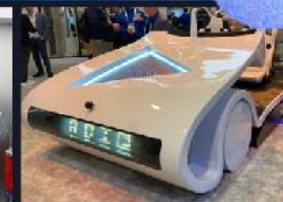
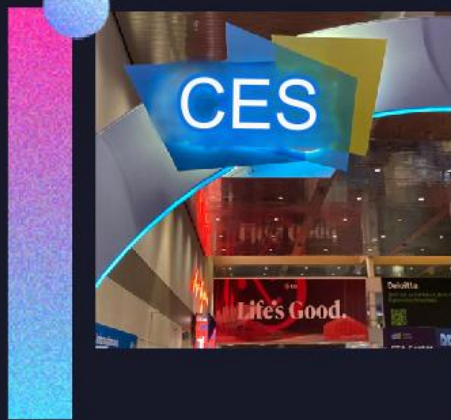


# TheMilk CES 2023 Annual Deep Dive Report



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CES2023 Tech Trends to Watch by CTA

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TheMiilk's CES Action Item List



# About this Report

CES 2023 is a tech show with the largest participation of companies and people since the Corona era. However, there are only a few people who understand the essence of the overabundance of information.

The Miilk's CES report contains insights from experts in each field who have participated in CES for more than 10 years and information collected by The Miilk Research Center experts while traveling to the Las Vegas Convention Center, Venetian Expo, Aria Hotel, and Mandalay Bay, where the press conference is held. Collected, analyzed and included.

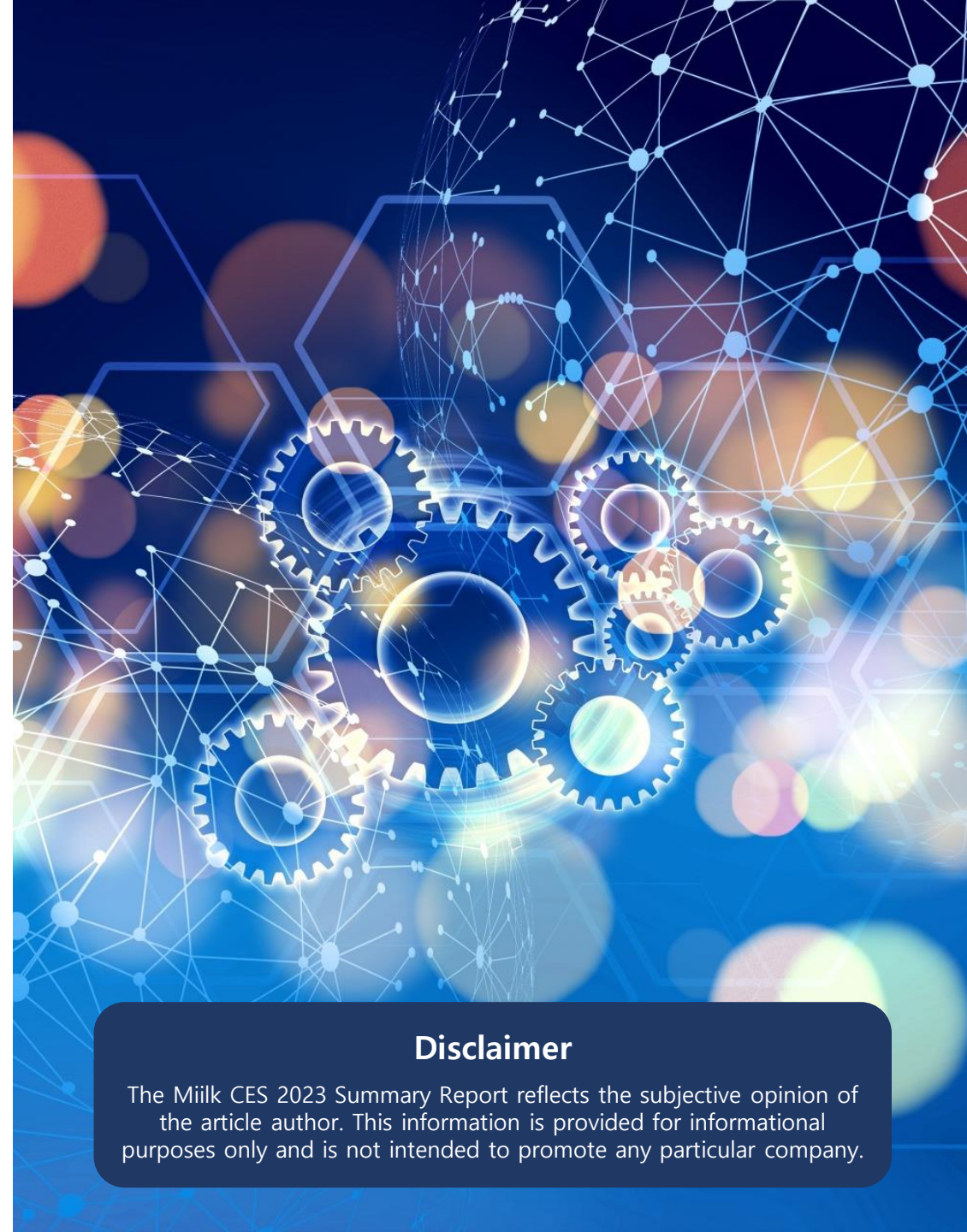
The Miilk CES 2023 Report is a report containing all the information you need to know about CES. We aim to provide key information containing innovation information and technology trends in an economic situation full of uncertainty.

# About TheMiilk

The name The Miilk contains the meaning of delivering Silicon Valley tech and economic trends and corporate information as fresh as Miilk, which is beneficial to your health.

The Miilk's mission is to become the foundation for positive change in the world with journalism-based, trustworthy content and to open a new path for media through a successful digital subscription model.

It is headquartered in Silicon Valley and works through the 'Virtual Newsroom' around the world, including in the US (San Jose, New York, Berkeley, Seattle, Boston), Korea (Seoul), and Ireland (Dublin).



## Disclaimer

The Miilk CES 2023 Summary Report reflects the subjective opinion of the article author. This information is provided for informational purposes only and is not intended to promote any particular company.

## Message from TheMilk: CES 2023 announced new changes in an era of global crisis

The past 10 years have been a time of overwhelming 'growth' due to abundant fund liquidity due to zero interest rates, China's globalization (free trade), and rapid innovation of big tech companies. After 2023, the flow of capital is changing, and as the geopolitical positions of countries around the world are also changing, technology is leading the times. The emergence of TVs and automobiles, invented in the late 19th century, changed the 'life' of mankind, and the 'iPhone', the first invention of the 21st century, turned the flow of modern life around. After the mid-21st century, 'artificial intelligence' will take the place of TVs, cars, and iPhones (mobiles). In this trend of the times, an unprecedented disaster called 'Corona' accelerated the application of technology.

Amid uncertainties such as the US-China trade war and the Ukraine war, another situation will unfold if a 'global recession' and 'high unemployment' occur in 2023, as predicted by many economists. Now, survival, or the proposition that "those who survive are strong," will dominate companies and society. But, as always, a hero is born in a difficult world.

The 2023 CES was held during a period of 'new normal' such as inflation and geopolitical risks.

Amid the spectacular technology exhibition at the 2023 CES, the key points to watch are how countries and companies around the world plan to break through and survive in the future, and what products (services) startups plan to surprise the world with. In particular, it is meaningful that amid the global crisis, technologies such as artificial intelligence, transportation technology (mobility), healthcare, and metaverse have been verified as new growth engines that will reach maturity in the future.



(Resource : CTA)



## CES2023(1) given meaning by CTA “Human security is the future”

John T. Kelley, CES Vice President and Show Director, said that the global crisis can be overcome through technology-based innovation and collaboration.

The main theme of CES2023 is ‘Human Security for All (H4SA),’ which presented how technology plays a significant role in developing human security around the world.

Human security is a concept that recognizes the importance of individual well-being and includes security related to each individual's lifetime experiences, such as food, access to medical care, income, environmental protection, personal safety, community security, and political freedom.

COVID-19 has promoted the introduction of new technologies such as digital healthcare, remote work, and digital payments, and the main task of this CES 2023 is the expansion of innovation power, CES organizer CTA (Consumer Technology Association) revealed.



(Top) John T. Kelley (Source: CES, Hyunji Kim) (Bottom) CES2023 main theme 'Human Security for All (H4SA)' (Source: CTA)

## CES2023(2) given meaning by CTA “Innovation comes during recession”

“Innovation accelerates and aggregates during economic downturns and is released when the economy begins to recover, ushering in a new wave of technological change.” – Christopher Freeman, 1921- 2010

CTA predicts that 2023 will be a ‘turning point in innovation.’

Steve Koenig, CTA Vice President of Research, said at 'Trends to Watch' held on January 3, "Powerful new waves of technological innovation occur during recessions.

Just as 4G LTE mobile broadband and smartphones became widespread during the global financial crisis (2008-2009), technological innovation for consumers occurred.

A wave of technological change will occur in 2023 as well.

“Technology holds the answers to the biggest problems facing the world,” he announced.



스티브 코닉 CTA 부사장)



# Overview

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What is CES?

CES trend changes by year

CES2023 in numbers

CES2023 Korea in numbers (Korean companies)

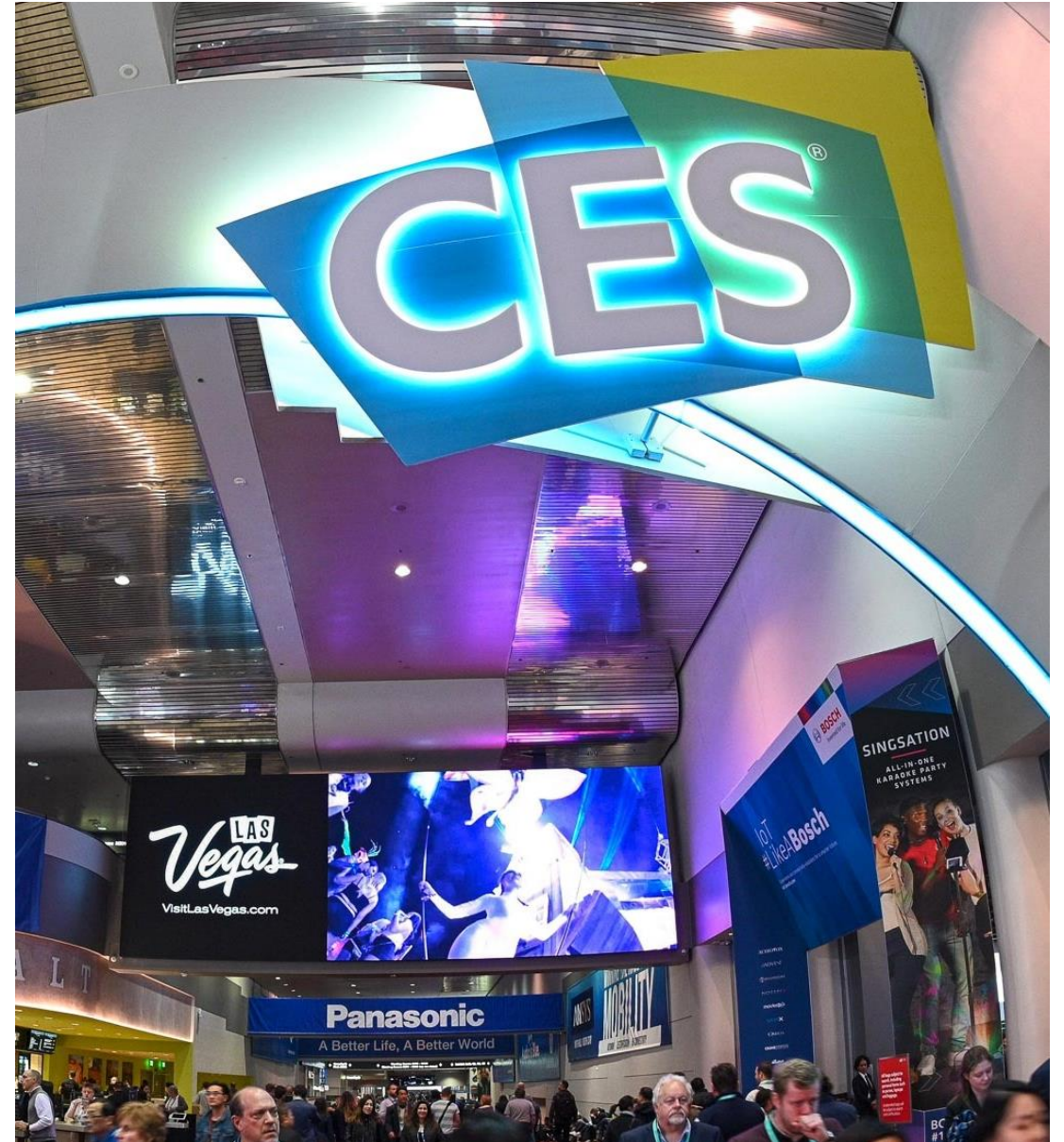
Global Innovation Index announced at 2023 CES

10 years of CES in keywords

# What is CES?

## The world's largest ICT convergence exhibition

- Hosted by the Consumer Technology Association (CTA) Started in New York City, USA in 1967.
- Since 1978, summer CES in Las Vegas and winter CES in Chicago have been held every other year.
- Since 1995, CES Asia has been held consistently every year in Las Vegas, Nevada, and since 2015, CES Asia has been held separately in Shanghai, China.
- Initially, it started as an exhibition focusing on home appliances, but since 2010, CTA has actively responded to changes in the IT industry and expanded the theme of the exhibition from 'product' to 'technology', rapidly emerging as the world's largest information and communication technology exhibition.
- Currently, it has transformed into a technology exhibition that discloses the technical achievements of companies and organizations with the latest technologies in the ICT field, such as future cars, drones, artificial intelligence, and robots.
- A great opportunity to discover both large corporations that showcase cutting-edge technologies that reflect the latest trends and startups that showcase new business items through ingenious ideas.





