

Consumer Hardware Needs Content Quantity, Variety

By **Andy Marken**
andy@markencom.com



Source – CTA

Since the earliest CES, the OMG of the show has always been the screen ... bigger, better, brighter, more immersive, more versatile, less expensive.

That's a good thing because this year's virtual event (and our locked at home lives) would have been terribly dull without the screen ... and the content.

5G/NextGen TV, streaming and remote learning/work/communications tools are great, but they are nothing without the content creation industry – audio, video, gaming.

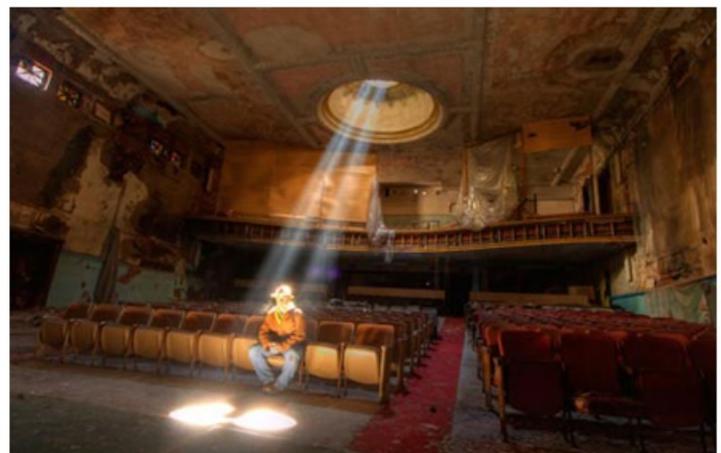
Content and virtual CES became even more important ingredients in the CTA world technology mix.

2020 left a lasting mark on our relationship with (and blurred the lines between) work, technology and entertainment.

The pandemic was devastating to the out-of-home entertainment industry – theatrical live and video.



Source – NYTimes



Source - Indiewire

***Gone Dark** – Theaters on Broadway have been dark for nearly a year and will remain so for some time to come. Cinemas have fared slightly better with people returning slowly.*

Live performances went dark.

Movie theaters – if open at all – were lonely places.

After nearly a year, a few concerts and plays have struggled to give people streamed performances.

It's a long way from "being there" and certainly can't be profitable but it's an escape, if only for an hour or two.

Movie theaters around the globe lost more than \$32B last year, according to Omdia.

While China has been modestly successful in controlling the pandemic, theaters are beginning to enjoy a new normal with an average of about 25 percent occupancy.

Even as theaters in other countries struggle to open and convince people it's time to come out of hibernation and catch a movie, the potential looks grim for some time to come.



Source – Warner Bros

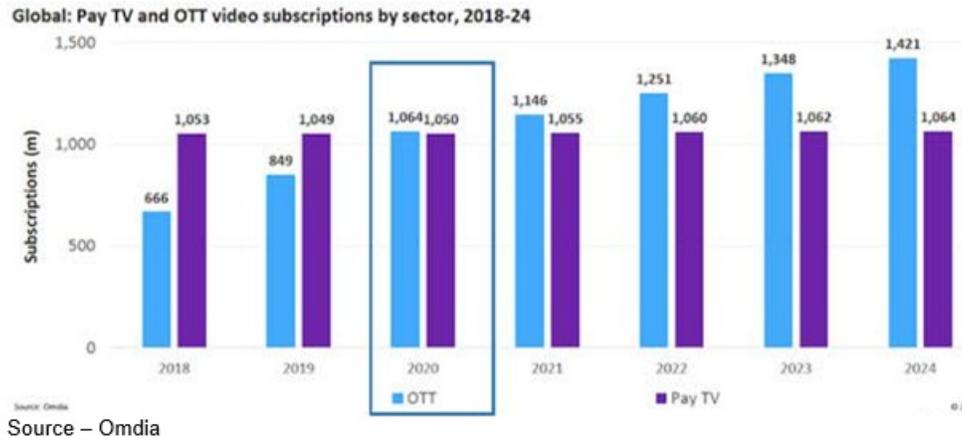
The pandemic pushed the fast-forward button on tech adoption in every segment of people's lives and the virtual CES showed how the entertainment and tech industry has responded.

