CES 2024 REPORT

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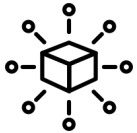
WHO THIS REPORT IS FOR



Product planners

Designers

Business leaders

Tech Enthusiast

This report is created to share our observations and insights from CES 2024. This includes: Macro and Micro trends, emerging technology, and our predictions for the years ahead. The report is for information purposes only, and should inspire discussion, new ideas, and conclusions.

ABOUT THE AUTHORS

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Hi! We are two design, research, and technology enthusiasts with over 28 years of experience between us.

Sanae is a Senior Product Designer at Argenta Park, where she experiences combining the domains of physical and digital product design in tech and consumer electronics. Prior to her current position, she worked for Denso Ten in both the US and Japan, creating future cockpit concepts with human-machine interaction for several major OEMs. For more information about her work at Argenta Park, please get in touch with her directly via email or social media like LinkedIn.

JohnRobert currently works at Amazon Web Service as the UX Design Manager in IoT, guiding the team to make it easier for customers to access the power of cloud connected devices. Prior to that he worked to make printer set up, account creation, and privacy easier for HP smart app customers. Like Sanae, he also worked at Denso Ten as the UX design lead testing, validating, and managing future product roadmaps for customers like Toyota, Mazda, and Subaru. For more information about his work you can visit his website or contact him directly.

OVERVIEW

THE SHOW WAS HELD IN THE CENTER OF LAS VEGAS

Consumer Technology Association

Date: Jan. 9 (TUE) - Jan. 12 (FRI), 2024

CES is an annual trade show organized by the Consumer Technology Association. It is held in Las Vegas, and is one of the largest and most influential technology events in the world.
The show typically features new and upcoming products in the consumer electronics industry, including home appliances, smart devices, and other technology products. Over the past few years, the event has been transforming into an event where visitors can see emerging technology trends, with an increasing number of software, B2B, and start-ups.

CES 2024 IN NUMBERS

4000+
EXHIBITORS

Returned to pre-pandemic numbers (4,400 in 2020)

311
FORTUNE GLOBAL 500

A bit less than the last year. Apple and Toyota were still absent.

130,000+
ATTENDEES

The number of visitors increased from last year; It was 115,000 last year.

41
CATEGORIES OF INDUSTRY

Covered latest technology including: AI, AgTech, digital health, and vehicle tech.

150+
COUNTRIES

Exhibitors were from all around the world. Many east asian exhibitors.

4800
MEDIA REGISTERED

TV, magazines, web media, and influencers reported the show

CES 2024: LOSING THE SHAPE

Last year's report, we highlighted a focus on three achievable "outcomes", such as sustainability, accessibility, and inclusiveness, through the use of technology. This trend persisted this year, with an increase in AI reliance and enhancements to industrial applications, resulting in sustainable, accessible, and inclusive outcomes.

This year's most remarkable advancements were not immediately apparent with just the technology on display. For instance, Siemens partnered with Unlimited Tomorrow, a company specializing in personalized, affordable prosthetic arms. By integrating Siemens' NX software into Unlimited Tomorrow's manufacturing process, this collaboration made these devices more affordable, realistic, and comfortable. They reduce costs by 90%, enhance quality, sped up delivery; while offering a personal and user-friendly solution for amputees.

Understanding the stories behind the innovations is crucial as technology begins to intertwine with social issue, extending beyond technology and individual consumers. We expect in the coming years technology will take a backseat to the global social impacts and stories around those outcomes.

In this report we identified three main trends. Although many of these innovations lack a physical form, it's clear they are profoundly transforming our daily lives.

Siemens keynote with Unlimited Tomorrow

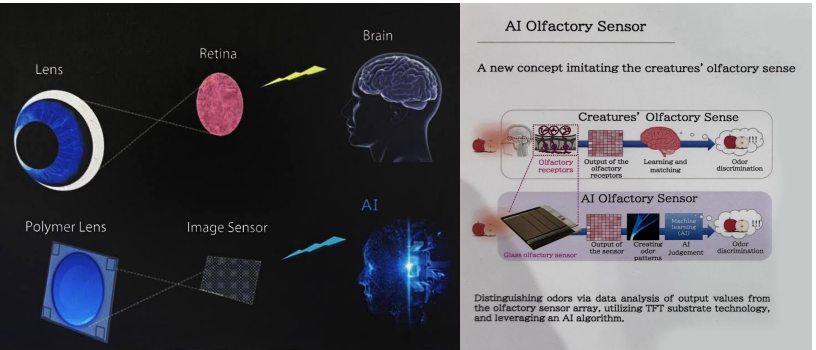
CES 2024: LOSING THE SHAPE

3 CATEGORIES OF TRENDS WE HIGHLIGHTED

01 NATURAL INTELLIGENCE

02 INDUSTRIAL TRANSFORMATION

03 ADVANCING INCLUSIVITY & SUSTAINABILITY



Top & middle: BMW, AI voice assistance demo
Bottom left: Sharp
Bottom right: Sharp, AI smell sensor