# CES 2023

## Key Takeaways

- 
- Growth and expansion of mobility
  - Ubiquitous AI
  - Mobility advancing to the sea – Marine Tech rather than UAM
  - Geopolitical changes also impact key themes of CES 2023
  - CTA Global Innovation Index released – including Korea's median group
  - Taiwan's scary technological pursuit is a 'warning light' for Korean companies as well
  - 'Web3' newly appeared at CES2023
  - Solve the challenge of human security for all
  - Continuous innovation in energy saving technology
  - 'Human Tech', a combination of technology and humanity

# CES trend changes by year

- By looking at the major trends of CES, which is held every year, you can see the flow and evolution of technology
- Digital transformation, which changes the physical world into a digital world, is gradually becoming more advanced.
- Physical hardware emphasizes high performance , lightweight , and ergonomic form factor . In the digital world, areas such as enhanced immersion , cybersecurity , and AI are evolving further.

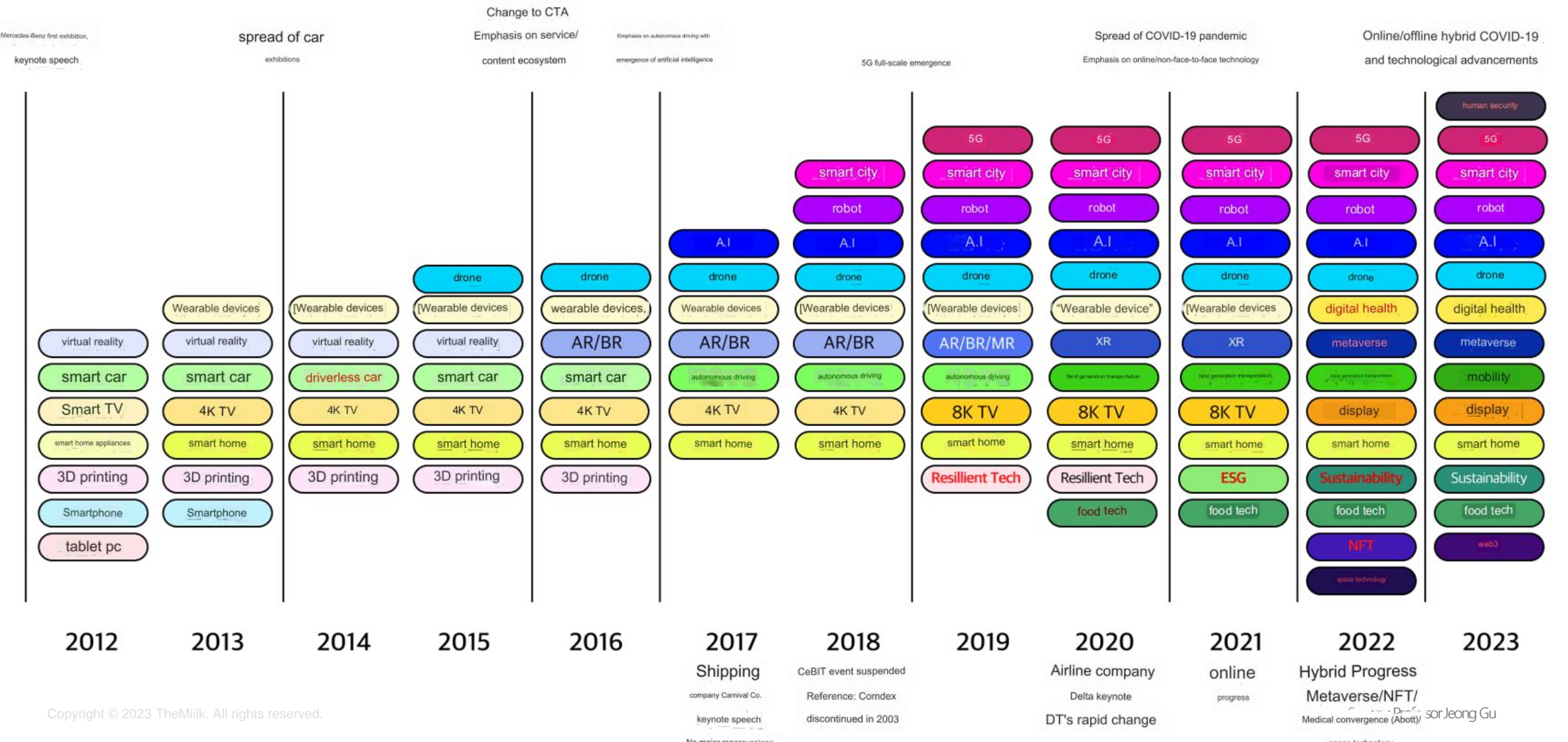
2019 The future changed by 5G+data	2020 Digital Transformation: The End of an Industry	2021 Advances in technology accelerated by the pandemic	2022 Post- pandemic , the new role of technology	2023 Sustainability and mobility emerge as mainstream tech industries
<p><b>CES2019 announces the universalization of 5G and the beginning of the data economy</b></p> <ul style="list-style-type: none"> <li>• Audi presents technology that links</li> <li>• BMW Vision i Nextro virtual reality test run revealed</li> <li>• Chinese startup Nreal unveils virtual reality magic glasses</li> <li>• SKT showcases media and mobility technologies in the</li> </ul>	<p><b>Delta Air Lines gave a keynote speech for the first time as a ' Non - Tech' company. Announces the digital transformation of traditional companies. The meaning of industry (business boundaries) disappearing</b></p> <p><b>Fierce competition in semiconductor technology</b></p> <ul style="list-style-type: none"> <li>• SK Hynix showcases semiconductor technology using</li> <li>• AMD and Qualcomm's offensive , Intel falters</li> </ul> <p><b>Digital technology expands to treatment</b></p> <ul style="list-style-type: none"> <li>• Pay attention to</li> <li>• Healthcare , advancing from the field of devices to the field of treatment</li> </ul>	<p><b>Future changes brought forward by the pandemic</b></p> <ul style="list-style-type: none"> <li>• Post-corona technology war</li> <li>• Robots that turned</li> <li>• Digital healthcare still attracts a lot of attention</li> </ul> <p><b>Limitations of online exhibitions</b></p> <ul style="list-style-type: none"> <li>• Participating companies decreased by more than half</li> <li>• Fatigue caused by searching information about numerous companies online</li> </ul>	<p><b>CES halved due to omicron mutation. Focuses on the new role of technology in the post-pandemic era. ESG comes to the forefront of the show for the first time.</b></p> <p><b>virtual / augmented reality technology</b></p> <ul style="list-style-type: none"> <li>• LG Electronics Augmented Reality introduces innovative products through Metaverse</li> <li>• Metaverse , NFT focuses attention</li> </ul> <p><b>Advanced mobility</b></p> <ul style="list-style-type: none"> <li>• A new battleground for future technologies beyond automobiles</li> <li>• Hyundai Motor Company's Meta Mobility Vision Revealed</li> </ul>	<p><b>Web 3.0 and Metaverse topics created</b></p> <ul style="list-style-type: none"> <li>• this year's CES , new topics such as Web 3 and Metaverse were added</li> <li>• A large number of next-generation technologies such as</li> </ul> <p><b>Evolution</b></p> <ul style="list-style-type: none"> <li>• 300 exhibitors will showcase the latest technologies in autonomous driving</li> </ul> <p><b>Emphasis on sustainability</b></p> <ul style="list-style-type: none"> <li>• startups, including John Deere, who delivered the keynote speech, are scheduled to introduce energy conservation , increased power production , solving food shortage problems , sustainable agricultural systems , disasters and disaster response, etc.</li> </ul>



## CES2023 in Number



# 10 years of CES in keywords





# CES 2023 Technology Trends \_ to Watch by CTA

- CTA tech trend announcement data analysis



### Global Challenges Confronting Industry

	<b>Supply Chains Remain Vulnerable</b> <i>China's dismantling of its zero-Covid policy is a positive sign.</i>
	<b>Semiconductor Demand Softening</b> <i>Lead times falling. Chip inventories rising.</i>
	<b>Labor Shortages</b> <i>U.S. has a shortage of 10 million workers.</i>
	<b>Stubborn Inflation and Rising Interest Rates</b> <i>U.S. Fed raised interest rates six times in 2022.</i>

Sources: WSJ, Susquehanna, U.S. Chamber of Commerce, Federal Reserve

Consumer Technology Association CES

### Digital Utilities Underpin the Modern Enterprise

<b>Security</b>  <b>Cybersecurity</b>	<b>Scalability</b>  <b>Cloud</b>	<b>Simulation</b>  <b>AI &amp; Robotics</b>
---	--	---

Consumer Technology Association CES

## 6 key trends for CES 2023

Acceleration of technological advancement due to

Digital Healthcare , Metaverse & Web 3, Games & Services

Increasing awareness of climate change

The Rise of Sustainability

Advancement/sophistication of technology

enterprise tech innovation ,  
Transportation Tech / Mobility

## Enterprise Tech Innovation

Challenges across global industries

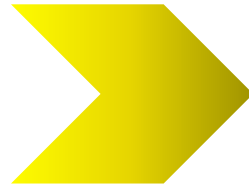
- ✓ Weak logistics distribution network
- ✓ Decrease in demand for semiconductors
  - ✓ manpower shortage
- ✓ Rising interest rates and inflation

that will tackle inflation and restore  
From companies expected to come out



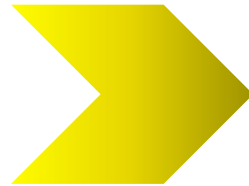
## The wind of innovation accelerated by the crisis

**economic depression  
(2008~2009)**



- consumer Leading to Tech Innovation
  - ✓ 4G LTE – Mobile Broadband
  - ✓ Smartphone
  - ✓ tablet
  - ✓ laptop

**2023 panic ?**



- enterprise tech innovation
  - ✓ 5 G – Industrial Internet of Things Application
  - ✓ connected intelligence
  - ✓ automation system
  - ✓ quantum computing

## Global economic growth through enterprise tech innovation

- Enterprise tech innovation does not originate from the big tech companies we are familiar with. Most innovations will originate from the smallest startups

2020

2030

Existing innovations center around cloud AI, robotics , and cybersecurity.

- Areas of application : SaaS, supply chain retail related industries

In the future, innovation will occur centered on automation and virtualization.

- Industry using 5G , Industrial Internet of Things , Web 3
- Application areas : smart factory , automation system , metaverse

## Digital technology is the foundation of modern industry

through cyber security  
Securing

using the cloud  
Securing service scalability

AI and robots  
Simulation possible in a virtual  
environment



## Industrial changes due to logistics and warehouse automation

- Automation enables safe and efficient industrial operation



*Ocado Group*

### Increased productivity

- Ocado Group 's warehouse solution



*Cray X – West Hall 7141*

### Improved worker safety

- Increases the worker's strength when working with manual materials and measures the workload at the same time
- Cray X Exoskeleton from German Bionics



*RightHand Robotics*

### Optimize space and uptime

- RightHand Robotics accomplishes tasks efficiently with automated robotic arms

## Expansion of the cybersecurity ecosystem

- **Cybersecurity is an industry in itself.**
  - ✓ The industry is progressing in a variety of fields, not just firewalls and authentication apps.
- **Zero Trust Security Model**
  - ✓ A security model that thoroughly authenticates the access or data transmission of all devices and users connected to a private network.
  - ✓ The system doesn't trust you
  - ✓ Even if the user is already logged in and accesses frequently, if the user shows behavior that is different from before, check this and re-authenticate.



