ETC@USC

CES 2024 REPORT

Powering People
Enabling connection, collaboration and imagination

Artificial Intelligence
Innovations transforming everyday life

Sights and Screens
New ways to see, experience, and hear

CES 2024: AI Everywhere, But Not the Only Thing

CES
Consumer Technology Association

Jan 9-12, 2024
Las Vegas, Nevada

ALL ON

LG's 77" transparent Signature OLED T wireless is considered the next step in the evolution of OLED TV technology and was honored by major tech publications including CNET, Digital Trends, TechRadar, Tom's Guide, Forbes, The Verge, Wirecutter, PCMag and Mashable.

Transfiguration (2020), an artwork by Universal Everything

ENTERTAINMENT TECHNOLOGY CENTER@USC

CES 2024 REPORT

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Special Thanks to the ETC Executive Board

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Entertainment software continues to grow software and services. Audio, video and gaming dominate market share, with games leading the way, according to CTA research. Mobile and console account for 82% of games in a market moving towards hybrid and immersive formats.

CES | Consumer Technology Association

Entertainment Leads Software Spend

Consumer Spending on Software

$154B — 2022
$157B — 2023e
$163B — 2024p

- ■ Digital Health
- ■ Apps
- ■ Home Security
- ■ PC Software/Services
- ■ Extended Warranties
- ■ Audio
- ■ Video
- ■ Gaming

Entertainment Software
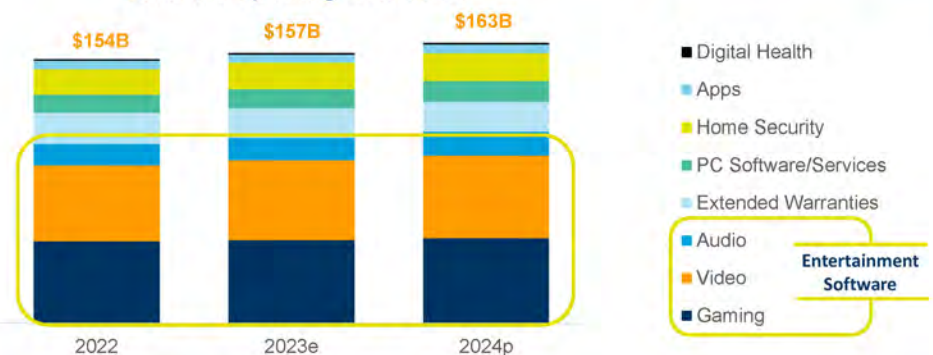
Source: CTA, U.S. Consumer Technology One-Year Forecast, January 2024

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#CES2024 | JAN 9-12
LAS VEGAS, NV

ALL ON

About this Report

The 2024 CES Report is presented by the Entertainment Technology Center at the University of Southern California (ETC), a research center and think tank organized within the School of Cinematic Arts. Find more Information at etcenter.org, read the latest industry technology news at etcentric.org, and subscribe to our free Daily News Brief. Our reporting from CES 2024 presented here, and in a narrative presentation by ETC analysts that becomes available after the completion of a series of live-onsite briefings, highlights products, technologies, companies, issues, and trends important to media, entertainment, and technology companies.

About ETC

The Entertainment Technology Center at the University of Southern California is a think tank and research center that brings together senior executives, innovators, thought leaders, and catalysts from the media & entertainment, consumer electronics, technology, and services industries along with the academic resources of the University of Southern California to explore and to act upon topics and issues related to the creation, distribution, and consumption of entertainment content. As an organization within the USC School of Cinematic Arts, ETC helps drive collaborative projects among its member companies and engages with next generation consumers to understand the impact of emerging technology on all aspects of the media and entertainment industry, especially technology development and implementation, the creative process, business models, and future trends. ETC acts as a convener and accelerator for entertainment technology and commerce through research, publications, events, collaborative projects and shared exploratory labs and demonstrations.

Disclaimer

ENTERTAINMENT TECHNOLOGY CENTER / CES 2024

ETC TRENDS AND SUMMARY

Technology that empowers creators, a new generation of displays, and the promise and peril of artificial intelligence dominated CES 2024. After several years of incremental advances, market development built on maturing technology, and over-hyped trends, this year felt different with an energy that suggests the beginning of a new era.

By Don Levy

Among the highlights were next generation displays, including MicroLED and transparent technologies. If a consensus emerged, it is that AI may be everywhere but it isn't everything. "People at the heart of creativity" was Sony's CES slogan, yet its people-centered sentiment applied broadly across the show.

More than 135,000 people flocked to Las Vegas to comb more than 2.5 million square feet of CES exhibit space occupied by over 4,300 exhibitors. CES now attracts a significant share of global media leaders and content creators. The C Space venue at the Aria Hotel not only featured packed conference sessions during Digital Hollywood and the Variety Entertainment Summit, but towers of hospitality suites buzzed with activity.

In addition to incumbent media players, the landscape now includes companies like Amazon, Samsung, LG and Netflix, which reported a reach of more than 15 million active monthly viewers one year into its ad-supported subscription tier. LG, through its webOS smart TV operating system, sells advertisers "a winning combination of global scale and unique reach," with 35 million LG TVs in the U.S. market alone.

Areas of Interest

01 Embedded AI

02 Vehicle Tech

03 AI & Digital Health

04 Screens and XR

LG's new 70-inch transparent OLED television was named Best TV by numerous reviewers including *Engadget*, *CNET*, and *Tom's Guide*. The transparent screen is intriguing but the unit respects that there are times when you don't want to see through the picture. That's when a shade rolls up behind the screen to give the viewer a solid picture.

MicroLED displays were also big news on the floor, with Samsung, LG, TCL, and Hisense all showing models. Samsung demonstrated a transparent MicroLED designed for commercial applications and not yet on the market.

Though not the first time, the screens are getting bigger and offer flexibility in that MicroLED panels can be assembled to create video walls. Take Sony's Crystal LED for example, which was really the only display in their booth and was shown to demonstrate virtual production. Sony will announce new TV and other products at their own event in the spring.

CES always attracts government officials, foreign and domestic. Last year, however, a contentious election to name a Speaker of the House sidelined legislators and congressional staff. With AI and calls for some levels of government regulation to establish guardrails on this emerging technology, Washington and international capitols were widely represented.

Among the panels and sessions, Federal Trade Commissioner Rebecca Slaughter discussed generative AI, and said, "we are on the precipice of a huge explosion in innovation. Our job is to think about how to unleash those benefits while limiting the downside risks that can take hold when a new exciting tech comes to market."

On-device generative AI was a highlight of Qualcomm President and CEO Cristiano Amon's keynote conversation. "We're entering the age of generative AI, and on-device generative AI has the potential to profoundly impact how we interact with our devices," said Amon in the CES announcement "Running AI pervasively and continually on the device will transform our user experience, making it more natural, intuitive, relevant, and personal, with increased immediacy, privacy, and security."

As the Consumer Technology Association (CTA), owner of CES, celebrates its 100th anniversary, CES announced the addition of technology as the eighth pillar in the Human Security for All (HS4A) global campaign, a partnership with the United Nations Trust Fund for Human Security (UNTFHS) and the World Academy of Art and Science.

"This year at CES, we are excited to spotlight the critical role that technology is playing to improve every aspect of the human experience," said Gary Shapiro, president and CEO of CTA.

TRENDS

The ETC@USC 2024 CES Report is organized around these key areas.

- Embedded AI

- Vehicle Technology

- Digital Health and AI

- Screens and XR in All Technology Manifestations

- Policy and Regulation
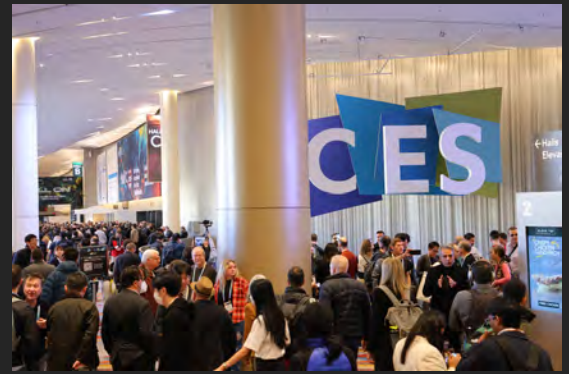
"**Generative AI represents a platform shift that fundamentally changes the way humans interact with software and will catalyze upgrades to PCs, mobile phones and other hardware.**"

— Nick Patience, lead analyst for AI and machine learning research at SP Global Market Intelligence

According to an SP Global Market Intelligence Report published in December 2023, M&A investment is down 37% and private equity off by some 44% since its peak in 2021. But that downturn is indicative of the magnitude of investment already made and the players involved. The underlying forces driving investment remain strong, the report says.

Technology must transition from proof-of-concept to production and must become more specialized before M&A deal activity in the sector gains steam, the report attributes to Goldman Sachs' Global Banking & Markets team. Policymakers across the globe will also need to crystalize legal and regulatory frameworks around the technology before potential buyers can feel confident in making an investment.

Largest AI funding rounds announced globally since 2020

| Target	Announced date	Transaction value ($M)	Select buyer/investor
OpenAI LLC	01/23/23	10,000.0	Microsoft Corp.
Anthropic PBC	09/25/23	4,000.0	Amazon.com Inc.
Metropolis Technologies Inc.	10/05/23	1,700.0	Temasek Holdings (Pvt.) Ltd. 3L Capital Management LLC
Databricks Inc.	08/31/21	1,631.3	Fidelity Management & Research Co. LLC Morgan Stanley Investment Management Inc. Tiger Global Management LLC Bank of New York Mellon Corp. Franklin Resources Inc. BlackRock Inc. T. Rowe Price Group Inc.
Beijing Horizon Robotics Technology Co. Ltd.	12/22/20	1,500.0	Dongfeng Asset Management Co. Ltd. Great Wall Motor Co. Ltd.
Anduril Industries Inc.	05/13/22	1,500.0	Lightspeed Ventures LLC WCM Investment Management LLC Andreessen Horowitz LLC
SB Technology Inc.	03/22/22	1,302.6	Breyer Capital LLC Guggenheim Investments Inc. T. Rowe Price Associates Inc.
Inflection AI Inc.	06/29/23	1,300.0	Microsoft Corp. NVIDIA Corp.
Databricks Inc.	02/01/21	1,028.7	Fidelity Management & Research Co. LLC Tiger Global Management LLC Franklin Resources Inc. BlackRock Inc. T. Rowe Price Group Inc. Amazon.com Inc. Microsoft Corp.
Group 42 Holding Ltd.	04/14/21	800.0	Silver Lake Technology Management LLC

CES TECH TRENDS TO WATCH

1. **The Year of the Megabundle:** Content providers will increase their promotion of "service bundles" to draw more consumer interest. Megabundles have the potential to offer consumers discounted rates on their favorite services while also simplifying their payment process.

2. **Streaming Up:** Consumers will spend $14 billion (up 6% over 2023) on audio streaming services and $48 billion (up 4%) on video streaming in 2024.

3. **Gaming Hardware Boom:** Product refreshes in tablets, augmented and virtual reality headsets and gaming (Major brand console refresh in 2024/2025) will boost gaming revenues in 2024. Gaming will also be amplified by 12% growth in subscription services (growing to $3.5 billion in 2024). Generative artificial intelligence is expected to improve the gaming experience while also helping developers bring games to market faster.

4. **Devices and Services Go Hand-in-Hand:** Services continue to be an essential part of product purchase, as seen through growth in the services segment. CTA estimates that 25% of all consumer spending on tech was for various software and subscription services in 2019. In just 5 years to 2024, CTA projects the same services to be just under one-third of all consumer spending.

5. **Believe the AI Hype:** Over 230 million smartphones and PCs shipping to the U.S. this year will tap the powers of generative AI through mobile apps, browsers and on-device software. AI is being deployed in mobility safety systems, fitness tracking apps on smartwatches and picture quality improvements on televisions.
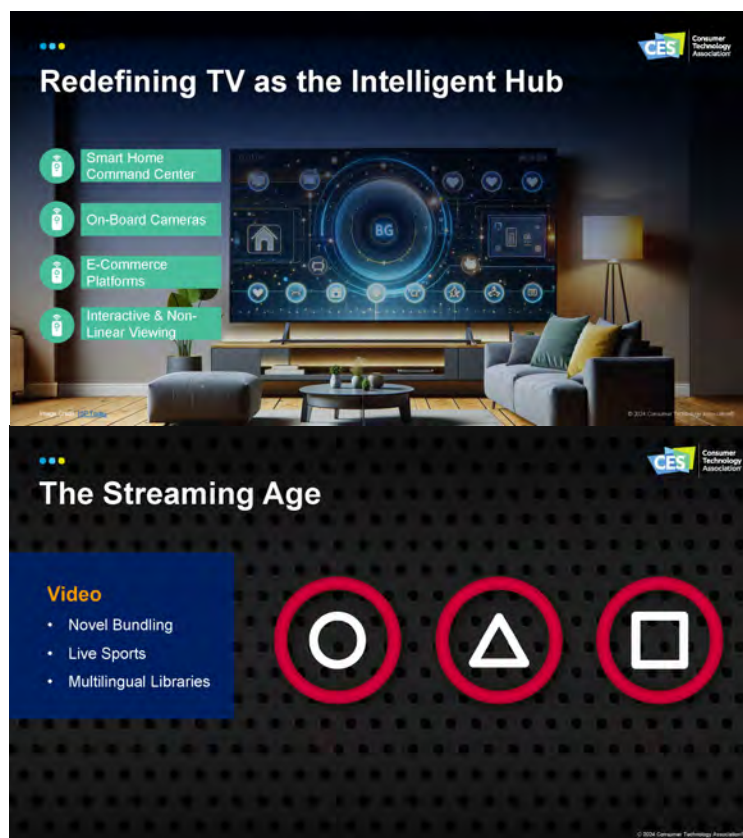
Generational Power

~69 Million — U.S. Gen Z (11-26 YO)

86% — of U.S. Gen Z say tech is essential to their lives

$ — U.S. Gen Z more likely splurge on tech

Source: ACS 5-Year Estimates Public Use Microdata Sample

MORE: CES TECH TRENDS TO WATCH

Global Connectivity Acceleration

5.4 Billion people are connected to the internet today.

90% of the global Gen Z reside in emerging markets.

1 Billion more expected to come online by 2027

92% U.S.
87% E.U.
73% CHINA
76% LAC
55% NIGERIA
46% INDIA

Digital Infrastructure Evolves

Advancing Connectivity

NextG

IoT/Edge

Li-Fi

Cybersecurity

Cloud

AI & Robotics

Digital Utilities

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CTA CES RECAP

From the Consumer Technology Association

With 4300+ exhibitors, including a record 1400+ startups from around the globe in Eureka Park®, CES showcased the innovative trends shaping tomorrow and solving the world's most pressing challenges.

"The resurgence of CES proves that face-to-face conversations and meetings are a necessity for the technology industry," said Gary Shapiro, president and CEO, Consumer Technology Association (CTA)®. "For more than 20 years, I've said that every company must become a tech company, and the diversity of exhibitors at CES 2024 proves it. The CES footprint and conference programming span the entire tech ecosystem."

Fifty top corporate leaders who comprise CTA's Board of Industry Leaders, agreed on Thursday afternoon that CES is the dominant event across AI, accessibility, digital health, mobility and so much more.

CES 2024 by the Numbers (pre-audit figures)

- 2.5+ million net square feet of exhibits, 15 percent bigger than CES 2023

- 4300+ exhibitors, including 1400+ startups within Eureka Park

- 135,000+ attendees, a record 40+ percent from 150 countries, regions and territories

- 5000+ global media and content creators

- 60% of *Fortune* 500 companies

- 250+ conference sessions with 1000+ speakers

- CES 2024 Innovation Awards program received 3000+ submissions, a record high, and included AI as a new category

- 25,000+ pieces of media content led to 160+ billion impressions of CES 2024

"CES 2024 brought the ALL ON experience for media, executives and industry thought leaders. Across the show and on CES conference stages, thousands of global brands announced new visions, products, investments and partnerships," said Kinsey Fabrizio, CTA Sr. VP, CES and membership. "Technology is solving global challenges, and we're excited to see so many collaborations and partnerships start here in Las Vegas, and produce a show where attendees come to meet, dream and solve."

Catch all the highlights and announcements from CES 2024 – including all of our conference programming—via video on demand and the CES Tech Talk Podcast.

CES 2024 Highlights

Artificial Intelligence – AI led the global conversation at CES 2024.

CTA CES RECAP

Companies highlighted the enormous potential of AI to improve our world with cutting-edge applications that will transform how we communicate, do business and take care of one another.

Human Security for All – CES established access to technology as the eighth pillar of the Human Security for All (HS4A) global campaign, which focuses on the critical role technology plays to improve every aspect of the human experience. Tech is a catalyst for tomorrow, powering solutions to pressing global challenges. This week at CES, Force for Good released a new report at the CES Research Summit on tech's influence on human securities. Aligned with CTA's CES 2024 Tech Trends to Watch, the report proved that universal connectivity and leveraging AI across human securities will improve our world.

Keynotes – For the first time, beauty brand L'Oréal Groupe took center stage for a CES keynote. Joined by partners and actress Eva Longoria, L'Oréal shared a vision of inclusive beauty tech improving lives across the world and highlighted new products and acquisitions.