01

UNVEILING THE DAWN OF "NATURAL INTELLIGENCE"

Artificial Intelligence (AI) was the biggest buzzword at CES 2024, and the biggest trend that everyone wanted to showcase their progress in. Many solutions embedded generative AI, like ChatGPT to provide natural language interactions. Some, custom trained models, provide near expert level customer service experiences with natural language interactions, that can handle context, and complex preferences.

At the same time several companies showed the integration of AI with natural systems and processes. By mimicking nature they were able to develop faster, more efficient, and created new human like sensing capabilities for machines. For example Sharp created smaller cameras with faster focusing capabilities by mimicking the human eye.

Given AI's ability to identify patterns, and optimize accuracy through large data sets, we expect it's influence to expand beyond assisting humans to interact with machines. New ways to sense and interact with the world will open up new data sets, and new opportunities. This will transform the artificial into something that naturally blends technology with the world and our lives.

Top: Unlimited Tomorrow, prosthetics
Bottom: Blendhub, container-size factory

02

INDUSTRIAL TRANSFORMATION: BRIDGING THE GAP WITH TECHNOLOGY

The CES in the 2010s was focused on optimizing technology for individual consumers. In contrast, the 2020s have seen a shift towards optimizing industry to address the needs of global populations, aiming to solve global issues through personalized solutions.

Siemens exemplified this shift through collaborations that produced personalized solutions efficiently and at an attainable cost. For instance, Blendhub, a company specializing in the production of food powders, utilizes Siemens' digital twins, IoT platform, and AI to provide globally nutritious food tailored to local needs. Unlimited Tomorrow, a startup producing prosthetic limbs, is creating custom prosthetics at 90% lower costs using scanning and 3D printing technologies. They are tackling the current issue that only 2.5 million out of 50 million people who need prosthetics can access them.

Companies like John Deere, Nikon, Sharp, Samsung, Hyundai HD, AWS, and others are also focusing on industry optimization. Their goal is to create personalized solutions for global populations that have previously been marginalized due to the inability to manufacture customer-specific solutions.

03

ADVANCING INCLUSIVITY AND SUSTAINABILITY IN TECHNOLOGY

Based on the trends observed in recent years, CES 2024 continues to emphasize technology's dedication to inclusivity and sustainability. This trend is evident in the increased accessibility of both hardware and software technology, as well as the growing commitment within the tech industry to cater to the specific requirements of diverse demographics and embrace sustainable practices that benefit individuals and the planet.

EssilorLuxottica's smart glasses exemplify this trend. These glasses cater to individuals experiencing mild hearing difficulties, positioned as an intermediary solution before the need for hearing aids arises. Equipped with a speaker, the glasses can detect the user's line of sight. The integrated software then isolates and amplifies the speech from that specific direction, playing it through the speaker. These types of technology was showcased at last year's CES, however, by aligning with both market needs and opportunities, it has evolved into an appealing product.

While this area may not be experiencing groundbreaking innovations, it is certainly evolving. This year, we can discover numerous solutions that have practical applications in our daily lives, showcasing how technology can be a powerful force for positive change by promoting inclusivity and environmental responsibility on a global scale.

Top: EssilorLuxottica booth
Bottom left: Nobi, fall detection lamp
Bottom right: Samsung, accessibility attachment

DEEP DIVE

01 NATURAL INTELLIGENCE

- Ai Everywhere
- Biomimic, Organic Tech
- Next Of Llm Ai: Large Action Model

02 INDUSTRIAL TRANSFORMATION

- Beyond Competition: The Era Of Collaborative Innovation
- Transforming Commerce: Tech-Driven Supply Chains
- Subtle Innovations: Solution-Driven Ar/Vr
- Making It Easier To Connect

03 ADVANCING INCLUSIVITY & SUSTAINABILITY

- Car To Mobility: How Ces Is Shaping The Future Of Travel
- Agtech: Revolutionizing For Sustainability
- Reducing Resources
- Alternative Materials

01

NATURAL INTELLIGENCE

At CES 2024, AI was the buzzword. Companies integrated Chat GPT for expert-level customer service with natural language interactions. Some exhibits also showcased futuristic AI possibilities, such as mimicking nature's solutions for faster, more efficient, capable models.

