

# TOGETHER



Quarterly  
newsletter

+  
Market Intelligence Report

Issue 01 / 2022

With 2022 starting we have decided to dedicate this issue of our newsletter to us - "us" meaning Inverto and, you, our partners and customers.

Our relationships with customers have spanned over 30 years and in this time we – together - have experienced some good times, and certainly, some less good times.

To paraphrase Andrew Carnegie: "Teamwork is the ability to work together toward a common vision. It is the fuel that allows ordinary companies to attain extraordinary results". Teamwork has been the common thread of our relationships over the years. To celebrate it, here are some experiences you have shared with us.

We are looking forward to further strengthening our co-operation and relationship with you and are thankful for the renewed vote of confidence every time you choose to work with us.

*Christophe Perini*  
CEO

## The Multichoice Group Africa's leading entertainment company

The Multichoice Group (MCG), as Africa's leading entertainment company, delivers compelling content to over 20 million Pay TV customers across more than 40 African markets. For such a dominant Pay-TV operator, which generates close to 3.5 billion dollars in revenue, continuity of supply chain to meet customers growing demand across the African continent is paramount.

Since 2016, Multichoice has relied on Inverto for the development and supply of their advanced smart LNBs to feed an ever increasing number of multi-tuner Pay-TV receivers. The past two years in particular have been a testimony to the strength of the relationship and have put Inverto's resilience as a supplier to the test. The global chipset crisis, which has been a prominent newspaper headline for the past months, took the industry by storm in late 2020. While one does not immediately associate LNBs, or Outdoor Units in general, with ICs, a Broadcom silicon is a vital component of Inverto's Unicable range of LNBs. Chipset availability collapsed and delivery lead

times were doubled just as Inverto was gearing up for the initial delivery phase of a multi-year agreement with Multichoice. To make matters worse, transportation costs increased, compounded by a lack of container availability, and Covid-related market shutdowns.

*“While managing the most urgent crises on-the-fly,” commented Justin Shaw, MultiChoice Support Services Executive Head, Commercial Sales., “it has been by establishing continuous communication, extending our forecasts, anticipating procurement of key components, and developing contingency plans (comprising the launch of a new product) that Inverto was able to meet Multichoice demands and help contribute to MCG’s market growth. As it is through challenges that long-lasting relationships are forged, we look forward to identifying new opportunities and to bolstering our collaboration with Inverto in the near future”.*



## **OSTROWSKI SP. Z O.O.**

**Distributor for Poland**

**Mr. Bartek Ostrowski**

**CEO**

We have been partners of Inverto for more than 15 years. Our cooperation started when the DTH market gained traction in Poland. Step by step, we established a good relationship that paved the road to grow together.

Throughout our partnership, we developed new products tailored to the Polish market, improved existing products lines, always with the same mission in mind, to add value to our stakeholders 'ecosystem, from installers, to end users.

The current crisis caused by the COVID-19 pandemic brought many challenges. We faced supply chain and logistics disruptions on a daily basis. Prices of components and raw material exploded, production lead times became uncertain, transit times volatile and the transportation costs soared. Navigating this ambiguity is not easy, but the Inverto team was always there to help us find the best solutions and to make sure our clients are satisfied.

We consider the key factors of our successful cooperation are based on 4 shared values: innovation, professionalism, trust and respect.

We know that whatever happens, Inverto will be there, supporting us to always provide the highest quality of products and the best degree of service to our clients. This is only possible when all partners involved in the value chain are taking their steps to constantly improve and grow, hand in hand.

The pandemic crisis is still here and for sure more challenges are ahead, however, we are excited with future opportunities, and know that collaborating with the right partners makes everything easier.



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For purpose of brevity, some product descriptions in this sheet remain at platform level and may not be referred to as detailed data sheets of the products.

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Consumer  
Technology  
Association™

**+ Market Intelligence Report**  
January 2022

## CES

A foldable smartphone, a tablet with light-powered wireless technology, a foot-controlled electric carrier and multiple empty booths greeted press and industry analysts attending CES 2022's Unveiled event.