CEOs from Best Buy, Elevance Health, HD Hyundai, Intel,

Nasdaq, Qualcomm, Siemens, Snap and Walmart also took to the keynote stage to present new collaborations across industries, highlight partnerships with enterprise tech leaders and announce new products.

Startups – Eureka Park grew this year with a record 1400+ startups including country pavilions representing France, Italy, Israel, Japan, Korea, Netherlands and Ukraine.

Mobility – With 600+ mobility exhibitors, CES is one of the world's largest and fastest growing global auto, mobility and transportation events. Exhibitors displayed the ecosystem of mobility, with global unveils highlighting the future of autonomous vehicles, electric vehicles, micro-mobility, software-defined vehicles and flying cars, plus the future of assistive mobility and safety systems. *Exhibitors included: BMW, Honda, Hyundai, Kia, Magna, Mercedes, Paccar, Recaro, Sony, Supernal, Togg and Vinfast.*

Sustainability – Exhibitors at CES 2024 showcased their commitment to sustainable solutions through technologies, products, and services to reduce emissions and waste by streamlining electrification, developing renewable energy sources, and

experimenting with new technologies such as battery recycling. *Exhibitors included: 3M, Caterpillar, Doosan, Goodyear, Jackery, John Deere, HD Hyundai, Kubota, Midbar, Nasdaq, Panasonic, Siemens and SK Group.*

Digital Health – Tools and technologies aimed at lowering costs, improving health equity and saving lives were highlighted. Innovations included digital therapeutics, mental wellness, sleep tech, women's health tech and telemedicine.

At the CES Digital Health Summit, Mark Cuban and his Cost Plus Drug Company broke news about a new partnership, while capacity crowds joined the Digital Health mixer and programming with officials from the FDA and across the health policy space.

During the CTA Foundation pitch contest, eight startups pitched their health tech to a standing-room-only audience. Congratulations to Augmental, the grand prize winner, and Proxy Health, the winner of the audience choice and patient safety prizes. *Exhibitors & Sponsors included: Abbott, American Medical Association, American Psychological Association, Dassault Systèmes, Humetrix, Moderna, NuraLogix,*

Philips, ResMed, Withings, Xenco Medical.

Accessibility & Innovation for All – CES 2024 fostered a platform centered on universal design for the diverse tech industry to come together and converse on the next wave of innovation. CES featured sessions on diversity in the tech industry, a wave of new technologies that will improve lives and advances in accessible gaming. CTA also announced a new investment partnership in TFX Capital, which supports veteran entrepreneurs in tech.

Attendees saw, heard and touched advancements in the health space, ensuring technology bridges the gaps in care through improved eye testing cameras or using AI-driven speech technology to simulate a natural voice for those with disordered speech. Nuance Audio Hearing Glasses by EssilorLuxottica transformed what glasses can do.

C Space: Entertainment and Content – CMOs, CCOs and CXOs converged across CES for conversations and exhibits, including at C Space, which spanned ARIA, Vdara and Cosmopolitan. Attendees from the marketing, entertainment and media industries explored the tech trends impacting content consumption, AI, programmatic and connected TV, advertising and consumer behavior—including catering to Gen Z.

Gaming & E-Sports – Gaming has evolved from the console and PC entertainment-focused days into a social platform used by most adults globally. The push for controllers and other gaming accessories with inclusive design standards will allow more consumers to become gamers. Similarly, advancements in captioning technology and hearables will ensure the entertainment sector improves accessibility. *Exhibitors included: AARP: AgeTech Collaborative, Bandai Namco, EssilorLuxottica, Garmin, LG, Meta, Microsoft, Netflix, Nvidia, Razer, Samsung, SpaceX/Starlink, Whispp and Ubisoft.*

CTA's 100th Anniversary – CTA kicked off its 100th anniversary at CES 2024, celebrating a century of igniting innovation by advocating for innovation-friendly policies, capturing emerging trends in market research, developing consensus standards, and convening innovators to solve some of the world's biggest challenges.

Innovation Policy Summit – At a moment of global uncertainty and rapid technology advancement, government leaders shared an optimistic view of regulation to empower tech innovation, including in AI. 160+ international, federal, state and local government officials and staff participated in the Leaders in Technology Program and IPS, which convened top innovators and policymakers to discuss the future of pressing tech policy issues, including privacy, health innovation, trade policy, competition, artificial intelligence and self-driving vehicles.

Senior government officials at CES 2024 included U.S. Senators John Hickenlooper (D-CO), Ben Ray Lujan (D-NM), Cynthia Lummis (R-WY), Catherine Cortez Masto (D-NV) and Jacky Rosen (D-NV), FDA Commissioner Robert Califf, FCC Commissioners Brendan Carr and Anna Gomez, FTC Commissioner Rebecca Slaughter, Deputy Assistant to the President and Deputy National Security Advisor for Cyber and Emerging Tech Anne Neuberger, Chair of the U.S. Consumer Product Safety Commission (CPSC) Alexander Hoehn-Saric and Assistant Secretary for Investment Security at the U.S. Department of the Treasury Paul Rosen. CES also attracted dozens of government officials from around the world and international organizations, including UN Envoy on Technology Amandeep Singh Gill.

We'll be ALL TOGETHER again as CES returns to Las Vegas from January 7-10, 2025.

KEYNOTES AND CONFERENCE SESSIONS

CES Keynotes in 2024 reflect a focus on consumer products, enabling technology, artificial intelligence, marketing, equity and inclusion, robotics, and sustainability with presentations from L'oreal, Intel, Siemens, Walmart, HD Hyundai, Snap and MediaLink.

(Click images to play)

CTA State of the Industry and L'Oréal

Siemens

C-Space Keynote

Walmart

HD Hyundai

Intel

CES 2024
ALL CES 2024 VIDEOS
30 Videos

CES 2024
C-SUITE PLAYLIST
49 Videos

CES 2024
CES TECH TALK PODCAST
23 Videos

CES 2024
CES 2023 ANCHOR DESK
16 Videos

Click on any of the banner arrows to access conference session videos and highlights from the show floor.

C Space, where media and marketing take center stage, featured sessions on talent, brands, content creation, AI, data, and research.

The Tech Talk Podcasts explore a variety of topics, including Decrypting Crypto, FinTech, Experiential Retail, Social Shopping, and Game Health.

ARTIFICIAL INTELLIGENCE AT AN INFLECTION POINT

By Don Levy

Devices have been getting progressively smarter and machine learning has transformed business practices, search, marketing, shopping, and more. If last year CES unveiled hints of thinking machines, this year it is apparent that AI is becoming embedded in devices and our psyche. ETC coverage takes you into some of the most relevant sessions and topics.

IBM and NVIDIA Emphasize Guardrails and Data Quality

Impact and opportunity surfaced as the dominant theme of a full day of Digital Hollywood sessions devoted to artificial intelligence at CES 2024. *Forbes* columnist Charlie Fink, moderating a panel of industry leaders from CAA, Paramount, HTC, Nvidia and Google, noted that we are in a period of disruption similar to the early 90s when the Internet went mainstream. Yet despite the transformation already underway, panelists agreed that this is neither the first nor last technology to shift the status quo, more the latest example of inevitable change and adjustment. The current conversations around AI at CES are a refreshing departure after a few years of evolutionary, not revolutionary tech confabs.

During an opening session, Steve Canepa of IBM and Richard Kerris from Nvidia, along with Nokia's Leslie Shannon who moderated, key points were made about the quality and sourcing of the data coming into large learning models and guardrails for when it comes out. "Trust in, trust out," said Kerris.

Canepa noted that the notion of bigger models being better is not the case. "A lot of models have vacuumed up so much data," he said. "Now we have to clean up the data and piles of rights."

For generative AI, rights issues are a growing concern, which companies like Adobe, Getty and Shutterstock are addressing by managing rights within their generative models.

Kerris suggested that "we will start to see watermarks and [ways to] indemnify use cases. These things we worry about are an opportunity for companies to build security, governance, rights management," and more, similar to the industry that has developed around cybersecurity.

Shannon cited a Stanford study that looked at big image video models that revealed "thousands of inappropriate images."

From left to right: Leslie Shannon, Steve Canepa, Richard Kerris. Watch.

Despite the security, ethical and intellectual property concerns, AI is already proving to be extremely valuable in creating new experiences. Canepa gave an example of the brand conscious Masters golf tournament and how "AI analyzes and classifies video from the tournament. Then our models can generate commentary, trained on their data to create branded content."

Nvidia plans to make several AI announcements in March at its GTC conference, including more on the company's Omniverse platform and its relation to digital twins.

The ability to create physically accurate, large-scale simulations — digital twins — is a powerful tool at enterprise-scale in animation and manufacturing. Yet, "it also applies to the home. Instead of robot vacuum cleaners spending their first weeks of service bumping into things to learn the layout, with a digital twin of a home the robot will know from day one," said Kerris.

SEQUOIA CAPITAL: GENERATIVE AI MARKET MAP AND INFRASTRUCTURE STACK
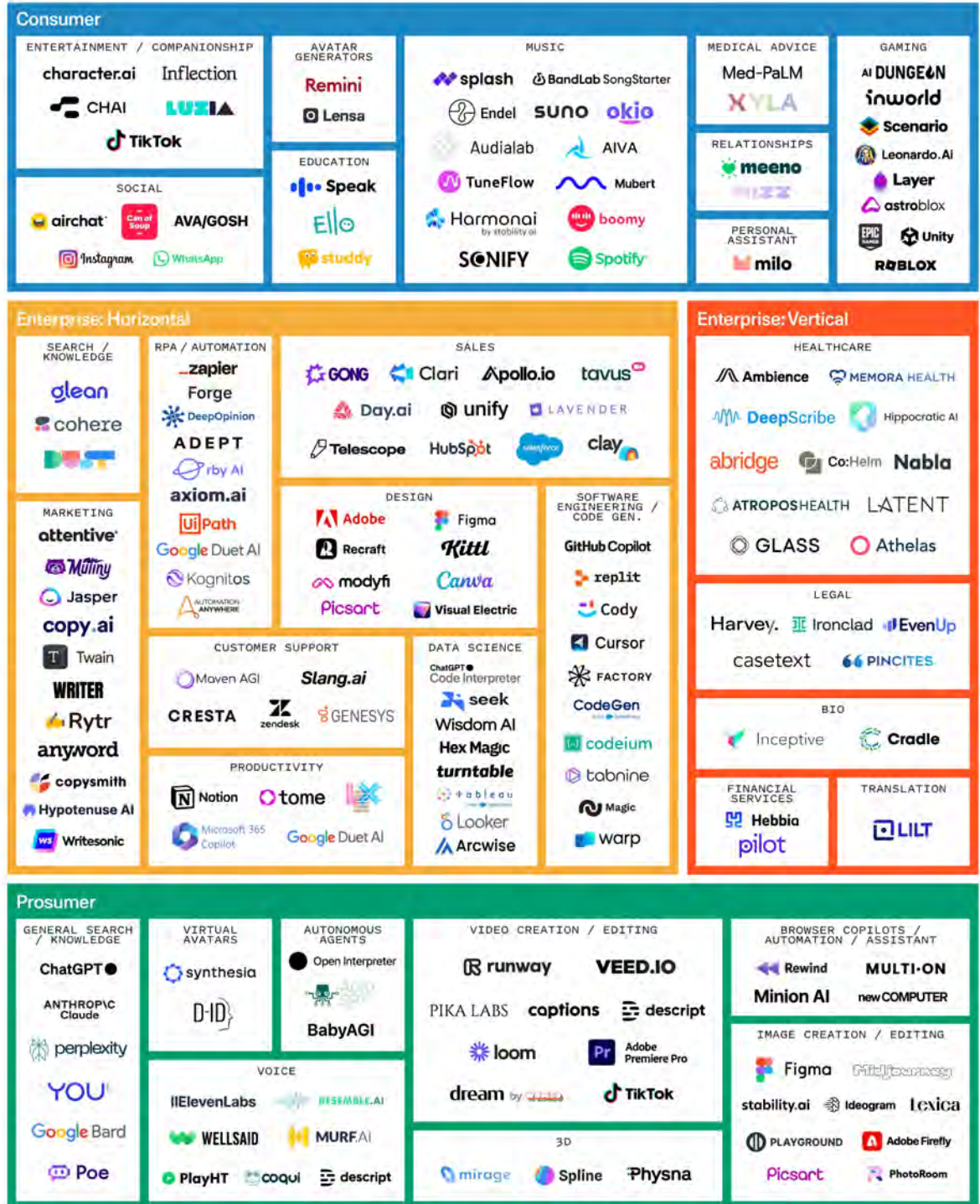
Sequoia Capital updates its chart of leading players in the Generative AI market. Read more on their website.

The Generative AI Infrastructure Stack v1

A work in progress

Production Monitoring & Observability

LLM OPS
- LangSmith
- PromptLayer
- Weights & Biases

OBSERVABILITY, MONITORING, ALERTING
- arize
- fiddler
- Helicone
- DATADOG
- Amplitude
- baserun
- GANTRY
- vellum

USER ANALYTICS
- Aquarium

FIREWALLS
- Arthur Shield
- ROBUST INTELLIGENCE

Apps & Workflows
- Retool
- Streamlit
- gradio

Developer Tools/Infra

APPLICATION FRAMEWORKS
- LangChain
- FIXIE

DATA MANAGEMENT
- mindsdb
- UNSTRUCTURED
- LlamaIndex
- Neum AI

VECTOR DATABASES
- Pinecone
- chroma
- milvus
- Weaviate
- qdrant
- supabase
- MongoDB.

Model Tuning

MODEL TRAINING & FINE TUNING
- Weights & Biases
- Amazon SageMaker
- Fireworks.ai
- anyscale
- Hugging Face
- DOMINO

DATA LABELING
- scale
- surge
- Snorkel

SYNTHETIC DATA
- gretel

Compute & Inference

GPU SUPPLY
- CoreWeave
- Lambda
- FOUNDRY
- together.ai
- CrusoeCloud
- ARMADA
- aws
- Google Cloud
- Azure

PAAS
- replicate
- Modal
- baseten
- BANANA
- RunPod
- Lepton AI

Foundation Models

TEXT
- GPT-4
- Claude
- cohere
- Llama 2
- Falcon
- Mistral AI
- contextual·ai
- Hugging Face
- AI21 labs

IMAGE
- Midjourney
- Stable Diffusion

VIDEO
- Stable Diffusion

AUDIO
- IIElevenLabs
- RESEMBLE.AI
- WELLSAID
- MURF.AI
- PlayHT
- Bark
- descript

3D
- intel
- NVIDIA.
- Luma AI

CODE
- Codex
- CodeGen
- StarCoder

OPEN SOURCE
- Hugging Face

Sequoia Capital maps the Generative AI Infrastructure stack. Read more on their website.

For additional insight on the AI Landscape, see Navigating the AI Landscape of 2024: Trends, Predictions, and Possibilities published in Towards Data Science

VIDEO: NVIDIA Avatar Cloud Engine (ACE) is a suite of technologies that help developers bring digital avatars to life with generative AI.

Nvidia Announces Avatar Cloud Engine: Generative AI for Digital Characters

By Paula Parisi

As part of what it calls "production microservices," Nvidia is adding an Avatar Cloud Engine (ACE) that lets game developers, as well as those who make tools and middleware, to integrate generative AI models into the digital avatars created for games and applications. The new ACE microservices "let developers build interactive avatars using AI models such as Nvidia Omniverse Audio2Face (A2F), which creates expressive facial animations from audio sources, and Nvidia Riva automatic speech recognition (ASR), for building customizable multilingual speech and translation applications using generative AI," Nvidia says.

In a newsroom post announcing the ACE microsoervices, Nvidia says developers including Charisma.AI, Convai, Inworld, miHoYo, NetEase Games, Ourpalm, Tencent and Ubisoft are already using it.

Convai, which has already demoed a convincing use of the tech, is now showcasing a further advance that "empowers users to engage NPCs dynamically, seeking real-time responses and actions," VentureBeat writes, adding that "characters now execute complex tasks, fetch items, and initiate interactions with other NPCs," also

known as non-playable characters (more or less extras, or supporting cast).

"Even during idle moments in the game, Convai-enabled NPCs engage with each other, expanding the spectrum of their interactions and perceptions within the virtual world," VentureBeat explains, linking the demo.

Put simply, "ACE tech combines speech-to-text recognition and text-to-speech responses with generative AI facial animation and automated character personas to spit out computer-created character interactions," explains Polygon, reporting on a CES 2024 demo which showed how ACE works. It is designed to integrate with game engines like Unity and Unreal Engine.

"Nvidia ACE opens up new possibilities for game developers by populating their worlds with lifelike digital characters while removing the need for pre-scripted dialogue, delivering greater in-game immersion," Keita Iida, VP of developer relations at Nvidia tells IGN India.

Meanwhile, a Tom's Guide writer says "Nvidia AI NPCs freak me out but they might be the next big thing for video games," enthusing over the fullness of the conversation, and realistic lip movements in the Convai-produced demo.

