



Media & Entertainment Transcoding Workload and Device Royalty Forecast 2020-2030

HEVC fallout damages VVC adoption, AV1 grows on back of Android TV and OTT, LCEVC takes root, in \$7.8 billion annual royalty market



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Executive Summary

“Rethink has a commitment to forecasting markets that others shy away from – those on the verge of radical transformation”

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Snapshot Executive Summary

- AVC (H.264) declines from XX% to XX.X%, through 2020 to 2030, of total transcoding workloads, globally.
- VVC's anticipated high royalty fees stall adoption, reaching XX% in 2030.
- AV1 and its successors will reach nearly XX%, while HEVC grows to XX.X%.
- LCEVC grows to achieve XX.XX% attach rate, acting as enhancement layer for other video codecs. Close ties to AV1 propel initial growth.
- MPEG family share of transcoding workload falls from XX% in 2020 to XX.X% in 2030.
- Illustrative example shows Total Addressable Market (TAM) for video device royalties grows from \$X.XX billion in 2020 to \$X.XX billion in 2030.
- Service Obtainable Market (SOM) reaches \$X.XX billion. Annual video device sales reach X.XX billion units, globally.

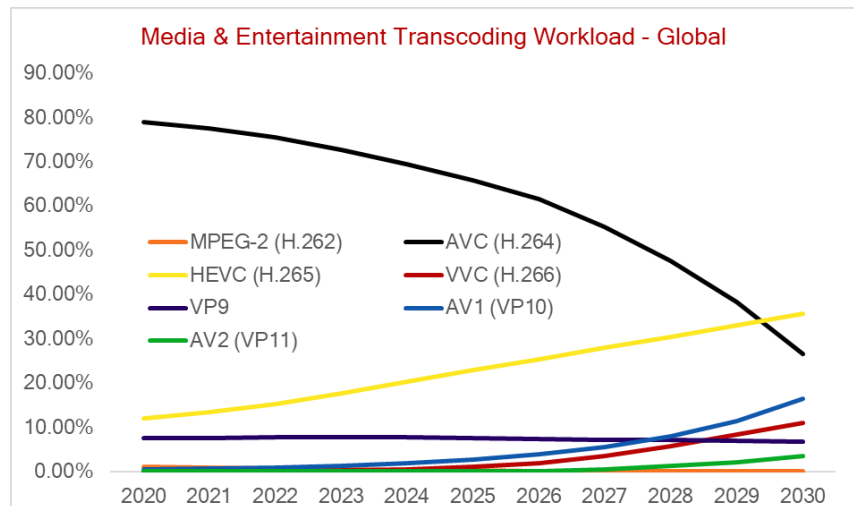
Introduction

The arrival of a new generation of video codecs, the first designed for our streaming-first Media and Entertainment world (M&E), will disrupt the transcoding market substantially, over the course of the next ten years. AVC (H.264) will finally decline, but HEVC (H.265) will not replace it entirely. As HEVC grows, its successor, VVC (H.266) will act as a direct competitor. Meanwhile, AV1 will emerge as an OTT option, but is still dogged by concerns of intellectual property ownership. Elsewhere, LCEVC will grow to an attach rate of XX.XX%, acting as an enhancement layer for other video codecs – with close ties to AV1 propelling its initial growth.

Our research suggests that AVC will begin to decline in earnest from 2026, after a more gradual decline. By the end of the period, it has fallen to XX.X%, with HEVC finally passing it that same year – reaching XX.X%. VVC, the direct successor to HEVC, will reach XX% of the transcoding workload, after arriving in smartphones in 2023, followed by TVs and set tops in 2024.

AV1 will overcome its licensing teething problems, with Sisvel establishing itself as the lone patent pool for the codec. We expect AV1 to be bolstered by Google’s mandate for the codec inside Android TV, and project AV1 to reach XX.X% of the transcoding workload by the end of the period. VP9 usage, the predecessor to AV1, is expected to remain flat and suffer a mild decline, but AV2 is expected to arrive on the scene in 2027, and grow to X.X% by the end of the period.

What this graph shows is the gradual decline of AVC, the codec of choice for media and entertainment applications. However, because there is not just one



direct successor to AVC, we see that no single codec will reach the same dominant position that AVC once held. You can see HEVC rising, passing AVC in 2029 at our current projections, as well as the arrival of AV1 in 2018.