AI EVERYWHERE

At this year's CES, AI exhibits were everywhere. Some of them were a bit puzzling in terms of their AI-related concepts. However, in this chaos, several displays indicated a potential transformation in AI technology, moving beyond just incremental improvements. The aim was to enable entirely new tasks that neither machines nor humans could accomplish previously. In the coming years, AI will likely undergo various trial-and-error phases as it moves through the hype-curve.

BIOMIMIC, ORGANIC TECH

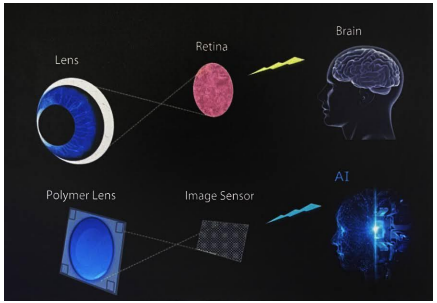
For AI to be more than a verbal assistant, it needs a way to engage with, understand, and evolve the world around it.

MOBILITY

Insect intelligence isn't considered high on the evolutionary spectrum, but it still surpasses AI, allowing insects to have expert navigation and observation skills. Opteran deconstructed insect reasoning to create low resource processing, and high accuracy machine autonomy.

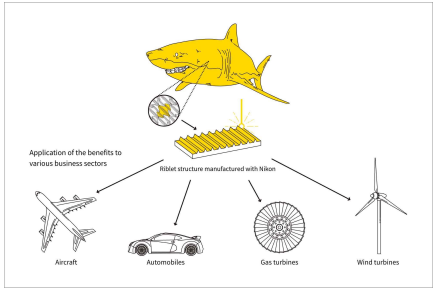
SENSING

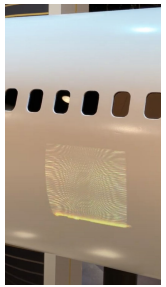
Animals use multiple senses to interact with the world. As AI grows in capabilities it's need to sense the world in more ways also grows. Sharp, and others, explored how machines can smell, taste, and see the world.



SELECTION

Sharks have evolved skin with micro textures that reduces drag through the water. Nikon showed how AI can evolve the skin of vehicles, that when etched with micro textures will reduce drag. JAL gained a 2% reduction in fuel costs after etching their planes with Nikon's technology.