INFLECTION POINT

Voiseed Upgrades Its Platform for Expressive AI Voices

By Paul Bennun

Milano-based Voiseed demonstrated its web-based Revoiceit platform at CES, pitched as the best way to manage synthetic voice actors, particularly ensuring that synthetic voices present realistic emotions. The company describes it as a cloud-based solution that uses "generative AI to infuse virtual voices with human emotions and prosody,
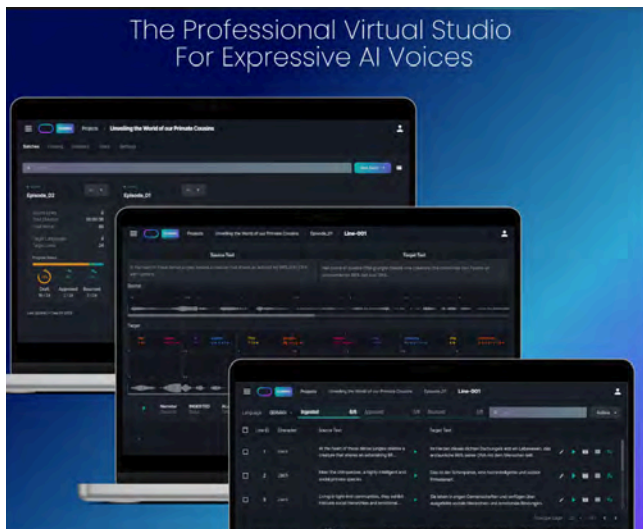
creating highly expressive, lifelike audio experiences." While Revoiceit's most obvious feature is its Studio (imagine Adobe Audition devoted to second-by-second management of voices), it may well be the product's forthcoming API that provides real value to developers of entertaining technology products.

Revoiceit aims to provide any creator employing artificial voice actors with highly granular control over their performance. This control extends to a comprehensive list of voice attributes: emotional affect is the banner feature, but other elements of intonation are also controllable. For example, the studio permits a user to use IPA markup (the baroque symbols you'll find following words in dictionaries that provide a standard pronunciation guide).

The system was created to assist localization of dialogue for applications such as games, and promises the ability to provide seamless translation of dialogue into any supported language. It's 'human in the loop' approach marks Voiseed as yet another company carefully considering real-world workflow in the design and presentation of its features. Interestingly, the company also appears proud of its

ethical approach to voices, and claims a fully in-house approach with a 'no cloning' policy.

Given the system is already capable of setting second-by-second changes in emotional expression, at CES the company made clear its intention to expose its endpoints to developers via a yet-to-be-published API.

This is particularly interesting for applications that track the emotional state of system player characters in games or interactive entertainment, where their emotional state may be affected by a human audience member, or even another character. A developer could simply concentrate on the logic of the game, and the affect presented by SPCs could be controlled by Voiseed.

Walmart Introduces AI Reorders and 'Shop with Friends'

By Paula Parisi

In a CES 2024 keynote address, Walmart President and CEO Doug McMillon and other key execs from the company offered a look at how the retail giant is putting technologies like drones and augmented reality (AR) as well as generative AI and other artificial intelligence tools to improve the customer shopping experience. Walmart unveiled new products, including a pair of AI-powered platforms for managing search for replenishment of products. In addition, a new AR social commerce platform, now in beta, called "Shop with Friends" was also highlighted.

Shop with Friends "takes AR shopping to the next level by enabling customers to share the virtual outfits they create with friends and get feedback on their fashion finds," Walmart writes in its CES news release.The tool "combines Walmart's AI-powered virtual try-on tech, launched last year, with social features," writes *TechCrunch*, quoting McMillon couching it as a new trend called "'adaptive retail' — that is, retail experiences that are personalized and flexible."

As for the replenishment enhancement, "imagine never running out of milk again," *The Verge* reports, noting Walmart is tapping AI to introduce a new aspect of its $20 per month InHome membership that "aims to automatically order the right stuff at the right time, and hand it off to a delivery person who can drop things off in a fridge in your house."

Currently, Walmart InHome members get products delivered but must choose and order the items themselves. "By training its models on both your habits and Walmart's overall knowledge of how people buy and consume stuff, the company figures it can begin to make your grocery list for you," *The Verge* adds.

The new feature puts Walmart ahead of Amazon in one aspect of the tech race, according to *TechCrunch*, which says "surprisingly, Amazon has not yet leveraged AI to do the same (i.e. to augment or replace Dash Replenishment)."

Walmart is also introducing an iOS GenAI search feature that allows customers to "search for products by use cases, instead of by product or brand names," according to *TechCrunch*, explaining that "you could ask Walmart to return search results for things needed for a 'football watch party,' instead of specifically typing in searches for chips, wings, drinks or a 90-inch TV."

Walmart's AI-powered search results are being compared to Google's SGE (Search Generative Experience), which is able to recommend products, contextualizing the results with insights that could affect decision making, including prices, images and reviews.

Walmart also showcased how it is using AI in related business areas, including within its wholly owned Sam's Club subsidiary and in employee apps.

Getty Rolls Out iStock Generative AI Powered by Nvidia
By Paula Parisi

Getty Images and Nvidia are expanding their AI partnership with the addition of the text-to-image platform Generative AI by iStock, designed to produce stock photos that can be used by individuals or enterprise customers. Built on Nvidia Picasso, a foundry for custom AI models, and trained exclusively on data from Getty Images' proprietary creative libraries, Generative AI by iStock "has been engineered to guard against generations of known products, people, places or other copyrighted elements," Getty explains, adding that "any licensed visual that a customer generates comes with iStock's standard

$10,000 USD legal coverage."Generative AI by iStock integrates with iStock's library of authentic as well as stylized commercial-ready imagery, including millions of exclusive photos, illustrations and videos.

The addition of Generative AI by iStock gives customers another option for securing visuals for print marketing, social posts, online promotions and other needs, Getty notes in its press release. Accessible in 75 languages, it modifies images in addition to generating new ones.

Getty is also enabling advanced iStock GenAI features through APIs for integration into creative applications and plugins, allowing for further customization.

"Getty Images is making advanced inpainting and outpainting features available via application programming interfaces, launching on iStock.com and Gettyimages.com soon," according to the Nvidia announcement, adding that "developers can seamlessly integrate the new APIs with creative applications to add people and objects to images, replace specific elements and expand images in a wide range of aspect ratios."

"The cost is $15 per 100 generated images," according to *TechCrunch*, which says Generative AI by iStock is Getty's second foray into AI image generation, building on Generative AI by Getty Images. "The difference is that the image platform from iStock — a stock photo service owned by Getty — helps individual or single-seat users, unlike Getty Images, which is more of a multiuser enterprise solution," *The Verge* writes.

Although Getty is clearly taking pains to limit its models to sourcing from is own proprietary images as a way to avoid copyright infringement, *TechCrunch* cites a recent article in *IEEE Spectrum*, wherein NYU Professor Emeritus and AI critic Gary Marcus and visual effects artist Reid Southen "show how AI systems, including OpenAI's DALL-E 3, regurgitate data even when not specifically prompted to do so. '[There's] no publicly available tool or database that users could consult to determine possible infringement, nor any instruction to users as how they might possibly do so,' they write."

Getty specifies that Generative AI by iStock did not train on the company's contributor library of editorial images "to

prevent it from generating trademarks or known personalities," per *The Verge*.

Rabbit Launches AI-Powered Pocket Controller for Apps

By Paula Parisi

Santa Monica-based AI startup Rabbit Inc. is offering a virtual assistant in the form of a pocket device that the company says can improve upon mobile phones by learning to use your apps and running them for you. Heavily publicized at CES 2024 in Las Vegas this week, the initial run of the company's r-1 units had as of Tuesday sold out at $199 each. The retro-looking device with a 2.88-inch touchscreen is continuing to take preorders; shipments are scheduled to begin in late March. The company says its proprietary Rabbit OS is the first operating system built on a Large Action Model (LAM) foundation. LAMs are LLMs trained on datasets of actions and consequences.

The r1 "works as a sort of universal controller for apps," *The Verge* reports. Rabbit developed r1 to offer users "an app-free online experience" in which the device — which features a push-to-talk button, 360-degree rotational eye and analog scroll

Rabbit Founder and CEO Jesse Lyu introduces Rabbit with a detailed explanation of the product in this 25-minute video. Click to watch

wheel — "navigates all of your apps … so you don't have to."

The LAM "can infer and model human actions on computer interfaces by learning users' intention and behavior when they use specific apps, and then mimic and perform them both reliably and quickly," Rabbit explained in an introductory announcement.

"The company is hoping you'll carry a second device around to save yourself the trouble of opening your phone — and has gone to extraordinary technical lengths to make it work," *TechCrunch* writes, explaining that "instead of pulling out your phone, unlocking it, finding the app, opening it and working your way through the UI (so laborious!), you pull out the r1 instead and give it a command in

natural language: 'Call an Uber XL to take us to the Museum of Modern Art. Give me a list of five cheap restaurants within a 10-minute walk of there.'"

"You don't interact with the r1 by opening apps; instead, you press a physical push-to-talk button to ask a question or play a song on Spotify as if you were speaking into a walkie-talkie," reports *CNET*, adding that Rabbit CEO and founder Jesse Lyu "likens it to handing your phone to a friend to order takeout rather than doing so yourself."

"The phone is an entertainment device, but if you're trying to get something done it's not the highest efficiency machine," Lyu says in *TechCrunch*, pointing out that "to arrange dinner with a colleague we needed four-five different apps to work together." Large language models, he says, offer a universal means for devices to understand requests.

The Verge notes those who preordered before January 9 can expect delivery in March, while those ordering after that official launch date should receive the item "between April and May 2024."

INFLECTION POINT: EMBEDDED AI

Session Details the Impact and Future of AI Technology

By Phil Lelyveld

Dr. Fei-Fei Li, Stanford professor and co-director of Stanford HAI (Human-Centered AI), and Andrew Ng, venture capitalist and managing general partner at Palo Alto-based AI Fund discussed the current state and expected near-term developments in artificial intelligence. As a general purpose technology, AI development will both deepen, as private sector LLMs are developed for industry-specific needs, and broaden, as open source public sector LLMs emerge to address broad societal problems. Expect exciting advances in image models — what Li calls "pixel space." When implementing AI, think about teams rather than individuals, and think about tasks rather than jobs.

Rajeev Chand, partner and head of research at Wing Venture Capital in Palo Alto, moderated the discussion.

Will the Current AI Hype Cycle Lead to Another AI Winter?

Ng responded that because AI is a general purpose technology, like electricity, it has many use cases and will continue to grow. Li added that media coverage will go in waves, but this is a "deepened horizontal technology" that is a true transformative force in the next digital revolution. It is changing the very fabric of our societal, political and economic landscape.

Predictions for the Near Future

We are at the verge of exciting advances in pixel space, Li suggested — a shift from large language models to image models. Ng added that this is a shift in both creating images and analyzing images for any situation where you have a camera (example: for self-driving cars).

Public sector AI, or open source AI, will be better resourced and develop alongside of private sector AI, said Li. Open source LLMs will reach the level of closed LLMs, but the development of the two will diverge because they will be developed with very different data sources. The closed source LLMs will deepen with industry-specific knowledge, while the open source LLMs will broaden as they address wider societal matters.

Autonomous agents that can plan and execute a sequence of actions in response to a request are barely working now, but Ng expects significant advances in the near future. Li respectfully requested changing the language from autonomous agent to assistive agent. As the tech rolls out, long-tail results matter and human intervention is required to catch errors such as AI hallucinations. Part of the work
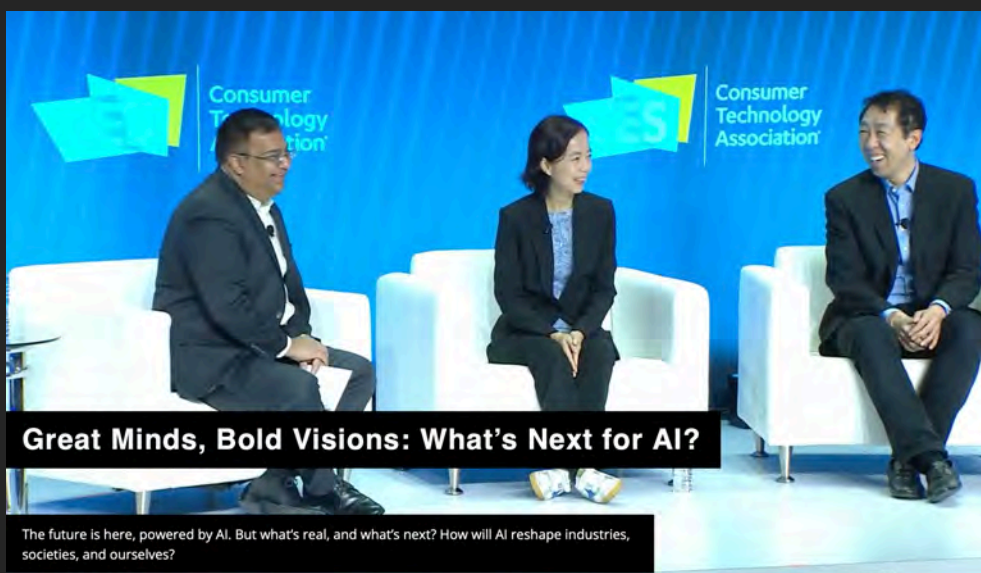
Video of the 40-minute panel — "Great Minds, Bold Visions: What's Next for AI?" — is available on the CES site.

GREAT MINDS: WHAT'S NEXT FOR AI?

can be autonomous, but part of the work must be collaborative with humans.

Human-Centered AI (HAI): Running AI on your laptop is possible, even though it is not as powerful as a full LLM. Ng believes that manufacturers will market laptops powerful enough to run AI locally, and that will trigger another wave of sales as companies and consumers upgrade.

Guidelines for Implementing AI

Li stressed the importance of distinguishing between replacing jobs and replacing tasks. For example, a nurse's 8-hour shift involves hundreds of tasks, she said, and some of them can be AI-assisted.

Li described the levels of the implementation problem. There is understanding of the data versus the decision-making versus the intention. We are getting very good at understanding patterns in the data. The second, decision-making, is much more nuanced. We are just scratching the surface in AI's understanding of intention.

Look at 'team' rather than the 'individual,' and look at the 'task' rather than the 'job,' Ng recommended. Assess what can be augmented by AI with a clear ROI (return on investment). He stressed that the highest ROI task is often not obvious.

It may be tempting to let AI read an X-ray instead of a radiologist, but the highest ROI for AI implementation may be gathering patient data. He has seen that it is often niche tasks specific to an industry rather than an obvious

Accenture hosted a series of deep dive conversations with leaders in AI research, including Stanford's Dr. Fei-Fei Li. Click to watch.

Senator Jacky Rosen (D-NV) led a bipartisan panel discussion with U.S. Senators Ben Ray Luján (D-NM), Cynthia Lummis (R-WY), and John Hickenlooper (D-CO). The Senators discussed closing the urban and rural tech divide, access to high-speed internet, regulating artificial intelligence, building a strong tech workforce, advancing semiconductor technology, and ensuring data privacy. Click image to watch the discussion.

general tasks that benefit most from AI implementation.

Another way to assess where AI adds value is to look where you have the most good-quality data, said Li. If you can discern

repeatable patterns in the data, then the patterns can be actionable.

Circana Foresees an Increase in Tech Spending in 2024

By Debra Kaufman

The technology sector had a tough 2023. During a CES session in Las Vegas, Circana Vice President Paul Gagnon and Circana Industry Analyst Ben Arnold revealed the details of what they've been tracking over the last year, noting both areas of decline and "pockets of growth." They encouraged tech vendors to look for innovative ways to sell products, targeting consumers via age group and income bracket as well as looking at geographic zones such as Mexico that are experiencing growth. The good news, they stressed, was the return of growth in the latter half of 2023.

Over the last 12 months, they said, "only 12 percent of tech categories experienced dollar growth and unit growth." The main tech product categories that saw decline were handhelds, televisions, home audio, computers, and portable audio.

Gagnon noted the decreased buying power of millennials and Gen Z consumers, with the 18–24-year-olds share of tech spending declining 2 percent from 2021 to 6 percent in 2023. The only age category showing growth were the 55+ year-old consumers, who were responsible for 35 percent of tech spending in 2023, up from 31 percent in 2021.

"Young people are far more price conscious," explained Gagnon. "And they're the ones who did the most pullback during the holiday season."

What millennials and Gen Z did spend money on were graphics cards, detachable lens cameras, camcorders, stereo headphones, and notebook PCs.

By income, those earning under $50K spent most on remote controllers, drones, car stereo speakers and dash cameras. Those earning $50-100K spent the most on digital point-and-shoot cameras, e-readers, dash cameras and item trackers; while those making $100+K purchased baby monitors, item trackers, e-readers and lenses, filters and adapters.

Looking at geographic zones, Gagnon drew attention to Mexico. Whereas the U.S., which accounts for 90 percent of North America CE dollars, YTD spending declined 10 percent in 2023. Total Mexico CE dollars were only down 1 percent, with 47 percent revenue growth compared to 2019.

"There's a sustained opportunity here," Gagnon said. "Think global when you think of selling products."

Growth will return in 2024, according to Gagnon. "It'll start tough," he predicted. "Total dollars will be down 1 percent in the first six months of the year, as consumers pay off credit cards from the holidays. We think recovery starts in the second half of the year, as key categories enter a refresh cycle. And we think brands will be more focused on what consumers are asking for: strong products and strong values."

