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Forum Vegas Pro Video ACES and ACEScc Intro and Tutorial for Vegas Pro balazer wrote on 4/28/2015, 7:44 PM ACES and ACEScc are color spaces for motion picture production. They enable accurate exposure compensation and color balancing, and let you easily match between shots and cameras. Sony Vegas Pro 12 and later have built-in support
for ACES. I've built a new configuration for ACEScc, which is easier to use than ACES, and works better with standard video filters. My ACES and ACEScc configurations have added color spaces: * Rec.709 and Rec.709 full range, for standard video cameras * Sony Cine1 (HyperGamma 4) * Sony NEX-VG20 * Panasonic GH2 * Panasonic GH4 * GoPro
Protune * Canon Log (C100/C300) * Panasonic V-Log With help from forum members, I can create color spaces for additional cameras. The configurations are posted on my web site: Short ACEScc Intro and Tutorial video: Follow Thank You (2) Quote Forum Vegas Pro Video ACES and ACEScc Intro and Tutorial
for Vegas Pro Follow us on VPro 23 release Date hint? Created on 8/13/2025 by MikeS VEGAS Pro Price Watch Created on 8/12/2025 by paul-g Whether you're a content creator, experienced editor or a full-stack videographer, VEGAS has all the tools you need for video editing, motion
graphics, image composition, live streaming & sound design. Our mission: to make VEGAS software faster, more efficient, and even more intuitive. Our goal: to provide users at all levels-from video editing amateurs to creative professionals-tools that are perfectly suited to their needs and demands. Video editing software This article has multiple
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message) This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. "Vegas Pro" - news · newspapers · books · scholar · JSTOR (February 2011) (Learn how and when to remove this message) This article contains
promotional content. Please help improve it by removing promotional language and inappropriate external links, and by adding encyclopedic text written from a neutral point of view. (December 2020) (Learn how and when to remove this message) Vegas ProVegas ProVegas
 100 riginal author(s)Sonic FoundryDeveloper(s)Sonic Foundry (1999-2003)Sony Pictures Digital (2003-2006)Sony Creative Software (2006-2016)MAGIX Software (2016-present)Stable release 22 Build 250 / 7 May 2025 (2025-05-07)[1] Written in C#, JScript[2]Operating system Microsoft Windows[3]Platform x86-64;[3]. NET Framework
4.0[3]TypeVideo editing softwareLicenseProprietaryWebsitewww.vegascreativesoftware.com/us/vegas-pro/ Vegas Pro (stylized as VEGAS Pro, formerly known as Sony Vegas) is a professional video editing software package for non-linear editing (NLE), designed to run on the Microsoft Windows operating system. The first release of Vegas Beta was on
11 June 1999.[4] Vegas was originally developed as a non-linear audio editing application. Version 2.0 would split the program into audio editing on
unlimited tracks, resolution-independent video sequencing, complex effects, compositing tools, 24-bit/192 kHz audio support, VST and DirectX plug-in effect support, and Dolby Digital surround sound mixing. The software was originally published by Sonic Foundry until May 2003, when Sony purchased Sonic Foundry and formed Sony Creative
Software.[5] On 24 May 2016, Sony announced that Vegas was sold to MAGIX, which formed VEGAS Creative Software, to continue support and development of the software, to continue support and development of the software.[6][7] Each release of Vegas is sold standalone; however, upgrade discounts are sometimes provided.[8] Vegas does not require any specialized hardware to run properly,
allowing it to operate on any Windows computer that meets the system requirements. [9] In the areas of compositing and motion graphics, Vegas provides a 3D track motion with control over z-depth and spatial arrangement of visual planes, including plane intersection. Many of the visual effects processing in Vegas follow an audio-like paradigm.