Source: CTA

## Metaverse is reality : The concept of object metaverse emerges

The metaverse is closer than you think . The materialized Metaverse service is expected to provide an immersive experience online

- **Metaverse of Things (MoT : Metaverse of Things)**

**virtualization**  
3D metaverse

**immersion**  
Simulation and collaboration  
through digital twins in  
enterprise environments

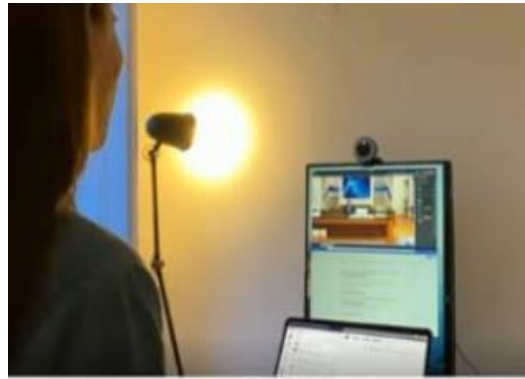
**Benefit**  
✓ and communication  
✓ Provides a next level of  
immersion



# Innovative examples of virtualization and immersion enhancement

## Virtualization Innovation Cases

- **Touchcast**
  - ✓ Part of the Microsoft exhibition
  - ✓ 3D space and one-to-one interaction
  - ✓ Consumers can experience products in a virtual space at home



## Examples of innovations that enhance

- **OVT Technology**
  - ✓ Digitization of olfactory data
  - ✓ Smell memories last
  - ✓ Add visual experiences to immersive experiences



## ‘ Transportation Tech ’

- 1. Advances in technology related to electric vehicles and batteries**
  - Increasing need for large capacity batteries and fast charging
- 2. Development of autonomous driving systems and applied industries**
  - Commercialization of self-driving truck technology is necessary to solve
- 3. Changes to the in-vehicle experience**
  - A vehicle is a space where various technologies are combined, and the most notable feature is the screen.
  - voice control function And with the advent of screens in cars, large screens are placed in various places inside the car.
  - 5G- based vehicle-to-everything (V2X) technology, vehicles are transformed
  - shopping and entertainment
  - This is a subscription car performance upgrade ( FaaS : Features as a Service) model, which means paying a subscription fee for services such as heated seats . Regular subscription fees are expected to become increasingly important not only in



Portable electric vehicle battery and car interior ( Source : The Miilk )

## Transportation innovations at

### Transformation of transportation into a battlefield

Electric trucks , electric boats ,  
eVTOL

### Components for

Various precision sensors and  
modules such as lidar

### Improved performance of transportation

External panels for improved  
performance



(Source: CTA)



## Healthcare , from B2B to B2C : Health care at home

- Demand for telemedicine grows explosively during
- Active movement to build
- Sensors , wearables , and other diagnostic tools can be used to deliver live data to medical staff .

### **digital therapy**

Chronic disease monitoring ,  
treatment , online pharmacy

### **telehealth**

Remote patient monitoring by  
doctors , depression diagnosis

### **fitness tech**

Effective exercise at home  
possible with a variety of  
wearable sensors and equipment

## Health Tech at CES2023

**Telemedicine via network**  
Essence Group 's Care@Home

**Health management through connection between heterogeneous devices**

Abbott 's Proclaim Plus supports pain management devices and smartphone-linked applications

**Health care using wearable devices**  
SK 's Zero Glasses provides an epileptic seizure prediction solution using smart glasses

Telehealth / RPM



Essence Group  
Care@Home

Connected Devices



Abbott  
Proclaim Plus

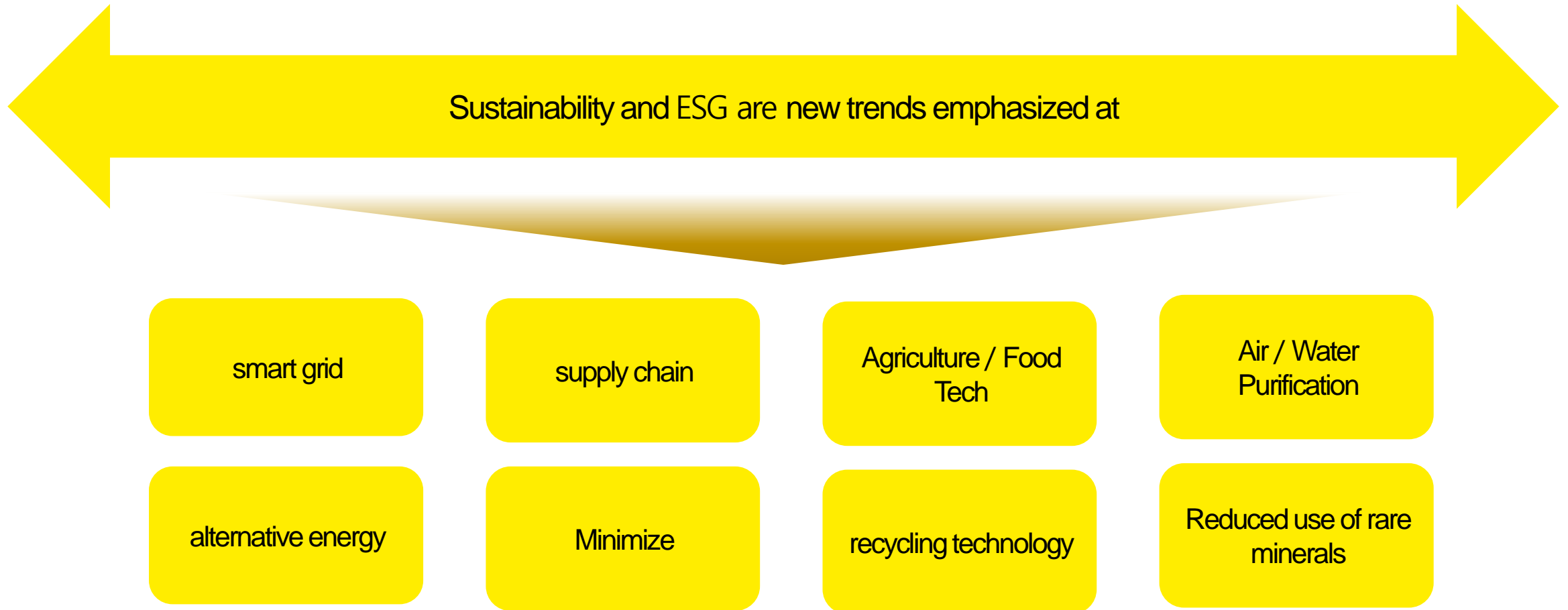
Wearables



SK  
Zero Glasses

(Source : CTA)

## Sustainability and ESG



## Innovative technologies related to sustainability at CES2023

### Technology for water purification

ACWA Robotics' water pipe diagnostic robot moves along the water pipe. Clean Water Pathfinder

#### Water Purification



**ACWA Robotics –  
Clean Water Pathfinder**

### Eco-friendly power generation technology

Jackery 's Air-W, a portable personal wind generator

#### Clean Power Tech



**Jackery –  
Air-W**

### Innovation in battery technology

Leydenjar 's Pure Silicon Anodes developed using silicon cathode

#### Battery Tech Innovations

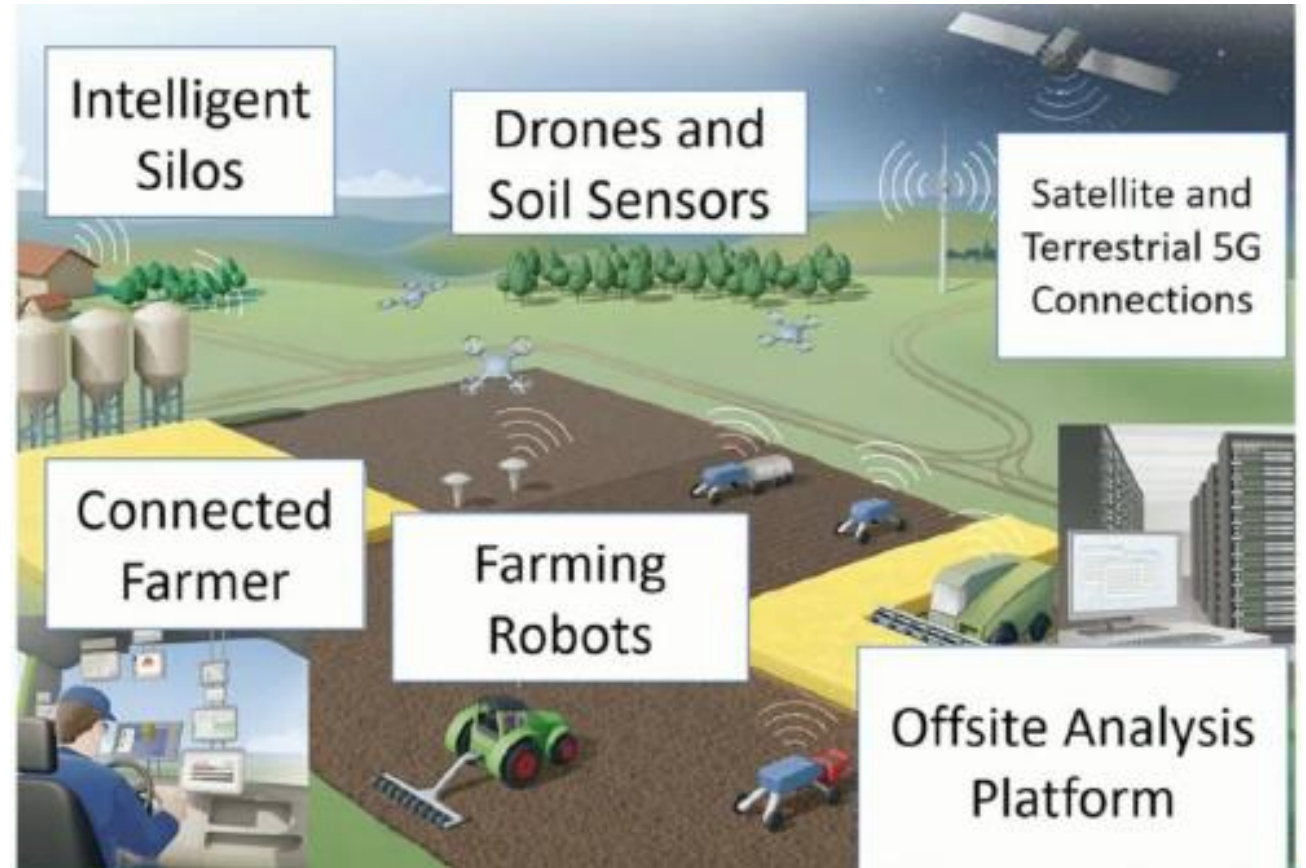


**LeydenJar–  
Pure Silicon Anodes**

(Source: CTA)

## What the farm will look like in the near future

- farming robot
- smart warehouse
- Connectivity via
- Farmers using
- Precise diagnosis using an analysis platform remotely
- drones and soil sensors



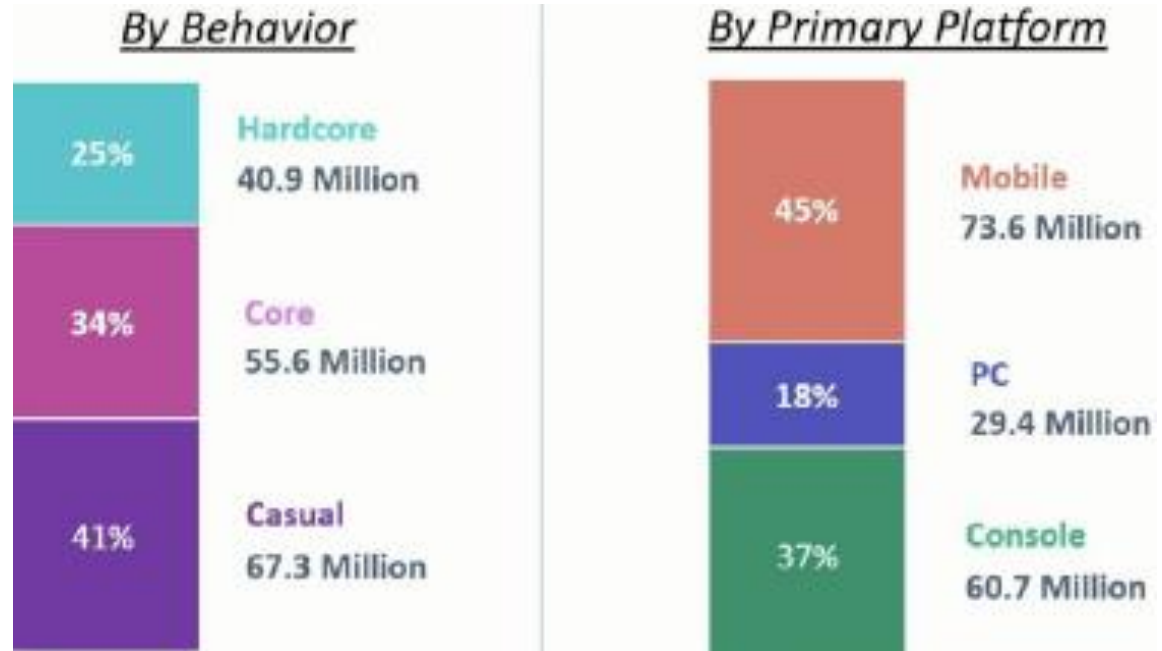
(Source: CTA)



## Rapid growth of the gaming industry

- Gaming plays a very important role in culture
- The average age of gamers ranges from 13 to 64, making up
- Number of gamers in the US as of 2022 : 164 million people
- Average gaming time per week increases
  - ✓ Increase in mobile game users
  - ✓ The number of people playing games at night or early in the morning increases even if they are not hardcore gamers
- Users who play games casually account for the highest proportion of the total at
- The highest proportion

< US gaming market for ages 13-64 in 2022 : > 164 million people \_



( Source : CTA, The Future of Gaming 2022 )

## Products related to games

### hardware

Razer 's Edge 5G Handheld device

### display

Samsung's Odyssey Neo G9 gaming monitor

### Haptics

OWO 's Skin haptic system

### metaverse

Sony's PlayStation VR2 headset

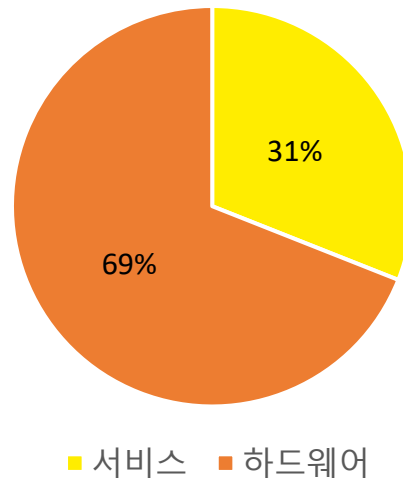


( Source : CTA )