Marketers Look at Evolution of Storytelling with AI Twist

By Debra Kaufman

During a CES 2024 panel on "Amazon Streaming: Clay Tablets to Streaming TV — The Evolution of Storytelling," moderator Carly Zipp, who is Amazon global director of brand marketing, asked panelists for their favorite stories, recounting that her son replaced her bedtime stories with ChatGPT. Lauren Anderson, Amazon Studios head of AVOD originals and unscripted programming, picked the story of Tracy Chapman's song "Fast Car." "It shows how stories can resonate through generations, genres, geographies, and ethnicities," she said. For GroupM global CEO Christian Juhl, the stories of Hans Christian Andersen were formative in his childhood.

Stephanie Chang, vice president of content for the advertising division of The Trust consultancy at *The Wall Street Journal*, is a big fan of "Hamilton," and, for actor

Ronald Gladden, being the star of "Jury Duty" changed his entire life.

Storytelling has evolved for them all — and they all recognize that AI will soon change storytelling in ways not yet fully understood. Chang started her career in print and transitioned to digital. "*WSJ* has a very strong print subscription but digital has exceeded that and also allowed us to do interesting things with sponsored content," she explained.

Juhl reports that, "50 percent of what we're buying now is digital — and the format dictates the story." "Even five years ago, we were only 25 percent digital and the primary storytelling medium was video," he added. Anderson, who came from a broadcast background, notes that TV encouraged community, as people watched together and talked about shows the next day.

"'Jury Duty' could have worked on broadcast," she said. "We got incredibly fortunate with Ronald. In streaming, we're looking at what creates community."

Juhl notes that "brand integration has changed." "We've gotten very involved in TV shows and how to make it organic and not disrupt the story," he said. "Advertising should earn its place in someone's life — not interrupt it."

For that reason, he warns against "any lack of authenticity." "We've seen brands try to make a pivot that's too radical for them," he noted. "Then you break trust with the consumer and your brand will suffer." Anderson stressed that the marketer must "stay focused on your audience, your customer and what you're trying to deliver to them."

WSJ's The Trust began creating AR and VR experiences during the pandemic, such as "World on Pause," a VR experience about how the pandemic would impact climate change.

"What we run into is that some brands conflate branded storytelling with pure advertising/marketing," Chang said. "Tell good stories through real people and peoples' experiences," she added. "It's a lighter touch. Let them connect he dots themselves."

Nvidia's special address at CES 2024 chronicle's the company's role in AI development dating back to 2005 and contains numerous announcements, including the Avatar Cloud Engine (ACE).

Video: Watch Sony's CES media presentation

Sony's Mixed-Reality Headset Built for Content Creation

By Paula Parisi

Sony Corporation debuted a mixed reality headset "aimed at supporting creators in sophisticated 3D content creation." The Sony XR HMD includes "an XR head-mounted display with 4K OLED Microdisplays and Sony's proprietary rendering technology" to enable real-time, high-definition "rendering of textures of 3D objects and facial expressions of human characters," Sony announced at CES. The electronics giant disclosed plans to "collaborate with developers" of 3D production software, "including in the entertainment and industrial design fields." At launch, Sony is exclusively partnered with Siemens to develop a collaborative product design solution.

The partners will use software from the Siemens Xcelerator open digital business platform. Further details including specs, launch date, pricing, distribution and software compatibility for the system — which will be "available later in 2024" — are said to be forthcoming.

The XR HMD spatial design system includes "a video see-through function, and a pair of controllers optimized for intuitive interaction with 3D objects and precise pointing, allowing creators to craft in virtual space with controllers and keyboards, all while wearing the head-mounted display," Sony's announcement explains.
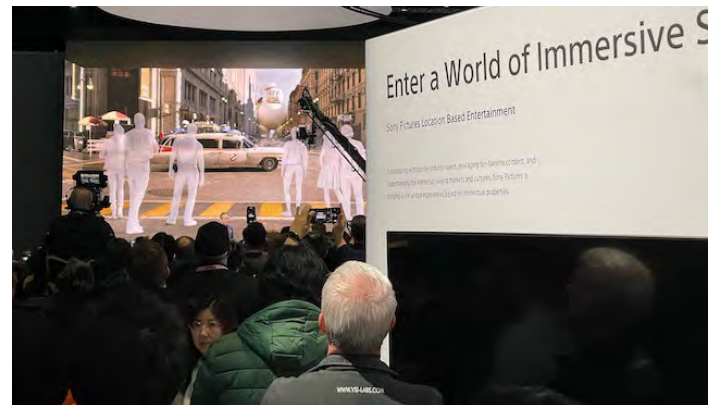
Video Below: Torchlight is a unique blend of technologists and creatives that can communicate and realize the filmmakers' vision. Torchlight serves productions in each step of the virtual production process from pre- to post-production.

The XR HMD is the first announced product that uses the Snapdragon XR2+ Gen 2 platform, Qualcomm's new XR processor, unveiled this month. The new Qualcomm chip "aims at enabling hardware makers to produce high-end XR devices to compete with Apple Vision Pro," writes *ZDNet*, adding that most of the XR2+ Gen 2-powered headsets "will be powered by Android, and Sony confirmed to *ZDNet* that its headset is also running Android."

The result is "a high-performance

platform for their creative workflow," according to Sony.

"The system will not only allow users to see real-scale 3D models in an Extended Reality (XR) environment but also to create, modify, and manipulate 3D models in it," according to *PetaPixel*, which highlights inclusion of "two different controllers. The ring controller allows users to manipulate objects in virtual space. The pointing controller, as the name implies, allows for accurate and stable pointing in those virtual spaces."

The pointing controller, *PetaPixel* says, was designed "for the dominant hand and the ring for the other hand, allowing users to utilize other controllers and keyboards while wearing the display."

ZDNet got a private demo of the product, calling it "the biggest surprise of CES 2024," adding that "it will not be sold as a standalone device, but as part of a product package with Siemens NX Immersive Designer."

Ultimately that product will help "engineers, designers, and product leaders accelerate development by creating 'digital twins' (virtual versions of real-world products) to streamline creation, collaboration, and approval" for products destined for the metaverse and "Vision Pro, Meta Quest, and other headsets and smartglasses," per *ZDNet*.

ETC team members George Gerba and Don Levy had an opportunity to try the Sony Mixed Reality Headset. The experience was quite intuitive and the image resolution was crisp at 4K per eye, enabling text to be read with ease. The touch recognition made it possible to pick up, move, and control virtual objects. Siemens and Sony announced a joint product launch for immersive engineering. See the announcement

LG MG Wireless OLED.

ENTERTAINMENT TECHNOLOGY CENTER / CES 2024

DISPLAYS

LG's New OLED TVs Tap AI Superchip for Enhanced Features

By Paula Parisi

LG Electronics has unveiled this year's lineup of OLED TVs powered by the company's new A11 AI Processor. LG's high-end G4 OLED and wireless M4 OLED models leverage what is being called an artificial intelligence "superchip" to enable features such as adjusting the image based on scene context and enhancing the distinction between foreground and background objects. Both series will be showcased at CES. Two lower priced new models, the C4 and the B4 OLEDs, utilize the company's A9 and A8 AI chips.

LG's 2024 OLEDs utilize "AI upscaling" with pixel-level image analysis that can "sharpen objects and backgrounds that may appear blurry," LG explains in a press release lauding "the discerning judgment of the AI itself," raising questions about directorial and photographic intent, though LG says it's at the service of "a more clear and vibrant viewing experience."

Tom's Guide points out that "these TVs will have an option to turn off AI picture processing."

Other AI processor capabilities include refining colors "by analyzing frequently used shades that best convey the mood and emotional elements intended by filmmakers and content creators," and something called Dynamic Tone Mapping Pro, which "splits pictures into blocks and fine-tunes brightness and contrast by analyzing variations in brightness where light enters the scene, creating images that look more three-dimensional."

"Across the OLED TV lineup, LG now supports variable refresh rates up to 144Hz (up from 120Hz), which will be welcome news for PC gamers," says *The Verge*, noting that "the new G4 series brings the company's Micro Lens Array technology, the secret sauce behind the G3's significantly brighter picture, to a larger 83-inch screen size for the first time."

Simultaneously, the 2024 iteration of the OLED M wireless line is adding a 65-inch version.

Samsung Odyssey OLED Gaming Monitor

LG 27" StanbyMe touchscreen packs in a steel case to go anywhere.

The biggest improvement on the "entry-level B4 series," according to *The Verge*, is "four full-bandwidth HDMI 2.1 ports, all of which are capable of 4K 120Hz gaming," courtesy of "the TV's new A8 chip."

Tom's Guide writes that "through repeated scene analysis, the processor will be able to recognize objects on-screen and properly apply LG's Dynamic HDR tone mapping to them," resulting in objects in motion with less motion blur and colors with a more natural tone.

Prices and availability for LG's new sets were not announced, and are expected to be disclosed "in February or March as we get closer to their potential launch," according to *Tom's Guide*
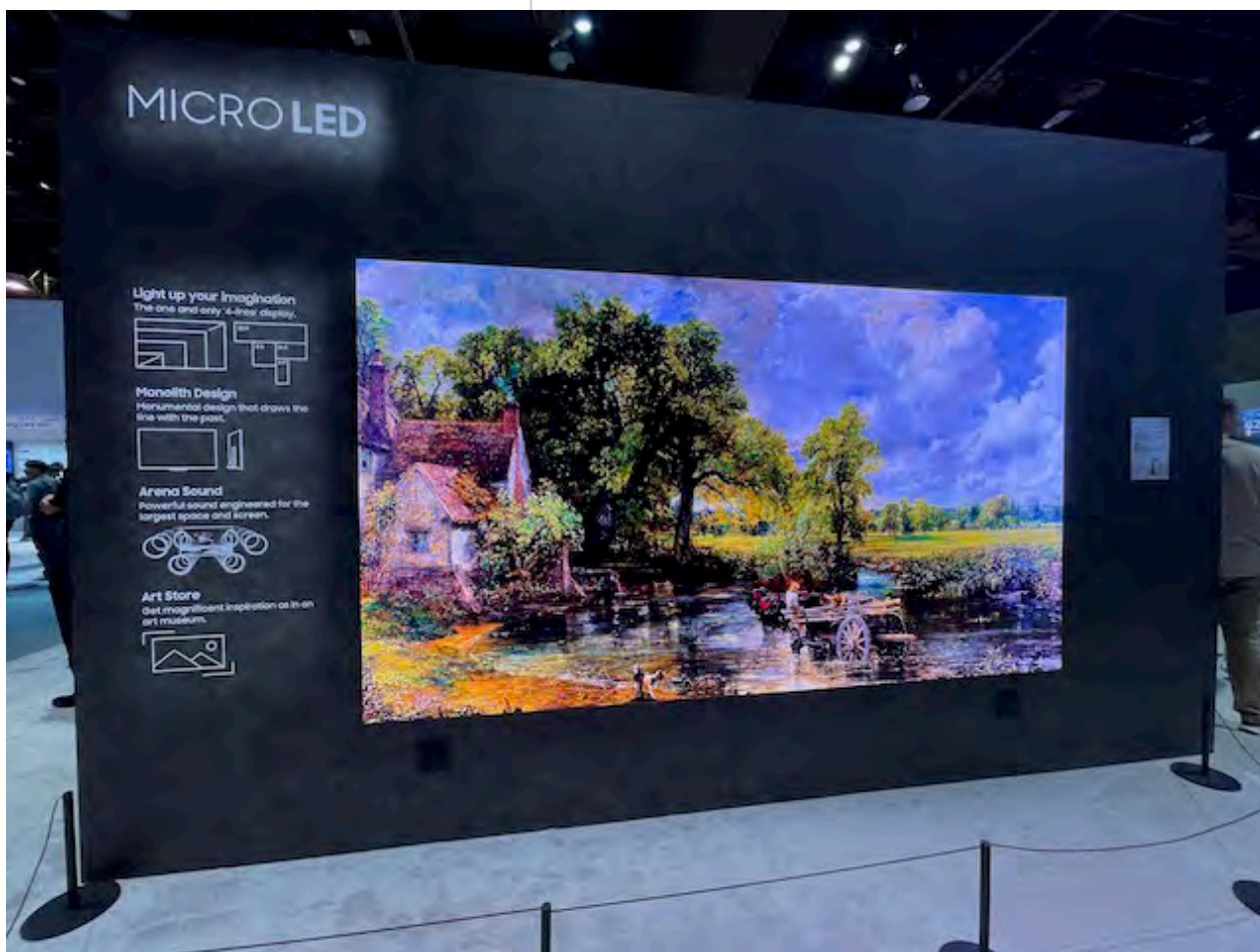
Roku to Demo Its Pro Series TVs and Smart Picture AI at CES

By Paula Parisi

Roku is followed up the budget-priced, self-branded TV sets it introduced in January last year at CES with the more ambitious Roku Pro Series TV lineup debuting at CES 2024 and shipping later this spring. The 4K QLED Pro TVs will come in 55-inch, 65-inch, and 75-inch sizes retailing for under $1,500. Included are features like Mini LED local dimming for heightened contrast and deeper blacks. The Pro TVs also tap artificial intelligence for a Smart Picture feature that automatically adjusts picture and audio. The feature is scheduled to roll out to all Roku TVs this year.

"Using AI, machine learning and data from content partners, Roku Smart Picture determines what type of content is on the screen and adjusts the TV settings to ensure viewers get the best presentation," *TechCrunch* writes. The feature will be coming to third-party Roku hardware, too, not just the signature line.

The Roku operating system provides access to streaming channels, including free and live TV. Consumers "have streamed billions of hours' worth of content on the platform," per *The Verge*, resulting in the company gaining "a wealth of data and expertise when it comes to video processing, bit rate optimization, and so on."

Among the Roku research findings: "over 90 percent of customers never change their picture modes at all, so now the company is going to handle that duty itself," says *The Verge*. Motion smoothing will be on by default, but "whenever Roku Smart Picture detects cinematic content it'll turn off the smoothing automatically" so viewers can experience the content as its creators intended.

The Pro Series also has immersive audio and a new flat-to-wall mount.

Bloomberg sees the move into higher end sets as "a bid to continue sales momentum for the company's devices" and says it "comes at a critical time for the company, which made its name in cheap streaming boxes that could plug into existing TVs."

"Building on the success of our Roku Select and Plus Series TVs, the Roku Pro Series delivers a powerful, yet simple streaming experience," Roku explained in a blog post. The company says it "will also expand the retail availability of its less expensive TVs, which are already sold at some stores such as Best Buy" and "top out at $999," writes *Bloomberg*.

DISPLAYS
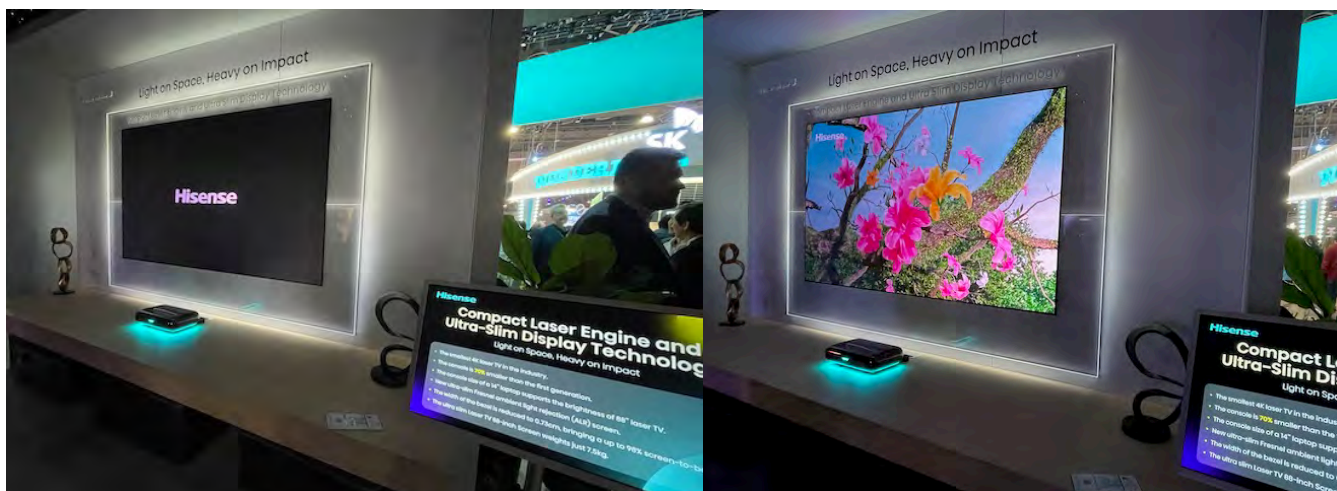
TCL 115-Inch Mini-LED TV Has 20,000 Dimming Zones

By Paula Parisi

TCL's new 115-inch mini-LED television is drawing crowds at CES 2024, where it's garnering notice for its 20,000 local dimming zones and 5,000 nits peak brightness. The IMAX Enhanced TV has a 120Hz QLED display panel with anti-glare coating. The model, TCL QM891G, also features built-in 6.2.2-channel Dolby Atmos speakers and an ATSC 3.0 tuner for NextGen TV broadcasts. TCL says its new smart TV is 2.5 times brighter than any currently available television. The company also debuted two other mini-LED TVs (at 75-98 inches) and a pair of new QLEDs (43-98 inches). All of them offer 4K resolution.

"TVs are big news at CES 2024, and one of the biggest TVs to be found at this year's show is the TCL QM891G," reports *TechRadar*, which says "TCL's ultra-large TV category grew 600 percent for the company in 2023."