Effects can be applied at any stage of the visual signal flow or event level. Moreover, track levels and output level effects, such as reverb, delay, and flange, are applied in a digital audio system, like Pro Tools, Cubase, or Sonar. Master output effects can also be controlled and manipulated over time by the use of Master Bus track automation
envelopes. Although Vegas started as a non-linear multimedia audio editor, it has no MIDI capability at all (except control-desk and synchronization). For this reason, the use of Vegas is restricted only for post-production audio or for the non-linear video editing market. Vegas features integration with 24p DV. It is also one of the few non-linear video
editors that can convert other formats to 24p (or any other format) without any kind of a plug-in or third-party application to be opened simultaneously. Clips and sequences can be copied and pasted between instances of Vegas. One example of this can be
rendering a sequence in the background, while the user continues to edit in a different instance of Vegas in the foreground. Vegas provides compositing, including green screen, masking, and key-frame animation. Nesting allows a prior project to be included in another project, modulating the editing process so that an array of tracks and edits
become one track for further editing. Any changes to the previous project become reflected in the later project. Nesting is helpful in large, complex, or special effects projects, as the final rendering suffers no generation loss. Vegas Pro 1.0b running on Windows NT 4.0 Vegas 1.0 was released after a brief public beta[4] by Sonic Foundry on 23 July
1999 at the NAMM Show in Nashville, Tennessee as an audio-only tool with a particular focus on re-scaling and resampling audio. It supported formats like DivX and Real Networks RealSystem G2 file formats.[10] Martin Walker from Sound on Sound described working in Vegas 1.0 as a "very pleasurable experience, especially since so many functions
are highly intuitive" though also criticizing some features as hard to figure out due to the lack of a central help file.[11] Later, on 12 June 2000, Vegas Video and Audio 2.0 (also referred to as just Vegas 2.0) was released, [12] with its beta releasing earlier that year on 10 April.[13] This was the first version of Vegas to include video-editing tools and
was also the first to have a low-cost "LE" version alongside the regular release of Vegas 4.0. Vegas 3.0 was released the next year on 3 December, [14] and added new video effects, features for ease-of-use with DV, and support for editing Windows
Media files. Vegas 4.0 was released on 6 February 2003 and added application scripting, advanced color correction, 5.1 surround sound mixing, and Steinberg ASIO support. This was the last release under the Sonic Foundry name after it sold much of its software suite, including Sound Forge and Acid Pro, to Sony Pictures Digital for $18 million later
in 2003.[15] Under Sony's ownership, Vegas 5.0 was released on 19 April 2004, bringing 3D track motion, compositing, reversing, envelope automation. With the release of 8.0, Sony opted to go back to the original "Vegas Pro"
branding that the first version released with. It added the ability to burn Blu-ray and DVD optical media, support for 32-bit floating point audio, support for tempo-based audio effects, and more. It also moved the timeline to the bottom of the window by default with the option of moving it back to the top if the user wished to. Sony was also
experimenting with 64-bit at this time and ported Vegas Pro 8.0 to 64-bit systems under the name "Vegas Pro 8.0 to 64-bit systems under the name "Vegas Pro 9.0 added support for 4K resolution and pro camcorder formats like Red and XDCAM EX. In 2009, Sony Creative Software purchased the Velvetmatter Radiance suite of video FX plug-ins which were included in Sony
Vegas Pro 9.0. As a result, they were no longer available as a separate product from Velvetmatter.[17] Vegas Pro 10 was released in 2010 with stereoscopic 3D editing, image stabilization, OpenFX plugin support, real-time audio event effects, and a few UI changes. This was the last release to include support for Windows XP.[18] Vegas Pro 11 was
released the next year on 17 October, with GPGPU video acceleration, enhanced text tools, enh
Vegas Pro 12 Edit, for "Professional Video and Audio Production"; and Vegas Pro 12 Suite, for "Professional Editing, Disc Authoring, and Visual Effects Design". Vegas Pro 13 would be the last version released with Sony branding after the acquisition of much of Sony Creative Software's library by Magix. After they acquired Vegas, Magix released
version 14 on 20 September 2016. It featured advanced 4K upscaling as well as many bug fixes, a higher video velocity limit, RED camera support, and a variety of other features major UI changes that claim to bring usability
improvements and customization. It was the first version of VEGAS Pro to have a dark theme; it also allows more efficient editing process. Vegas Pro 15 includes support for Intel Quick Sync Video (QSV) and other technologies, as well as various other features. It introduced a new
VEGAS Pro icon as a V.[20] Vegas Pro 16 has some new features including file backup, motion tracking, improved video stabilization, 360° editing and HDR support. [21] Magix has continued to improve Vegas through version 21 with support for reading Matroska files, a more detailed render dialogue, live streaming, VST3 support, a VST 32-bit
bridge, and a selective Paste Event Attributes menu. Magix would later release a subscription model for using Vegas release. Major
broadcasters have utilized the software, such as Nightline with Ted Koppel.[23][24] Several films[which?] have used Vegas to cut their features.[25] ^ "Patch: VEGAS Pro 22 Build 250". VEGAS Community. ^ "www.vegascreativesoftware.com/us/downloads". Listed in Script FAQ's. ^ a b c "Vegas Pro Technical Specifications".