## After the pandemic, the proportion of ' services ' increased

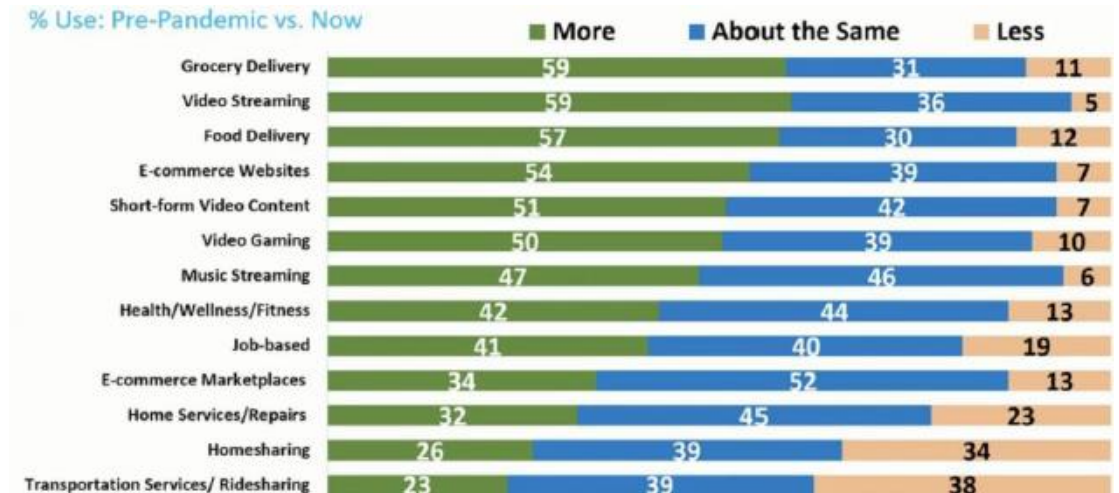
- Video Streaming , Food Increased use of
- 2023, approximately 31% (KRW 600 billion ) of U.S. technology revenues will be service-based.
- Decrease in human-facing services such as home sharing and transportation services
- The competitiveness of the service industry is increasing
  - cloud gaming
  - fitness / health
  - home security
  - Audio / Video

< US technology revenue in 2023 : approximately 600 billion >



( Source : CTA, US Industry Forecasts, Jan. 2023 )

< Consumers' dependence on services is increasing >



( Source : CTA, On-Demand Consumer Services Segmentation, DeC. 2022 )

## Key Takeaways 10

Growth and  
expansion of  
mobility

Ubiquitous AI

Mobility advancing  
to the sea – Marine  
Tech rather than  
UAM

Geopolitical changes  
also impact the core  
themes of

CTA Global  
Innovation Index  
released – including  
Korea's median  
group

Taiwan's scary  
technological  
pursuit, a 'warning  
light'

Web3

Solve the challenge  
of human security  
for all

Continuous  
innovation in energy  
saving technology

'Human Tech', a  
combination of  
technology and  
humanity

# 1. Growth and expansion of mobility

- BMW , the company that received the most attention at CES2022 , gave a keynote speech instead of Hyundai Motors.
- **Over 300 mobility companies** participate in **CES2023** Add heat
- **mobility technology evolves in all directions**, the rapid pace of expansion is also noteworthy.
- Agricultural machinery company John **Deere** received this year's Best Innovation Award for its **self-driving tractor**, and **Hyundai Heavy Industries** is expected to make a major
- Mobility technologies such as autonomous UAM ( Urban Aviation ) have been
- Ford predicted self-driving delivery by combining self-driving cars and robots , and Toyota came up with the idea of turning the entire city into a self-driving smart city.
- Now it's not just an idea, but real-life application and commercialization . has entered the stage
- **As mobility takes the lead, related displays and batteries The industry is also growing explosively**

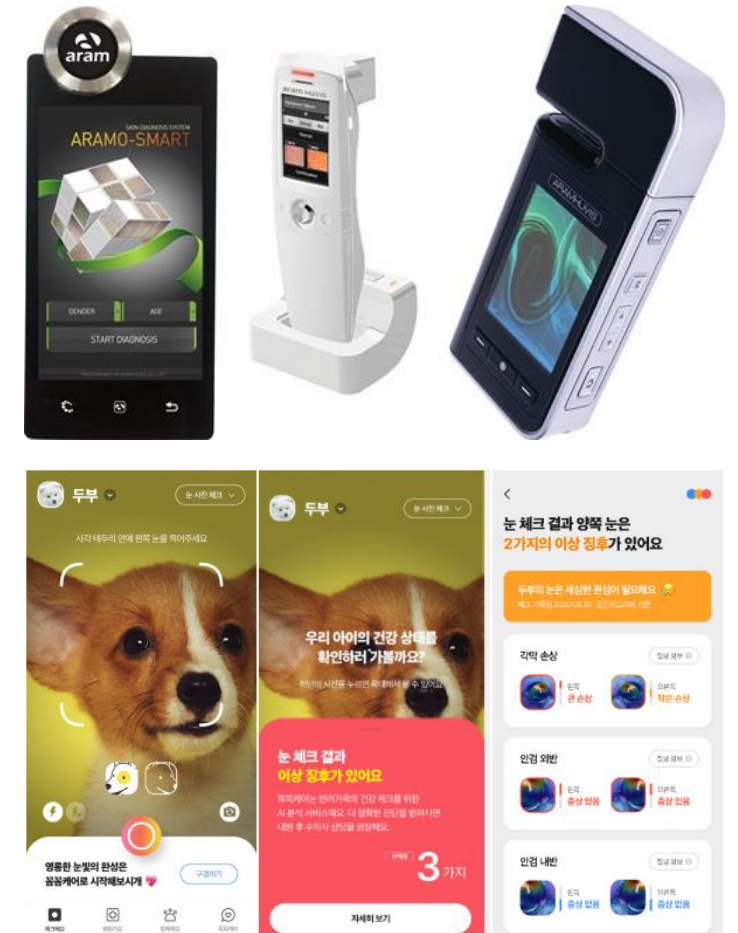


John Deere large self-driving truck, Magna's Intelligent Force, Caterpillar 100t 'Cat 777' off-road truck ( Source : The Milk )



## 2. Ubiquitous AI

- Artificial intelligence, which used to have a high barrier to entry, is now becoming more
- Aram Huvis, a scalp care solution company, After learning more than 100,000 pieces of scalp data, we came up with a solution that classified each individual's scalp condition into 10 types . This allows customized suggestions for shampoo.
- AI For PET informs you of your pet's health status just by taking a photo of it
- When you take a picture of an abnormal part of your body, analysis begins immediately . Artificial intelligence software analyzes images and matches a veterinarian to provide treatment based on this data.
- Among the majority of countries and companies participating in CES , including France , Taiwan , and Korea, **there is no product that does not include AI functions.**
- CES is still a battleground in the home appliance industry . This year too , Korean companies, including 46 Samsung Electronics and 28 LG Electronics , dominated the CES Innovation Awards . Most of these products feature artificial intelligence as standard.



Source : ( above ) Aram Huvis , ( Below ) AI for Pet

### 3. Mobility entering the sea – Marine Tech rather than UAM

- Mobility advances to the sea at CES2023 . **The Rise of Marine Tech**
- UAM , which was a hot topic last year, did not receive attention this year.
- Following automobiles, **marine mobility is also undergoing electrification innovation** . Electrification of boats contributes to a sustainable shipping business . Ship electrification improves customer experience by minimizing noise and shaking
- Brunswick and Candela marine technology participate in
- Brunswick's proposed future boat method is defined as ACES (Autonomy, Connectivity, Electrification, Shared access) . In other words, **autonomy , connectivity , electrification , and sharing approaches are** expected to be key factors.
- Swedish company Candilla unveiled the production version of the electric boat C-8 . **C-8 is a boat that can fly quietly over water and waves, presenting the future of sustainable water travel.**
- Korea's Hyundai Heavy Industries Group (HD Hyundai ) also introduced Marine Tech at



Candilla Marine , hd modern , of brunswick Marine Tech ( Source : The Mii

## 4. Geopolitical changes also affect the core themes of

- The war between Russia and Ukraine , the trade conflict between the United States and China , external environments such as pandemics , and geopolitical changes accelerate technological innovation.
- This sense of crisis served as the background for deciding that
- of agricultural technology is a powerful means of solving the food crisis
- John Deere , the first agricultural company, participated in the keynote speech
- Geopolitical tensions are making cybersecurity threats even greater . A new **era of ' digital geopolitical risk '** has arrived.
- CES 2023 will also showcase various technologies related to



Source : Shutterstock \_



## 6. Taiwan's scary technological pursuit , a ' warning light ' for Korean companies as well

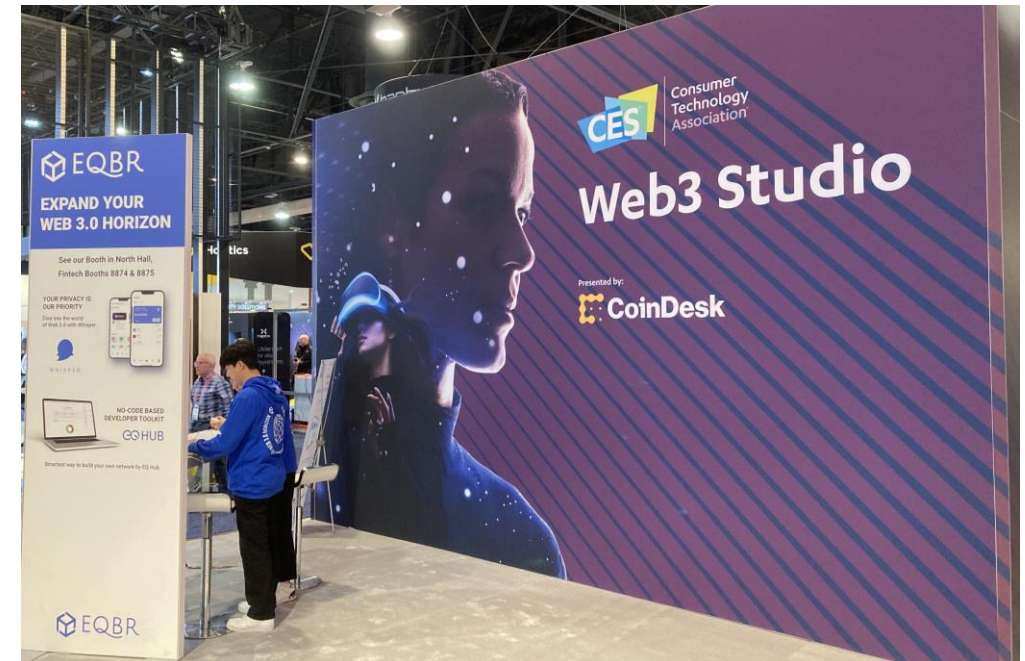
- Industrial Technology Research Institute (ITRI), Taiwan's largest high-tech research institute, participates in both online and offline events at
- wearable devices , digital twin virtual coaches, smart aquariums , self-driving robots, and advanced manufacturing robots.
- Taiwan is a case that proves that not only semiconductors (TSMC) but also other technologies are a threat to Korea.
- **Currently, Korea is benefiting from the US-China conflict and accounts for a large portion of the 2022 and 2023 CES , but is facing constant challenges from**
- In order not to give up the initiative, continuous development and support of core technologies are needed domestically.



Taiwan Pavilion ( Source : The Miilk )

## 7. ' Web3' newly appeared at CES2023

- NFT, digital assets , blockchain technology, etc. ' **Web 3'** topic appears for the first time at
- **CTA partners with CoinDesk to run the Web 3 conference program** . CoinDesk operates the 'CES Web 3 Studio ' at the event to curate the Web 3 conference.
- Web 3 Studio features interviews with
- Presentation predicting the network effects of Web 3 , XR, and Metaverse . An XR-AR- Metaverse session
- What is noteworthy is whether **the metaverse, which has been** mainly recognized as an ' online game ' , will be applied industrially , and the future **development potential of Web 3** will be confirmed. thing
- At CES2023, VR medical education and beauty market application cases will be exhibited. Technologies applied to



The Web3 category was created for the first time at CES2023 ( Source : The Milk )



## 8. Solve the problem of human security for all

- ' Human Security for All' The concept of **viewing humans as the ultimate object of security** Emphasizes that it is more urgent than anything else to protect humanity from political
- As we experience factors that threaten our survival, such as the
- CES2023 reflects the times and puts technologies that provide solutions at the forefront.
- Reflects growing interest in sustainability due to climate change and security instability
- For the first time in the keynote speech category, agricultural company ' John Deere ' was named, conveying



Source : CTAs

## 9. Continued innovation in energy saving technology

- As global energy prices rise due to the war in Ukraine, technologies that emphasize energy efficiency have emerged.
- called ' Bcool ' released by Baracoda Daily Health is characterized by **the fact that it does not require batteries at all**
- Using special technology, a small amount of electricity can be charged just by shaking it a few times.
- BeFC is a French startup. The goal is to replace
- Typical digital ovulation tests contain lithium batteries, so 97% of them end up in landfills after disposal.
- BeFC has developed a bio-substrate that can produce a small amount of power by synthesizing carbon and glucose
- There are still limits to generating large amounts of electricity.