With screen sizes that often soar past 98 inches, "mini-LED TVs are now providing a formidable alternative to the best 4K projectors, and one that's bright enough to easily be used for viewing in well-lit rooms," *TechRadar* adds.

TCL's 2024 TV lineup continues to include the S Class designation for smart TVs (available in 43-inch to 85-inch screen sizes) and Q Class for QLED TV (43 to 98 inches). The premium QD Mini LED falls within the Q Class, but its specs are excepted from the Q and S models' up to 5,000 local dimming zones with peak brightness of up to 5,000 nits.

"For the first time, TCL's S Class also features a new TCL AiPQ Processor with AI Super Resolution to ensure the S5's bright colorful images are also sharp and clear," TCL says in an announcement.

In addition, S5 models include HDR PRO+ with both Dolby Vision and HDR10+ for more vivid images. The S5 adds AI processing for things like the Enhanced Dialog Mode, which "analyzes a scene's audio content, isolates speech, and makes the sound clearer," *ZDNet* notes. TV as Center Channel Mode can "ensure easy listening, even with loud content," TCL says.

TCL's Q Class gets Quantum Dot Technology for rich QLED color. The first new series, TCL's Q6, adds the High Brightness Plus LED Backlight, which ups the brightness by 28 percent, TCL says.

Q6 models larger than 85 inches and larger Q6 models come with a native 120Hz Panel Refresh Rate "so gamers can step up to Game Accelerator 240 for blistering fast 240 VRR gaming on a big screen TV, per TCL.

Samsung's Transparent MicroLED (above) is designed to display images and information in public settings, such as a skybox at a stadium. Not to be outdone (below) TCL's displays its 163" Micro LED TV.
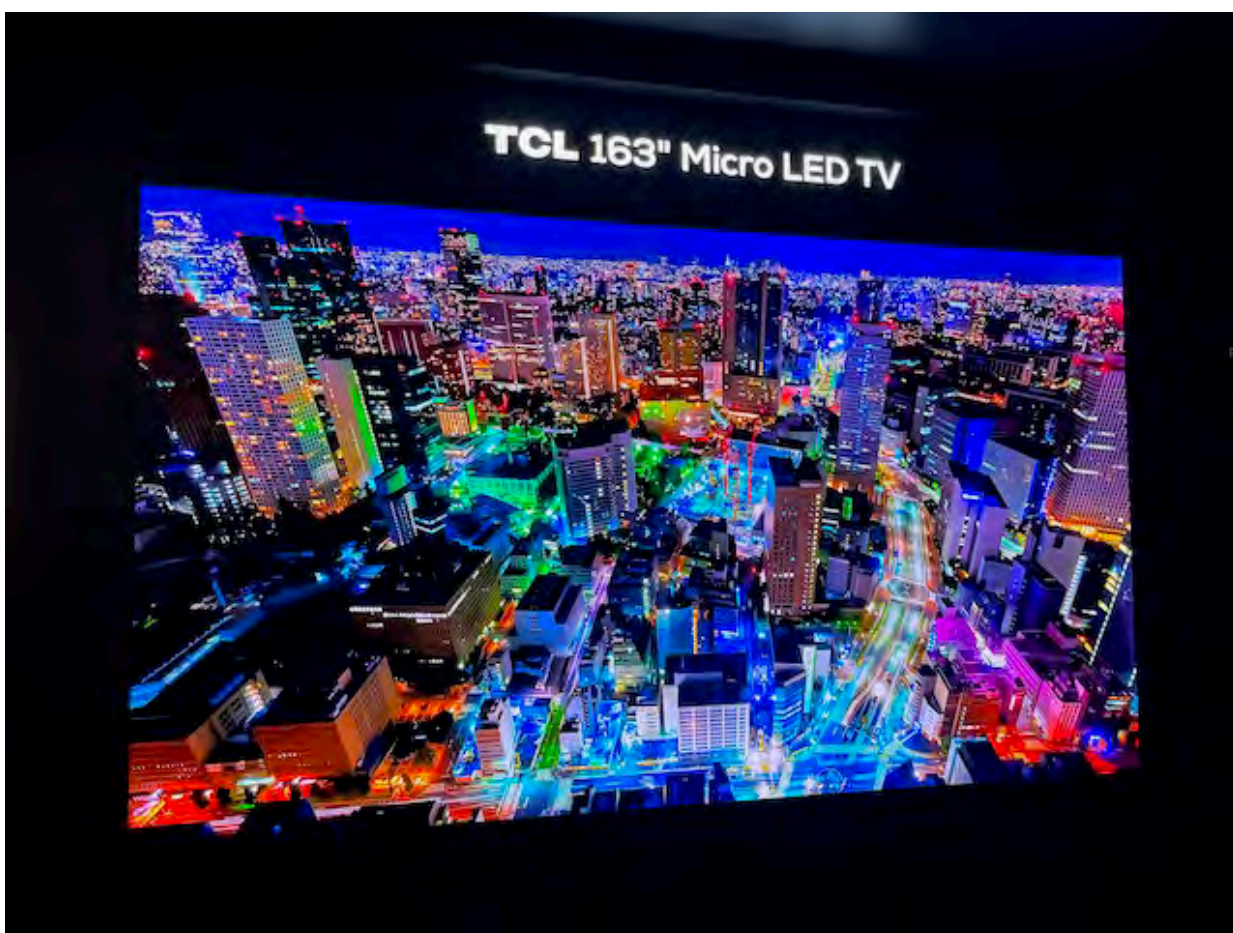
XR AND AR

Breakthroughs in XR Address Adaption and Accessibility

By Paul Bennun

While entertainment and telepresence are considered the most clear uses for virtual reality (VR), mixed reality (MR) and augmented reality (AR), several developers at CES 2024 demonstrated why in the short term, it may be that counterintuitive uses of extended reality (XR) as assistive technologies for visually impaired people provide the best case for its existence. The show demonstrated impressive ways to address macular degeneration, to assist in outdoor activities and to "read the room." Two particular companies — Ocutrx and Lumen — showcased interesting headsets that may also point to a variety of entertainment, military, medical and enterprise applications.

Ocutrx Technologies, of Colorado and California, demonstrated its OcuLenz (below), an undeniably impressive AR headset that, while seeking a solution for people with advanced macular degeneration (AMD), ended up creating an AR device with an industry-leading field of view and resolution.

A quick set-up senses where a user's blind spots are, and cleverly pushes the image outside of those areas. Given how our brains learn to ignore blind spots (and every eye has them), the rave testimonials Ocutrx claim don't seem far-fetched. The 5K-per-eye hardware and wide FoV are similarly impressive even for those who do not AMD compensation.

Lumen, a Romanian company, presented an equally impressive solution for people with severe visual
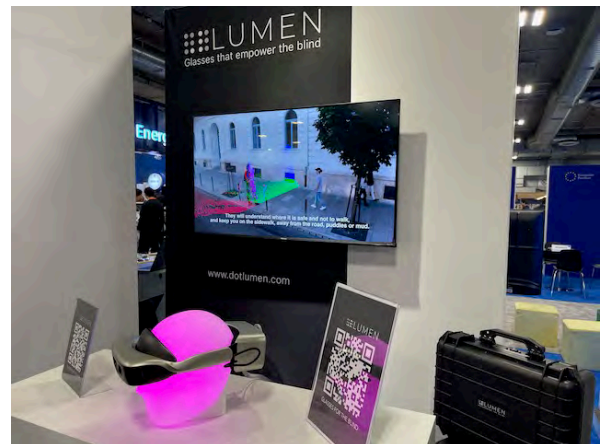
impairment, and who may rely on guide dogs to maximize their independence outdoors. Where a guide dog pulls the hand, the Lumen headset (below) steers the user with haptic feedback from the headset.

Various sensors in the headset (the maker claims similar abilities to current advanced driver assistance hardware), and proprietary environmental models enable the headset to perform real-time semantic analysis of terrain and lead the wearer away from environmental risks.

Lumen claims the device does more than help its wearer avoid lampposts, but also helps them cross the road in the right place and to avoid them stepping in water, no matter how invitingly flat and obstacle-free it seems.

C-SPACE

Marketers Shift Tactics in Streaming, Post-Cookie World

By Debra Kaufman

Audiences are migrating from broadcasting to streaming, and Google just announced its decision to phase out third-party cookies. What's a marketer to do? At CES, Disney, Pfizer and GroupM marketers discussed how they plan to evolve in a changing landscape. The Walt Disney Company's Lisa Valentino emphasized the need for interoperability of data across platforms, with the consumer at the center. GroupM debuted its Ad Innovation Accelerator to "strategize and create scalable ad formats that are designed to be ubiquitous across ad-supported streaming environments." Partners include BrightLine, Disney, KERV, NBCUniversal, Roku, Telly and YouTube.

GroupM U.S. Chief Investment Officer Matt Sweeney pointed out that, whereas linear TV had 16 minutes of ads per hour, "as it migrated to streaming, it became three minutes of ads." To that end, the launch of the accelerator aims to "compel the marketplace to leverage the benefits of these digital platforms … [and] to work with audiences and different innovative marketplaces and to scale with media, not just one or two partners."

Pfizer Global Head of Media, Growth & Performance Marketing Emmanuel Marques noted that, "we can start planning for digital and find additional moments on TV." But what will be the "common currency" to measure effectiveness? Valentino asked if it "needs to be Nielsen."

"Or are we moving to a micro-moment with lots of different flavors of opportunity?" she added.

Sweeney added that "competition in the marketplace needs to happen." "I want research companies like iSpot to come forward," he said. Both he and Valentino agreed that Nielsen will move forward to "quickly develop a dataset."

Valentino said that marketers need "a new blueprint" going forward, as well as a focus on creativity. "Disney now looks at platforms as partners, not competition," she noted. At Pfizer, said Marques, the new blueprint is to "put the consumer at the center and make it about their journey — and make sure we provide value for every interaction."

"We're just at the beginning of maximizing reach and frequency across multiple vendors in the streaming ecosystem," he explained.

Marques emphasized the power of AI to streamline and scale up. "AI will play a role in the personalization of ads and generative AI will play a role in the creative" he said. "We have to move from the mindset of broadcasting to narrowcasting and a more efficient way of telling a story."

Valentino pointed out that consumers have embraced Hulu as part of the Disney+ app. "When given the choice of a more streamlined experience, consumers want that," she said. "And nearly 70 percent of the subs chose an ad tier."

Will.i.am Discusses the Intersection of Music and Tech

By Phil Lelyveld

Musician will.i.am of the Black Eyed Peas — who is also a noted technologist, entrepreneur, investor and philanthropist — discussed his work with Mercedes-AMG, why he attends the CES conference each year in Las Vegas, and his vision of the future. In 2022 he was asked by Mercedes to reimagine a vehicle. He loves pattern-matching, he said, and seeing how things align. After developing ideas with his team and auctioning off the working prototype WILL.I.AMG to raise funds for his inner-city education philanthropy, he went back to Mercedes with a simple but powerful pitch with a focus on audio.

C-SPACE

Car passengers are accustomed to the roar of the internal combustion engine as a car's ambient sound. Electric vehicles are either silent rides, or they have artificial sounds pumped through the speakers to correspond to normal driver activities like acceleration and braking.

Our experience with music has been how it was captured on lacquer. Unchanging and repeatable. What if you captured data from the car's sensors — accelerometer, gyroscope, compass, brakes, etc. — and use it to create a real-time audio driving experience?

He pulled a team together on his own and developed MBUX Sound Drive, "a fusion of cutting-edge technology and musical artistry, raising the Mercedes-AMG in-car

entertainment experience to an even higher level," which is being demonstrated at CES 2024.

The future of in-car music, will.i.am said, is real-time live music generation. Music unfolds and gets

remapped and rearranged based on what you do. Even if you have a fixed commute, there are differences every day in how you wait at a light, hit a bump, or weave in traffic. It will turn your daily commute into a new experience every day.

It will turn drivers into composers the way Instagram turned people into photographers. Professional musicians could sell pieces to be reworked by the car's motion, and drivers could capture and share their driving compositions.

Will.i.am comes to CES to see "what the big boys are afraid to put out fast." He primarily looks at the small booths where he can find great ideas presented by "big brains with small budgets." But he also has seen amazing ideas in prototype demos from big companies that won't be put into products until Legal sees how the public responds to them.

Will.i.am has been working in AI since at least 2015, when his team prototyped a smartwatch and later implemented their AI into Beats headphones. He linked AI to the term Abracadabra. Folk etymologies attribute it to ancient Greek or Latin words meaning "I will create as I speak." Historically, it has been used for incantations, but it also echoes how we interact with AI algorithms, he said. Just as abracadabra incantations summoned change, he proposed that AI will overturn old industries and create new ones.

The people who will create those new industries, he posited, are the downtrodden who will use AI to learn and advance from their oppression — like the people digging up the minerals in Africa and South America that are used to make consumer electronics. The future isn't "Terminator" with one global OS and AI. It is "Star Wars" with multiple robots, multiple operating systems, and multiple AIs.

AI can already be your genie for information, he suggested. As AI spreads, it will be everyone's genie for aspirations.
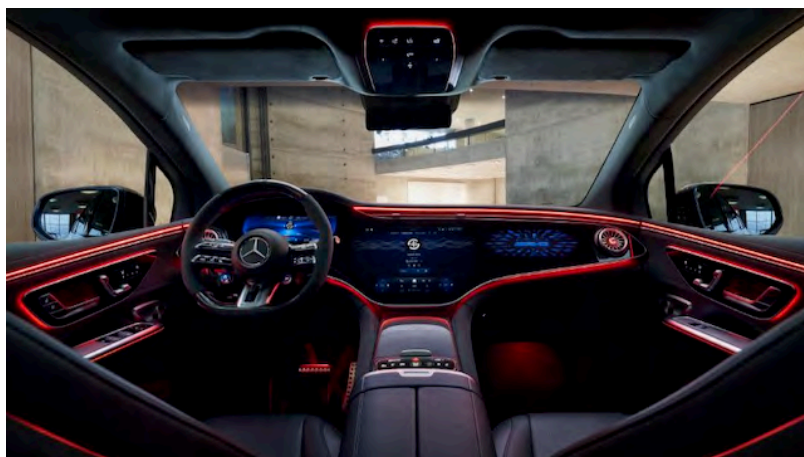
C-SPACE

Creators Talk About Integrating AI into Their Media Work

By Debra Kaufman

Nuconomi CTO Greg Carron, tech and business journalist Molly Wood, and CBS Sports Radio host JR Jackson spoke with Consumer Technology Association Senior VP of Government Affairs Michael Petricone about how they've integrated artificial intelligence into their artistic expression. "The synergy of technology and creativity is creating a profound transformation," explained Petricone. Reporter and climate change investor Wood noted that synergy led to the launch of Molly Wood Media where she uses AI to streamline her process. "I used AI to make myself a cyborg and do everything I want to do as a human being," she said. "Turns out I don't need a producer."

Jackson started his "JR SportBrief Show" on YouTube, built up a big following and now has a show on CBS Radio among his other endeavors. For him, AI is now a way to produce a clip in multiple languages "without having to shoot, edit and produce."

"The end result is it gives me more inventory and a larger business model," he said. Other benefits include being able to grow his business without partnerships and revenue splits. "AI is the next superpower," he suggests.

Carron's company is working on several projects including e-commerce and managing Shopify stores for entertainment and music brands. "A year ago, I got into AI and I'm digging into creating AI avatars, and doing lip sync, translation and other tools," he said. "I've been blown away by the rapid pace."

Wood is concerned that, in working with AI, the algorithms might begin to deliver only what it thinks she wants. "Creativity is exposure to new things," she noted. "I don't know what I don't see."

Ethical considerations are important when using AI tools. "It's potentially hugely detrimental to small artists," said Wood. "Someone could have my voice read an audiobook and it would sound possibly indistinguishable from me. We do have to figure out how to handle this."

Jackson agreed that he didn't "want people stealing my content or taking replicas of my content without me having any say-so." "The problem will get bigger, but trying to figure out the solution can take forever," he believes.

"Violating IP is nothing new," he added. "If you create something that people want, somebody is going to want to steal it. But with technology, you should be able to put a quicker stop to it." Carron agreed, pointing to Web3's blockchain ID as a potential solution.

Everyone agreed that regulations aren't the answer. "If you put a law in place, it would be out of date tomorrow," Wood said.

HAPTIC TECHNOLOGY MAKES SLOW STRIDES FOR CE PRODUCTS

By Paul Bennum

While technology for immersive visual content has (for now) settled on stereoscopic headsets with two little high-resolution screens behind two little lenses, at CES in Las Vegas this week four different developers presented four different approaches to realistic haptic feedback for arms and hands. Buzzing, squeezing and zapping are all on offer, with fundamentally different business and technology models. New haptic products from companies such as Afference, bHaptics, Valkyrie Industries and Microtube Technologies suggest we may be slowly getting closer to more physically-engaging immersive experiences.

Founded in 2015, bHaptics developed a haptic vest featuring 40 vibro-tactile motors and wireless connectivity. More than 50 SteamVR and Oculus Quest games provide support for the vest. At CES, the company presented its Bluetooth TactGlove for $299 — usable only with camera-based systems (the glove does not perform any hand tracking).

TactGlove (above) provides six points of haptic feedback per hand via linear resonant actuators that buzz your fingertips and palm, all controlled by a what the company describes as an "advanced

neuromorphic algorithm." The hype is high. The price is low. The effect is … what one would imagine, but shows promise.