We don't really blame AT&T/Warner for moving *Wonder Woman 1984* and then all of their 2021 roster of films from theatrical openings to their streaming service, HBO Max.

In the U.S., the \$200M tentpole brought in a meager \$35.8M with a global gross of \$141.7M.

With more than 17 very expensive films ready to release this year, the parent company has a pile of debt to pay off and stockholders to answer to.

Still, the sudden shift without talking with your business partners left a lot to be desired and they're appeasing the hungry beasts with money ... lots of money.



Tied, Passed – Streaming services tied with Pay TV this past year as people enjoyed a growing list of movie/series options. Streaming will grow more slowly in the coming years while time/day viewing will stagnate.

Now an important part of the CES program, CTA’s Steve Koenig noted, “It took Disney just five months to hit 50 million global subs whereas it took Netflix seven years. The point is that the events of the past year will transform the overall economy for the next decade.”

According to CTA, the total spending on streaming services and software is projected to reach a record high of \$112 billion in 2021 (11 percent growth over 2020), following 31 percent growth in 2020 over 2019.).

CTA also projects that exclusive video content and cord-cutting are driving multiple subscriptions per household to push spending to \$41B in 2021, up 15 percent over last year.



Source – Sony

One of the first things people did in the lockdown was upgrade their TVs. And according to CTA, the demand will continue through 2021.

TV sales will slip slightly to \$22B this year to 43M units, the second highest volume on record.

Larger sets (55-inch and up) will experience the greatest growth.

CTA notes that 8K UHD sets will increase 300 percent in 2021, which is difficult to understand because the terrestrial and streaming industry is only now sending 4K UHD content to the home.

8K content won't become widely available for five years or until 5G wireless and 1Gb cable services are in place.

Streaming providers – Netflix, Hulu, Amazon Prime Video, Disney+ – are the industry's leading SVOD services with more than 55 percent of the total OTT content market, according to Nielsen; and show little sign of slowing.



Source – ScreenDaily

During one of several streaming service sessions at Virtual CES, executives from Starz, Warner, Philo and Pluto emphasized that every provider is in the battle to ensure customers find their content as quickly and easily as possible.

Obviously, they aren't succeeding because Ampere Analysis notes that the average U.S. streaming household has an average of four SVOD services and at least one AVOD service.

In Western Europe, the average home has two subscription services. And despite a strong mix of original and catalog shows/movies in their lineups, it takes an average of 15 minutes to find something to watch!

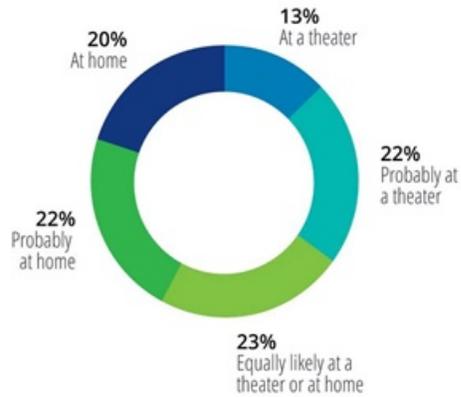
According to Ampere's Guy Bisson, AVOD, studio-direct and broadcast streaming have brought the industry to change its thinking on the way content creators, distributors, aggregators, platforms and channels view the TV market.

Regardless of how the content is delivered to the screen (smartphone, computer, table, big screen set) it's simply TV.

At the same time, studio executives realize that the movie industry won't enjoy record growth and profits without theaters.

Disney, Universal, Warner, Paramount and major/secondary studios around the globe recognize that theatrical releases are important--not just to their bottom line but also to the dedicated theater goer.