Source : ( above ) Explora ( below ) BeFC

## 10. 'Human Tech', a combination of technology and humanity

- Many top innovation awards come from the human
- DotPad developed by Korea's ' Dot' **Braille pad that takes into account the lack of accessibility to**
- Since last year, we have been collaborating with Apple to allow text and various pictures that appear on the iPhone and iPad to be accessed directly on the Dot Pad.
- B2N, a domestic company, Introducing
- **silver care service targeting nursing hospitals**, AI analyzes and predicts
- ' Always Smart Band ' is a wearable device that provides the ability to directly call caregivers and medical staff



**NEUL**  
**SILVER CARE**

source : ( top ) dot ( bottom ) B2N

# CES2023

## Keynote Keynote Summary

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john deere  
BMW  
LG Electronics  
hd modern  
Stellantis  
panasonic  
bosch  
sony  
AMD  
Samsung  
TCL



# John Deere's agricultural tech revolution

- is being reborn as a company that creates cutting-edge agricultural technologies based on
- A robot fertilizer spreader that does the work of 6,000 people alone '
- Can reduce
- When a farmer plants a seed, the machine's sensor detects where the seed takes root and then sprays only the necessary amount of fertilizer
- Introducing new electric excavators
- Kreisel battery - powered excavators have improved performance and safety compared to existing products
- Low operating costs , low noise pollution , no exhaust emissions



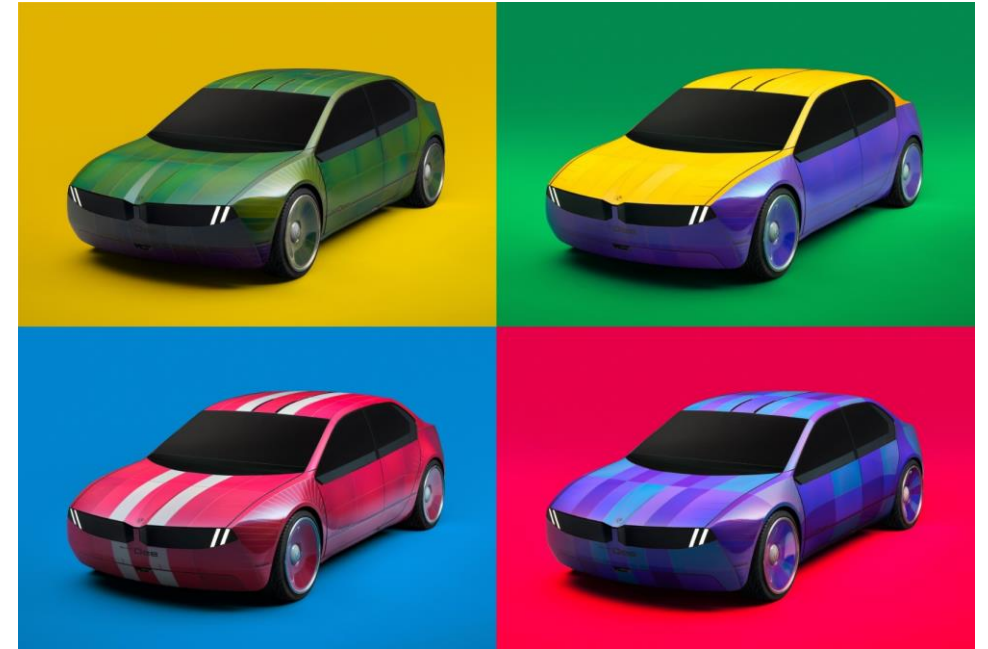
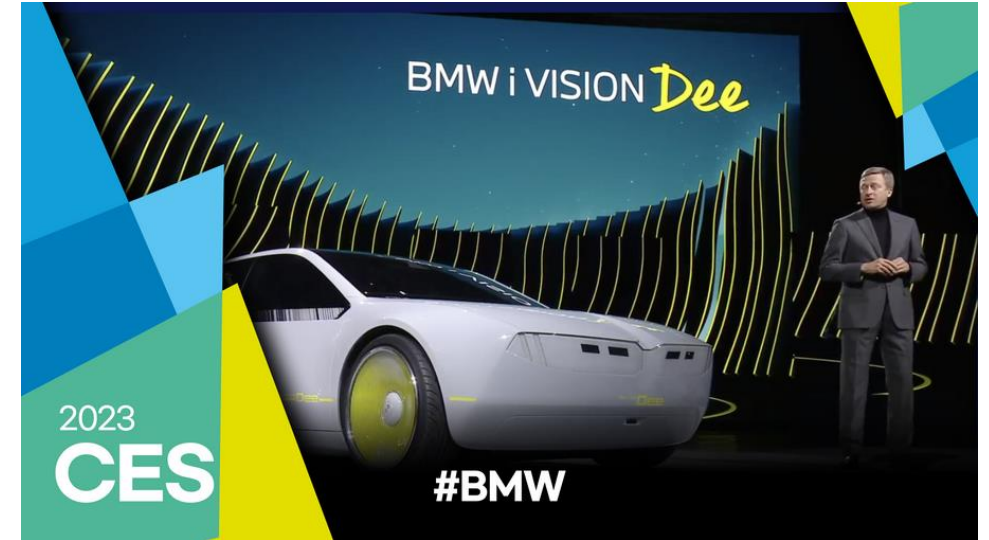
Source : The Miilk



Source : CTAs

# BMW, expresses emotions like a friend future car

- BMW at CES2023 Media Day Presenting a vision to make
- BMW i is a car that is more than just a means of transportation or transportation; it is like a friend that stays with you for life. Vision 'Dee' unveiled
- BMW Chairman Oliver Zipse said that BMW 's future lies in
- full-color E Ink technology
- BMW applies e- paper film to the car body to express up to 32 colors
- BMW is \_ Apply mixed reality
- D. Visually expresses the joy and surprise of talking to people in a drawing.
- the driver approaches the vehicle, it turns on the lights, makes noise, communicates, and expresses emotions.



Source : CTAs

# LG, now beyond home appliances to Mobility

- LG Electronics takes a step further
- Jo Joo-wan The CEO explained
- OLED TV , which allows you to watch 4K video without complicated wire connections, will be launched by LG Electronics at CES2023 . An ambitious work presented in honor of the 10th anniversary
- LG ThinQ will provide
- LG Electronics announces partnership
- LG Electronics introduces a shoe case, the successor model to
- Redefine
- Developing next-generation autonomous driving solutions in collaboration with



Source : CTAs



# HD Hyundai , from energy production to transportation All in on the sea

- HD Hyundai reveals its ' Ocean Transformation ' vision,
- mobility , logistics , resources , and climate change problems
- HD Modern Ocean The core of the mobility business is unmanned and remote digital solutions.
- the Ocean Energy plan is to build a kind of energy cluster.
- HD Hyundai Oceanwise 's strategy is a transportation optimization platform based on data and networks.
- HD Hyundai's ocean life strategy is centered around a leisure platform that creates a space for living in the ocean.
- Users can use the fish finder function on this leisure platform to find seas with lots of fish for fishing and find a place to watch the perfect sunset.



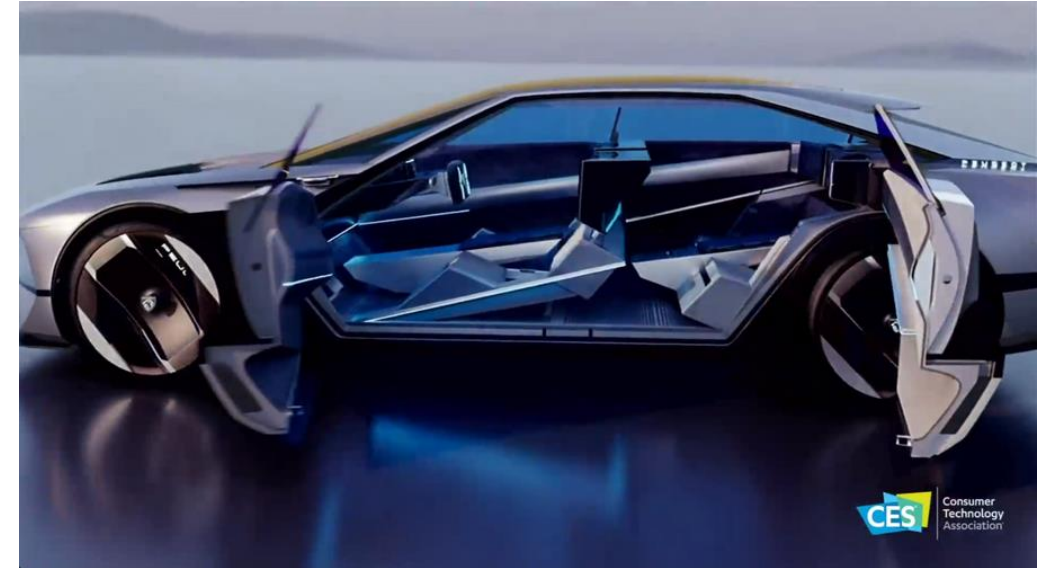
Source : CIAs



HD Hyundai exhibition hall aerial view ( Source : HD Hyundai )

# Stellantis' data software

- Stellantis announced its agreement with FCA on January 16 , 2021 . A multinational automobile company established through the merger
- Following the emphasis on the 'Mobilisights ' plan to commercialize vehicle data, the Ram 1500 Revolution battery electric vehicle concept and the Peugeot Inception concept were unveiled in succession
- The future profit model newly revealed by Stellantis today is MobilySights.
- Stellantis is Plan to collect data on
- , Stellantis unveiled new cars for each brand on this day . The electric concept car unveiled by major brand Peugeot is ' Inception ' .
- A new control system, Hypersquare, is placed in the next - generation i-Cockpit, a