The approach is to support specific game titles only, revealing the distance left to cover before generic haptic response makes the market.

Valkyrie Industries, meanwhile, demonstrated a sportsband-like device (below) worn on the upper arm with a Bluetooth receiver and a couple of electrodes. Adopting the same technology as electrical muscle stimulation (EMS) — or electromyostimulation, which is broadly accepted as an effective aid to increase muscle hypertrophy in a

workout, the Valkyrie EIR will cause involuntary muscle contractions that simulate load on the biceps and triceps.

The system does not simulate either load on the wrist, or tactile feedback on the hands. It currently works only within the Meta hardware ecosystem, but Valkyrie promises compatibility with the Overwolf platform, which lets the game modding/hacking community add some kind of support to games that work with that system. No price was given during CES.

Valkyrie's technology is less sophisticated than Afference's Phantom a wearable announced by

Afference last year, and which (in their words) "hacks" the nervous system, adding extra information while your hands communicate with your brain.

Built by a team of neuroscientists, this information tricks the brain into fee ing objects described by input from any properly configured software. Afference's most obvious application is in VR, but a relatively sophisticated SDK promises integration with a variety of other tools.

The system presents in a fingerless glove, with rings around each finger. Again, the device does not do hand tracking.

Finally, Microtube Technologies from Singapore introduced its HEXR Glove (below) for $3,999 — an untethered pneumatic system which squeezes the hand in response to your actions within a Unity application (they throw in a Unity asset plugin when you purchase the glove).

This is a high resolution system capable of simulating some aspects of weight and texture; restricting freedom of movement on demand will (the developer claims) mean a decent simulation of moving the hand through a viscous medium like water or (for example) squeezing a balloon.

The different approaches demonstrate clearly how far off widespread consumer adoption is: there appears to be a high curve relating to cost to efficaciousness of the various systems; different systems have particularly polarized strengths and weaknesses (for example, Valkyrie is good at communicating weight but your hands remain 'empty,' bHaptics is cheap but less realistic, and Microtube's HEXR is unaffordable for consumers, but an effective approach to the problem).

There's no common language or standard to mark up objects for haptic IO. Fascinating developments, and Afference particularly stands out as a fascinating direction with great potential — but this was not the year of haptics at CES.

THINGS TO WATCH

IXANA TRANSFORMS HUMAN BODY INTO NETWORKED RECEIVER

By Paula Parisi

Seattle-based tech firm Ixana is at CES 2024 demonstrating its Wi-R communication chip, which "reduces energy consumption by 100x compared to radiative wireless technologies like BLE, Wi-Fi, cellular, Zigbee and Z-Wave, enabling a paradigm shift in wearable technology," according to the company, which nabbed a CES Innovation Award. The 4Mbps YR22 Wi-R chip offers "continuous charging-free body-worn health monitoring, video streaming for extended reality, and intuitive human-computer interaction," Ixana says, explaining it works via algorithms that run via distributed computing on battery-powered devices.

One observer attending the CES Innovation Awards showcase on behalf of ETC called Ixana's tech "conductive networking" that "turns your body into a short range transceiver with 4Mbps bandwidth."

"Wi-R pioneers a new era of ubiquitous computing with seamless connectivity" for markets including AR/VR, audio, physically secure electronics, automotive, healthcare and medical sensors, smartphones and wearables, the startup explains in its CES Innovation Award submission.

"Building on the buzz of CES 2023's Wi-R reveal, Ixana soars further with a prestigious CES 2024 Innovation Award" for a product in the embedded technologies and computer hardware category, Ixana writes in a blog post celebrating the win.

Ixana founder and CTO Shreyas Sen says what makes the Wi-R compelling is not only energy efficiency, "but its role as an enabler for manufacturers to unlock performance and innovation in a wide range of

THINGS TO WATCH
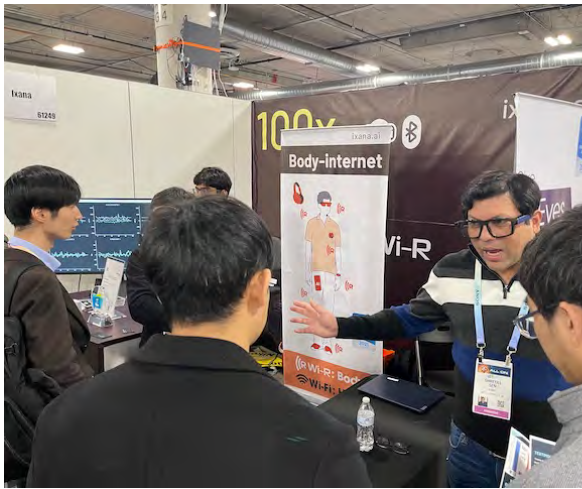
applications." By "solving the challenge of energy consumption," Ixana frees manufacturers of enterprise and consumer goods to "design wearables that can be charging-free," the company points out.

CoinDesk calls the technology "promising," and says it "could help power the future metaverse" with wireless tech that "uses the human body as a conductor," making possible "a new generation of sleeker VR and AR devices." The non-radiative technology can also enable "all-day video streaming for real-time AI," the company says, explaining the tech in a white paper.

TCL DEMOS RAYNEO X2 LITE AUGMENTED REALITY GLASSES

By Paula Parisi

The RayNeo X2 Lite 3D AR glasses were demonstrated for the first time at CES 2024 in Las Vegas last week. Weighing just 60 grams (2.1 ounces), the sleek eyewear was lauded for its microLED optical waveguide display and standalone form factor, which does not require tethering to a computer or smartphone. The RayNeo X2 Lite, releasing in Q3 2024, and the Ray Neo X2, which had a limited launch in China but has not yet been released to the rest of the world, are anticipated as the first microLED display augmented reality glasses which will be available in the United States.

RayNeo, which was incubated at Chinese electronics giant TCL, announced at CES 2024 a prelaunch for the RayNeo X2, called "the world's first binocular full-color MicroLED optical waveguide AR glasses" in the company's press release, which adds that "the RayNeo X2 is slated to launch globally on Indiegogo in February 2024."
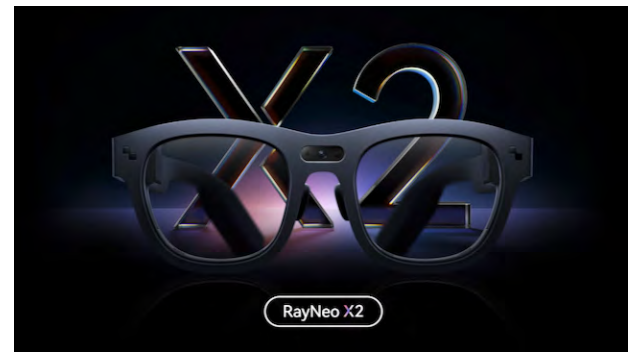
When TCL announced the RayNeo X2 at CES 2023 it used its name as part of the branding, an effort that seemed minimized this year.

Since TCL Electronics Holdings, which trades on the Singapore stock exchange, has a market cap of more than $7 billion, *UploadVR* was among those puzzled by the crowdfunding effort, writing that it "couldn't determine the exact relationship between the companies."

Specifications for the forthcoming RayNeo X2 Lite and latest RayNeo X2 glasses are mostly the same. The main

THINGS TO WATCH

difference appears to be the weight (with the X2 weighing 88 grams) and the Qualcomm chips powering each, with the X2 getting the Snapdragon XR2 Gen 1, engineered to unite 5G and AI with extended reality and VR capabilities, and the X2 Lite using the Snapdragon AR1 Gen 1, the first Qualcomm processor designed exclusively for smart glasses.

Both boast 1,500 nits of brightness and display 3D content at 640 by 480 pixels per eye. *UploadVR* describes the X2's camera as 16MP and says it has 128GB to store material, while *PC Magazine* says the X2 Lite's is 12MP, with 32GB of storage. Both can capture 1080p video at 30fps. While no word on the RAM in the X2 (trotted out as a concept piece at last year's CES), the X2 Lite has 4GB.

Each comes with a dedicated AI chatbot, and provide live translations and enhanced navigational displays on the lenses to direct wearers who are out and about. The X2 Lite's "adjustable nosepad for all-day comfort" was, when joined with the light weight, enough to prompt *PC Mag* to call them "the antithesis of Apple's large and heavy Vision Pro headset."

"The glasses are controlled by touch controls on the temples, voice commands, or a RayNeo Ring that acts as a 3DoF rotational laser pointer," according to *UploadVR.* The outlet provides an informative "field of view comparison" chart that includes the RayNeos, Xreal, Magic Leap 2 and Meta Quest 3 (this last comparing most favorably with the human eye).

LG Labs showcased the DukeBox, a sophisticated take on the Jukebox, while Samsung updated their popular Frame with a music-centered interface.

THINGS TO WATCH

TimeKettle

TimeKettle X1 is the world's first interpreter hub that can handle up to 20 people and five different languages to be translated. It is initially targeted for international businesses, from one-on-one meetings and calls to conferences and meetings. Product ships in Spring 2024.

Withings BeamO

For several years, Digital Health leader Withings has been making news at CES. In 2024, they introduced BeamO, a first of its kind home-health monitor; BeamO that "fuses the capabilities of a thermometer, electrocardiogram, oximeter, and stethoscope in a home heart device for both heart and Llungs monitoring. According to the company's press release, BeamO is packed with sensors that beam light waves to interpret blood flow patterns and temperature, as well as acoustic information. It performs multiple functions in one handheld device.

INTRODUCING
BeamO
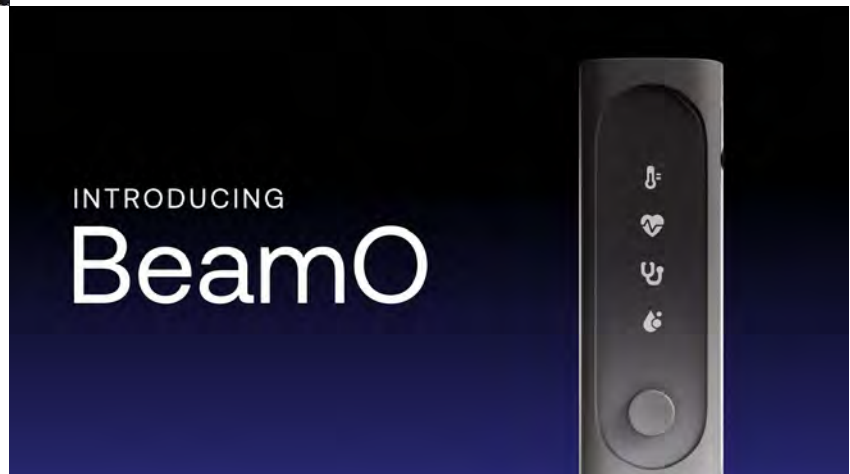
Watch video to learn more.

THINGS TO WATCH

DogsPlay
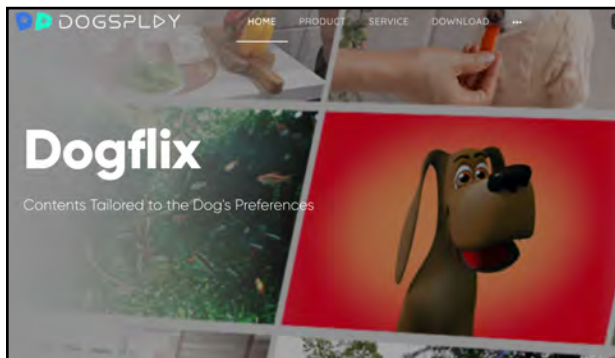
Veeo

Gaudio Lab
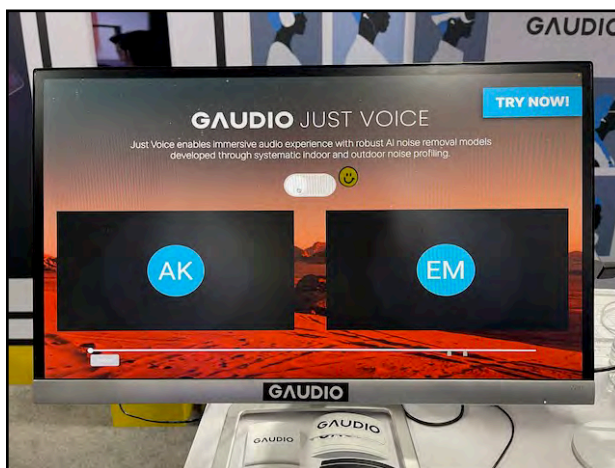
PalmPlug

Canon MS-500

Dogsplay is the world's first pet media box, purpose built for canine pets it features Dogflix, Dog Music, and an app so you can video call your pooch. **PalmPlug** features hand tracking, haptic feedback, and visual cues. **Veeo** takes an LG transparent OLED screen and adds a camera behind the screen to enable direct line of sight eye contact. Designed for surveillance, the **Canon MS-500** is the world's first ultra-high-sensitivity camera equipped with a SPAD sensor, achieving a minimum subject illumination of 0.001 lux. When combined with ultra-telephoto broadcast lenses, it may be possible to capture clear color videos of subjects at a distance of several miles, even at night. Korean-based **Gaudio Lab** is a pioneering AI audio technology company. Their products include *Gaudio Source SEParation (GSEP)*, *FALL-E*, a popular generative Sound AI for sound design; their 2024 CES Innovation Award honoree *Just Voice,* which eliminates background noise and enhances voices; *GTS, an audio-text synchronization model that aligns lyrics and subtitles; and Gaudio Studio Pro Music Replacement,* a content creation tool with an AI recommendation feature that automatically extracts audio from videos and replaces the background music with copyright cleared alternatives true to the creative intent.

MOBILITY

Click on video to watch 2024 booth demo

Sony Honda Mobility, the joint venture between Sony and Honda, will open pre-orders in 2025 for the 2026 delivery of AFEELA. Luxurious and stylish with abundant infotainment features, the AFEELA makes extensive use of Sony's imaging and sensing capabilities. For example, 45 cameras feed into the vehicles safety and autonomous driving systems. The car is a case study in partnerships with Sony and Honda leveraging their respective expertise. The car incorporates Qualcomm's Snapdragon Digital Chassis, which is a comprehensive set of cloud-connected automotive platforms essential for software enabled vehicles.

CAMERAS AND SENSORS +

Multiple sensors surrounding the vehicle translate the world outside into 3D objects inside. Sony Honda Mobility teamed with Epic Games to produced the next generation of augmented reality driver assistance and in-car entertainment. Yes, in "Monster View" that really is a monster mapped into the street view!
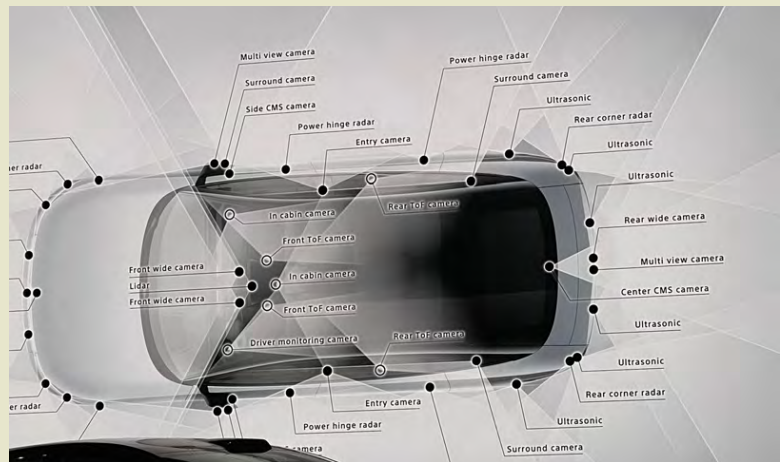
As described on the **Afeela** website, the future of in-car entertainment technology "immerses passengers in a 3D world built with Epic Games' Unreal Engine. Advanced technology linking the data captured from sensors to the network transforms elements from the physical environment into real-time 3D objects, allowing drivers to view their current location from any angle. Additional metadata from the Internet is overlaid to further enhance the display…We are also using 3D mapping technology to create exciting new game experiences and playful visual expressions. These visualization of sensing data are not only entertaining but also provide a more profound sense of security, showcasing the accuracy of AFEELA's sensors. Get ready to be amazed and reassured as you embark on a ride like no other."

THIN, LIGHT, AND WISE: HONDA'S NEW APPROACH TO EV DESIGN

By Don Levy

In addition to its partnership with Sony Corporation on the development of the **Afeela** car, Honda announced a new approach to EV design and the introduction of **Honda 0,** a new series of cars in 2026. In its announcement at CES, Honda said, "The series name represents Honda's determination in taking on this challenge of developing new EV series by going back to the starting point of Honda as an automaker and creating completely new EVs from "zero." With this new EV series, Honda will strive to further advance its "M/M concept*" and the "joy of driving," which Honda values in its car making, and take the "joy and freedom of mobility" to even greater heights."

"Space for people made possible by the internet of things (IoT) and connected technologies," is a new core value assigned by Honda to the 0 series. As they explain, "Through IoT and connected technologies centered on Honda's original vehicle OS, the Honda 0 Series models will aim to offer the value of "fun to drive, fun to use and fun to be connected." With the utilization of AI and big data, the vehicle will learn the user's preferences such as music, as well as a driver's behaviors and tendencies while driving, and will make various suggestions. Moreover, the vehicle will provide information about the surrounding areas …The vehicle will offer value as if it understands the feelings of the user. The more people use their vehicle, the closer they become with their vehicles, which makes it possible for the vehicle to offer the "fun of being connected" in various situations in people's daily lives.