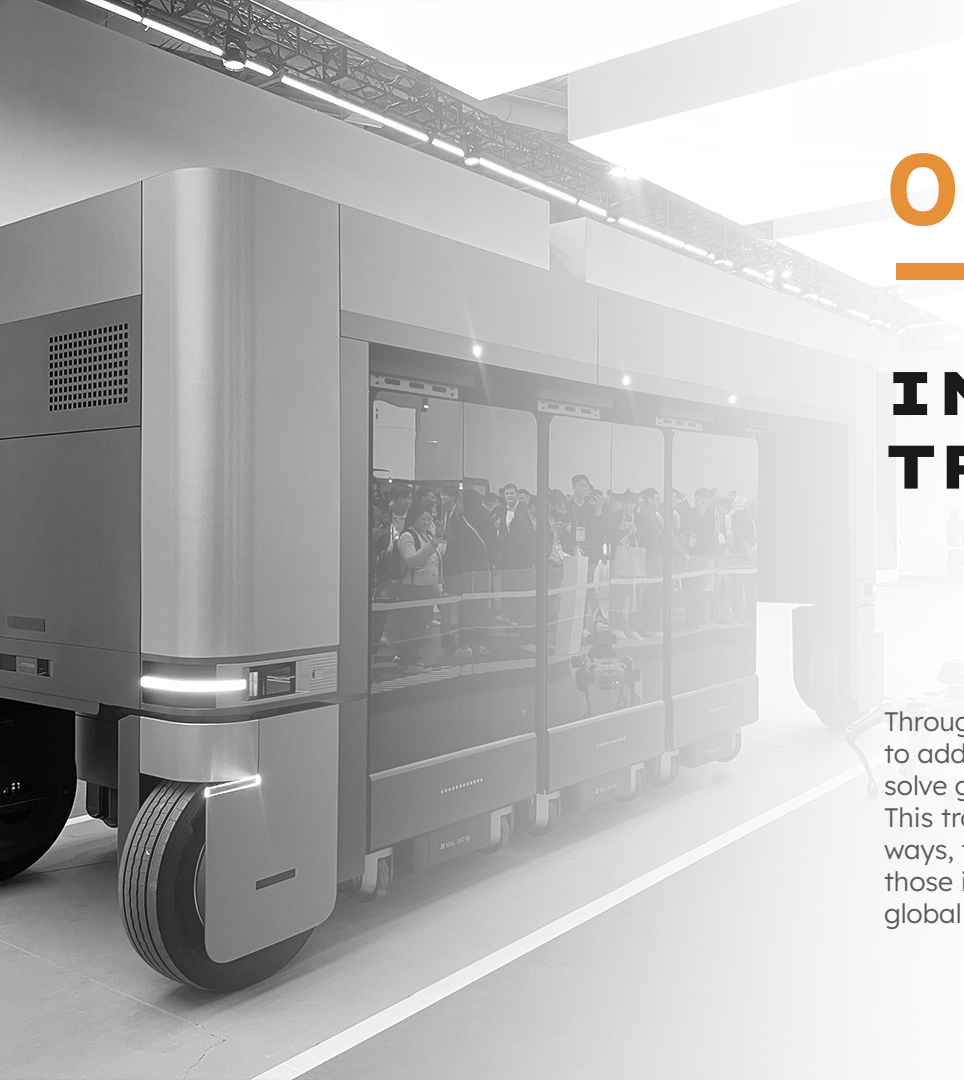


NEXT OF LLM AI: LARGE ACTION MODEL

The advent of ChatGPT has rapidly gained popularity not only in the tech industry but also among the general public. While many exhibits at CES 2024 featured AI using Large Language Models(LLMs) like ChatGPT, the AI gadget utilizing a unique model stood out to the public.

The Rabbit r1, designed by Teenage Engineering – a company with a cult following among gadget enthusiasts – , is built on the Large "Action" Model (LAM) platform. It sold out its initial pre-order of 10,000 units immediately upon announcement at CES. Jesse Lyu, the founder of Rabbit, explains, 'While the large language model understands what you say, the large action model actually gets things done.'

In contrast to LLMs, which understand and manipulate language, LAMs can observe human behavior and perform tasks accordingly. LAMs are designed to learn how to use various apps and services, completing tasks on behalf of humans. This development suggests the emergence of a new dynamic in the relationship between technology companies and developers. Today, the apps we interact with through our digital assistants (siri, google, and alexa) are limited by the ability for each app maker to integrate with the assistant. LAM are posed to break this model, and finally integrate our connected devices with a single assistant.



02

INDUSTRIAL TRANSFORMATION

Through industrial transformation, industry is optimizing to address the needs of global populations, aiming to solve global issues by providing personalized solutions. This transformation will offer more solutions, in attainable ways, to more people, and in ways that are unique to those individuals. It’s a shift from market segments to global segments.

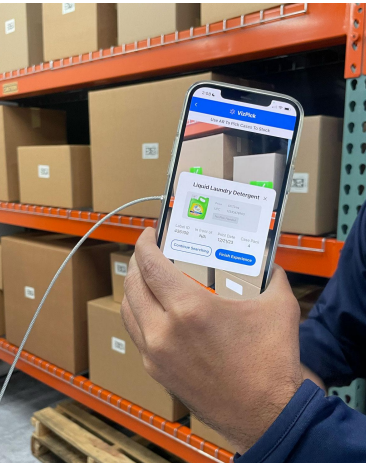
BEYOND COMPETITION: THE ERA OF COLLABORATIVE INNOVATION

CES 2024 marked the tech industry's move towards collaboration over competition. Major corporations like Walmart and Microsoft, Siemens and Sony, Sony Honda Mobility and Microsoft, and BMW and Amazon showcased the power of strategic partnerships. No longer confined to individual ventures, companies recognized that in an era of integrated technology; collaboration is a key factor in their growth strategy.

Microsoft stood out as a key player in forming strategic alliances. Their cloud service, Azure, coupled with AI capabilities, made them an attractive partner for various industries. Besides the previously mentioned partnerships, collaborations included Cerence, focusing on AI-driven automotive user experiences, and Omnicom, blending advertising with AI innovations.

These partnerships demonstrate the growing trend towards integrative and cross-industry collaborations, which aim to create more sophisticated, user-centric solutions. CES 2024 was the place to unveil strategic blueprints and alliances, where the show floor blurred corporate lines and exposed new innovation opportunities.

Top: Walmart announces collaboration with Microsoft at Keynote.
Middle: Siemens and Sony announce collaboration at Keynote.
Bottom: Sony Honda Mobility announce collaboration with Microsoft at Keynote.