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or display resolutions with a width of around 4,000 pixels 4K resolution refers to a horizontal display resolution and digital cinematography commonly use several 4K resolutions. The movie projection industry uses 4096 × 2160 (DCI 4K). In television, 3840 × 2160 (4K UHD) with a 16:9 aspect ratio is
the dominant standard. Many 4K Blu-ray releases of ultrawide films use a letterboxed form of this, keeping the horizontal resolution is about 1600-1620 pixels.[citation needed] The 4K television market share increased as prices fell dramatically throughout 2013 and 2014.[2][3] Comparison of
common broadcast resolutions Comparison of common display resolutions The term "4K" is generic and refers to any resolution with a horizontal pixel count of approximately 4,000.[4]:2 Several different 4K resolutions have been standardized by various organizations. The terms "4K" and "Ultra HD" are used more widely in marketing than "2160p"
(cf. "1080p"). While typically referring to motion pictures, some digital camera vendors have used the term "4K photo" for still photographs, making it appear like an especially high resolution even though 3840×2160 pixels equal approximately 8.3 megapixels, which is not considered to be especially high for still photographs. [5] Comparison of DCI
and UHD resolutions In 2005, Digital Cinema Initiatives (DCI), a prominent standards organization in the cinema industry, published the Digital Cinema System Specification. This specification establishes standards organization in the cinema industry, published the Digital Cinema Initiatives (DCI), a prominent standards organization in the cinema industry, published the Digital Cinema System Specification.
The resolution of the video content inside follows the SMPTE 428-1 standard, [6]: §3.2.1 which establishes the following resolutions for a 4K distribution: [7]: 6 4096 × 2160 (flat crop, 1.85:1 aspect ratio) 3996 × 2160 (flat crop, 1.85:1 aspect ratio) 2K distributions can have a frame
rate of either 24 or 48 FPS, while 4K distributions must have a frame rate of 24 FPS.[6]:§3.1.4.2 Some articles claim that the terms "2K" and 4K formats defined in the DCI standard.[9]
 UHDTV2.[14][15] The standard defines the following characteristics for these systems: A resolution of 3840 \times 2160 (UHDTV1) or 7680 \times 4320 (UHDTV2)[15]: §5.1 A framerate of 23.976, 24, 25, 29.97, 30, 50, 59.94, 60, 100, 119.88, or 120 Hz with progressive scan[15]: §1.2 RGB,
Y'CBCR 4:4:4, 4:2:2, or 4:2:0 pixel encoding[15]:§7.7 10 bpc (36 bit/px) or 12 bpc (36 bit/px) or 12 bpc (36 bit/px) color depth[15]:§1.2 Colorimetry characteristics as defined in the standard, including color primaries, quantization parameters, and the electro-optical transfer function. These are the same characteristics later standardized in ITU-R BT.2020. UHDTV1
systems are permitted to use BT.709 color primaries up to 60 Hz.[15]:§6.2 In 2012, the International Telecommunication UHDTV) standard.[16] It adopts the same image parameters defined in SMPTE ST 2036-1.[1
Although the UHDTV standard does not define any official names for the formats it defines, ITU typically uses the terms "4K", "4K UHDTV" to refer to the 3840 \times 2160 system in public announcements and press releases ("8K" for the 7680 \times 4320 system).[18] In some of ITU's other standards documents, the terms "UHDTV1" and
"UHDTV2" are used as shorthand.[19] In October 2012, the Consumer Electronics Association (CEA) announced their definition of the term Ultra HD product as a TV, monitor, or projector with the following characteristics:[21] A resolution of
3840 \times 2160 or larger An aspect ratio of 1.77:1 (16:9) or wider Support for color depth of 8 bpc (24 bit/px) or higher At least one HDMI input capable of supporting 3840 \times 2160 at 24, 30, and 60 Hz progressive scan (though not necessarily with RGB / Y'CBCR 4:4:4 color), and HDCP 2.2 Capable of processing images according to the color space
defined in ITU-R BT.709 Capable of upscaling HD content (i.e. 720p / 1080p) The CEA definition does allow manufacturers to use other terms—such as 4K—alongside the Ultra HD logo.[4]:9 Since the resolution in CEA's definition is only a minimum requirement, displays with higher resolutions such as 4096 × 2160 or 5120 × 2880 also qualify as
"Ultra HD" displays, provided they meet the other requirements. Some 4K resolutions, like 3840 \times 2160, are often casually referred to as 2160p.[22][23][24] This name follows from the previous naming convention used by HDTV and SDTV formats, which refer to a format by the number of pixels/lines along the vertical axis (such as "1080p" for 1920").
