF) is an IT-centric file container that can encapsulate any number and type of files in a fully self-contained and self-describing package, AXF supports interoperability among disparate data storage systems and ensures long–term availability of data, no matter how storage or file system technologies evolve. The nature of AXF makes it possible for equipment manufacturers and content owners to move content from their current archive systems into the AXF domain in a strategic way that does not require abandoning existing hardware unless or until they are ready to do so. In enabling the recovery of archived content in the absence of the systems that created the archives, AXF also offers a valuable means of protecting users' investment in content. AXF already has been employed around the world to help businesses store, protect, preserve, and transport many petabytes of file-based content, and the format is proving fundamental to many of the cloud-based storage, preservation, and IP-based transport services available today. Participation by bodies such as the Library of Congress, and by major storage companies, has helped to ensure that AXF will provide a compelling solution for any critical archiving requirement.

Media Device Control over IP Today's modern media storage, playback, control and effects devices lack a standardized means of exposing control functions to both operators and software applications. Standardized simple machine control functions such as PLAY, STOP, PAUSE, LIST, SEARCH, JOG, along with the ability to query storage devices would allow users to choose components and applications from various manufacturers. These would easily work together to provide control, similar to the capabilities provided by older serial and parallel control technologies.

Participating in the SMPTE Standards Process

Anyone interested in the standards process is welcome to join the SMPTE standards community. Detailed reports from SMPTE Standards meetings and more information about participating is available here: https://www.smpte.org/standards/engineering-committees.

Industry Awards and Honors: Oscar®, Emmy® Awards, and More

On 8 January 2015, SMPTE received its eighth Emmy® statuette: The Prestigious **Philo T. Farnsworth Award** at 66th Primetime Emmy® Engineering Award Ceremony. The Television Academy recognized SMPTE for its significant impact on television technology and engineering.

Academy of Motion Picture Arts and Sciences (AMPAS) Oscar® statuette for contributions to the advancement of the motion picture industry (1957).

NATAS Citation for Outstanding Achievement in Engineering Development for the standards work associated with the compatible One-Inch Type C videotape format and for the technical development of the Universal Video Tape Time Code (1974-1975).

Academy of Television Arts and Sciences (ATAS) Citation for Outstanding Achievement in Engineering Development for expeditiously achieving the difficult task of obtaining industry agreement on the One-Inch Type C Continuous Field (1977-1978).

NATAS Honor for Outstanding Achievement in Engineering Development for the standards work associated with the compatible one-inch Type C Videotape Format (1978-1979)

NATAS Emmy® Award for Outstanding Achievement in Engineering Development for early recognition of the need for a digital video studio standard, acceptance of the EBU (European Broadcast Union) proposed component requirement, and development of the hierarchy and line lock 13.5 MHz demonstration specifications, which provided the basis for a world standard (1982-1983).

NATAS Emmy® Award for Outstanding Achievement in Engineering Development for early recognition of the need for a component digital video tape recording standard, development of a recording system based on the worldwide standard for digital component sampling, and coordination with the EBU to provide the basis for a world standard for digital component video tape recording (1986-1987).

AMPAS Board of Governors Special Commendation for the contributions of the members of the engineering committees of SMPTE: "By establishing standards, they have greatly contributed to making film a primary form of international communication" (1990).

NATAS Emmy® Award in Technology and Engineering, for development and standardization of digital serial interconnection (SDI) technology for television (1992-1993).

NATAS Emmy® Award in Technology and Engineering, for development and standardization of MXF open file formats for the interchange of video and audio material (2007-2008).

NATAS Emmy® Award in Technology and Engineering, for pioneering development and deployment of Active Format system technology and system local cable ad insertion technology — digital standards for local cable advertising (2010-2011).

U.S. Federal Communications Commission (FCC) 2012 Chairman's Award for Advancement in Accessibility, presented to SMPTE for its Timed Text Standard for the captioning of video content distributed via the Internet.