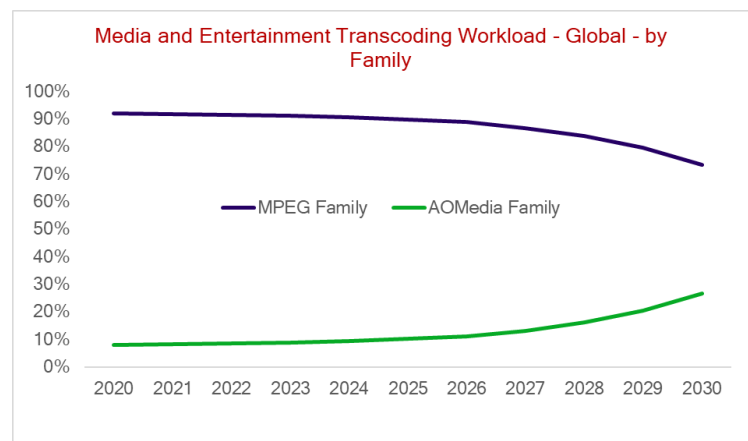
AV2 is expected to make its appearance in 2027, and leverage AV1's market position to achieve quicker uptake than its predecessor. Meanwhile, VP9 declines gradually, but is expected to linger for quite some time. None of these codecs are a flash in the pan, and our 2030 time frame shows that even the newest codecs take years to emerge and take hold.

The most pressing question here is what happens to VVC. In the graph, you can see its arrival in 2023, and then how it ramps up from 2027. It is significantly more expensive, in terms of device royalties, which delays its adoption and cedes ground to both AV1 and AV2.

The final part to consider is the success of LCEVC, which will be handled in a standalone section. It is not directly comparable to these codecs, as it is effectively an enhancement layer that builds on an existing codec, but it promises significant bandwidth savings. We evolved our thinking from an initial binary position, where by 2030, LCEVC was either at complete saturation or was nonexistent, to a model that sees its adoption closely mirror AV1. This will be explained later.

Staying with the codecs, when you group the protocols into two camps, the MPEG family and the AOMedia family, the evolution is more marked. In 2020, MPEG accounts for XX% of the transcoding workload for Media and Entertainment. In 2025, it will have declined to just XX.X%, but by 2030, it will have eroded to XX.X% - and will be on track for parity somewhere in the 2035-2040 range. However, more long-term questions about the next generation of codecs remain.

What this graph shows is how the MPEG approach will lose its dominant position in the



market. Simply put, the cost of the codec royalties has led the market to seek alternatives, and with the arrival of AV1, it looks like there is now a viable rival. Similarly, OTT streaming exists outside the traditional MPEG-stronghold that is the broadcast industry. Being web-native, AV1 enjoys significant support from the web giants, and its expected mandate inside Android TV is going to see AV1 force its way into the set top and television markets that have historically favored the MPEG family.

Of course, the recent fallout in the MPEG developer ecosystem has seen that project technically come to a halt. It is expected that another group will take on that same role, meaning that VVC will still be brought to market in the expected manner. However, MPEG's once dominant position seems to have come to an end – and the blame seems to be entirely on the mess that arose from intellectual property claims and royalties.

Extending this timeline to 2030 is a departure from our usual report format of a 5-year cadence. This is a necessity, however, due to the nature of codec adoption. What we expect to see, after 2030, is the gap to close between the two camps further. In addition, we also expect to see the first example of a new approach to video transcoding – one that reconstructs scenes from data, rather than one that displays the captured image from a camera.

Speaking of which, there is a growing divide between the image capture capabilities of modern smartphones and the display capabilities of pay TV. Consumers will notice that the images captured via their phones, and shared online, will look much better than what they are seeing through their pay TV services. OTT video can bypass the legacy infrastructure of pay TV distribution networks, and embrace HDR and improved color gamut on mobile devices, but at some point in the near future, significant investment will be required from the pay TV ecosystem, to upgrade their systems to support the modern technology.

This report intends to illustrate how the arrival of the new codecs in the media and entertainment transcoding market will play out. We will examine the cost of royalties for the video devices themselves,

Methodology

This forecast originated in a series of stakeholder interviews, which influenced a series of research meetings that culminated in the creation of a timeline for adoption of these codecs in transcoding workloads. Over a period of weeks, further interviews and sessions led to the creation of what we currently believe is the timeline at which these codecs will be deployed and adopted throughout the ecosystem.