1080 progressive scan, or "480i" for the 480-line interlaced SDTV formats) rather than the horizontal pixel count (\approx4000 or "4K" for 3840 × 2160 due to its association with the well-
known 720p and 1080p HDTV formats. Although 3840 × 2160 is both a 4K resolution and a 2160p resolution, these terms cannot always be used interchangeably since not all 4K resolutions are ≈4000 pixels wide. However, some companies have begun using the term "4K" to describe devices with
support for a 2160p resolution, even if it is not close to 4000 pixels wide. For example, many "4K" dash cams only support a resolution. [27][28] although this is a 2160p resolution, it is not a 4K resolution of 2880 \times 2160 (4:3);[25][26] although this is a 2160p resolution, it is not a 4K resolution of 2880 \times 2160 (4:3);[25][26] although this is a 2160p resolution, it is not a 4K resolution.
In 2015, LG Display announced the implementation of a new technology (29) The media and internet users later called this "RGBW" TVs because of the white sub pixel. Most of the new M+ technology was employed on 4K TV sets which led
to a controversy after tests showed that the addition of a white sub pixel replacing the traditional RGB structure would reduce the resolution by around 25%. After tests done by Intertek in which the technical aspects of LG M+ TVs were analyzed and they concluded that "the addressable resolution display is 2,880 X 2,160 for each red, green, blue", in
other words, the LG TVs were technically 2.8K as it became known in the controversy.[30][31] Although LG Display has developed this technology for use in notebook display, outdoor and smartphones, it is more popular in the TV market due to the supposed 4K UHD marketed resolution but still being incapable of achieving true 4K UHD resolution as
defined by the CTA as 3840x2160 active pixels with 8-bit per color. This negatively impacts the rendering of text, making it a bit fuzzier, which is especially noticeable when a TV is used as a PC monitor.[32][33][34][35][36] In 2019, Sony was granted the CinemaWide trademark by the European Union Intellectual Property Office (EUIPO), in which therefore the color is a second to the color in the color is a second to th
trademark covers 'Class 9' electronic devices, including smartphones. [37] According to Sony and SID, [38] the standard defines a CinemaWide 4K product with the following characteristics: A resolution video (2160p) in an aspect ratio of 21:9 Capable of upscaling
non-4K content (i.e. 720p / 1080p)[39] Sony Xperia 1 II, Xperia 1 IV and Xperia 1 V. Video sharing website YouTube and the television industry have adopted 3840 \times 2160 as their 4K standard.[40][41] As of 2014[update]
4K content from major broadcasters remained limited.[42] By late 2014, 4K content was becoming more widely available online, including on Apple TV, YouTube, Netflix, Hulu, and Amazon Prime Video.[43][44] By 2013, some UHDTV models were available to general consumers in the range of US$600.[45][46] As of 2015[update], prices on smaller
computer and television panels had dropped below US$400.[47] On March 26, 2013, the Advanced Television Systems Committee announced new proposals of a new standard called ATSC 3.0 which would implement UHD broadcasts at resolutions of up to 3840 \times 2160 or 7680 \times 4320.[48][49][50][51] The standard would also include framerates of up
to 120 Hz, HEVC encoding, wide color gamut, as well as high dynamic range.[52][53][54] In 2014, the Digital Video Broadcasting Project released a new set of standards intended to guide the implementation of high resolution content in broadcast television. Dubbed DVB-UHDTV, it establishes two standards, known as UHD-1 (for 4K content) and
UHD-2 (for 8K content). These standards use resolutions of 3840 × 2160 and 7680 × 4320 respectively, with framerates of up to 60 Hz, color depth up to 10 bpc (30 bit/px), and HEVC encoding for transmission. [55] DVB is currently focusing on the implementation of the UHD-1 standard. [56] DVB finalized UHD-1 Phase 2 in 2016, with the introduction
of service by broadcasters expected in 2017. UHD-1 Phase 2 adds features such as high dynamic range (using HLG and PQ at 10 or 12 bits), wide color gamut (BT. 2020/2100 colorimetry), and high frame rate (up to 120 Hz).[57][56] As of February 2025, both YouTube and Vimeo support high-resolution video uploads, with maximum resolutions of
4096 \times 2304 pixels (approximately 9.4 megapixels) and 4096 \times 2160 pixels (approximately 8.8 megapixels), respectively.[58] The growing availability of 4K content across streaming platforms like Netflix, Amazon Prime Video, and YouTube has made it more accessible to consumers. Vimeo's 4K content is currently limited to mostly nature
documentaries and tech coverage. [59][60] High Efficiency Video Coding (HEVC or H.265) facilitates streaming of 4K content at bitrates between 20 to 30 Mbit/s, offering efficient compression without significant quality loss. [61] In January 2014, Naughty America launched the first adult video service streaming in 4K. [62][63] In February 2025, Supering efficient compression without significant quality loss.
