

# **HEVC Technologies Slash Bandwidth, Energy, Storage, Distribution Costs and Empower More Efficient 4K, HD, SD Video Streaming Delivery**

## **Growing Patent Pool Convenience Delivers Cost Savings to Consumers, Society Globally**

**An HEVC Technology Value and Benefits White Paper**

**by**

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### **Introduction:**

To better serve the present and future consumer appetites for video delivery and streaming, and to propel the launch of 4K UHD entertainment (requiring up to four times the video data payloads of legacy codecs for HD & SD Broadcast, Cable and Satellite video and MPEG-4/h.264 (AVC) HD SD and Blu-ray video), thousands of engineers around the world have worked nearly a decade to develop the next generation of digital video technology – HEVC, or H.265. HEVC 4K UHD, and legacy HD and SD video files can be economically delivered onto billions of viewer screens, from mobile phone and tablet size up to wall sized living room, club and auditorium environments and theaters.

Thanks to HEVC encoding/decoding technology, UHD video – which requires four times the video data for than Full HD – can be delivered

over broadcast, cable, satellite, mobile wireless, WiFi and cable modems using half the bandwidth size of today's video. Just as important, HEVC also reduces the storage space, energy costs for providers and halves the cable modem and wireless bandwidth for viewers needed to deliver HD, DVD and SD quality downloads and streams to mobile phones, tablets and set-top boxes. That translates into huge cost savings for consumers all around the world!

Naturally, HEVC, the technology which delivers cost savings to consumers and the industry, is protected by a pool of patents. These assure interoperability, high quality and dependability to viewers and content producers both. Those managers administering the HEVC Advance patent pool have reached out for feedback from content providers, wired and wireless content distributors, along with leading makers of TVs, tablets, mobile phones and other consumer products. Those dialogues have resulted in a compelling series of licensing terms and conditions establishing royalty fee pricing equitable to all.

## **Supporting Value Propositions for HEVC Present, Ongoing Industry, Societal and Consumer Value**

While HEVC has been popularly associated with 4K UHD, it also offers tremendous value to the existing digital media value chain of HD, and SD quality infrastructures as well. There, HEVC slashes storage farm, and operating energy savings to producers, delivery services and consumer internet and wireless providers. These infrastructure savings may well translate into larger catalogs of titles being made available and perhaps provide some pass-along savings to content distributors and the fees they charge for consumer content. The bandwidth savings for consumers are dramatic: half or less data is needed for enjoying HEVC content.

Some industry figures show digital video delivery accounting for up to 90% of the world's internet traffic through this decade and the next. In North America alone, consumers watching streaming video from Netflix, Hulu and other similar services routinely account for more than half of cable and telco wired broadband services and nearly as

much wireless broadband delivery to consumers!

### **HEVC Halves Bandwidth Needed for Content Producers, Distributors, Wireless Operators and Consumer Alike**

The greatest immediate value consumers will likely enjoy and appreciate is how HEVC technologies delivers to society is the dramatic reduction in data files sizes – and therefore the bandwidth needed – for the same picture quality compared to earlier technologies. All legacy HDTV quality files require up to four times the disk space and up to four times the network bandwidth to deliver than HEVC-delivered HD! Even the most recent “last generation” technology – MPEG-4/h.264 AVC – requires about double the storage space and infrastructure bandwidth, double the distribution costs, and much greater cable modem and wireless costs than HEVC streamlined, lean content for consumers.

Without HEVC, 4K UHD video files and streams would be impractical to economically delivery globally. As such, nearly all 4K UHD content, storage and delivery systems today depend on HEVC encoded content to host and convey that rich content to consumers using as little as one-eighth the bandwidth and resources required before the invention of HEVC technologies!

On the consumer and viewer audience side, the savings are similar when HEVC is applied to slimming the much larger libraries of HD, DVD and SD video conveyed daily to billions of viewers. Many wired internet subscribers face usage caps on their content, unless they pay more for additional capacity. Similarly, most wireless subscribers face monthly limits on their streaming and downloads, unless they pay much more for an overage fee. In each case, HEVC-encoded and delivered lean content, media and live streams use just a fraction of the bandwidth to deliver SD, HD and 4K UHD quality movies, programs and sports!

For consumers who prefer to load-up with “content to go” while they are in a WiFi environment where cellular bandwidth charges do not apply, HEVC permits double the hours of content to fit on your dev

ice's internal and external memory limits than traditional video files.

Consumer convenience in transferring that content while at home, school or public WiFi is also accelerated with HEVC. A cell phone or tablet owner can download or transfer usually twice as much content while in a WiFi hotspot or over paid cellular services. Those download time savings of halving the time needed add up quickly to fast lifestyles.

At a basic societal value summary, HEVC technologies can meet the consumer viewers' present and soaring appetites for digital video in all its forms. HEVC also slashes consumer data access internet and wireless charges, while bettering the content industry's own distribution costs on a global scale.

The HEVC Advance patent pool has already attracted – and will continue to attract as licensors – many of the companies that played the most significant roles in developing the HEVC standard. As a result the HEVC Advance pool license will provide the deepest and broadest coverage for the inventions at the very core of the HEVC standard. For the same reasons HEVC Advance will offer hundreds of essential patents from day one a number that will grow several fold as these same HEVC pioneers and the others who join them as licensors.

*Technology assessor Richard Doherty earned eleven U.S. Patents in his late twenties in consumer, industrial, medical and machine tool fields. A senior member of the I.E.E.E. and Consumer Electronics Conference committee member, Doherty received International Awards and U.S. Congress' Office of Technology Assessment for his reports on the technologies supporting the transitions to digital video and HDTV accolades while senior writer at Electronic Engineering Times. Doherty competed the maximum two terms allowable to volunteer on the Presidential National Medal of Technology and Innovation Selection Committee, for Presidents Bush and Obama, organized under the auspices of the U.S. Patent & Trademark Office. His consultancy, The Envisioneering Group, has contributed to scores of international standards for broadcast, cable and satellite and streaming internet video over two decades. Envisioneering did not advise nor consult to the HEVC Advance Licensing Authority prior to the preparation of this informative white paper.*

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