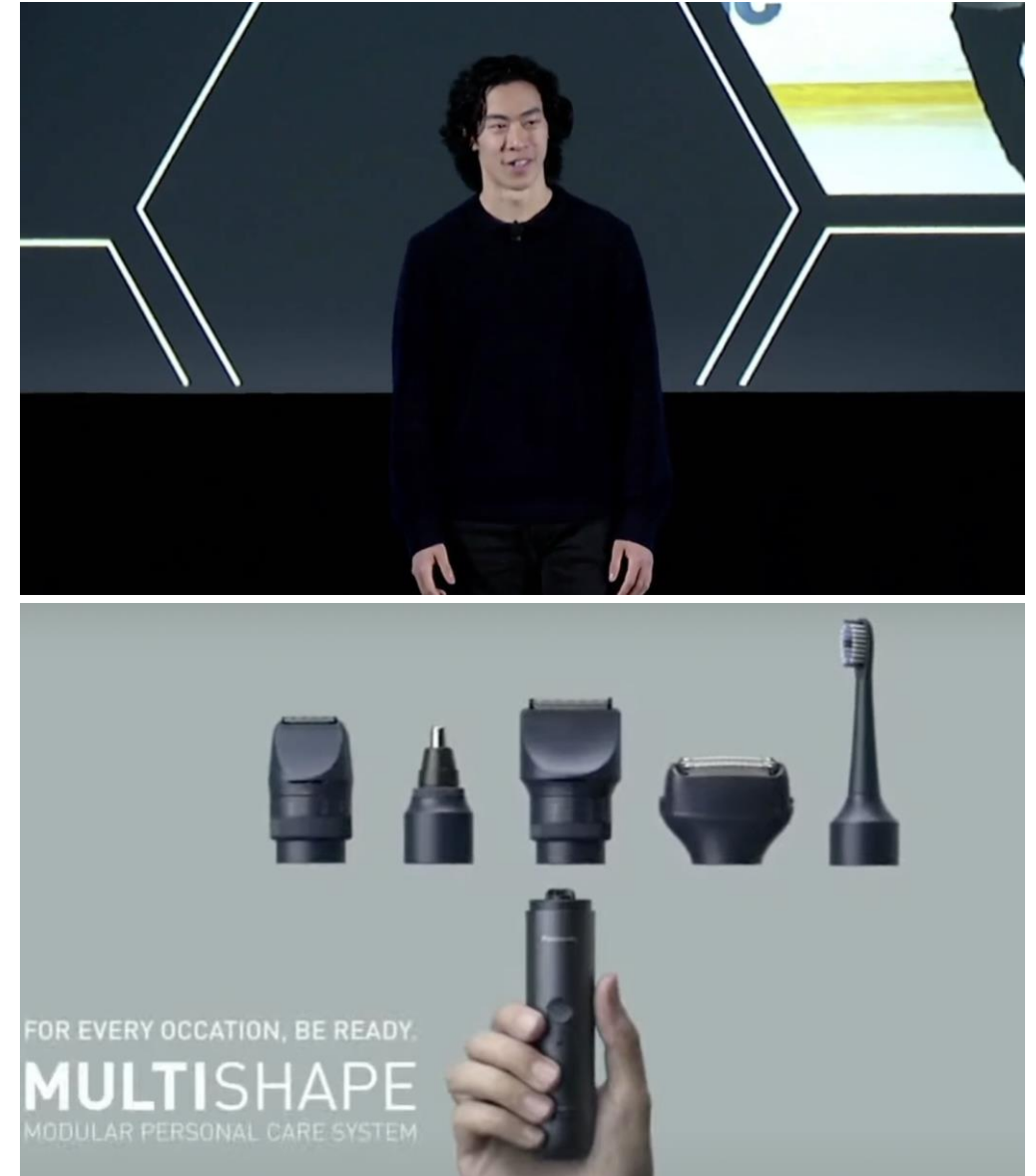


Source : CTAs



# Panasonic emphasizes sustainability

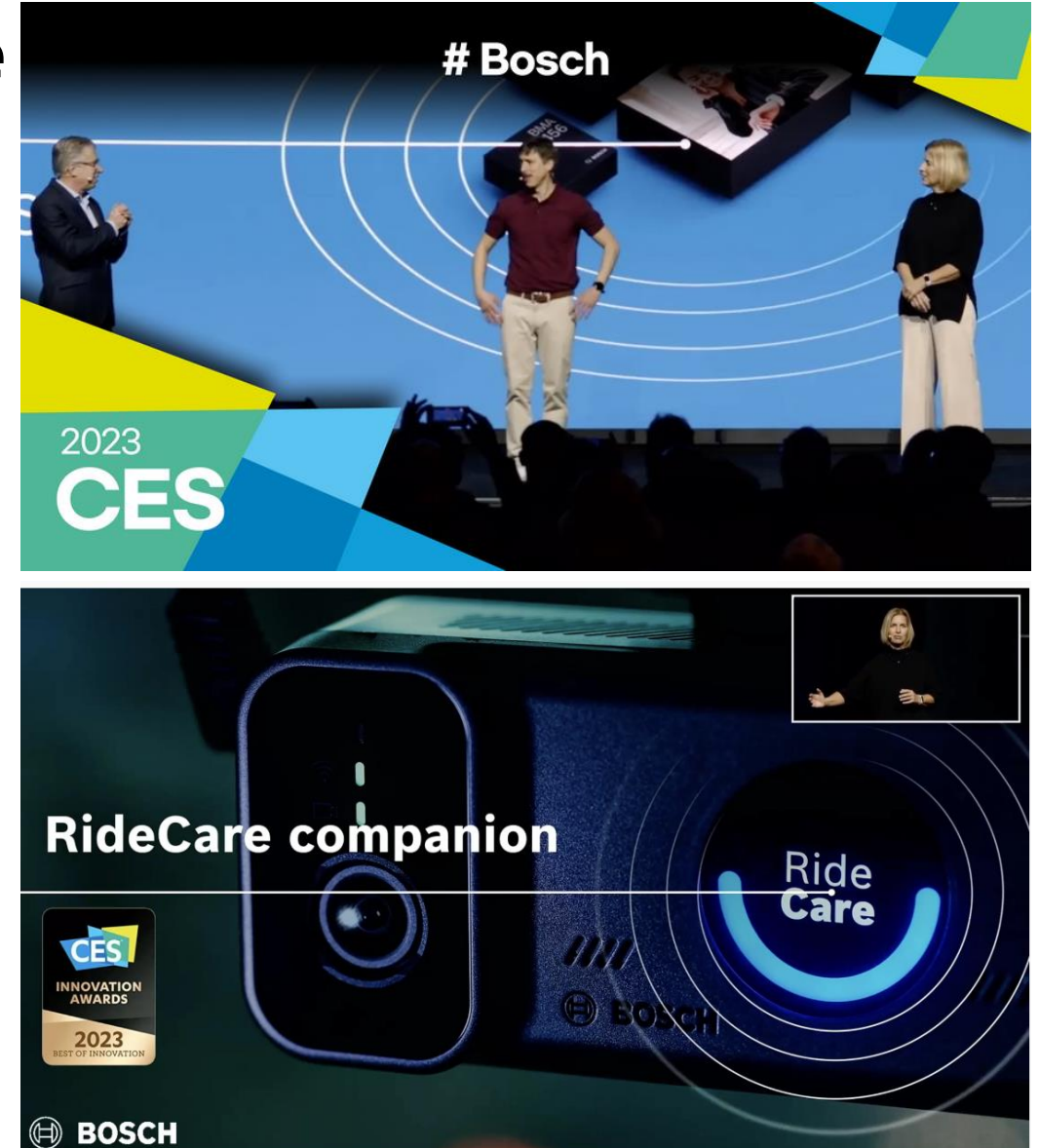
- Panasonic emphasizes most through this CES is 'sustainability.'
- Panasonic emphasizes the
- Introducing the 'Take Back for Tomorrow' home appliance parts recycling program
- Discarded electric razors are recycled and used as electric car
- Voice recognition , audio , portable air purifier ... Introduction to new technologies for vehicles
- Panasonic is collaborating with Amazon to allow drivers to control their vehicles using just their voice by saying
- Special audio for electric vehicles also released
- Also announced is



Source : CTAs

# Bosch , sensor tec lies the path to future

- Bosch introduced a sensor that would become
- Unveiled
- ' Ride Care ' has a smart camera and a wireless SOS button, so when a driver encounters a dangerous situation such as an accident, a Bosch representative can remotely inspect the vehicle through a monitor and quickly request assistance from rescue teams.
- Bosch is The off -zone collision detection system, which won
- A device that protects occupants in the event of a side collision that may occur when changing lanes or crossing an intersection.
- Bosch and Mercedes-Benz receives commercial approval in Germany
- Bosch is We began developing quantum sensors in collaboration with



Source : CTAs

# Sony moves into entertainment VR mobility

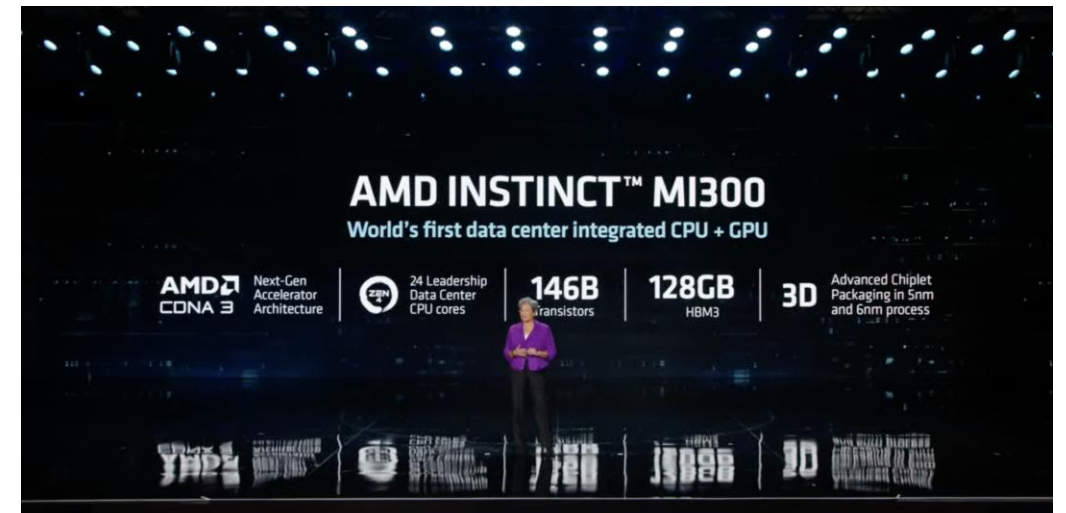
- Sony selects 'entertainment, virtual reality (VR), and mobility' as its next-generation core business direction
- Sony focuses on supporting creative activities of creators that connect virtual and reality.
- Digital cinema camera, full-frame mirrorless camera Alpha™ series, VLOGCAM series, professional drone Airpeak introduces a wide range of video production solutions, including
- PS VR2, the next-generation virtual reality headset for PlayStation 5, was unveiled at Media Day.
- PS VR2 features headset feedback, eye tracking, 3D audio and adaptive triggers, haptic feedback on the PS VR2 Sense™ controller, and more.
- A prototype vehicle named AFEELA was introduced
- Sony Honda Mobility Apira will be available



Source : CTAs

# AMD, 30% faster than Apple chips

- CEO Lisa Su , " CPU and GPU combined with AI will contribute to sustainable computing. "
- Introduction to semiconductor chips applied to various computing fields such as
- CEO Lisa Su said , " Starting with COVID -19 , demand for semiconductors has increased rapidly , and their importance is also emerging . " " Advanced technologies such as AI ( artificial intelligence ), games , and cloud cannot exist without semiconductors , " he emphasized .
- high-performance laptop processor ' Ryzen 7045HX' released
- Ryzen AI is 30% faster than Apple chips and 45% faster
- Launch of the best gaming hardware on the planet for gamers
- ' Instinct MI300' chip,
- Instinct The MI300 chip is the world's first chip that integrates



Source : CTAs



# Samsung Electronics proposes a hyper-connected era

- SmartThings Home Monitor' that can be protected even when going out through
- DX sector transition to
- Achieve carbon neutrality by
- Harman Ready Care announces
- Can communicate with
- Smart lighting announces partnership with Philips Hue
- Smart lighting can be synchronized with





# TCL dreams of a new realm of AR glasses

- AR glasses Rayneo X2 revealed
- Pay attention to the automatic translation support feature
- Lightweight and with navigation Provides photo functions, etc.
- TCL stands for " Rayneo "X2 is a new realm of AR glasses ," he said.



Source : CTAs



TCL AR glasses at the event venue ( Source : The Miilk )

# CES 2023 Trends by Major Category (Trends Analysis)

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mobility  
robot  
display  
digital healthcare  
W3& Metaverse  
ESG

mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

## Autonomous driving goes to the sea ... Rapid rise of marine technology

- Another feature of this year's CES is that **Marine Tech has filled the space**
- The advancement of autonomous driving technology extends not only to land but also to the ocean.
- HD Hyundai drew the attention of visitors by splendidly designing this year's exhibition hall, which was vacated by Hyundai Motor Company.
- HD Hyundai, which has become the world's number one shipbuilding group, introduces a new concept called ' of Brunswick, another marine tech company and an American marine ship company, was also filled with visitors.
- The electric self-driving yacht exhibited by Brunswick is not a mock-up, but an actual model for sale, and its price is approximately 1.5 billion won .



Brunswick , Candilla Marine , HD Hyundai Marine Tech ( Source : The M



mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

# Heavy equipment companies , agricultural machinery companies ... Advancement of autonomous driving technology

- the world's No. 1 heavy equipment manufacturer, and John Deere, the No.
- 100 -ton transport truck
- A Caterpillar official emphasized, “When materials are loaded onto this truck with a forklift, it moves along a designated route,” adding, “We can implement a fully autonomous truck that operates
- John Deere unveils a self-driving tractor that runs diagonally across the entire exhibition hall
- By using GPS , cameras , sensor AI technology, etc. , it has become smarter by working in the fields
- **Using a technology-intensive autonomous tractor, the tractor alone can do the work of**



john deere & Caterpillar Showroom ( Source : The Miilk )



mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

## Gorgeous exhibition hall , 3 German companies

- **three , including Mercedes-Benz , BMW, and Volkswagen,** stand out
- The futuristic exhibition space reminiscent of Mercedes-Benz's outer space attracts people's attention.
- Mercedes-Benz is introducing an infotainment system at this CES . Provides personalized infotainment functions
- Mercedes-Benz announced that it plans to install approximately 10,000 high-performance electric vehicle chargers in
- unveils the camouflage model of
- The maximum driving range on a single charge is approximately 700 km in Europe (WLTP).



Mercedes Benz Showroom ( Source : The Miilk )

mobility

robot

display

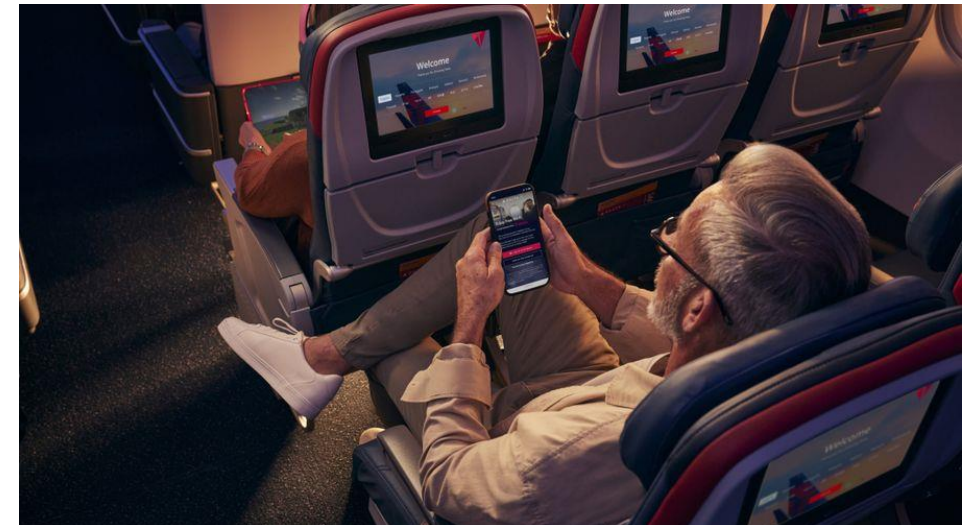
digital  
healthcare

W3& Metaverse

ESG

## Delta brings the future of travel to life with free WiFi and smart screens

- **Delta Air Lines becomes the first U.S. airline to offer free, high-speed Wi-Fi on board starting**
- Starting this year, seat back screens are planned to be replaced with smart screens.
- Providing personalized travel for customers through the
- 's mission is to connect people ,
- The most important thing to connect to the sky is **high-quality , high-speed Wi-Fi** . Delta will offer free Wi-Fi to all passengers with a SkyMiles account starting in



mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

# CES 2023 Keyword Mobility . Autonomous driving sensor , mass production level perfection

- The Consumer Technology Association (CTA) highlights mobility in its media preview. Designated
- CES 2023 will reveal the present and future of
- The major innovation awards at CES 2023 provide a glimpse into the evolution of autonomous driving sensors
- mass production level lidar sensors and 4D imaging radar sensors.
- For lidar sensors, products from
- For 4D imaging radar, the domestic company Smart Radar System and Israel's Arbe won the Innovation Award
- 4D imaging radar is a product that complements the shortcomings of cameras and lidar, and has recently attracted attention in the autonomous driving market.