NATAS Emmy® Award for Technology and Engineering in recognition of the Society's work on development, and standardization of the High-Definition Serial Digital Interface (HD-SDI) standard (2013-2014).

SMPTE 2015 Event Highlights

NAB Show's Technology Summit on Cinema
Timely and relevant insights into the techniques and technologies driving the industry forward. 11-12 April in Las Vegas. https://www.smpte.org/tsc2015

SMPTE 2015 Forum
Entertainment Technology in the Internet Age – A European Perspective
Produced in partnership with the Germany-based Fernseh- und Kinotechnische Gesellschaft (FKTG), The Forum examines how connectivity, bandwidth, and media technology improvements will impact media production and distribution across all platforms, from cinema and broadcast to mobile and interactive new media technologies. A particular focus will be the impact of European Union (EU) policy and regulatory decisions related to net neutrality and streaming. 7 – 8 May 2015 at the Fraunhofer-Forum in Berlin https://www.smpte.org/forum2015

Bits by the Bay
Produced the SMPTE Washington D.C. Section, this conference offers an immersive educational experience in the foundations and advancements of audio and video technology for television. 21-22 May in Chesapeake Beach, MD https://www.smpte.org/bits-by-the-bay

Entertainment Technology in the Internet Age (ETIA)
This 2-day event on the beautiful Stanford campus where technical, creative, and ecosystem experts will explore how the Internet is changing entertainment and provide context to help understand technology and application trends. 16-17 June at Stanford University, Palo Alto, CA http://www.smpte.org/etia

SMPTE15 Conference & Exhibition Australia
SMPTE's biennial Conference & Exhibition in Australia is the pre-eminent event for suppliers, technologists and content creators in the motion-imaging, sound and broadcast industries. 14-17 July 2015 at Moore Park Entertainment Center, Sydney http://smpte.com.au

SMPTE Symposium
Preceding the SMPTE 2015 Annual Technical Conference & Exhibition, this one-day focused event covers crucial technologies impacting content creation, aggregation and distribution. 26 Oct. in Hollywood, California www.smpte2015.org

SMPTE 2015 Annual Technical Conference & Exhibition
The preeminent gathering of motion-imaging scientists, researchers, engineers, and business decision makers designed to accelerate standards development, industry expansion, technology advancements and business success. 27 – 29 Oct. in Hollywood, California www.smpte2015.org

SMPTE 2015 Honors & Awards Ceremony
These prestigious industry awards are presented annually in conjunction with the SMPTE Annual Technical Conference & Exhibition. SMPTE highlights the outstanding leaders that advance the industry. 29 Oct. in Hollywood, California. www.smpte2015.org

SMPTE Webcasts
Conveniently scheduled webcasts covering top-of-mind technology topics. Presented by industry recognized subject matter experts, SMPTE's webcasts cover a range of areas including the latest on technologies that are currently being deployed. Webcasts include specific tracks on SMPTE Standards updates, Executive Strategy Briefings and Emerging Technologies. www.smpte.org/webcasts

SMPTE Virtual Classroom
One of the SMPTE Professional Development Academy's most innovative educational services is its Virtual Classroom. Through the Virtual Classroom, we are able to offer a variety learning opportunities to individuals around the world. www.smpte.org/education/courses

SMPTE Digital Library

A single platform for all SMPTE intellectual property, including all issues of SMPTE *Motion Imaging Journal* back to the first issues from 1916, conference papers and standards. SMPTE members benefit from complimentary access to the full journal collection. library.smpte.org

SMPTE Test Charts

SMPTE CamWhite Pocket Chart
The SMPTE CamWhite pocket chart is a consistent and reliable neutral white reference with a sturdy laminated surface. Enabling users to white-balance cameras to a scene's primary light source with precision, CamWhite charts are a versatile tool for improving the production value of images — saving both time and money in post. store.smpte.org/product_p/dlab-smpte-cw.htm