The ten-year timeline is longer than our usual five-year one, chiefly because forecasting these next-generation codecs on a five-year cadence is not feasible. Consequently, there is a greater chance of deviation from our predictions in 2030 than we would normally expect – but this is simply a fact of forecasting such a nascent topic.

To this end, Rethink TV intends to refresh its core research publications on an annual basis. In next year's edition, we intend to properly model the revenue that will be generated by these codecs, building on the foundation of device shipments that we have established in this report.

Creating the annual shipments of devices, as the basis of our royalty calculations, took considerable effort. We remained focus on annual shipments of new devices, rather than calculating the installed-base by removing the number of previously sold devices from a cumulative total that had been terminated. This is something that future work might build on, if we need to model the precise number of devices in homes.

On this point, it is worth outlining our view of devices over the next ten years, or so. Over this period, Smart TV sales will move to account for nearly all of total Television sales. This is hardly surprising. In addition, operators will have properly begun their transition away from set top boxes, and will come to rely on the application ecosystems of Smart TVs and Connected TV Devices.

The Connected TV Devices, however, will also decline over the period. For now, they are a cheap and cheerful way to add Smart TV functionality to a 'dumb' TV. In time, that functionality is expected to be completely absorbed by Smart TVs.

The death of Games Consoles has been predicted a number of times, but the fact of the matter is that they are a long-lived product. This is mostly due to the inability for cloud gaming services to replace them entirely in the near future. The death of the games console will only occur once the complete usefulness of the hardware itself has been replaced. This means that homes must have no need for a console in any of its rooms, both for playing video games as well as streaming OTT content.

Smartphone shipments, globally, will continue to grow. Computer shipments will eventually slow, given their relative longevity, but we are wary that the long-term affect on working patterns instilled by the Covid-19 pandemic might alter this trajectory significantly. However, we do not think this will have a significant impact on our model, and it can be adjusted with ease if it does. Tablet shipments, however, are expected to dwindle, over the course of the period.

Previous reports have provided a framework for modelling how much video will be handled by each of these codecs. However, the original scope of our project, to cover both device royalties and the transcoding service revenues, would have meant future reports being delayed, in the Rethink TV calendar. To that end, we intend to revisit transcoding service revenues, and if we're lucky, more concrete details on VVC, EVC, and LCEVC pricing will have emerged.

As for the current model, our device shipments are calculated per macro region, based on household purchasing patterns. This gives us the regional amount of new video devices sales. This can then be applied to our per-device royalty tables, which will then generate our dollar-values.

It should be noted that we have included both the Total Addressable Market (TAM) and the Service Obtainable Market (SOM) in this forecast. The TAM represents a perfect world, in which every video device is paying every possible royalty. The SOM represents our expectation for the realistic achievements of this industry. TAM is useful for gauging the best possible outcomes, but not much else. SOM should be the main focus.

After the groundwork was completed, we began our usual process of vendor and customer interviews, and used the insights gleaned from these interviews then informed our model, and enabled us to refine previous research, our historic forecasts, and this demographic model, to create this Live Sports OTT Security model.

Our modelling draws on Rethink Technology Research's deep knowledge of the markets, as well as Rethink TV's expertise in the video ecosystem. Public documents and filings, and private confessions, have been combined with and used to corroborate the forecast.

Rethink TV maintains a demographic model that charts a range of criteria that help us profile countries. This ranges from population projections, landmass usage and urban population data, household income and spending, broadband internet and mobile usage, transport infrastructure and usage, and national productivity and economic data.

For our geographic regions, we are in the process of expanding our modeling to provide complete global coverage. Currently, we focus on specific regions. North America and Latin America are well known, as are MENA and APAC. However, because of the use of the latter two, our Europe classification is much larger than some – comprising Western Europe, Eastern Europe, and the Commonwealth of Independent States. In time, we hope to transition to complete forecast for Africa and Asia, which would see our regional classifications change accordingly.

Who should buy this report?

This report is critical for anyone who wants to understand how transcoding workloads are going to dramatically shift in the next decade as the next generation of codecs arrive. The answer sheds light on how OEMs will have to loosen their purse strings to keep up with consumer demand and puts a cool-headed roadmap on how and when these changes will likely take place.