Honda made use of transparent displays, as shown by LG and Samsung, to tell its story in its CES West Hall booth.

*M/M=The "man maximum, machine minimum" concept, a basic approach to Honda car design to increase the efficiency of the vehicle interior by maximizing space for people and minimizing the space required for mechanical components.

On the farm it's AI power, not horsepower, that is driving efficiency in the massive rigs that John Deere makes.

Lotus Robotics was one of several companies demonstrating autonomous chassis with wheel configurations and movement reminiscent of the famous Chapman dollies.

"Conversation with a Commissioner" CES Edition

WATCH: Conversation with a Commissioner features FTC Commissioner Rebecca Slaughter (above), FDA Commissioner Robert Califf, and FCC Commissioners Brendan Carr and Anna Gomez

POLICY AND REGULATION

By Debra Kaufman

FTC Commissioner Rebecca Slaughter on AI Regulation

In a CES conversation with Consumer Technology Association Senior Director of Regulatory Affairs Rachel Nemeth, FTC Commissioner Rebecca Slaughter discussed the Commission's work on AI-enabled impersonation fraud, privacy, and right of repair. Taking the stage just after FDA Commissioner Robert Califf, Slaughter said she wanted to co-sign his plea for "full visibility of the work we do." "We have responsibility to all Americans to make sure they are represented in the substance of the work we do," she said. "The same is true for industries that want to reach all Americans."

To Nemeth's query about the FTC's upcoming rulemaking on impersonation fraud, Slaughter demurred, noting that, "this is an ongoing proceeding so I can't talk about it in detail." But she continued that the FTC "cannot make illegal practices that are otherwise legal.""What we can do is provide clarity about the contours of the laws which we enforce," she explained. "That way, honest businesses will have a better way of knowing how to comply with the law and less honest ones are deterred since violating the law brings financial implications, not just an injunction."

Regarding generative AI, "we are on the precipice of a huge explosion in innovation," Slaughter suggested.

"Our job is to think about how to unleash those benefits while limiting the downside risks that can take hold when a new exciting tech comes to market," she said. "We're particularly cautious that companies are actually doing what they say with their product does. False claims liability has been the FTC's bread & butter for a long time."

Because artificial intelligence "runs on huge amounts of personal data," said Slaughter, "we want to make sure companies are adequately protecting that data and not creating security risks."

POLICY AND REGULATION

Third is competition. "The FTC wants the potential of this technology to not be limited by a few gatekeepers," she noted. "We want innovation to grow in the market."

Slaughter also spoke on the current patchwork of state laws governing privacy. "For a long time I've been an advocate of federal privacy laws for uniform standards and a baseline of protection," she said. "There's no reason to have more protection in California than Kansas." She added that the more states that pass privacy laws "incentivizes federal conformity."

Last week the FTC published a request for comment on rulemaking on repair. "The repair policy landscape is one of those great issues that lands squarely in our consumer protection and competition jurisdictions," said Slaughter, referring to a unanimous bipartisan report on the topic.

"It's hard for consumers to get the most out of the products they bought and for companies — from tractors to smartphones — to compete." "The ability to have control over the purchases you make and manage the things you own is about autonomy and dignity"

FDA Commissioner Robert Califf on Bias in Healthcare

Introduced by Consumer Technology Association VP of Regulatory Affairs David Grossman, FDA Commissioner Robert Califf took the CES stage with interviewer Lisa Dwyer, a partner at international law firm King & Spalding. Califf noted the monumental differences in technology that have taken place between his first stint at
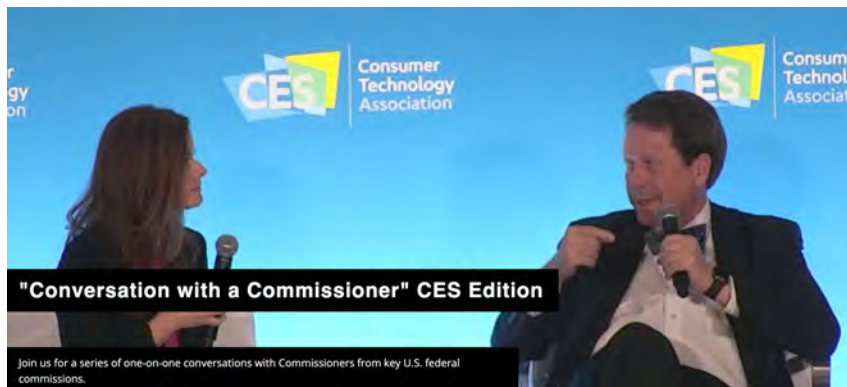
FDA Commissioner Robert Califf

the Food & Drug Administration in 2015 and today. "The changes are so dramatic, it's hard to characterize them," he said. "We're moving into a different world." He's excited about "the hundreds of products with AI" that can bring so much good to the market but also noted the potential harms.

We're still in an early stage in the digitization of healthcare, he reports. "You can compare it to when you had to pull off the side of the road to read your map," he said. "You can see it's going to be guided by more algorithms but the digitization of everything is something we haven't fully grasped."

Connected products for the home is one of the three areas he's most excited about. Second is the operating room. "With robotics plus digital imaging around the world, there's no reason why you can't have the experts scrub in, wherever you are," he explained.

The harm that bias causes is of particular concern to him regarding his third area of interest: the clinic, or what he calls "bread & butter" healthcare. "Everyone knows it's suffering," he pointed out. "You wait

forever for an appointment and then have five minutes with the doctor. It's so obvious that clinicians are distracted from their task by tedious work."

Digital technologies can relieve much of that, he says, but the problem is that it is "structurally designed to favor people with money and power. "AI will only be good in the system in which it is deployed," he suggested. "The gatekeepers are suppressing information that will show the problems we have."

"In terms of life span, the U.S. is in dead last place of high-income countries," he added. "An unfettered analysis would show why that's the case, but it's not getting the priority. If that were unfettered, it would show that we are putting our best clinics not where the need is but where the money is. If we can get bias out of the way, it'll be a big advantage for where we rate in the list of high-income countries."

FCC Commissioner Anna Gomez on Spectrum Strategy

Telecommunications attorney and FCC Commissioner Anna Gomez, in

POLICY AND REGULATION

conversation with CTA Vice President of Regulatory Affairs David Grossman on the CES stage, talked about her decision to cast a vote to restart net neutrality rules. "I agree with a lot of what [FCC Commissioner Brendan] Carr said about it," she explained, referring to his remarks deeming net neutrality not as relevant as it was in the early 2000s. "But broadband connectivity is central to everyone's lives and it's important to have guardrails to make sure that all consumers benefit from a competitive product."

"We have a patchwork of state laws," she continued, "but a national rule would be helpful because not everyone has access to competitive broadband services." Grossman asked, regarding the Biden administration's National Spectrum Strategy, if AI and machine learning will improve efficient use of spectrum — and where the FCC would fit in.+

Gomez congratulated the White House and NTIA (National Telecommunications and Information Administration) on the proposal to push spectrum forward for licensed and unlicensed uses. "Regarding AI, I'm very excited about the potential," she said. "If we can more efficiently

manage spectrum, that would be great."

Grossman asked about her participation as part of the U.S. delegation to the World Radiocommunication Conference (WRC) in Dubai in 2023. "The amount of time you spend traveling around the world meeting regulators to push forward your positions is extremely important, no matter which government agency," she said. "A lot of relationship building goes on."

In line with fellow Commissioner Carr, Gomez also would "love to see the FCC auction authority re-upped." "I don't think people appreciate how long it takes to get a spectrum auction done," she noted. "We cannot plan in advance so this keeps putting us behind." She also expressed enthusiasm for the U.S. Cyber Trust Mark.

"Public-private partnerships can be so effective," she suggested. "Consumers can be skeptical about using connected devices without knowing if they'll be manufactured and updated in a secure manner."

Grossman named Gomez the first Commissioner to deliver remarks in

English and Spanish. She replied that she's not the only one doing so. But she does it, "to engage consumers, to meet them where they are, so they know how to take advantage of the protections and understand they have a recourse." Grossman noted her concern for persons with disabilities as part of her issue of diverse communities.

"When I talk about seeing our actions through the lens of consumers, I'm talking about all consumers. Including those with disabilities," she explained. "Tech development creates accessibility opportunities, and I will continue to advocate for that."

FCC Commissioner Brendan Carr Addresses Spectrum

The FCC's Brendan Carr, the senior Republican Commissioner, in conversation with Consumer Technology Association Senior Director of Regulatory Affairs Rachel Nemeth, addressed the fact that the FCC's spectrum auction authority has expired. FCC Chairwoman Jessica Rosenworcel and her fellow Commissioners have called for its renewal. Nemeth asked Carr to comment on how the end of spectrum auctions would impact technologies such as voice recognition and IoT devices that are "on the cusp" of coming together to be "more seamless and practical for the consumer." His answer was that spectrum is vital for connectivity and "our geopolitical leadership."

Carr notes that, recently, "a lot of action on spectrum is backwards." "They're trying to claw back some of the rules we put into place," he said, referring to the National Spectrum

POLICY AND REGULATION

Strategy issued by the Biden administration in November 2023.

We just have to find a way to get going again," said Carr. "We freed up about 6,000 MHz and the most recent news, we're studying a fraction of that." (The National Spectrum Strategy is looking at 2,700 MHz.) Carr noted that, "there are incumbent federal users with critical missions."

"So it's not easy and we have to be balanced," he suggested. "But we're behind other countries, including China, without a real plan to get going."

Nemeth asked about his "strong track record on promoting telehealth." "Historically, we did a great job of supporting connections to brick-and-mortar health facilities," he said. "And we launched proceedings to move to connected care, but then COVID hit." Regarding the Cyber Trust Mark, Carr said he appreciates that "the program proposes to be voluntary and based on NIST" (National Institute of Standards and Technology).

"There's a sweet spot to enable consumers to have confidence in what they're purchasing, but we have to be careful we don't go too far with

regulations that make it too complicated," he explained. "But there's a path forward and it can do a lot of good."

He expressed his strong opposition to bringing back net neutrality. "It's broadly agreed upon that we should not see throttling or blocking," he said. "We could do this almost by unanimous consent." Reclassification as Title II, he added, "made sense in the 1930s when we had a telephone monopoly, but the competition now is frothy. The debate that started in the early 2000s just isn't relevant today."

Panelists Weigh Need for Safe AI That Serves the Public
By Phil Lelyveld

A CES session on government AI policy featured an address by Assistant Secretary of Commerce for Communications and Information Alan Davidson (who is also administrator of the National

Telecommunications and Information Administration), followed by a discussion of government activities, and finally industry perspective from execs at Google, Microsoft and Xperi. Davidson studied at MIT under nuclear scientist Professor Philip Morrison, who spent the first part of his career developing the atomic bomb and the second half trying to stop its use. That lesson was not lost on Davidson. At NTIA they are working to ensure "that new technologies are developed and deployed in the service of people and in the service of human progress."

There is no better example of the impact of technology on humanity than the global conversation we are having now around AI. Davidson said that we will only achieve the promise of AI if we address the real risks that it poses today — including safety, security, privacy, innovation, and IP concerns. There is a strong sense of urgency across the Biden administration and in governments around the world to address these concerns.

He described President Biden's executive order (EO) on AI. Directed by the EO, NIST is establishing a new AI safety institute, the Patent and Trademark Office is exploring copyright issues, and NTIA is working on AI accountability and the benefits and risks of openness. Governments, businesses, and civil society are stepping up to engage in the dialogue that will shape AI's future.

U.S. government activities were discussed by Stephanie Nguyen, CTO of the Federal Trade Commission, and Sam Marullo,

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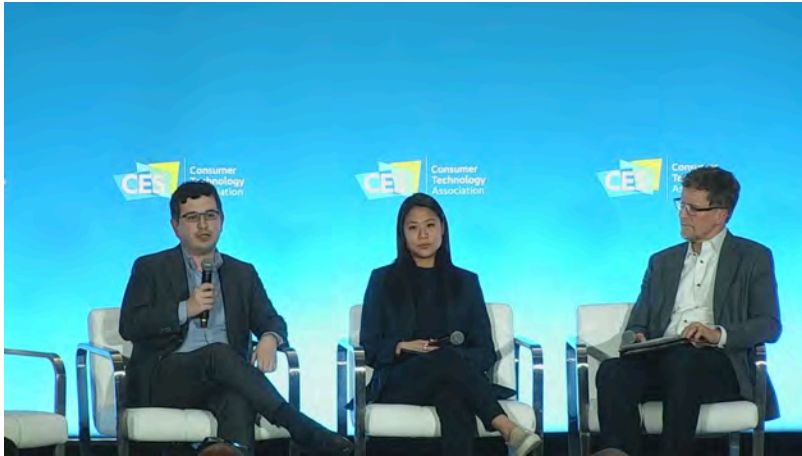
counselor to the Secretary of Commerce. Nguyen explained that the FTC's mission is to protect against unfair, deceptive, and anticompetitive acts and practices. There are "no AI exemptions on the books," she said.

The President's EO on AI aspires to safe, secure, and trustworthy AI. Both the FTC and Department of Commerce are working to build the best multidisciplinary subject-matter-expertise teams to address key aspects of this challenge. Those teams will include government, private sector, and civil society representation.

Open questions that the panel discussed include how AI will impact establishing provenance, 'know your customer' models, and patent and copyright issues. There is bipartisan interest in Congress to do "something," Marullo said, but discussions are in their very early stages.

Industry perspective was articulated by Xperi VP of Marketing David McIntyre, Google Global Cloud AI Policy Lead Addie Cooke, and

Microsoft Senior Director for AI Policy Danyelle Solomon.

McIntyre made a key point about AI and regulation when he said that AI is not a fundamentally new problem for the agencies. It is simply a new tool to be applied to the use cases for which the agencies have already developed regulations. The agencies should focus on the end goal of the use cases, he suggested, and identify the gaps and holes that AI introduces, and develop regulations to address these issues rather than develop a separate AI regulatory regime.

Cooke was heartened to hear the FTC suggest that a diversity of people, skills, and ideas is important for policy development. She stressed the need to coordinate standards development nationally and internationally, rather than have individual jurisdictions develop their own local regulations. She noted that the first ISO standard for AI (42001) was recently published, and NIST has put out AI standards. At the federal level, Solomon listed a number of bills being developed for which she has a positive opinion.

"Something I'm sure we all feel pretty strongly about," said McIntyre, "is making sure you're regulating the use-case rather than the underlying technology." How do you make sure your AI rules and safeguards are part of the engineering mindset and then how do you build them into the test framework? How do you incorporate tests for potential risks at a micro level so they are as integral to the QC process as any other feature that is prone to attack?

The President's EO on AI set up the NIST's Artificial Intelligence Safety Institute with a proposed $10 million budget, and a pilot program through the National Science Foundation and partners for a National Artificial Intelligence Research Resource (NAIRR) that will establish a shared national research infrastructure. Solomon called these critical resources and expressed her support for them.

What stood out in the EO for McIntyre was the comment that AI is not an exception or something new. The agencies' fundamental rule-making roles continue. "AI is a tool that achieves an end, and you're regulating that end," he said.

Cooke added that privacy regulators need to remind players in their jurisdictions that the rules around privacy, security and other issues have not changed. It doesn't matter what the technology is. You have to respect the rules and regulations.

Solomon called for a national privacy law. The three panelists agreed that national policies and laws on many of these key issues, rather than state level laws, would be desirable.

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Experts Discuss the Path Toward a National Privacy Law
By Debra Kaufman

In a conversation with CTA Senior Director of Regulatory Affairs Rachel Nemeth during CES 2024 in Las Vegas, a group of experts on consumer affairs and federal regulatory policy delved into the impact of existing and recent legislation on various sectors. Interestingly, they all agreed on one thing: the need for a national privacy law to replace the patchwork of differing state laws. T-Mobile Director of Federal Regulatory Affairs Melanie Tiano noted that currently 13 states have comprehensive privacy laws and that, two weeks into the new legislative session, she's tracking more than 30 privacy-related bills.

"A federal law is critical," Tiano stated. "It's unfair for consumers to have less protection based on what state they live in." Deven McGraw, lead for data stewardship and data sharing at Invitae, added that companies are faced with compliance at the state level, which makes the marketplace "confusing and difficult."

She also noted that, "unlike Congress, which acts slowly and seeks consensus, the state legislators are moving way too fast." "Some of the legislation we see coming through didn't think about the outcome on the company and consumer sides," she said.

Simone Hall Wood, privacy and public policy manager at Meta, pointed out one benefit of this patchwork of state privacy laws. "We've learned a lot about models that work or get the right balance between certainty and consumer

protection," she said, pointing to Virginia and Connecticut's legislation as "models of thoughtful regulation."

"There's an emerging consensus," she added. "Organization accountability and strong individual rights are common themes that are quite important and that I think should be part of any data protection framework."

The two panelists from the federal government shared their thoughts. Kevin Moriarty, attorney/advisor to FTC Chair Lina Khan, stated that a 2021 opinion based on a case tried under the previous administration "deprived the FTC of its authority to get monetary relief for deceptive and unfair practices."

"That had been a major way to hold companies accountable for deceiving and harming consumers," he noted. He hopes this year, by legislation of an FTC rule, this will be rolled back.