Bowl LIX was broadcast in 4K resolution with Dolby Vision HDR and Dolby Atmos sound for the first time. Fox aired the game, and it was also available for free streaming in 4K on Tubi, marking a significant milestone in sports broadcasting. [64][65] See also: Category: Mobile phones with 4K video recording The first mobile phones to be able to
record at 2160p (3840 × 2160) were released in late 2013, including the Samsung Galaxy Note 3, which is able to record 2160p at 30 frames per second. In the year 2014, the OnePlus One was released with the option to record DCI 4K (4096 × 2160) at 24 frames per second, as well as LG G3 and Samsung Galaxy Note 4 with optical image
stabilization. In the year 2015, Apple announced the iPhone 6s was released with the 12 megapixel camera that has the option to record 4K at 25 or 30 frames per second. In the years 2017 and 2018, mobile phone chipsets reached sufficient processing power that mobile phone vendors started releasing mobile phones that allow recording 2160p
footage at 60 frames per second for a smoother and more realistic appearance. [66] iMac with Retina Display (2014) is one of the earliest computers that utilise 4K widescreen. [67] Samsung UN105S9 105-inch (2,700 mm) ultra-high-definition 4K television In 1984, Hitachi released the ARTC HD63484 graphics processor, which was capable of
displaying up to 4K resolution when in monochrome mode. [68] The resolution was targeted at the bit-mapped desktop publishing market. [68] The first commercially available 4K camera for cinematographic purposes was the Dalsa Origin, released in 2003. [69][70] 4K technology was developed by several research groups in universities around the
world, such as University of California, San Diego, CALIT2, Keio University, Naval Postgraduate School and others that realized[71] several demonstrations in venues such as IGrid in 2004 and CineGrid. YouTube began supporting 4K for video uploads in 2010 as a result of leading manufacturers producing 4K cameras.[72] Users could view 4K video
by selecting "Original" from the quality settings until December 2013, when the 2160p option appeared in the quality menu.[73] In November 2013, YouTube began to use the VP9 video compression standard, saying that it was more suitable for 4K than High Efficiency Video Coding (HEVC). Google, which owns YouTube, developed VP9.[72] Theaters
began projecting movies at 4K resolution in 2011.[74] Sony was offering 4K projectors as early as 2004.[75] The first 4K home theater projector was released by Sony in 2012.[76] Despite this, there's not many finished films are edited
in HD resolution and enlarged to fit a 4K format.[77] Sony is one of the leading studios promoting UHDTV content, as of 2013[update] offering a little over 70 movie and television titles via digital download to a specialized player that stores and decodes the video. The large files (≈40 GB), distributed through consumer broadband connections, raise
concerns about data caps.[78] In 2014, Netflix began streaming House of Cards, Breaking Bad,[79] and "some nature documentaries" at 4K to compatible televisions with an HEVC decoder. Most 4K televisions sold in 2013 did not natively support HEVC, with most major manufacturers announcing support in 2014.[80] Amazon Studios began shooting
their full-length original series and new pilots with 4K resolution in 2014.[81] They are now currently available through Amazon Video.[82] In March 2016 the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution and high-dynamic-range video (HDR) at 60 frames per second—were released.[83] One of the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution and high-dynamic-range video (HDR) at 60 frames per second—were released.[83] One of the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution in 2014.[81] They are now currently available through Amazon Video.[82] In March 2016 the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution in 2014.[81] They are now currently available through Amazon Video.[82] In March 2016 the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution in 2014.[81] They are now currently available through Amazon Video.[82] In March 2016 the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution in 2014.[81] They are now currently available through Amazon Video.[82] In March 2016 the first players and discs for Ultra HD Blu-ray—a physical optical disc format supporting 4K resolution in 2014.[81] They are now currently available through Amazon Video.[82] In March 2016 the first players are now currently available through Amazon Video.[82] They are now currently available through Amazon Video.[82] In March 2016 the first players are now currently available through Amazon Video.[82] In March 2016 the first players are now currently available through Amazon Video.[82] In March 2016 the first players are now currently available through Amazon Video.[82] The first players are now currently available through Amazon Video.[82] The first players are now currently available through Amazon Video.[82] The first players are no