**10 Hot  
Consumer  
Electronics  
Products At  
CES Unveiled  
2022**

The official media event of CES held before the annual consumer electronics trade show opens had products available from Samsung, Oledcomm and Pickwheel, among other companies.

Because of the spread of the omicron variant of COVID-19, the conference held physical and online-only events. Several major companies also dropped out of physically attending CES 2022 in Las Vegas, including Amazon, T-Mobile and Microsoft.

**Here's a look at the most cutting-edge products on display at Unveiled.**

### Samsung

The foldable Galaxy Z Flip3 smartphone was on display during Unveiled. The phone is an Innovation Awards Best of Innovation honoree this year. This offering from the South Korea-based manufacturer comes in a 4.2-inch folded compact design with a 1.9-inch cover screen. The phone has a dual rear camera and shows users previews of photos on the cover screen. It has a 5nm processor and 8GB of random access memory.





## Aptero

CEO Cedric Chane-Ching demonstrated his company's brand of 3D rooms created for businesses for use in virtual reality. It works on computers, mobile devices and VR headsets, requiring no installation.

The France-based company creates virtual rooms for businesses, including in-room screens that can show user-broadcasted live video. The company provides an on-premises installation and can integrate into Microsoft Teams servers or websites, according to Aptero.



Did you know?

With the advent of IoT, and connected devices, having a state-of-the-art Wi-Fi connection free of dead-spots will be even more critical than it is today. Inverto's OneNet ProX is the perfect tool to enhance your home IoT experience

Inverto's OneNet Mesh Wi-Fi solutions ensure that you get top notch connectivity between your devices throughout your home.



**OneNet™ PROx**  
**WiFi 6 MESH system**



## Nanotech Energy

representatives offered a look at the company's non-flammable, advanced lithium-ion batteries powered by the company's graphene-based electrodes and proprietary Organolyte non-flammable electrolyte. The company bills its batteries as safer and more powerful than traditional lithium-ion battery packs, with an ability to fit any form factor or container, according to Nanotech. The batteries can power electric vehicles, consumer electronics, military equipment and other electrified equipment.



The Los Angeles-based company was founded in 2014 and raised a \$64 million Series D round of funding in August 2021.

## TestNPass

One of CES 2022's innovation award winners is the TestNPass rapid COVID-19 test from French startup Grapheal.

The test strip promises to detect biomarkers and deliver time-stamped, encrypted radio-frequency identification tags. Test results are immediately available on digital devices through an application, according to Grapheal. The technology relies on graphene, billed as the world's thinnest material with a single layer of carbon atoms.

Last year, the France-based company raised 1.9 million euros (about \$2 million) in seed financing, according to a company statement from the time. The company was founded in 2019, according to Grapheal. Along with TestNPass, Grapheal develops wearable and disposable biosensors aimed at remote health monitoring and on-site diagnosis.



## **Orioma**

Another French startup to present at CES Unveiled 2022 is Orioma. Orioma debuted its self-powered occupancy sensor with the SEEL low-powered infrared camera. The camera consumes up to seven times less energy than competitors, according to the company. The company's sensors are meant for internet of things, smart buildings, extreme conditions measuring and surveillance, according to Orioma. The company is developing 180-degree low energy consumption cameras as well, according to Orioma. The company has six full-time employees and five part-time.



## **Shifall**

Representatives of Shifall, a subsidiary of Panasonic, demonstrated the company's HaritoraX motion-tracking device for waist and leg movements. During the demonstration, a company representative donned a virtual reality headset from Oculus – which shares the same parent company as Facebook, recently renamed Meta – and a virtual avatar on his Alienware laptop stood up and sat down at the same time as the demonstrator. HaritoraX is scheduled to ship in the U.S. in spring. Thousands of units have shipped in Japan already, according to the company. The device works for SteamVR and tracks hip and leg movements for metaverse users. The device has a built-in rechargeable battery for more than 10 hours of power on a single charge.