Autonomous driving sensors from Smart Radar System , RB , Ouster , and Innoview ( Source : Comprehensive information from each company )



mobility

robot

display

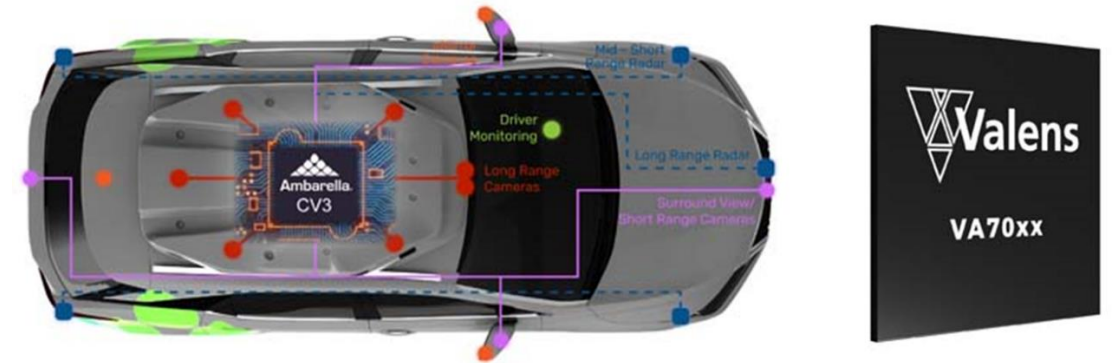
digital  
healthcare

W3& Metaverse

ESG

# Advancement of autonomous driving processors and high-speed network chips

- Ambarella's autonomous driving processor wins innovation award
- Supplied
- Luxonix wins innovation award for recognition chipset for robots
- Israel Valens won the Innovation Award for its high-speed network chip that connects autonomous driving processors and autonomous driving sensors . Technology that quickly transmits numerous data from autonomous driving sensors .
- Domestic company Mars Auto and US company NPS received innovation awards for self-driving truck technology
- France's Valeo receives innovation award for autonomous parking system
- Domestic company Avikus received the Innovation Award for its autonomous ship technology , and American agricultural machinery company John Deere received the Best Innovation Award for its autonomous agricultural tractor.



Ambarella's autonomous driving processor and Valens' high-speed network chip for vehicles ( Source : Each company)



Mars Auto's autonomous truck technology and Avikus' autonomous ship technology ( Source : Each company)



mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

# Self-driving racing competition held successfully

- Challenge (IAC), an autonomous driving racing competition, will be held at the Las Vegas Motor Speedway on January 7 . Only those registered for CES 2023 can attend.
- ICA began two years ago as a competition with 31 university teams from 10 countries competing, with the prize money being \$ 1 million .
- Participating teams compete by installing the developed driving software on vehicles provided by ICA . You must be able to reach a speed of 192 km /h or higher to participate in the race.
- This is a great achievement considering that
- Nine university teams participated in this event , and Korea's KAIST also participated, attracting attention .
- PoliMOVE from Politecnico di Milano (Italy ) ranked first . The KAIST team was eliminated due to a collision with the car in front.



Source : CTAs

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display

digital  
healthcare

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ESG

# From hardware-centric robots to intelligent robots . The definition of a robot is evolving

- is evolving into an intelligent robot that
- The range of robots is very comprehensive
- Robots in a broad sense include drones , self-driving cars , AI speakers , etc. At this year's CES , it was confirmed that autonomous tractor and autonomous truck companies were included in the robot category.
- Robots in the narrow sense include industrial robots and service robots.
- In the case of industrial robots, products that reduce the workload through robots worn by workers are unveiled.
- Service robots are infiltrating our daily lives in various areas . Potential for future expansion is expected



Source : The Miilk

mobility

robot

display

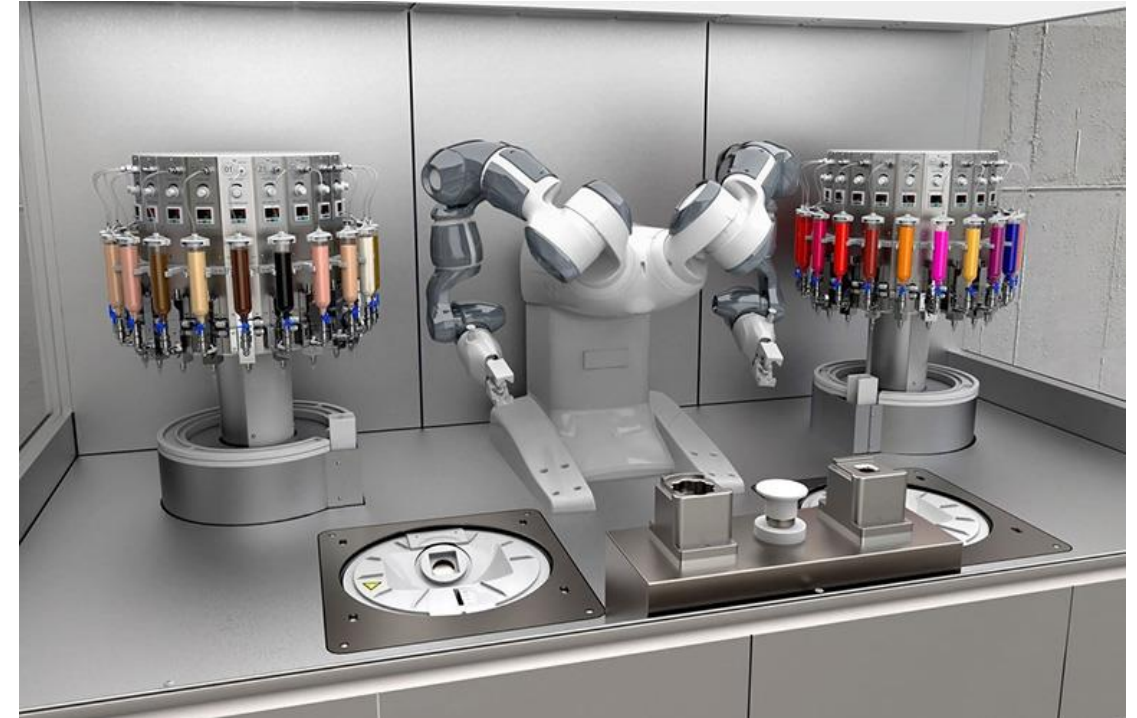
digital  
healthcare

W3& Metaverse

ESG

# Largest number of Best Innovation Awards at

- Las Vegas Convention Center (LVCC) North Hall showcases numerous next-generation innovative products on the topic of
- **A total of 24 conference sessions** related to robotics Ready
- **255 companies**
- The robotics field **produced the most innovation awards this year.**
- **Robotics & Drones** designated
- The robotics field can be applied to a wide range of areas ranging from
- In industry, it contributes to increasing safety , accuracy, and reducing waste.
- The need for robots in the manufacturing and service industries will increase further due to trends such as



Amore Pacific's custom cosmetics manufacturing solution received the Innovation Award ( Source : Amore Pacific )



mobility

robot

display

digital  
healthcare

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ESG

## There is a trend of greater emphasis on robot software advancement.

- Moving away from hardware-based robots that performed simple repetitive tasks , they are evolving into smart robots that can interact more with humans.
- The role of artificial intelligence is key to increasing the intelligence of robots and operating hardware effectively.
- this year's CES , the importance of artificial intelligence and robots was once again emphasized by combining them as one topic.
- A conference session titled
- This session introduces how robotic processes can be instantly and effectively automated through AI and discusses how the combination of artificial intelligence and robotics can change the industry .



Source : The Miilk



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display

digital  
healthcare

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## Service robot . Expected to have greater future growth potential than industrial robots

- Service robots are in the early stages of a market that is gradually becoming active with the development of artificial intelligence.
- Has the potential to overtake the industrial robot market and grow rapidly in the future.
- Some experts predict that, like smartphones, social robots will become an essential part of our daily lives.
- creative and innovative use cases and apply them to robots.
- Developing robots specialized for specific sectors ( healthcare , silver industry , education for the disabled, etc. ) will be more competitive in the initial market , rather than categorical service robots that are applied to various places.
- French startup Blue Frog at this CES Robotics' **main philosophy is to create**
- We'll see more service robots at next year's CES .



French startup program Robotics' service robots ( Source : prog Robotics )

mobility

robot

**display**

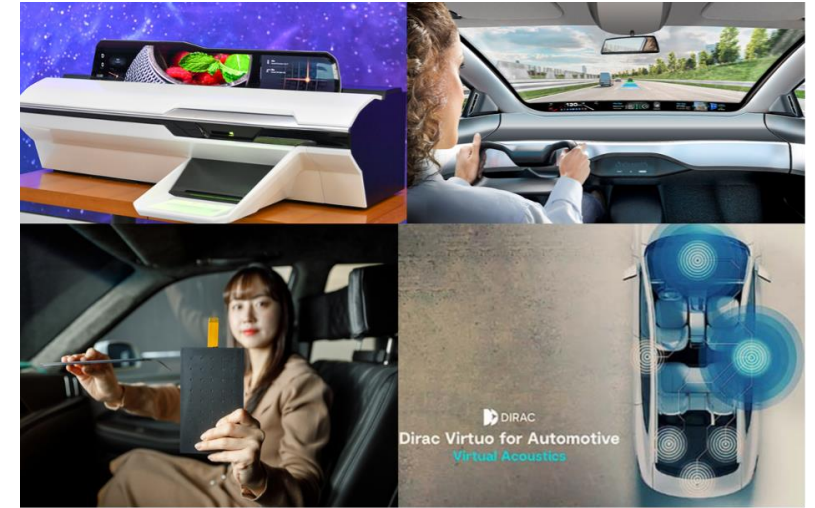
digital  
healthcare

W3& Metaverse

ESG

## Received multiple innovation awards for automotive display and audio technology

- Hyundai Mobis , Continental , and Visteon received innovation awards for their in-vehicle displays . Autobride received an innovation award for its technology that turned truck side mirrors into displays.
- Hyundai Mobis won the Innovation Award for its
- Continental's Scenic View head -up display also received an innovation award .
- LG Display received the Innovation Award for its invisible speaker technology that uses display panels and vehicle interior materials as diaphragms.
- SK won the Best Innovation Award for its
- Greenenergy, a domestic battery startup, won the Innovation Award for its lithium titanium (LTO) battery . Charging is possible even at extremely low temperatures, so it is applied to construction equipment in Northern Europe and other countries.
- Domestic companies Eva and Daeyoung Chaevi also received innovation awards for their charger-related technology . Eva provides a service that uses a charging-only vehicle and moves to the location when the user calls to assist with charging.



Hyundai Mobis , Continental , LG Display and Dirac's automotive display and audio technology ( source : each company )



SK, Greenenergy , Eva , and Daeyoung Chaevi ( Source : Each company )

mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

## Pay attention to the performance of 'K-Digital Health'

- At this CES , domestic companies such as
- CES is introducing related technologies by adding
- Domestic digital medical companies unveil next-generation digital medical technologies applying artificial intelligence
- SK Biopharm A device specifically designed for epilepsy Zero Wired , Zero Headband , Zero Earbuds , Zero Headset, etc. released . Data analysis is possible by recording biological signals in real time in
- Medical AI company Deepnoid has unveiled technology that can detect various diseases through its
- Lotte Healthcare unveils a trial version



Deepnoid's 'Deepax Pro' solution ( Source : Deepnoid )

mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

# Innovative digital healthcare services unveiled through

- AI algorithms.
- In the case of domestic company Weisen, it won four innovation awards
- ' WayMed Corp ' is an app that can measure a patient's respiratory condition using only a smartphone.
- ' Waymed Endo ' is an image analysis software that uses AI to help detect abnormal areas
- Linkerbus startup received an innovation award for its
- AI algorithm for nails can identify symptoms of up to 18 diseases and nutritional deficiencies



Linkerverse ' Healthy Bus ' solution ( Source : linker bus )



mobility

robot

display

digital  
healthcare

W3& Metaverse

ESG

## Evolving into a simple and personalized digital healthcare solution

- The digital healthcare market is expanding from the treatment and prevention of patients' physical and mental problems to services that help them manage their daily health conditions.
- New and rapidly emerging areas of digital healthcare, from brain care that supports brain and mental health to sleep tech that provides quality sleep.
- Personalized diagnostic technology based on wearable sensors has a cost-reducing effect and is expected to solve the high cost issue, which has been a chronic problem in the existing U.S. medical market.
- Various wearable devices, such as