This builds upon modelling from previous Rethink TV forecasts, including our last transcoding report, and various pursuits into estimating video device sales on a global level, to consider how the growing demands of consumers and video service providers – improving QoS while lowering bandwidth consumption – will shape demand for new codecs. This will have knock-on effects for all those involved in the delivery of video from a content owner to an end-user, including operators and CDNs.

This report will be of great interest to transcoding vendors, who want a reasoned outlook on how their workload will change in the coming years, as well as data that will boost their value proposition. Equally, consumer electronics manufacturers, and vendors supplying those industries, will be able to prepare for changing demands from the video community. The same can be said for any vendor that provides hardware for cloud infrastructure.

More broadly, this report should be read by C-Suite individuals, business strategists, marketers, public relations, and operations management, working in and adjacent to the transcoding, OTT, video delivery, and consumer electronics markets.

The data contained within this report, and the wealth of additional information you will find in the Rethink TV and Faultline archives, will enrich your understanding of the technologies at play here, and the wider ecosystem in which they exist. Nearly every business can use this understanding to optimize capital and operational expenditures and win more contracts.

This report includes:

- Numbers you can drop straight into your business case
- An expectation of the scale of the Transcoding and Device Royalty market through 2030
- A clear understanding of the initial scope of this market, without hype.

A direct [eCommerce purchase can be made here](#) or you can contact roz@rethinkresearch.biz for a walk through of our service offerings.

Rethink TV: Forecasting disruption in video

Rethink TV is our video research team, producing market forecasts, technology white papers and tracking operator-technology vendor relationships in pay TV, OTT video and have documented the transition of TV services from the TV set, onto laptops, tablets, phones and smart TVs and other devices.

Our sister publication Faultline Online Reporter has been Rethinking the ideas behind TV for the past 20 years. We thought it was time we gave you a reliable source of business forecasts for the underlying technologies which have made that transition possible.

Rethink TV also tracks the top 100 paid OTT service providers and their suppliers, provides monthly updates to their key providers whether that is Adaptive Bit Rate packaging, encoding, DRM, recommendation systems, analytics or programmatic advertising systems.

It comprises of two parts:

- 1) 8 forecasts a year related to OTT and video
- 2) 100 up-to-date profiles on the top 100 operators globally.

Here are some sample titles of reports we have produced recently:

- Live Sports OTT Security Forecast 2018-2026
- Pay TV and Broadband place their last chips on understanding the customer
- CDN and WebTRC Video Forecast
- New Kids on the Block – the next video wave
- Subscription VoD peaks, as Covid-19 lockdown drives sales
- How to survive the Set Top Box endgame
- Virtualization to capture 500 million fixed broadband customers by 2025
- Addressable advertising boom across all regions and platforms
- Globalization lifts TV sports rights past \$85 billion future

Annual 1-5 User license - \$3,800 (*A group license permits up to 5 users*).

Annual corporate license—\$5,100 (*unlimited distribution inside your organization*).



RETHINK TV'S MAIN CONTRIBUTORS

Alex Davies - **Senior Analyst**

alex@rethinkresearch.biz

+44 (0)117 329 1480

Rafi Cohen - **Analyst**

rafi@rethinkresearch.biz

+44 (0)117 329 1480

RETHINK LEADERSHIP

Peter White - **CEO and Co-founder**

peter@rethinkresearch.biz

+44 (0)117 925 7019

Caroline Gabriel - **Research Director**

caroline@rethinkresearch.biz

+44 (0)207 450 1230

www.rethinkresearch.biz



About Rethink Technology Research

Rethink is a thought leader in quadruple play, emerging wireless and renewable energy. It offers consulting, advisory services, research papers, live webinars, plus three weekly research services; Wireless Watch, a major influence among wireless operators and equipment makers; Faultline, which tracks disruption in the video ecosystem, and OTT video.. Rethink Energy, forecasting the changing energy landscape and its investment possibilities as renewables begin to take over from conventional fossil fuels .



Need more information?

Roz Hilton (*Business Development Director, Video Technologies*)

roz@rethinkresearch.biz

+ 44 (0)1962 732886



Bristol & Exeter House
Lower Approach Road
Temple Meads
Bristol
BS1 6QS
United Kingdom

Tel. +44 (0) 1173 291480
Tel. +44 (0) 1179 257019

www.rethinkresearch.biz

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