## Sonos

A US trade court barred Google from importing products that infringe home-audio company Sonos' smart-speaker patents. The U.S. International Trade Commission affirmed an August decision that Google audio products infringed five Sonos patents and banned Google from importing "networked speaker devices" and devices that can control them like mobile phones and laptops.

The ruling says Google won't be barred from importing products that it had redesigned to avoid infringing the patents. A Google spokesperson said it does not expect the decision to affect its ability to import or sell its products.

"We will seek further review and continue to defend ourselves against Sonos' frivolous claims about our partnership and intellectual property," the company said.

Sonos' Chief Legal Officer Eddie Lazarus called the ruling an "across-the-board" win and said Google's products still infringe the patents despite its attempts to design around them. Sonos' stock was up 1.5% having earlier risen more than 3%.

The parties have been embroiled in a global patent war over multi-room audio technology since 2020 that includes court cases in California, Canada, France, Germany and the Netherlands, according to a Sonos regulatory filing.

Sonos first sued Google in Los Angeles, alleging the company misused its technology in "more than a dozen different infringing products," including Google Home speakers and Pixel phones, tablets, and laptops.

Google responded with its own lawsuit in San Francisco, alleging Sonos used "substantial volumes" of its technology without permission for several products, including controller apps and its Sonos Radio service.

At the ITC, Sonos had been trying to block Google from importing Home speakers, Pixel phones and other products from China.

**Sonos wins  
Google  
import ban  
ruling in  
patent fight  
over smart  
speakers**





# FEATURES

## Best New Audio Products of the Year

We're living in a golden age of audio where old-school analog formats like vinyl (and even CDs) continue to trend upwards in popularity — in fact, the demand for vinyl skyrocketed during the pandemic — while the quality of new-age wireless streaming is getting better, more accessible and cheaper. What's more, many audio companies entered new product categories, like Sonos with its first portable Bluetooth speaker and a host of others in the now-popular realm of wireless earbuds. From futuristic, game-changing speaker designs to cutting-edge wireless streamers, these are the best products of 2021.

**Brand new  
speaker  
designs  
emerge and  
lossless  
streaming  
becomes the  
norm**

### Syng Cell Alpha

Syng (pronounced “sing”) is a new California-based audio company founded by Chris Stringer, who had previously worked as Apple’s design team for over twenty years on everything from the first iPhone to the HomePod, and Damon Way, one of the cofounders of DC Shoes. The company’s nascent product is a first-of-its-kind multi-room wireless speaker called the Cell Alpha. And yes, it looks like the Death Star.



The Cell Alpha generally works the same as other wireless speakers. It plugs into the wall, has a companion app and supports AirPlay 2 and Spotify Connect. It's different, however, because of its design and its sound. It's a 360-degree speaker with three beam-forming drivers placed evenly around its equator, which are responsible for the midrange and highs. There are two force-canceling woofers on the top and bottom of the speaker for the distortion-free bass (which is pretty darn impressive even at low volumes).

The speaker plays "triphonic" sound, an immersive spatial sound technology invented by Syng to describe the effect caused by Cell Alpha's three midrange-tweeter drivers. With the help of advanced digital signal processing (DSP) and support for immersive audio codecs, the Cell Alpha is able to deliver room-filling sound while also giving the illusion that certain sounds (instruments or vocals) are coming from specific areas of the room.

For the best representation of this triphonic sound, Syng suggests getting three Cell Alpha speakers in a room. (Yes, it's an expensive proposition.) Together they're able to create an immersive experience complete with virtual height channels that's similar to a 7.1 surround sound system. Not only that, but you can use the app to manipulate the sound so that specific sounds come from different areas within that bubble. It's truly the next evolution of multi-room audio.