August 2, 2016, Microsoft released the Xbox One S, which supports 4K streaming and has an Ultra HD Blu-ray disc drive, but does not support 4K gaming, [85] though many games use checkerboard rendering or are upscaled 4K. [86] On
November 7, 2017, Microsoft released the Xbox One X, which supports 4K streaming and gaming,[87] though not all games are rendered at native 4K.[88] This section may need to be rewritten to comply with Wikipedia's quality standards. You can help. The talk page may contain suggestions. (July 2024) Though the price of home cinema viewing
devices began to drop rapidly from 2013, the digital video projectors remained priced in the five-figure range well into 2015, only falling below US$10,000 later that year. Sony was the sole major manufacturer offering a comprehensive 4K
projection solution as of 2015.[89] Critics argue that, at typical direct-view panel sizes and viewing distances, the extra pixels of 4K are unnecessary for normal human vision.[citation needed] In contrast, home cinema projectors use larger screens without necessarily increasing the viewing distance to match the scale. One technique to provide a more
affordable 4K experience in home cinema projectors is "e-shift." Developed by some manufacturers, e-shift extrapolates additional pixels from 1080p sources at a much lower price point than native 4K projectors. This technology reached its fourth generation in 2016.[90][91][92][93] JVC
applied this technology to create an 8K flight simulation system for Boeing, meeting the visual acuity limits of 20/25.[94] The first pixel-shifted 4K UHD projectors adopted by the market are Optoma, BenQ, Dell, et al., for those adopt a 2718×1528 pixel structure. The amount of data these projectors process is true 4K, but they overlap the pixels,
which is what pixel shifting is. In fact, each of those pixels is far larger. In fact, each one has 50% more area than true 4K. Pixel shifting projectors. This way, they project a pixel and shift it up to the right by a half diameter and project it again with modified data—the second pixel overlaid on the first. This would result in adjacent red and green pixels
effectively forming yellow, with a fringe on one side of red, on the other of green—except that the fringe takes on another color as the next line of pixels overlaps too. 4K UHD or 1080p pixel shifting cannot reveal the fine detail of a true 4K projector such as those Sony ships in the business, education, and home markets. JVC has one true 4K at
$35,000 (in mid-2017) and another for $120,000.[citation needed] While projecting UHD, it might look as though the pixel structures would have 1/4 the area of 1080p; it just doesn't happen with pixel shifting. That much resolution is only carried by a true 4K projector. This is why "true" 4K costs so much more than 4K UHD projectors that have more
or less similar feature sets. They produce smaller pixels, finer resolution—no loss of detail or color from the overlapping pixels. This is in stark contrast to the small variation in the aspect ratio difference, which would be capable of being noticeable in a few companies, such as Kaleidescape, offering media servers that enable 4K UHD Blu-ray movies
with a wide dynamic range in a home theater.[95] In November 2014, American satellite provider by AT&T) became the first pay-TV provider to offer access to 4K content, although limited to selected video-on-demand films.[96] In August 2015, British sports network BT Sport launched a 4K feed, with its first broadcast being the 2015 and the selected video-on-demand films.
FA Community Shield football match. Two production units were used, producing the traditional studio segments at pre-game or half-time, but those hosted from the stadium
by the match commentators using a 4K camera. BT envisioned that if viewers wanted to watch studio analysis, they would switch to the HD broadcast and transmitted back to BT Sport studios and decompressed for distribution, via
4K-compatible BT TV set-top boxes on an eligible BT Infinity internet plan with at least a 25 Mbit/s connection.[97][98] In late 2015 and January 2016, three of Canada's television providers - including Quebec-based Vidéotron, Ontario-based Rogers Cable, and Bell Fibe TV, announced that they would begin to offer 4K compatible set-top boxes that
can stream 4K content to subscribers over gigabit internet service. [99][100] On October 5, 2015, alongside the announcement of its 4K set-top box and gigabit internet service. [99][100] On October 5, 2015, alongside the announcement of its 4K set-top box and gigabit internet service.