During one of the online discussions, one executive noted that nine months of home/device streaming entertainment has firmly established the fact that people can and will enjoy what they want, where they want and, on the device, they want ... even first run, tentpole productions.



Note: Sample size (N) = 1,100.

Source – Digital Media Trends

Evening Out – *As the pandemic comes under control, people will emerge from their homes just for a change of pace including experiencing a film the way it was meant to be enjoyed ... in a theater.*

At the same time, there is a large segment of the population that can't wait to escape their hibernation and return to the cinema to fully enjoy the total audio/video immersion of a film in a large venue ... the way the producer and crew intended it to be experienced.

Following new and strict production guidelines, producers and production teams around the globe have been back at work (successfully) for months, except in the U.S., which continues to have problems/issues with safe production.

International facilities have done such a good job of controlling the pandemic issues that most in Canada, London, Central/Western Europe, New Zealand and others are solidly booked for the next five years.

Just before virtual CES, Sony unveiled a pair of Crystal LED modular direct view displays for virtual production.



Source – Sony

Virtual Set – *In addition to a complete family of large and impressive TV screens at CES, Sony also unveiled its advanced Virtual LED Wall for even better and easier film, content production.*

Actually, it looks a lot like the ILM advanced LED Video Wall technology we first saw late last year that Disney/ILM used in producing *Cats*, *The Lion King* and *The Mandalorian*.

The video wall cost upward of \$1M and there are already 100 plus installed/being installed in studios around the globe and a couple of hundred more on order.

Somewhere in that backlog are several huge virtual sets for Sony Pictures.

And speaking of production, obviously almost every project has been produced by creative teams using the cloud and collaborative work tools.



Source – LumaForge/OWC

We were surprised (pleasantly) to learn during virtual CES that OWC (Other World Computing) had acquired LumaForge and its family of Jellyfish shared hardware/software storage solutions.

The video production/workflow solutions put OWC squarely in the heart of the content creation industry. The products are already widely used by national and international studios and production operations including Disney, Sony, Adobe, major YouTube channel services and others.

Of course, for us, video creation; production and distribution are the alpha-omega of content; but there is an even larger portion of the entertainment enjoyment public such as industry analysts Jon Peddie and Rob Enderle and Mark Poppin, publisher of *babbletechreviews*, constantly remind us ... it's all about gaming and especially AR/VR.

During virtual CES, we were surprised to learn that the global video gaming industry took in an estimated \$180B last year.

Do you realize that outstripped NFL, NBA, MLB, NHL ... *combined!*

Sheess...



Source – Samsung

Combined, home/portable console shipments will reach 18M units this year, up three percent earning \$6B in revenues (up 16 percent); so we guess we have to agree ... gaming is serious business.

No wonder AMD and Nvidia are doing so well and their graphic chips, desktop/mobile graphics cards are hard to find. They literally drive the gaming technology.

We like/respect one of the firms and their technology and you may prefer the other ... choice is good.

At different times, Peddie and Poppin have patiently explained to us why gaming has increased in popularity—especially during the pandemic.

Folks – young, old, male, female – go online, they game heavily/seriously, they make new friends/acquaintances, they chat/gossip ... they connect/stay connected.

Got it.



Source – CD Projekt Red

Even though we don't game, we were looking forward to *Cyberpunk 2077* because it stars Keanu Reeves and we've gotten to like him in the *Matrix* and *John Wick* movies.

We know, stupid reason, but the soundtrack was equally cool, and we figured it had to be good because they dropped a cool \$317M on development.

Unfortunately, it had a lot of early pushback on its initial release due to bugs, poor console performance and overall, under delivering on its promises.

Poppin said BabbleTechReview's three editors reviewed the launch release giving it an 8/10 noting it is flawed but overall an amazing achievement that sold 13M copies. But it won't be available for the PS5 or new Xbox X series until Q2.

Peddie was kinder, noting that no new game comes without hiccups. He likes the graphics; story progresses well and gives the gamer option paths using almost the entire keyboard and mouse buttons.