### **JBL L75ms**

Drivers: 5 (two 5.25-inch woofers; one 1-inch tweeter; one 4-inch midrange) Power: 350 watts Wireless Streaming: Chromecast; AirPlay 2; Bluetooth Price: \$1,500



The JBL L75ms is an all-in-one speaker system that's modeled after the company's iconic L100 loudspeakers from the 70s — same wooden veneer and striking Quadrex foam grille available in black, blue or orange — and it's a stunner. It gives off vintage vibes and plays hi-fi sound, plus it has all the modern conveniences (like Wi-Fi and Bluetooth streaming) that you'd want in a modern speaker. You can even use it as a soundbar (via HDMI ARC) or connect it to a turntable thanks to its built-in phono preamp. It's the total package.



## Nothing Ear (1)

Battery: 5 hours per earbud, 34 hours total w/ case Water-Resistance: IPX4 Features: Wireless charging; active noise-cancellation Price: \$99

### The Ear (1)

are wireless earbuds that look like nothing else out there. The result of a collaboration between Nothing, a new audio company started by one of the co-founders of OnePlus, and Teenage Engineering, an audio company best known for its funky designs and hip synthesizers, they have a unique transparent design — so you can see the circuitry, magnets and other inner-workings of each earbud. They also have premium features like wireless charging and active noise-cancellation. The kicker? You can snag a pair for less than \$100.



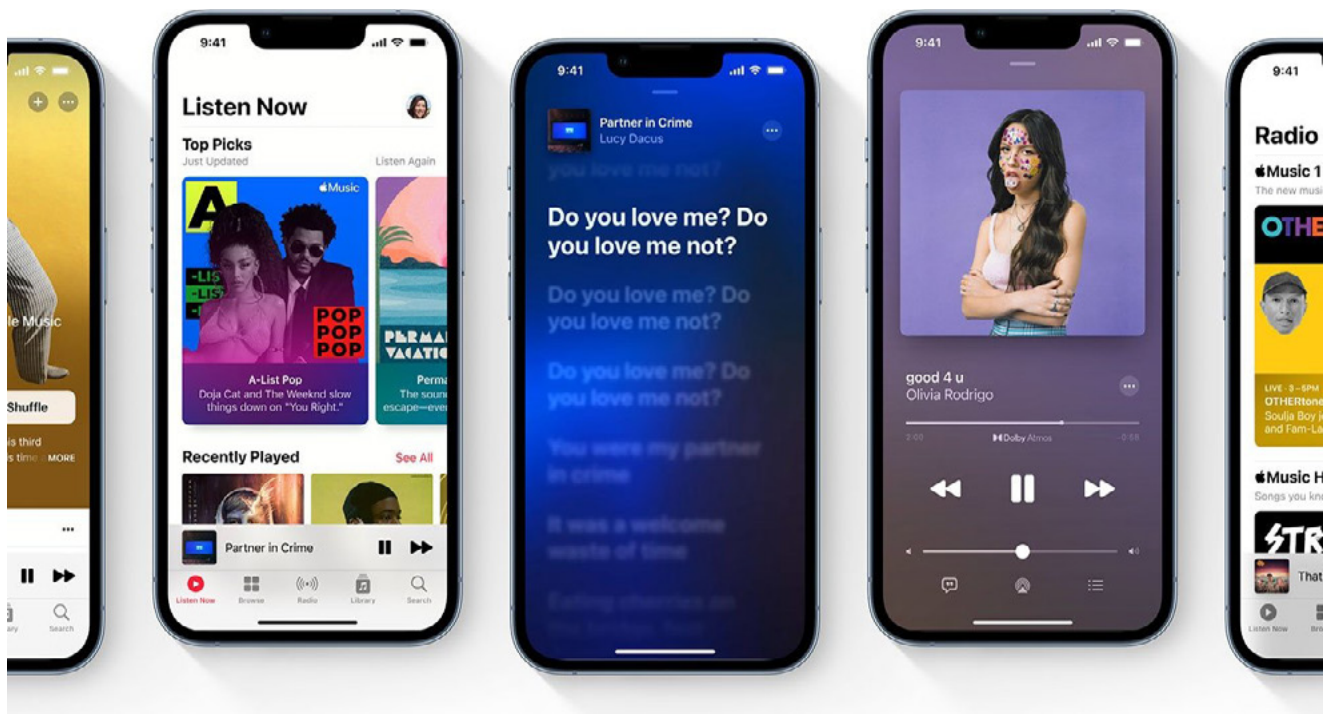


## Apple Music (Lossless + Spatial Audio)

Default Audio Quality: 256 kbp/s Max Audio Quality: Up to 24-bit/192 kHz Immersive Technologies: Support for Dolby Atmos and Spatial Audio Price: \$9.99/mo