Jays home games, and "marquee" National Hockey League games beginning in January 2016. Bell Media announced via its TSN division a slate of 4K telecasts to begin on January 14, 2016, in cooperation with BT Sport, Sportsnet broadcast the
first ever NBA game produced in 4K - a Toronto Raptors/Orlando Magic game at O2 Arena in London, England. On January 20, also during a Raptors game, TSN presented the first NHL game in 4K.[105] Dome Productions, a joint venture of Bell
Media and Rogers Media (the respective owners of TSN and Sportsnet), constructed a "side-by-side" 4K mobile production unit shared by Sportsnet and TSN's first 4K telecasts; it was designed to operate alongside a separate HD truck and utilize cameras capable of output in both formats.[106] For the opening game of the 2016 Toronto Blue Jays
season, Dome constructed "Trillium" - a production truck integrating both 4K and 1080i high-definition units.[107] Bell Media's CTV also broadcast the 2016, Spanish-language Univision trialed 4K by producing a closed-circuit TV broadcast of a football
friendly between the national teams of Mexico and Senegal from Miami (America) in the format. The broadcast was streamed privately to several special viewing locations. Univision aimed to develop a 4K streaming app to publicly televise the final of Copa América Centenario in 4K.[109][110][111] In March 2016, DirecTV and CBS Sports announced
that they would produce the "Amen Corner" supplemental coverage from the Masters golf tournament in 4K.[112][113] In late 2016, Telus TV announced that they would begin to offer 4K compatible set-top boxes.[114] After having trialed the technology in limited matches at the 2013 FIFA Confederations Cup,[115] and the 2014 FIFA World Cup (via
private tests and public viewings in the host city of Rio de Janeiro),[116] the 2018 FIFA World Cup was the first FIFA World Cup was the first FIFA World Cup in which all matches were produced in 4K. Host Broadcasting Services stated that at least 75% of the broadcast cut on each match would come from 4K cameras (covering the majority of main angles), with instant replays
and some camera angles being upconverted from 1080p sources. These broadcasts were made available from selected rightsholders, such as the BBC in the UK, and selected television providers in the United States.[117][118][119] Technical limitations in distributing 4K broadcasts (including the increased cost of 4K-compatible production
equipment)[120] have led to some broadcasters deciding against the format in favour of emphasizing 1080p/HDR broadcasts instead. After having broadcasts instead to some broadcasters elected to put resources behind HDR and other on-air features
instead.[121] Some U.S. broadcasters, such as CBS Sports,[122][123] Fox Sports,[124] and USA Network[125] have broadcast events promoted as having "4K" feeds, but are actually 1080p/HDR broadcaster Olympic Broadcasting
Services (OBS) in 4K, but downconverted to 1080p when received by NBC Sports' studios, and then upconverted to 4K for distribution. [125] Examples of some 4K resolution aspect ratio Pixels - 4096 \times 2560 1.6 16:10 10,485,760 - 4096 \times 2304 1.77 16:9 9,437,184 DCl
4K (full frame) 4096 \times 2160 \approx 1.90\ 256:135\ 8,847,360\ DCI 4K (CinemaScope cropped) 4096 \times 1716 \approx 2.39\ 1024:429\ 7,020,544\ DCI 4K (flat cropped) 3996 \times 2160\ 1.77\ 16:9\ 8,294,400\ -3840 \times 1920\ 2.0\ 2:1\ 7,372,800\ -3840 \times 1620\ 2.370\ 64:27\ 6,220,800\ -3840 \times 1020\ 2.00\ 2:1\ 7,372,800\ -3840 \times 1020\ 2:1\
1600 2.4 12:5 6,144,000 DFHD 3840 × 1080 3.55 32:9 4,147,200 The resolution of 3840 × 2160 is the dominant 4K resolution in the consumer media and display industries. This is the resolution of the UHDTV1 format defined by ITU-R in Rec. 2020,[16] and is also the minimum
resolution for CEA's definition of Ultra HD displays and projectors.[21] The resolution of 3840 × 2160 was also chosen by the DVB project for their 4K broadcasting standard, UHD-1.[56] This resolution of 1080p (1920 × 1080) for a total of
4 times as many pixels, and triple the horizontal and vertical resolution of 720p (1280 × 720) for a total of 9 times as many pixels. It is sometimes referred to as "2160p", based on the naming patterns established by the previous 720p and 1080p HDTV standards. In 2013, televisions capable of displaying UHD resolutions were seen by consumer
electronics companies as the next trigger for an upgrade cycle after a lack of consumer interest in 3D television. [126] This resolution is used mainly in digital cinema production, and has a total of 8,847,360 pixels with an aspect ratio of 256:135 (*19:10). It was standardized as the resolution of the 4K container format defined by Digital Cinema
Initiatives in the Digital Cinema System specification, and is the native resolution of all DCI-compliant 4K digital projectors and monitors.[6] The DCI specification allows several different resolutions for the content inside the container, depending on the desired aspect ratio. The allowed resolutions are defined in SMPTE 428-1:[6]:§3.2.1[7]:p. 6 4096
× 2160 (full frame, 256:135 or ≈1.90:1 aspect ratio) 3996 × 2160 (flat crop, 1.85:1 aspect ratio) 4096 × 1716 (CinemaScope crop, ≈2.39:1 aspect ratio) The DCI 4K standard has twice the horizontal and vertical resolution of DCI 2K (2048 × 1080), with four times as many pixels overall. Digital movies made in 4K may be produced, scanned, or stored in
a number of other resolutions depending on what storage aspect ratio is used.[127][128] In the digital cinema production chain, a resolution of scanned Super 35 mm film.[129] Various other non-standardized 4K
resolutions have been used in displays, including: 4096 × 2560 (1.60:1 or 16:10); this resolution was used in the Canon DP-V3010, a 30-inch (76 cm) 4K reference monitor designed for reviewing cinema footage in post-production, released in 2013.[130] 4096 × 2304 (1.77:1 or 16:9); this resolution was used in the 21.5-inch (55 cm) LG UltraFine
22MD4KA 4K monitor, jointly announced by LG and Apple in 2016[131] and used in the 21.5" 4K Retina iMac computer. 3840 × 2400 (1.60:1 or 16:10); this resolution is also referred to as "WQUXGA", and is four times the
resolution of WUXGA (1920 × 1200).[132] More recently, this resolution has returned in the Dell XPS Laptop series, under the name "UHD+".[133] 3840 × 1920 (2:1 or 16:8); this resolution is largely used by 360° videos[134] as they largely use a 2:1 aspect ratio. The reason is to represent a 360° on the horizontal axis and a 180° on the vertical.