There were some stand-out winners last year that encouraged folks to buy new hardware -- *Call of Duty: Modern Warfare* and *Call of Duty: Black Ops Cold War* (Activision) and Nintendo's *Animal Crossing: New Horizons*.

That was a good thing because the virtual show had a console, computer, monitor and TV screen to meet the tastes, needs and budget of every gamer.



Source – HP

2020 was a record year for laptops (enterprise and consumer), with more families than ever working and learning from home.

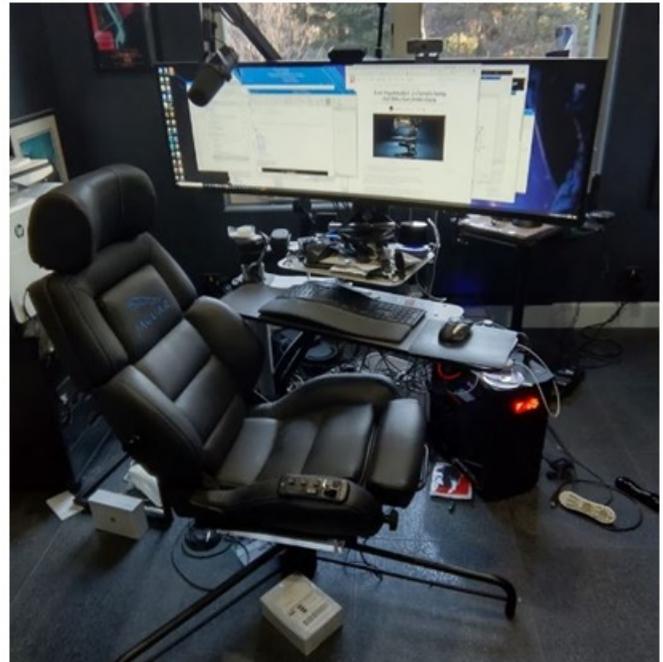
CTA predicted laptop shipments (regardless of the entertainment use) will remain strong in 2021, reaching 69 million units (up 1% over last year) and earning \$38 billion in revenue (down 2%).

We did see one gaming solution we had to share with the three during virtual CES. It was a Razer concept chair, which they claim is for next-generation immersion.

They took the gaming chair and turned it into a complete entertainment setup that adds an attached 60" OLED display that folds back into the chair when not in use. The 4D armrests roll out into adjustable peripheral tables and the chair offers Razer HyperSense tactile feedback.



Source – Razer Project Brookly Game Chair



Rob Enderle's Enhanced Game Solution

We made the mistake of suggesting that Enderle should upgrade his rig and **BAM!** he said his was better.

He took his Intel Labs chair, replaced the seat with a Recaro Touring Seat (heated, full power) and then rounded everything out with a 49-in Dell monitor.

Had to show off ... again.

The end of last year, we upgraded to a 55-inch OLED set and Rob just had to tell us he had just installed a 77-inch set ... sheess!

But that's just the way things are going to be this year with folks around the globe creating a work-from-home environment and scaling up their adoption of added online services, including SVoD.

Streaming content – video and audio – will level off this year as we continue to upgrade our devices. At the same time, gaming will become more important in the 21st century as people communicate and connect in a whole new way.

As Best Buy's CEO Corry Barry said in her opening virtual CES keynote, there is no scenario where people will revert back to a pre-pandemic world because folks have become increasingly comfortable with work and entertainment from home.

Still, when the world reaches its new normal, people will go out for dinner, go to the movies, travel, and attend CES in a hybrid fashion.

It will just take time to get there.

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Andy Marken – andy@markencom.com - is an author of more than 700 articles on management, marketing, communications and industry trends in media & entertainment, as well as consumer electronics, software and applications. An internationally recognized marketing/communications consultant with a broad range of technical and industry expertise in storage, storage management and film/video production fields; he has an extended range of relationships with business, industry trade press, online media and industry analysts/consultants.