SMPTE OneShot™ Pocket Chart
Offered in a SMPTE-branded protective case, the DSC Labs OneShot™ pocket chart provides all of the color and luminance information necessary to match and reproduce color in dailies footage. Printed with a matte surface that reduces glare, the OneShot chart can be incorporated into a shot with minimal reconfiguration of cameras and lighting. This pocket tool gives users a fast means of maintaining the right look and feel for motion images, even in high pressure, time-sensitive shooting environments. store.smpte.org/product_p/dlab-smpte-pos.htm

SMPTE CamBook® 3
The SMPTE-branded book has three charts in one. It features a number of popular DSC test elements, including the CamAlign™ color bar/gray scale with "SpectroGray" patented spectrophotometrically neutral grayscale, a 12-chip color bar with four standard skin tones, resolution trumpets, and both 16:9 and 4:3 framing lines. Additional DSC test elements include three "matte" reference chips, as well as a DSC Back Focus Pattern, all of which were previously unavailable in any CamBook. store.smpte.org/product_p/dlab-smpte-ck.htm

35mm Test Materials

35-PA Test Film
Designed to facilitate quantitative measurements of projector alignment. It is produced as a camera original on black-and-white, high resolution, 35mm stock. It is intended to test various elements including, overall focus, image resolution, projector alignment, image unsteadiness, and screen image size. store.smpte.org/category_s/25.htm

35-BT – Photographic Sound Buzz-Track Test Film
Designed to facilitate the adjustment of the lateral position of the scanning light beam of 35mm photographic soundtrack projectors and reproducers. This film is produced as a variable area track, in such a way that the standard soundtrack area is opaque (no sound). While the areas immediately adjacent to the soundtrack area are modulated with square wave signals, the square wave signals allow you to adjust the scanning beam to its proper position. store.smpte.org/product_p/p35-bt-50.htm

Digital Cinema Test Materials

DPROVE
Digital PROjection VErifier, a set of D-Cinema Packages (DCPs) primarily intended for use in theaters as a check of digital projector performance, alignment, and picture-sound synchronization. DPROVE is derived from SMPTE RP 428-6:2009. The RP428-6 sequences include traditional countdown numerals in front of a "clock arm" that rotates with the position incremented on each frame. The background image contains a large number of elements to aid in verifying projection performance and alignment. These elements include center and crop markers, focus stars, gradients for detecting contouring, gamma check, black and white references, precision color patches (saturated and desaturated), human faces for flesh tones, and left-right indicators for stereo (3D) imagery. store.smpte.org/product_p/dig-dprove.htm

Standardized Evaluation Material (StEM)
This test material is designed to evaluate the performance of digital projectors and other elements of digital cinema systems. The material is presented as a short uncompressed digital movie available in 4K, 2K, and HD TIFF file formats. The evaluation material was produced by the American Society of Cinematographers (ASC) and the Digital Cinema Initiative (DCI) and is distributed exclusively through SMPTE. store.smpte.org/category_s/31.htm

SMPTE Digital Leader
The SMPTE D-Cinema Digital Leader and Digital Projection Verifier are both derived from SMPTE RP 428-6:2009. Both contain 8–second leader sequences; the Digital Leader package also includes a 4–second "foot leader" that may be used if required. Both products include sequences for aspect ratios of 1.85:1, 1.896:1 (maximum projection extent), and 2.39:1 at both 2k and 4k resolutions. The sequences are provided at 24, 25, 30, 48, 50, and 60 fps, and in flat (2D) and stereo (3D) versions where applicable. Each product includes all versions currently defined in SMPTE Standards. The RP428-6 sequences include traditional countdown numerals in front of a "clock arm" that rotates with the position incremented on each frame. The background image contains a large number of elements to aid in verifying projection performance and alignment. These elements include center and crop markers, focus stars, gradients for detecting con-touring, gamma check, black and white references, precision color patches (saturated and desaturated), human faces for flesh tones, and left-right indicators for stereo (3D) imagery. Audio "pops" are included to assist in verifying picture-sound synchronization. The Digital Leader product is primarily intended for postproduction facilities, to permit the addition of leaders and/or "foot leaders" to DCDM reels intended for conversion to encrypted DCPs. The product delivery includes numbered sets of TIFF and WAV files for each of the standardized variants. store.smpte.org/product_p/dig-leader.htm