Apple Music isn't new. In fact, along with Spotify, it's the most popular music streaming service on the planet, with millions and millions of subscribers. But Apple flipped the music streaming industry on its head this year by giving Apple Music two really important things so that it feels, well, "new."

First, it brought lossless streaming tracks — which are roughly four times the audio quality of the average MP3 file — to Apple Music at no extra cost to subscribers. This meant that, overnight, not only did Apple Music become the most popular lossless streaming service, it also became the most affordable lossless service, as it cut the monthly cost of some legacy services (like Tidal) by half.



Secondly, it introduced tracks that support Dolby Atmos and Apple's new immersive technology, spatial audio. The combination of the two trick your ears into thinking that sound is coming from all around you — left, right and above — like you're at a concert. Furthermore, if you're listening on Apple's AirPods Pro, AirPods Max or AirPods (Gen 3), the audio will adjust as you turn your head thanks to spatial audio with dynamic head tracking, for a further feeling of immersion.

And again, all these new features come at no extra cost. So if you're an Apple Music subscriber (or you want to be), you kind of hit the jackpot.

### Did you know?

**Great sound requires great headphones, yet make sure you choose a wired pair: Bluetooth compression would ruin the Lossless experience!**

### Supra PRO 3

Wired Over-The-Ear Headsets with Active Noise Cancelling (ANC)



## Sonos Roam

Streaming: Wi-Fi and Bluetooth Smart Assistant: Amazon Alexa or Google Assistant Battery: Up to 10 hours Price: \$179

The Roam is the first ultra-portable speaker by Sonos — and it's super versatile. It can connect to Wi-Fi so that it works just like any other Sonos multi-room speaker, and you can even summon music with your voice (via Alexa or Google Assistant) just like Sonos One. It can also connect to Bluetooth, meaning you can take the Roam outside your home — like to the beach or to the park — and use it like any other portable Bluetooth speaker.



Let's be clear: the Roam isn't the first portable speaker that can connect to both Wi-Fi and Bluetooth. But it is the first one made by Sonos, one of the most popular speaker companies in the world. It's also priced competitively with other portable speakers that can't connect to Wi-Fi and don't have the same modern features (like wireless charging).

Essentially, if you already have Sonos speakers in your home (millions of people do) and you're looking for a portable speaker to take to the golf course or even just follow you around the home from room to room, there's only one great option: Roam.

## Sony WF-1000XM4

Battery: Up to 8 hours per earbud (with ANC on) Connectivity: Bluetooth 5.2 Max Audio Quality: Up to 990 kbp/s (with LDAC) Price: \$280

When Sony released the WF-1000XM3 in 2019, they were far-and-away

the best wireless earbuds in terms of sound quality and active noise-cancellation. But in the past two-plus years the competition has gotten fierce (most noticeably because of Apple's AirPods Pro) and it was Sony's job to do the catching up. And it very much did with the Sony WF-1000XM4.

The Sony WF-1000XM4 aren't just a newer and better version of their predecessors — they're completely redesigned. Sony made them smaller — the earbuds by 10% and the charging case by 40% — and gave each earbud a totally different, more bulbous shape. They gave them a new processor, a new microphone system and new 6mm drivers, the combination of which has drastically improved the active noise-cancellation and transparency capabilities, as well as the audio and call quality. And Sony brought over features such as wireless charging and advanced touch controls so they feel like the future. As for price? Yea, the Sony WF-1000XM4 are expensive. But they're regularly discounted so you can often pick up a pair for way less than Bose's or Apple's alternatives.