TRANSFORMING COMMERCE: TECH-DRIVEN SUPPLY CHAINS

While it is clear that the waste of natural resources is a significant threat to our environment, we can't simply stop online shopping and mass consumption for convenience.

In response to this challenge, Hyundai presented a comprehensive logistics solution featuring hydrogen-powered robots and autonomous vehicles, demonstrating a commitment to cleaner, more efficient supply chain.

Walmart, the largest retailer in the world, showcased the use of cutting-edge technology across its supply chain. In collaboration with Microsoft's Azure OpenAI, the Walmart InHome Replenishment system automates the reordering of frequently purchased items for customers. Additionally, the use of drones and comprehensive delivery systems is revolutionizing their supply chain, striking a balance between convenience and environmental responsibility.

These advanced supply chains highlight a shift towards a future where technology is used not only for convenience but also promotes sustainability as a system.

Top: Hyundai demonstrati modular freight system.
Bottom: Walmart demonstrate digital twin and AR in logistics.

SUBTLE INNOVATIONS: SOLUTION-DRIVEN AR/VR

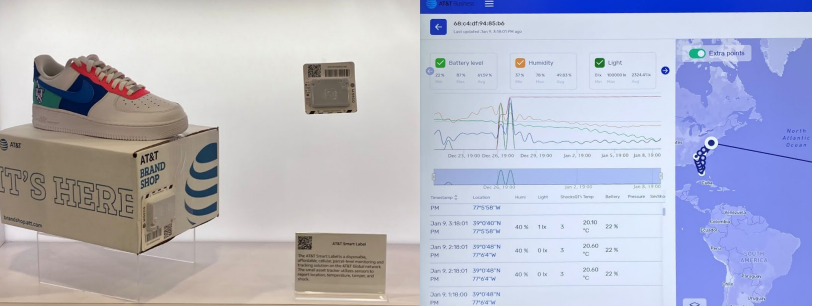
At CES 2024, the VR/AR segment was indeed less sensational than in previous years, but it still showcased notable evolutions. The emphasis this year was on solution-oriented designs rather than just hardware advancements.

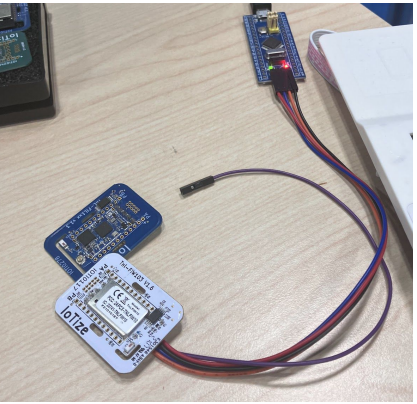
One of the highlights was the collaboration between Siemens and Sony, focusing on industrial VR glasses. This product combines Siemens' Xcelerator portfolio and Sony's advanced spatial content creation system in a high-quality XR head-mounted display, targeting industrial design and immersive engineering applications.

Additionally, AR glasses were prominent, with several models becoming lighter, smaller, and more specialized. BMW simulated the future of driving with a driving demo using XREAL AR glass. The simulation hinted at what would be possible when infotainment and Advanced Driver Assistance Systems (ADAS) we integrated with vehicle surroundings.

Despite less hype at CES, these developments suggest a maturing of AR/VR technologies with practical and innovative applications.

Top: Siemens and Sony, industrial VR glasses
Bottom left: BMW demo of AR driving concept.
Bottom right: Nimo, spatial computer demo





MAKING IT EASIER TO CONNECT

Businesses wanting to embrace digital transformation find it difficult to configure devices to connect to the cloud. To solve this, sensors with prebuilt access to cloud platforms and even a “device-in-the-middle” solutions allow companies to access connected data without the need to be cloud experts.

AT&T offered code free modules that were cheap to buy (starting at 10$) that instantly connected and reported data on a dashboard built by Cisco. For high value products, these sensors provided real-time updates on the product transit status, and condition.

Contralabs and IoTize, offered sensor connectivity and data visualization with no changes to existing devices. Business can connect new and existing devices without code by using a graphical user interface to configure a device-in-the-middle solution that manages the cloud connection.

Tata motors went further by building a High Performance Computer (HPC) to manage cloud connectivity between the vehicle and cloud. It brokered messages and commands between thousands of vehicle sensors and the cloud.

Top: AT&T single use IoT asset tracker and tracking dashboard.
Middle left: Ioize connectivity module with x.509 registered certs for cloud connections.
Middle right: Contralabs PortaCon middle-device for cloud connection.
Bottom: Tata motors HPC for cloud connected cars.