At the House Energy and Commerce Committee, Chief Counsel for the Innovation, Data and Commerce Subcommittee Tim Kurth noted that, with a different set of regulators in each state, preemption is important. "If they have authority, we want it to be succinct, clear and easy to follow," he said. "It's clearly interstage commerce, so it has to reflect that."

He added that statistics coming from California show that "lack of clarity in the rules creates a burden that drags down capital." "The state's own economic reporting says it's a huge burden to small businesses," he explained. "We have to be careful not to stifle innovation."

Moriarty said that he often thinks that the effort to create a national privacy regulation has been "a victim of the FCC's success in this area." "In 2000, they began bringing data protection type cases and slowly built up a program," he said. Kurth said his committee brought legislation forward, although the then-Speaker of the House did not bring it to the floor.

Nemeth asked the panelists if we should be concerned about generative AI "using our personal records."

"Yes," answered Moriarty. "Our chair has said that AI is just another tool and all the same FTC requirements that apply to tools apply to AI. There is no exception."

He pointed to the recent settlement with Amazon over Alexa "indefinitely retaining data." McGraw summed up the general consensus: "We're the only developed country in the world without a privacy law and a lot of lesser developed countries have them," she said. "It's gone way beyond the point that it's sustainable."

Panelists Discuss Competitive Merits of Anti-Regulation
By Debra Kaufman

Consumer Technology Association Senior Vice President of Government Affairs Michael Petricone moderated a lively CES panel on the importance of fostering a dynamic and competitive marketplace, which, he says, has "profound implications for technology and how we live." "CES is the most appropriate place to have this conversation," he noted.

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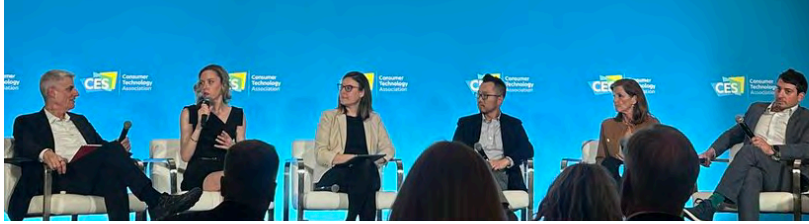
Those in support of antitrust regulation didn't have much of a chance to make its case, as the panel was composed of four ardent anti-regulation advocates, with a single panelist who stood up for the ongoing need for antitrust regulation in today's market.

Cato Institute Technology Policy Research Fellow Jennifer Huddleston, ASM Games CEO Alfred Mai, Small Business & Entrepreneurship (SBE) Council President Karen Kerrigan, and House Judiciary Committee Chief Counsel for Policy and Strategy Tyler Grimm took the firm position that small businesses and startups thrive in a non-regulatory environment.

Huddleston pointed out that, "when we look at policy proposals governing antitrust it's about much more than leading tech companies." "It can impact small companies too, even if they're not about technology." Kerrigan agreed, stating that, "startups and small businesses are the drivers of innovation."

On hand to prove the point was Mai, who, with his wife, started a gaming business. "Amazon allowed me to grow my business in a way I couldn't imagine," he said. "We drew it on a napkin and ended up outselling Hasbro and Mattel and are now in retail stores." Over the past years, he said, there's been a lot of negative discussion about the relationship between Amazon and its sellers.

"It was so far removed from my personal experience that I decided to get involved in public policy in my home state of California," he explained. "It's amazing how little policymakers know about e-commerce."

From his position on the House Judiciary Committee, Grimm noted that antitrust "used to be a sleepy issue at CES although there were some major deals with huge mergers." "But they never generated the same emotional response as tech issues," he said.

Kerrigan stated that 2023 is on track to be the second biggest year for people applying to start businesses, and that new startup numbers are also up. "The market is very competitive," she noted. "The tech sector is dominated by small businesses. Eighty-nine percent of data processing and web hosting companies have fewer than 100 employees."

Huddleston said there is a "false dichotomy of big versus small."

"Small businesses can lower costs and reach more consumers in different ways, such as app stores," she said. As to how this is playing out in Washington, Grimm reports that, "I think the folks currently running FTC's antitrust toolbox want to go on a D.C. investigative adventure."

Charlotte Slaiman, vice president of consumer advocacy group Public Knowledge, made the case for antitrust legislation. "We have a problem with gatekeeper power in U.S. and across the globe," she said. "You can't compete with those [dominant] platforms and you can't commoditize them or avoid them. Their take-it-or-leave it contracts are unsustainable and the public policy work we're doing can help with that."

She also presented her numbers: "capital investment is at a five-year low globally and in the U.S." A Brookings long-term study also shows "a continuing downward trajectory of businesses that are startups."

"Competition is being smothered," she suggested. In the past three years, she continued, the FTC and DOJ have "been more aggressive" which, she added, is "a part of [their] responsibility." "It's a big project so the Congress needs to get off the sidelines," she said.

Slaiman did not have the last word; Huddleston applauded the courts for "doing a good job at pushing back against the harm that some of these agencies want to do." And when Petricone asked for feedback on the EU's Digital Markets Act, which regulates competition, Kerrigan responded that, "the biggest losers will be European consumers."

ETC@USC REPORTING

Throughout CES, editor Rob Scott, George Gerba, Paula Parisi, Deborah Kaufman, Phil Lelyveld, Paul Bennun, and Don Levy attended live and virtual press conferences and monitored conference sessions to bring ETCentric readers news with a sharper focus on topics of importance to ETC member companies. Stories that have not already appeared elsewhere in this report are presented to you here.

Lenovo Unveils Laptops for AI-Enabled Business Computing

Lenovo has unveiled new ThinkPad and IdeaPad laptops powered by Intel's latest Core Ultra chipsets. The Lenovo ThinkPad X1 Carbon, ThinkPad X1 2-in-1, and IdeaPad Pro 5i are Intel Evo model laptops, each leveraging the Core Ultra's three compute engines — a CPU, a GPU and, for good measure, a neural processing unit. Lenovo says that while the three generally work together for optimal efficiency, some tasks wind up offloaded to the GPU or NPU to achieve greater performance and power management. Since both form factors use the Windows 11 OS, the new models support Microsoft's AI Copilot features.

Championing Consumer Product Safety in the Age of AI

U.S. Consumer Product Safety Commission (CPSC) Chair Alexander Hoehn-Saric spoke with CTA Senior Director of Regulatory Affairs Rachel Nemeth during CES 2024 about the challenges of extending safety to products that are constantly evolving and incorporating new technologies such as machine learning and artificial intelligence. Nemeth pointed out that the agency's authorizing statute was enacted in 1972 and was last amended in 2008. "We're doing a lot of good work with the statute we have," Hoehn-Saric responded. "But we're changing the way we operate. We talk a lot about machine learning and AI." Xreal Offers Spatial Computing with Air 2 Ultra for $699

Xreal Offers Spatial Computing with Air 2 Ultra for $699

Xreal, the Chinese XR company formerly known as Nreal, debuted its Air 2 Ultra AR glasses at CES 2024 this week in Las Vegas, with the $699 item scheduled to ship to U.S. buyers in March, crowding the February 2 release date Apple just announced for its $3,500 Vision Pro mixed reality headset. Though currently aimed at developers, who can preorder now, the Air 2 Ultra will be available for purchase online from Xreal to anyone in France, Germany, Italy, Japan, Korea, the Czech Republic, the Netherlands and the UK, in addition to China and the United States.

Samsung Updates Frame TV, Debuts New Music Frame

Samsung Electronics has updated its most popular lifestyle television, debuting The Frame TV 2004 at CES and spinning off The Music Frame, a wireless speaker with Dolby Atmos capability that also displays favorite photos or artwork. The Frame TV offers improved energy efficiency and a larger selection of display images. The Music Frame, which takes its inspiration from The Frame TV, features built-in woofers and intelligent audio processing for "a premium audio experience." It can serve as a standalone wireless speaker or, using Q-Symphony, can provide surround sound when paired with 2024 Samsung TVs and soundbars.

Qualcomm Chip Enables Faster Mixed Reality Features

Qualcomm's Snapdragon XR2+ Gen 2 chip for extended reality platforms is designed to allow those who incorporate it into their gear to give Apple's ambitious and technologically advanced Vision Pro headset a run for its money. Qualcomm says as part of the second gen Plus launch announcement that Samsung and Google have committed to using its new chip to power gen two XR experiences. Among the noteworthy XR2+ features is its single-chip architecture for 4.3K spatial computing at 90 frames per second. It supports 4.3K per eye resolution and 12 or more concurrent cameras to VR and mixed reality experiences.

ETC REPORTING

Sennheiser Touts Its New Wireless Momentum Earbuds

Sennheiser has updated its flagship Momentum True Wireless earbuds, adding support for Qualcomm's aptX audio tech. The company also debuted a Momentum Sport edition that tracks heart rate and body temperature. The Momentum True Wireless 4 promises "unparalleled sound," combining Sennheiser's audio expertise with Qualcomm's S5 Sound Gen 2 platform and Snapdragon Sound Technology with aptX for lossless sound and ultra-low latency. Boasting 7.5 hours of continuous listening, the new buds come in black copper, metallic silver, and graphite for $300. The more rugged Momentum Sport with biometric features lists for $330.

Google and Samsung Simplify File Sharing with Android

Google and Samsung have joined forces to make file sharing between Android devices easier and quicker. The companies have unified Google's Nearby Share and Samsung's Quick Share, "bringing the best of our sharing solutions together into a singular cross-Android solution under the Quick Share name," and introducing the new utility across the entire Android ecosystem. "We've integrated the experiences and created the best default, built-in option for peer-to-peer content sharing across all types of devices in the Android and Chromebook ecosystems," Google said at CES 2024 in Las Vegas.

VW Press Event Emphasizes a Future Transformed by AI

Volkswagen's CES press conference on Monday gave us a window into what we expect to see during this week's CES 2024. The presentation centered entirely around artificial intelligence. VW has partnered with Cerence to speed the integration of AI tech into their vehicles' in-cabin experience. The implementation touches on combining AI with spatial web capabilities. And VW has worked to make the in-car experience seamlessly compatible with AI-enhanced in-home and mobile device experiences that consumers are embracing. Not once during the presentation did they mention anything about car design or performance other than how it relates to AI implementation.

Microsoft Rolling Out a Copilot Hotkey for Windows PCs

Microsoft is introducing a dedicated AI Copilot hotkey on Windows 11 laptops and PCs. The move, announced at CES 2024, heralds "the year of the AI PC," according to Microsoft Executive VP and Consumer CMO Yusuf Mehdi, who said the keyboard enhancement will "not only simplify people's computing experience but also amplify it." The addition of the Copilot key is the first big change to the Windows PC keyboard since the four-paned Windows key was introduced in 1994. When pressed, the new key will open Copilot for seamless engagement with artificial intelligence.

Acer Showcases Curved and Glasses-Free 3D Monitors

Acer brought a fleet of new Predator gaming monitors to CES, including the curved colossus spanning 57-inches, the Predator Z57, and glasses-free 3D Predator SpatialLabs View 27, a mass market spin on the company's SpatialLabs professional display. Sprawling across 7,680 x 2,160 pixels, the flagship Z57 MiniLED runs at 120Hz, with 2,304 dimming zones, dual HDR and peak brightness of 1,000 nits, according to Acer, which has it priced at $2,500, calendared in Q2, as is the $2,000 View 27. The Ultra HD 3D monitor boasts a 160Hz refresh rate and AMD FreeSync and Nvidia G-Sync for fluid gameplay.

ETC REPORTING

Alienware Intros Updated Laptops, Curved 4K Monitors

Dell's Alienware has redesigned its gaming laptops with the debut of the m16 R2. It is also coming to market with Pro Line peripherals and two new QD-OLED curved gaming monitors, being showcased this week at CES 2024 in Las Vegas. The new m16 R2 laptop has a slimmed down look, with a reduced heat shelf and Stealth Mode that turns off the glitzy lighting and boisterous sound for gamers who want their portable hardware to perform double duty as a productivity device. The company also unveiled its first competitive gaming peripherals, the Alienware Pro wireless mouse and keyboard.

The Asus ROG Phone 8 Series Highlights Mobile Gaming

The Asus ROG Phone 8 series — demonstrated at CES 2024 in Las Vegas last week — is generating excellent reviews for its gaming capabilities and additional praise for its functionality as a smartphone. The devices start at $1,100 and tick up to an entry level of $1,500 for the ROG Phone 8 Pro. Asus calls the ROG Phone 8 series "the biggest redesign in its history," and says it has evolved from just a gaming phone into a device suitable for streamers and content creators. At the heart of that is Qualcomm's Snapdragon 8 Gen 3 Mobile Platform, supported by 8,533 Mbps LPDDR5X RAM and UFS 4.0 storage.

LG Introduces OLED Display Tech Designed for Gaming

Display manufacturers are giving gamers a big OLED push this year. That means faster refresh rates, a big plus when it comes to action titles, including sports. Samsung has a 32-inch OLED monitor that delivers 4K at 240Hz and 27-inch QHD OLED monitors and panels that clock at 360Hz. LG Display, providing tech to third parties — has debuted a 1440p panel said to be the fastest OLED yet. LG Elecronics' own UltraGear 32 OLED is the company's first to use dual refresh technology and has a .03ms response time, processing 4K at 240Hz and 480Hz for 1080p.

MSI Claw Is First Gaming Handheld with Intel Core Ultra

Taiwanese tech powerhouse MSI (Micro-Star International) has a new handheld gaming device called the Claw that uses an Intel Core Ultra 5 or 7 chip and Intel Arc graphics, making it among the most powerful portable PC gaming devices on the market. The device breaks from tradition, as competing mobile game units like the Steam Deck, the Asus ROG Ally and the Lenovo Legion Go all use AMD chipsets. The MSI system — demonstrated at CES 2024 in Las Vegas — is expected to be priced between $699 to $799 in a trio of configurations when it hits the market in February or March.

Leaders Urge Regulation to Unleash Blockchain's Power

CTA Senior Manager of Government Affairs John Mitchell led a discussion at CES on the use of blockchain as the basis of a new economic ecosystem. Coinbase Head of U.S. Policy Kara Calvert, FinClusive CEO Amit Sharma, and Paradigm Policy Director Justin Slaughter expressed enthusiasm about the potential for financial inclusion and digital identity as well as frustration over U.S. legislators' approach to regulation. "Here, blockchain is positioned as a problem to address, not an opportunity to be seized," suggested Slaughter. Meanwhile, they note, Switzerland, China and other countries are taking the lead.

ETC REPORTING

HP Spectre Laptops Get Intel Core Ultra, 9MP Webcam

HP has updated its popular flagship laptop, the HP Spectre x360, and the early reviews are quite impressive. HP has added Intel Core Ultra processors with neural processing for AI tasks and a 9MP webcam and Wi-Fi 7 capability. The Spectre x360 14 features a 14-inch screen and Intel Arc integrated graphics processing, while the Spectre x360 16 screen is two-inches larger, and includes the option to add an Nvidia GeForce RTX 4050 GPU. Both OLED screens display at 2,880 x 1,800, 120 Hz, with VESA True Black HDR 400. The 2-in-1 laptops use Intel's latest H series chips, which are 14th generation, Meteor Lake, integrating both x86 and Arm cores on the same chip.

LG Unveils New Compact CineBeam Qube 4K Projector

LG Electronics' CineBeam Qube projector weighs just 3.28 pounds, measures 5.3 x 3.1 inches, and doubles as a "stylish art object." It packs a big picture punch, projecting in 4K Ultra HD (3,840 x 2,160) for images measuring up to 120 inches. Its RGB laser light source delivers pictures the company says are sharp and clear, boasting a 450,000:1 contrast ratio and DCI-P3 color gamut coverage of up to 154 percent. The CineBeam Qube boasts an old-timey rotator handle reminiscent of crank projectors of yore. It's also a home entertainment center, running on the LG webOS 6.0 platform, with access to streaming services including Netflix, Disney+, Prime Video and YouTube.

Xgimi Announces First IMAX Enhanced Home Projector

Xgimi wants to bring the IMAX experience to your living room. The China-based company has unveiled what it says is the first long-throw home projector to earn certification as IMAX Enhanced, a designation previously limited to premium units. Xgimi's Horizon Max projector is intended for mass market viewing enthusiasts. The IMAX Enhanced specifications include Dolby Vision and DTS:X sound. The Horizon Max promises 3,100 ISO lumens brightness and a contrast ratio of 2,000:1. Pricing was not disclosed at the CES 2024 product announcement, but the projector is expected to ship in the second half of this year.

Amazon Offers Casting from Prime Video App to Devices

Amazon is rolling out Matter Casting, which lets customers cast directly from supported streaming apps on iOS and Android to Fire TV and Echo Show 15 devices. Viewers can begin watching a movie or browse for a Prime Video show on their phone, then cast it to a compatible Fire TV or Echo Show screen. Amazon called the CES announcement "an industry-first demonstration of implementing Matter Casting," referring to the open-source Matter standard protocol for connectivity between smart home and IoT devices. Amazon is a founding member and active contributor to the Matter standard.

CURATED ARTICLES

ALSO NOTED…

In addition to ETC's original reporting, the following pages provide links to articles from other publications published before, during and immediately after the show, curated by ETC consultant Dennis Kuba and ETC staff. You will find these headlines linked to their sources and cataloged by relevant categories.

General/Overview

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