## What Tech Trends Will ‘Matter’ In 2022?

Will Matter be the key to finally bringing interoperability to smart home devices?

Thanks mostly to a carry-over of market conditions and market forces, most of the hottest tech in 2022 will be advances of the hottest tech of 2021. Thanks to the shift from forced to willing to desired remote work, work-from-home (WFH) tech will continue to expand, and smart health/fitness, bigger screen 4K and even 8K TVs, true wireless earbuds, wearables, food technologies, and software & services all will continue to be hot tech categories.

Perhaps more importantly, some fundamental structural technologies will insinuate themselves more and more into new products and services. These include:

- **5G:** Both the number of 5G phones sold and 5G networks available are likely to top 50% in 2022, which will justify development and adoption in additional 5G applications and devices. “5G networks are expected to benefit industries in smart cities, infrastructure, education, and digital health,” notes Rick Kowalski, CTA director of industry analysis and business intelligence.
- **AI:** Nearly every consumer technology product we’ll see in 2022 will be smarter, more intuitive, and perhaps even more conversational. “By adding artificial intelligence and machine learning to devices and attaching services to hardware in homes, companies extend monitoring capabilities to consumers beyond standard access points,” observes Elizabeth Parks, president of Parks Associates. “These new services add benefits of security, convenience, and information for consumers.”
- **Sustainability:** Both governments and business are responding to consumer demand for more environmental responsibility, including how and of what materials devices are made, and how they’re packaged. “Consumer awareness is definitely rising in terms of supporting sustainable businesses, especially among millennials/Gen Z and the affluent,” asserts Ross Rubin, principal analyst at Reticle Research. But no technology trend is newer for ’22, more anticipated, and more potentially impactful, than Matter.

**Will Matter  
be the key to  
finally bringing  
interoperability  
to smart home  
devices?**

## **Does Matter Matter?**

Matter is a protocol created by the Connectivity Standards Alliance (CSA), formerly known the Zigbee Alliance, that would make all smart home devices, regardless of their walled ecosystem, interoperable. The concept is almost impossible to contemplate: Amazon, Apple, Google, and Samsung all deciding to play nice with each other.

There is industry agreement that lack of interoperability is stalling consumer uptake of smart home devices. “The only thing that ‘matters’ is ease of use and interoperability,” insists Stephen Baker, NPD VP and industry advisor. “This protocol will make it easier for consumers to mix and match smart home devices and make choices based on the device itself and not feel committed to one platform or another because of what they currently own.”

At CES, expect to see the first wave of Matter-compatible products, but many operational questions remain. Will there be a single Matter app? How backward compatible will legacy smart home products be? Will Matter bridges or hubs be necessary?

And, perhaps the most pressing question, can these carnivorous tech behemoths really all work together?

“Most predominant technology standards have been established through competition, where the most adopted one prevails” observes Kevin Collins, Accenture’s Software & Platform Services industry managing director. “However, it’s clear that the connected home market desperately needs one or two standards to emerge. Matter could have the opportunity to link competing ecosystems together, which would be powerful.”

Keeping Amazon’s, Apple’s, Google’s, and Samsung’s collective corporate eyes on the interoperability prize is challenging enough. But CSA needs to convince third-party device, service providers, and eventually consumers that Matter matters. All of this will take time.

“Apple, Google, Samsung, and Amazon all have good reason to see smart home adoption grow far past where it is now, and standardization is the route to that,” insists Jonathan Collins, smart home research director at ABI Research. “The impact of Matter is already underway in the product development and strategies of smart home players across the market. We expect it will be quickly supported with compliance products, applications, and roadmaps. That said, [Matter’s] impact will be more gradual rather than a sudden spike in spending.”

Tempering Matter expectations will likely last until the concept is proven in the marketplace. “No one can force or hold anyone to the standard,” says Robert Heiblim, partner and co-founder of Blue

Salve Partners and chair of CTA's Small Business Council. "Unless they harmonize the message and packaging, no one will know or care. Yes, Matter is nice, but I am skeptical it will make much impact, at least in 2022."