03

ADVANCING INCLUSIVITY & SUSTAINABILITY

Recent trends show that CES 2024 is emphasizing technology's commitment to inclusivity and sustainability. The tech industry is catering to diverse demographics and embracing sustainable practices. Although there are no obvious groundbreaking innovations, technology is evolving. This year's practical solutions promote inclusivity and environmental responsibility on a global scale.

CAR TO MOBILITY: HOW CES IS SHAPING THE FUTURE OF TRAVEL

Back in 2014 at the CES, BMW made headlines with their BMW i3, featuring an advanced auto-parking system. A decade has passed since then, and car brands are still a big part of CES. However the personal driving experience has been replaced with a focus on mobility for all.

For example, Hyundai Supernal's flying taxi eVTOL showed a vision of travel that involves seamlessly connecting different modes of transportation. For millions of people moving through mega-cities each day, the flying taxi will be one part of a complete mobility solution.

The space utilized at CES for mobility solutions continues to grow, as auto makers and tech companies showcase their innovations. 2024 continued this trend with many types of vehicles. In addition, companies highlight modular manufacturing processes, new sustainable materials, and refurbishment capabilities.

As car enthusiast we accept that the future of mobility is shifting. Cars are evolving from personal possessions that provide joy of ownership and autonomy; into a smart network of mobility solutions that provide sustainable autonomy for everyone.

Top: Hyundai Supernal's flying taxi concept.
Bottom left: Kia modular vehicle platform, shown in family mode.
Bottom right: Hyundai's mobile space concept.

AGTECH: REVOLUTIONIZING FOR SUSTAINABILITY

Last year, John Deere led the way in agricultural exhibitions, offering a glimpse into the future of farming. This year's agricultural and industrial exhibitions continued to feature intriguing exhibits. John Deere highlighted that their exhibits were grounded in real field experiences. The See & Spray solution, introduced last year, was presented this year with data verified on actual farms, along with meet-n-greets with the actual people using the solutions in the field. They use ML/AI to distinguish crops and weeds and minimize the usage of herbicides. This data is collected and visualized to optimize harvesting. Additionally, they showcased other innovations, such as an automated cotton-picking tractor and an autonomous tractor operating in Texas in real-time.

Kubota made its debut this year with the AgriConcept, an autonomous driving tractor designed for individual farmers. Traditionally, fields like agriculture, industrial mining, and constructions have been described as the 3Ds (Dirty, Dangerous, and Demeaning). However, these technological advancements are transforming them into safer, more efficient, and sustainable industries.

Top:John Deere See & Spray with paired dashboard.
Botto: Kubota's AgriConcept, autonomous tractor.

REDUCING RESOURCES

The first step in a sustainable ecosystem is reducing the resources used initially.

RESOURCES

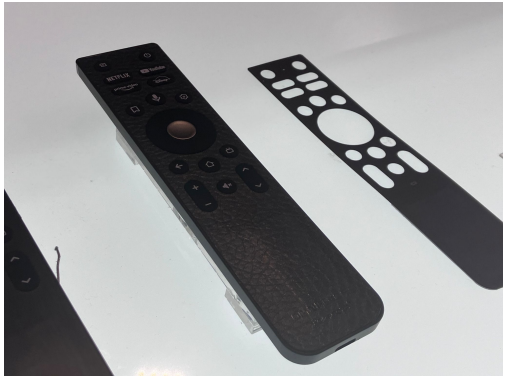
Single use products increase the resources needed to build components that are needed in similar products. Panasonic redesigned their beauty line be modular sharing a common powertrain. Hyundai did the same with their vehicle line offing swappable cargo.

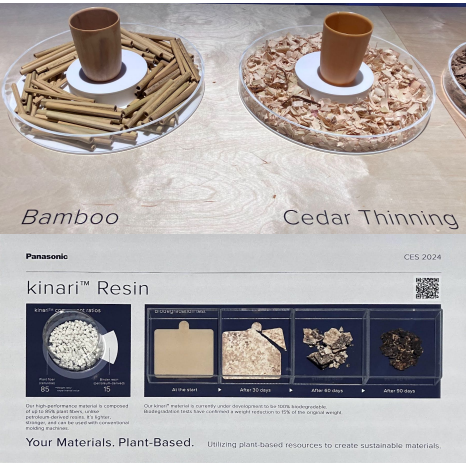
FOOD

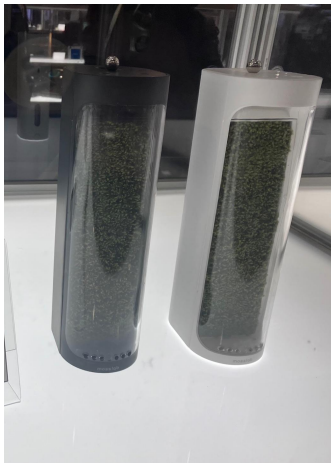
Nuvilabs combined machine vision with AI to monitor and adjust nutritional intake to reduce food waste. While startup shin-ku developed a vacuum seal bottle that slowed the decomposition of fresh food.