SMPTE Registration Authority, LLC (SMPTE-RA)

SMPTE-RA provides a variety of registration and repository services for the industry and is authorized by the International Organization for Standardization (ISO) to register MPEG-2 format identifiers per ISO/IEC 13818-1:2000. Many SMPTE Standards incorporate tables of values or identifiers that may be updated from time to time (usually by the addition of new values). SMPTE-RA also serves as the repository for all such tables, providing timely updates without re-publication of the underlying document. SMPTE-RA provides the repository for the SMPTE Metadata Dictionary, and will soon offer registration services for metadata elements. http://smpte-ra.org

SMPTE Leadership: A Who's Who of the Media, Entertainment, and IT Industries

SMPTE leadership represents the world's best-known media, entertainment, and IT businesses, Fortune 100 brands, and industry-leading companies. Current Executive Committee leadership includes:

- Robert P. Seidel, President, CBS Television Network
- Wendy Aylsworth, Past President, Warner Bros.
- Matthew Goldman, Executive Vice President, Ericsson
- Peter Wharton, Secretary/Treasurer, BroadStream Solutions, LLC
- Paul Stechly, Finance Vice President, Applied Electronics, Ltd.
- Alan Lambshead, Standards Vice President, Evertz (retired)
- Patrick Griffis, Education Vice President, Dolby Laboratories
- William C. Miller, Membership Vice President, Miltag Media Technology, LLC
- Barbara Lange, Executive Director, SMPTE

The SMPTE Board of Governors is composed of representatives from across the IT, motion picture, and television industries. Current Governors include:

- Merrick Ackermans, Southern Region Governor, Turner Broadcasting
- Stephen M. Beres, Hollywood Region Governor, HBO
- Dan Burnett, Southern Region Governor, Ericsson Television, Inc.
- Paul Chapman, Hollywood Region Governor, FotoKem Industries, Inc.
- Randy Conrod, Canadian Region Governor, Imagine Communications
- Angelo D'Alessio, Europe, The Middle East, Africa, Central and South America Region Governor, CDG – CineDesign Group
- John Ferder, New York Region Governor, CBS, Inc.
- William T. Hayes, Central Region Governor, Iowa Public Television
- Sara J. Kudrle, Western Region Governor, Grass Valley, a Belden Brand
- Karl Kuhn, Eastern Region Governor, Tektronix, Inc.
- Kwok-Luen Lam, Asia/Australia Region Governor, Hong Kong Cable TV Ltd (retired)
- John Maizels, Asia/Australia Region Governor, Entropy Enterprises and Productions
- Pierre Marion, Canadian Region Governor, CBC/Radio-Canada
- John McCoskey, Eastern Region Governor, MPAA
- Mark Narveson, Western Region Governor, Patterson & Sheridan LLP
- Andrew G. Setos, Hollywood Region Governor, BLACKSTAR Engineering, Inc.
- Douglas I. Sheer, New York Region Governor, DIS Consulting Corp.
- Leon Silverman, Governor At Large, The Walt Disney Studios
- Richard Welsh, Europe, The Middle East, Africa, Central and South America Region Governor, Sundog Media Toolkit, Ltd.

SMPTE Directors are appointed by the Standards, Education and Membership Vice-Presidents:

- V. Michael Bove, Education Director, MIT Media Laboratory
- Michael DeValue, Education Director, The Walt Disney Studios
- Al Kovalick, Education Director, Media Systems Consulting
- Pete Putman, Education Director, ROAM Consulting, LLC
- Karl Kuhn, North American Sections Membership Director, Tektronix, Inc.
- Bob Edge, Standards Director, Bob Edge TV Consulting
- Howard Lukk, Standards Director, Pannon Entertainment
- Paul Treleaven, Standards Director, IABM

Requests for interviews with SMPTE leadership should be submitted to aimeericca@smpte.org