## Covid 19

More than a year and a half after the pandemic started, we are closing the chapter on how customers react during a crisis and are now looking to how it has created permanent change. There is no denying that the pandemic changed the way Boomers, Millennials, and Gen Z shop.

Online stores and e-commerce solutions are going to continue to drive successful businesses well into the future. March 2020 saw 20% of Americans using a buy online, pick up in store service and that number has continued to grow to 24% a year later. Consumers research the possibilities, find what they want, buy it site unseen, and come to pick it up/have it shipped. In addition to store pick up, a recent EY survey found that 38% of consumers intend to do more shopping online and only visit stores that provide great experiences.

This means that one of the first impressions a customer is likely to have of your company is either your digital ads or your website. Understanding that reality should drive home just how crucial it is to have a website and consumer experience that leverages technology to provide a smooth and easy customer journey.

## Understanding The Pandemic's Lasting Impact On The Consumer



Harvard Business Review suggests using the four Cs to help make better marketing decisions, create more relevance with consumers, and build stronger human connections with your brand. Those four Cs are:

- Create engaging marketing content that focuses on gaining new customers and rewarding repeat customers.
- Have an excellent in-store and online customer experience.



- Create value through being an expert in your community.  
Example: Hosting a Facebook live event on repairing or replacing parts.
- Offer consumers coupons or benefits from a loyalty program.

Retailers also need to consider who they're marketing too, though. And in this post-pandemic world there are certainly more ways to identify different segments of consumers beyond basic demo- and geographic qualifiers. Consider these five consumer identities that the EY Future Consumer Index recognizes:

1. Affordability first (32% of consumers):  
Living within their means and budget, focusing less on brands and more on product functionality.
2. Health first (25%):  
Protecting their health and that of their family, choosing products they trust to be safe and minimizing risks in the way that they shop.
3. Planet first (16%):  
Trying to minimize their impact on environment and buying brands that reflect their beliefs.
4. Society first (15%):  
Working together for the greater good, buying from organizations they find to be honest and transparent.
5. Experience first (12%):  
Living in the moment to make the most of life, often making them open to new products, brands, and experiences.

Consumers are becoming more focused on buying from companies that share similar values. This is a change in the retail business that is sticking around and has caused discomfort as we shift our perspective.

So, ask yourself: Do I have a website that is easy for consumers to use? How can I make my customer journey seamless between online and instore? Does my online and in-store product assortment match? How do I maintain the experience all the way to consumer's doorsteps? These are only some of the questions we must ask ourselves as we try to create a customer journey that provides multiple touchpoints and value along the way.

# AUTOMOTIVE

## High-tech Cars

The annual CES electronics show in Las Vegas has long been a fantasyland of high-def televisions, drones, video games and audio gear but, in recent years, it's also become the place to check out the latest in high-tech automotive.

All told, more than a dozen new production and concept cars made their debut at the Las Vegas Convention Center this week, including some from as far away as Turkey and Vietnam. There's plenty of news about autonomous vehicles, the latest in-car infotainment, and "wearable robots" that could help create "super-human" factory workers.

**High-tech cars steal the show at CES consumer electronics extravaganza**



## Electrification

That's the big word at CES this year and, with only one exception, every new concept car and production model on display is pure electric.

Range is considered one of the biggest challenges to widespread EV adoption, but the Mercedes-Benz EQXX concept suggests next-generation EVs will address range anxiety — and then some. The sleek prototype gets 625 miles per charge and its batteries are 50 percent smaller and 30 percent lighter than those in the recently launched Mercedes-Benz EQS sedan. No production plans have been announced, but officials say the batteries and other technologies will find their way into future Mercedes electric vehicles.

Performance is another place new EVs are delivering: The 532-horsepower BMW iX M60 crossover will hit 60 in 3.6 seconds and the Silverado needs just 4.5 seconds.