ENERGY

PowerFoyle has developed a new solar material and partnered with 3M, Adidas, and others to create self-charging headphones, remotes, and speakers with designer finishes, suitable for different lighting conditions.







ALTERNATIVE MATERIALS

With a century invested in the development of high performance materials with little thought to the long term environmental impacts, companies are re-thinking material science. Organic, biodegradable, renewable, and repairable were all highlights at CES. Companies were showing off these new materials alongside the products that benefit from them.

3M - Developed a new battery cell bonding adhesive that holds cells stable, but release when needed. This will make electric vehicle technology repairable, reduce the cost of recycling, and ease the environmental burden to support the world growing demand for batteries.

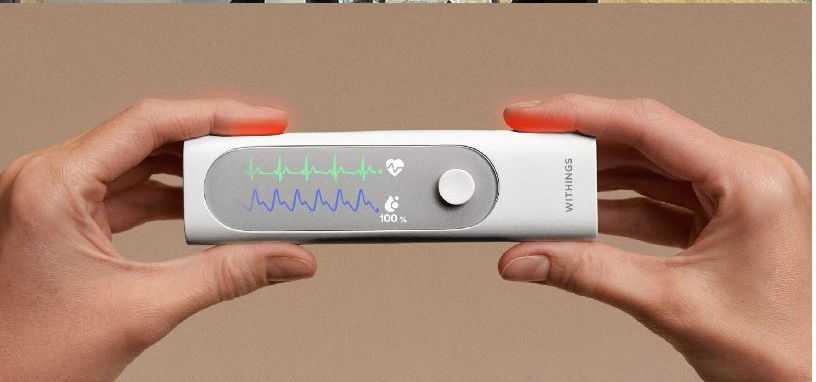
Panasonic - Kinari resin produced from plant-based material has the resilience of plastics, while also being biodegradable. This provides an alternative to plastics that doesn't diminish the benefits.

Mosslabs - An air filter that uses live moss as the filter produces clean oxygen enriched air without the need to replace a filter. Moss, with its increased surface area is more efficient per unit than other organic solutions, reducing airborne particles, increasing oxygen, and also adding humidity to the surrounding area.

Top: 3M bonding adhesive for battery cells
Bottom left: Panasonic's kinari resin, and matching product from organic material.
Bottom right: MossLabs air filter.

OUR PERSONAL FAVORITES AT CES 2024

A selection of exhibits we enjoyed that didn't fit into the overall themes.



WITHINGS' FUSION OF TECH AND DESIGN

At CES, the focus tends to be on technology, with device styling as a secondary thought. Withings, however, has been presenting devices with a modern design that evokes the user's usage scenario every year.

This year, the company introduced BeamO, a home health monitoring device designed to transform the way we do health checkups at home. BeamO is a 4-in-1 digital health device that combines the functions of an electrocardiogram (ECG), oximeter, stethoscope, and thermometer. It's designed for efficiency and user-friendliness, enabling all checks to be conducted in under a minute.

Withings continues to lead and expanding the home health category of IoT devices. Their continuous commitment to both aesthetic and functional excellence in the BeamO highlights a future where technology isn't just about what it can do, but also about how it fits into our lives.

POWERFOYLE: SOLAR CELLS FOR GREATER DESIGN FLEXIBILITY

Powerfoyle is a new type of solar cell optimized for low-light levels and has high flexibility in design, making it ideal for the IoT and smart home markets. It's highly efficient in artificial light and can power a wide range of products.

At the CES booth, Powerfoyle showcased application for products from companies such as Adidas, Philips, 3M, Urbanista, and more. The solar cell is cleverly integrated into the product design, with a flexible shape that can be textured to match a variety of materials including leather, brushed steel, carbon fiber, fabric, and wood. This enables seamless integration into devices without compromising aesthetics, expanding the possibilities for sustainable energy sources.

They also highlighted that their production process is environmentally friendly, using non-toxic materials and renewable energy sources. This innovation sets a new standard for sustainability in self-powered products.