\times 1600 (2.40:1 or 12:5); a number of computer monitors with this resolution have been produced, the first being the 37.5-inch (95 cm) LG 38UC99-W released in 2016. This resolution is equivalent to WQXGA (2560 \times 1600) extended in width by 50%, or 3840 \times 2160 reduced in height by \approx26%.[135] LG refers to this resolution as "WQHD+" (Wide Quad
\mathrm{HD}+),[136] while Acer uses the term "UW-OHD+" (Ultra-wide Quad HD+)[137] and some media outlets have used the term "UW4K" (Ultra-wide 4K),[138][139] 3840 × 1080 (3.55:1 or 32:9); this resolution was first used in the Samsung C49HG70, a 49-inch (120 cm) curved gaming monitor released in 2017. This resolution is equivalent to dual 1080p
displays (1920 × 1080) side-by-side, but with no border interrupting the image. It is also exactly one half of a 4K UHD (3840 × 2160) display. Samsung refers to this resolution as "DFHD" (Dual Full HD).[140] Sony Handycam FDR-AX1 See also: List of 4K video recording devices The main advantage of recording video at the 4K standard is that fine
spatial detail is resolved well. [141] Individual still frames extracted from 3840×2160-pixel video footage can act as 8.3 megapixels at 720p. If the final video resolution is reduced to 2K from a 4K recording, more detail is apparent than would have been achieved from a native 2K from a 4K recording, more detail is apparent than would have been achieved from a native 2K from a 4K recording, more detail is apparent than would have been achieved from a native 2K from a 4K recording 
recording.[141] Increased fineness and contrast is then possible with output to DVD and Blu-ray.[142] Some cinematographers record at 4K with the Super 35 film format to offset any resolution loss that may occur during video processing.[143] In full size, this image shows the difference between four subsampling schemes. The color images appear
similar. The lower row shows the resolution of the color information. Many consumer electronics such as mobile phones store video footage in Y'CBCR format with 4:2:0 chroma subsampling, which records color information at only one quarter the resolution as the brightness information. [144] For 3840 × 2160 video, this means that the color
information is only stored at 1920 × 1080.[145] Consumer cameras and mobile phones record 2160p footage at much higher bit rate reduces the visibility of compression artifacts, even if viewed on monitors with a lower resolution than 2160p. Film portalTelevision
portal 1080p Full HD - digital video format with a resolution of 1440 lines List of 4K video recording devices 2K resolution - digital video formats with a horizontal resolution of 1800 lines 1440p (WQHD) - vertical resolution of 1440 lines List of 4K video recording devices 2K resolution of 1920 × 1080, with vertical reso
of around 5,000 pixels, aimed at non-television computer monitor usage 8K resolution - digital video formats with a horizontal resolution of around 10,000 pixels 16K resolution - experimental VR format 32K resolution Aspect ratio (image) - proportional
              nip between an image's width and height Digital cinema Display resolution standards High Efficiency Video Coding (HEVC) - video standard that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 2160) and 8K (7680 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions of 4K (3840 × 4320) Ultrawid that supports 4K & 8K UHDTV and resolutions are supports 4K & 8
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Other Sources: Special Interactive Editing Project Tutorial: Vegas Forum: FrameLines.tv Interactive Editing ProjectIf you're interested in getting your feet wet as an editor, but you don't have any footage with which to practice, this might be a great opportunity for you.*This tutorial is more to art of cutting / art of editing rather than technical approach. The Art of Storytelling course by Pixar: For online Vegas Pro help still hosted in SCS: For Vegas Movie Studio version, look in this list. For DVD Architect, you can find it here. If anyone have other suggested tutorials, you can share it here as well.*Thanks to all contributors who suggest more links below: glovercover, Richard Jones, Cornico, jetdy, Steve, zulgar-cheeema, ahmed-m.