### **Starting from scratch**

Battery cars could help some brands redefine themselves — starting with Chrysler. The once-popular marque has all but vanished from view, down from as many as 12 to just two models today. Now one of 14 brands owned by Euro-American automaker Stellantis, it has only a short time to prove why it shouldn't be abandoned. Based on the initial response to the Airflow concept car, it's making its case. The name was borrowed from a breakthrough model from 1934 and may reappear as Chrysler's first EV in 2025. The brand plans to go all-electric in 2028.

CES also brought out several automotive startups from abroad. VinFast, Vietnam's first auto company, previewed two electric SUVs in November. It rolled three more into the Las Vegas Convention Center, and plans to launch its U.S. dealer network later this year. It not only plans to undercut the competition on price but will offer an unusual battery leasing program, the company said. The other foreign entry was Togg, a Turkish startup showing off a high-tech sedan concept styled by legendary design house Pininfarina.



Sony has long been a presence at CES with products like the Walkman, the Trinitron TV and the PlayStation game console. This year, however, the Japanese giant shone a spotlight on its Vision-S concept car and announced plans to launch Sony Mobility this spring. A version of the all-electric SUV could go into production



over the next few years and, not surprisingly, it would feature hands-free driving capabilities and plenty of infotainment tech to keep passengers occupied.

### **In-car technology**

It's hard to find a new vehicle that doesn't have at least one video screen. Some models on display at CES have seven — or more. In the Mercedes Vision EQXX and Togg Transition Concept, their displays run pillar-to-pillar across the instrument panel. One version of the BMW iX battery-SUV is designed to let passengers “Netflix and Chill,” the carmaker declared, with a 31-inch, ceiling-mounted panorama display, 5G connectivity, resolution of up to 8k and smart TV functionality.

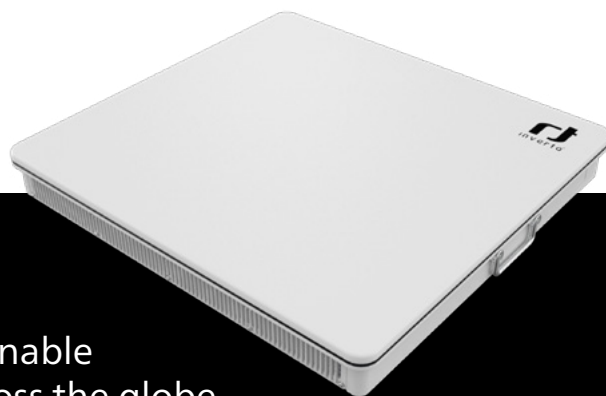
Along with those requisite screens, tomorrow's vehicles will have smartphone-style over-the-air update capabilities. CES participants outlined a variety of applications, including the ability to download software that could remotely fix recalls. Future vehicles will let motorists download new features, increase EV range and performance and stream entertainment — all for a fee.

### **Hands off**

While it is coming along more slowly than many had hoped, GM's Ultra Cruise system will launch next year on the hand-built Cadillac Celestiq supercar, CEO Mary Barra said. While its features will ultimately be upgraded — using over-the-air, or OTA, technology — the plan is that it will enable motorists to drive hands free on “every paved road in the U.S. and Canada.”

GM wasn't alone in talking autonomous tech. A variety of self-driving prototypes filled the convention center, along with exhibits showing off the latest in Lidar, radar and the other vehicle sensors that could make self-driving vehicles a reality this decade.

Finally, BMW showed off a possible way to keep your car looking fresh. Instead of conventional paint, a version of its iX electric vehicle was done up in E-ink, the same product used in e-readers. It contains microcapsules of dyes and, by applying an electric current, the SUV can turn black, white or any shade of gray. There are no immediate plans to put it into production, the company said.



Did you know?

Did you know? Low Earth Orbit satellites (LEO) enable high-speed, low-latency broadband internet across the globe.

Our range of low-profile flat panel electronically steered antennas provides quality Internet within each coverage area and for various mobile platforms including vehicles, vessels and air planes or wherever you are on the planet.



**OneNet™ Broadband**  
Flat Panel Phased Array Antenna