GLIDANCE: ASSISTIVE TECH

Thanks to a recommendation from a coworkers, we had the opportunity to try out a demo of Glindance 2, a functional prototype of an assistive technology device designed for visually impaired individuals. Glidance is a guiding device that helps users navigate to their destination by detecting obstacles and directing them along safe routes. Initially, we were unsure about its function. However, after experiencing it with our eyes closed, walking through a busy CES hallway, we realized the incredible potential to assist humans through well-designed feedback.

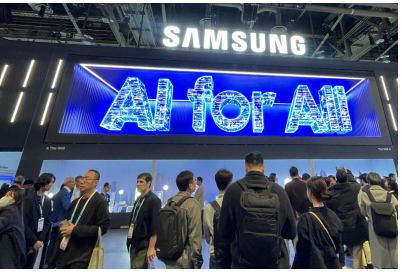
Despite the noisy environment, where we wouldn't be able to hear a voice guidance system, the tactile feedback of Glindance 2 was impressive. Glindance is still in the prototype stage, and they're currently collaborating with a designer for improvements. I'm excited to witness how this device will evolve and revolutionize the future as an intelligent assistive tool.

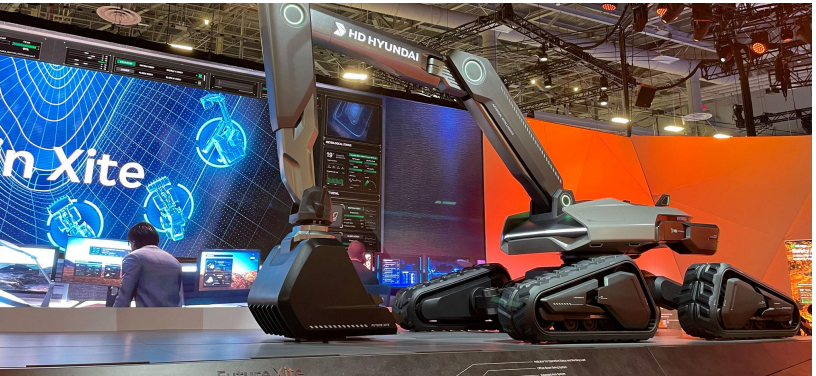
RETHINKING THE SOCIAL IMPACT OF TECHNOLOGY

Samsung showcased a suite of accessories that integrate with their existing product lines. These accessories enhance the ease of operation for people with a variety of mobility challenges. Consumers can mix-and-match the accessories based on their mobility needs, because the accessories are add-ons. The quality of integration that Samsung did, made it hard for the casual observer to know that the accessories didn't come straight from the factory.

This design for inclusiveness and sustainability meant that no new assembly lines or product lines were needed to get a straight from the factory look, that was unique to every person's individual needs.

Top: Samsungs accessible appliance accessories.
Bottom left: laundry dial add-on.
Bottom right: Refrigerator door handle.





KOREAN FIRMS LEAD WITH EYE-CATCHING EXHIBITS

At CES 2024, Korean tech giants, represented by LG, Samsung, and Hyundai, grabbed media attention for their presentations targeting technology trends. The highly complete exhibits showed Korea's national commitment to technology and design.

LG showcased its massive wireless transparent displays that captivated attendees. Perfectly synchronized motion and music highlighted the display size, resolution, and transparency.

On the other hand, Samsung showcased how AI is integrated into their home electronics, embracing their "AI for All" theme, marking a significant trend in consumer technology while they also emphasized their commitment to inclusivity and sustainability practices.

Hyundai's exhibit was equally impressive, featuring futuristic concepts like a flying taxi, advanced logistic robots, and a crab-drive car, painting a vivid picture of future mobility possibilities.

Top: LG, wireless transparent display
Middle left: Samsung booth front
Middle right: Hyundai Mobis, Mobion crab-walking concept car
Bottom: Hyundai HD, Xite excavator

CES PRO-TIPS

If you are planning to attend CES in the future, these are the tips we've gained over our years of attending.

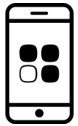
Skip the dress shoes and settle on comfortable walking shoes. Everyone else is doing the same, or wishing they had.

Bring snacks or grab a lunch on the way, and skip the hassle of standing in line. They will be long, and the food isn't that great.

Snap a photo of the exhibitors name before you enter. You'll have lots of photos, and it's going to be hard to remember each one.

Get away from CES and enjoy vegas. History, food, gambling, friends, and art. There is something to inspire everyone.

If you're tired, turn in early and get a fresh start the next day. You'll cover more ground, have better conversations, and achieve more.



Get the CES app. It's complicated to use, but the 3D map is priceless when it comes to finding exhibitors, shuttles, and events.

Thank you,
and please reach out
with any questions :)