Smart watch from iTOUCH \_ \_ ( Source : iTouch )

mobility

robot

display

digital  
healthcare

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ESG

## Metaverse impressive performance at this

- Metaverse is one of the main notable topics of CES 2023 , with many companies unveiling their latest products in the virtual reality
- Startup OVR Technology presents a headset that lets users smell the metaverse . This headset has value in applications other than gaming, for example health and wellness.
- Part of the venue's show floor will feature Web3 technology demonstrations.
- Microsoft and automaker Stellantis team up to create showroom in metaverse



Source : The Milk

mobility

robot

display

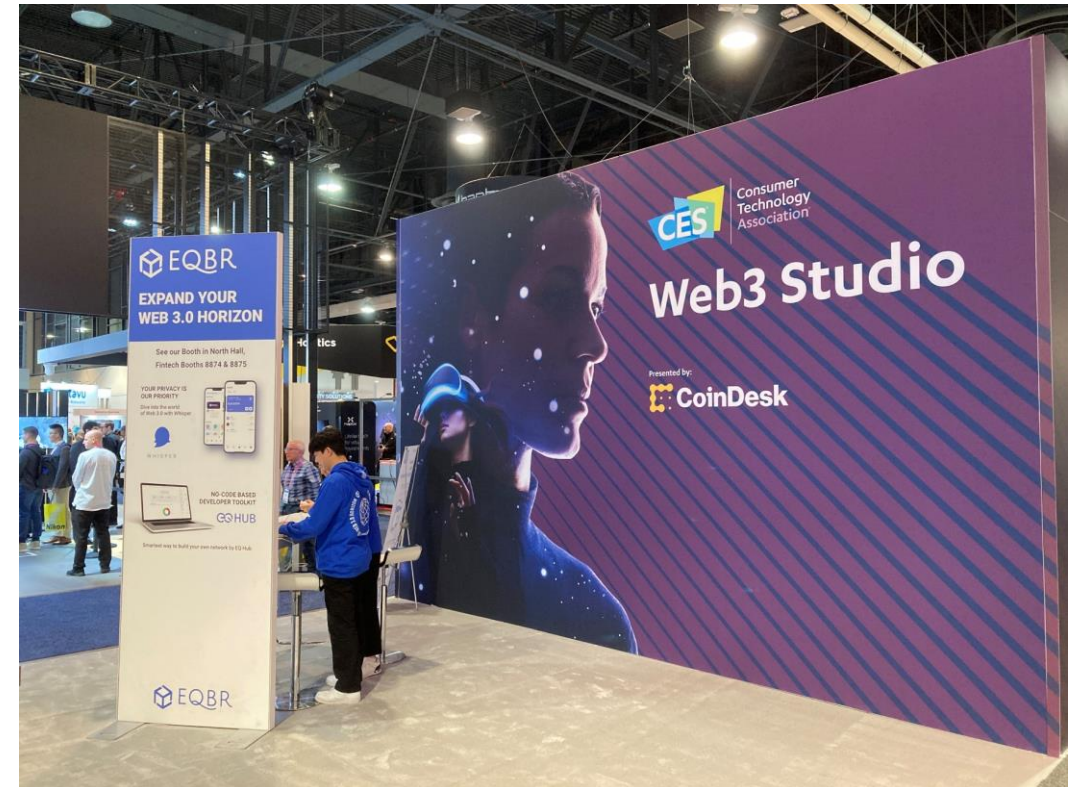
digital  
healthcare

**W3& Metaverse**

ESG

## Big tech companies use Metaverse as corporate applications

- Many companies at CES 2023 are still showing off virtual reality headsets , accessories and content for consumer applications like gaming , while others are showcasing enterprise applications for Metaverse technology.
- CTA defines
- most people don't have a VR headset, companies are looking to create a virtualized virtual reality that can be accessed from PCs, tablets, and smartphones. The trend of creating 3D spaces
- Microsoft and Nvidia are leveraging Metaverse technology for enterprise applications such as collaboration.
- Teams of engineers and designers can work simultaneously on the same 3D digital model of a product from multiple physical locations



Source : The Milk

mobility

robot

display

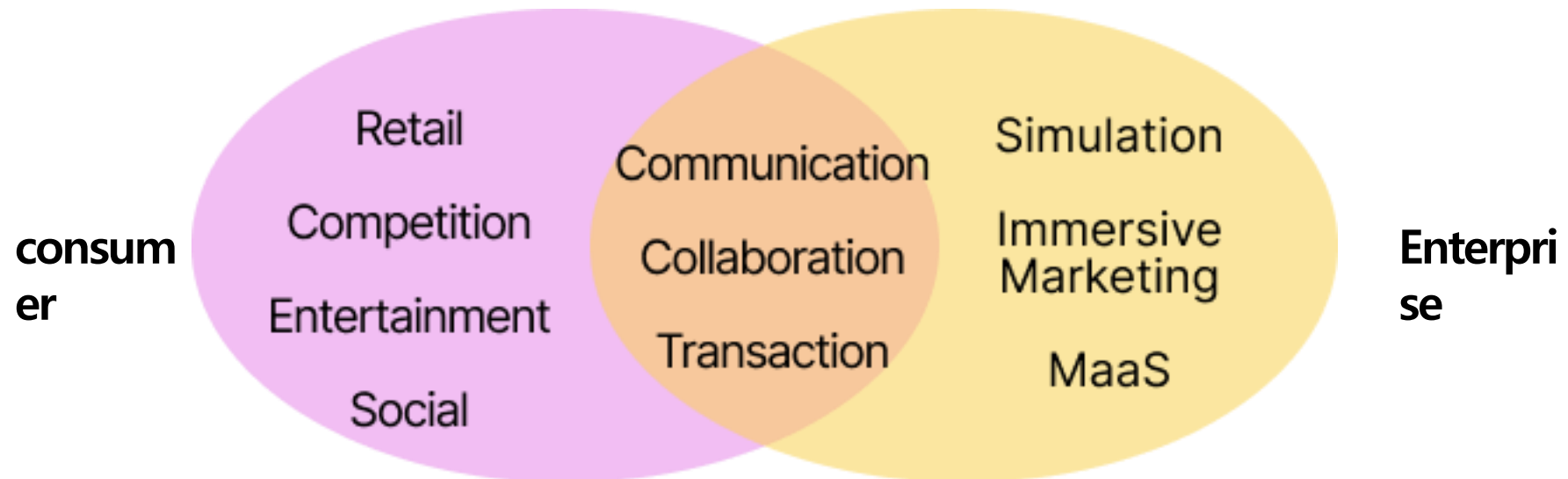
digital  
healthcare

**W3& Metaverse**

ESG

# Strengthening connectivity between companies and customers through

- The new concept of Metaverse Service ( MaaS : Metaverse as a Service) was introduced at the CES Tech Trend Keynote.
- for companies and customers to communicate , collaborate , and conduct transactions
- Providing a rich experience to customers through immersive marketing and virtual simulation through the Metaverse service





mobility

robot

display

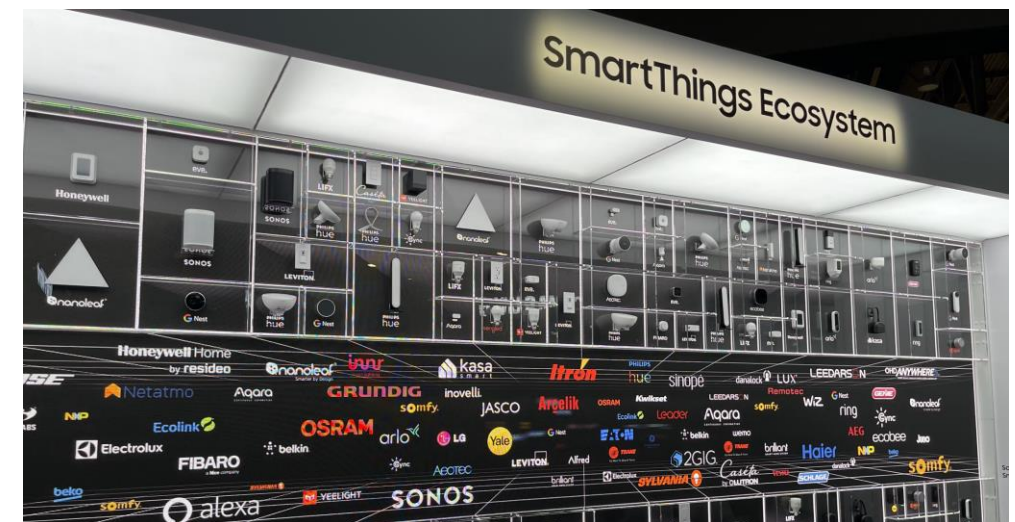
digital  
healthcare

W3& Metaverse

ESG

# LG and Samsung highlight their commitment to the future of our planet and humanity through innovation

- LG Electronics will highlight the company's ongoing commitment to sustainability with a dedicated exhibit at this year's
- the Better Life for All zone LG emphasizes ESG vision
- Showcasing the latest impactful innovations and how technology can help solve some of the world's problems
- LG covers its
- Samsung Electronics booth introduces a whole new era of device-to-device connectivity focused on keeping users connected to their environment.
- SmartThings and giving you all the latest information on how the company combines innovation and sustainability.



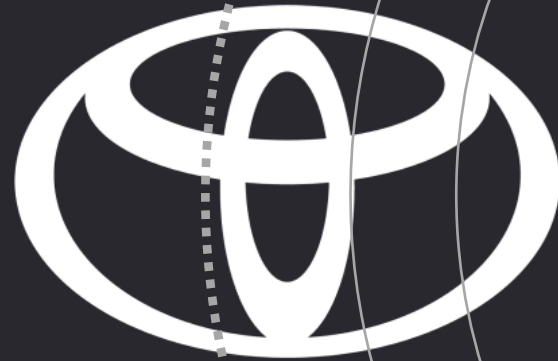
LG and Samsung Pavilions Emphasize Sustainability ( Source : The Milk )

# TheMiilk's CES2023 Action Item List

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Agile and sweeping change is needed  
Discover new growth engine items for survival  
Jump on the mobility wave  
Web 3, the metaverse is real  
Artificial intelligence (AI) is a necessity, not an option  
Target America's middle class  
Sustainability business is just beginning





Agile and sweeping  
change is needed

ROKIA



# Toyota raises questions about making electric vehicles its only

## Toyota Chief Says 'Silent Majority' Has Doubts About Pursuing Only EVs

Akio Toyoda says electric vehicles are one option alongside hybrids and hydrogen-powered cars



Source : WSJ.

On December 18 , 2022 ( local time ) , Toyota Chairman's 'Silent Majority' remark regarding electric vehicles received attention . It is argued that electric vehicles (EVs) are only a type of hybrid or internal combustion engine vehicle and are not a mainstream trend . However, the global market, especially in the United States, is rapidly and aggressively progressing toward electric mobility . Just as Nokia ignored smartphones in the past and then disappeared, Toyota may suffer the same fate .

Toyota's opinion is that full electrification of cars will not come as quickly as we think, so it would be more reliable and practical to use hybrid cars to transform the technology.

President Akio Toyoda emphasized in a recent interview, " **We should not limit ourselves to one option ( electric vehicles ) because it is not yet clear what the right answer is .** " He continued, "The 'silent majority' of those in the automobile industry question the idea of electric vehicles as the only option . However, in a situation where electric vehicle conversion is the trend, it is not easy to raise one's voice," he said .

# The world is currently undergoing a comprehensive transformation with a perspective of survival beyond growth.


Toyota actually entered the electric vehicle war by unveiling 17 types of electric vehicles at once at the end of 2021 . However, **a fatal defect was discovered in the first electric car, bZ4X , and a full refund was issued .** In other words , the reason Toyota is not going all-in on electric vehicles may be because its own electrification technology is not fully mature . In addition, battery raw materials are a reason for the growing skepticism about electric vehicles. And the rise in parts prices is also a factor . The price of electric vehicles is bound to rise , and there is a possibility that demand for electric vehicles may slow down amid the current global economic downturn .

However, looking at the current industrial transition, **Toyota, the world's largest automobile company, is following the huge industrial trend.** If we are not agile and make comprehensive changes, we may end up in the same fate as Nokia, which was left behind in the smartphone market .

**At CES2023 , Sony also introduced an electric vehicle model, and most automobile brands and traditional manufacturers such as shipbuilding and machinery are also launching mobility products, undergoing a comprehensive transformation with a view to survival beyond growth.**



Toyota's first electric vehicle, bZ4X ( Source : Toyota )

A collage of images from a tech exhibition, featuring various displays and product showcases. The images include a large curved wall display for Hyundai, a Samsung display with a blue background, and a large crowd of people at an event. A central text overlay is present.

for survival  
New growth engine item  
dig out



# The need for new growth engine items has become more urgent.

	1989	
1st	Industrial Bank of Japan	japan
2nd place	sumimoto bank	japan
3rd place	Fuji Bank	japan
4th place	Daiichi Kangyo Bank	japan
5th place	exon	USA
6th place	general electric	USA
7th place	Tokai Electric Power Company	japan
8th place	IBM	USA
9th place	toyota car	japan
10th place	AT&T	USA
11th place	Nomura Securities	japan
12th place	Royal Dutch Petroleum	Netherlands
13th place	Philip Morris	USA
14th place	Japanese Steel	japan
15th place	tokai bank	japan
16th place	mitsui bank	japan
17th	mitsubishi	japan
18th place	Kansai Electric	japan
19th	hitachi	japan
20th place	Merck	USA



	year 2014	
	Apple	USA
	ExxonMobil	USA
	microsoft	USA
	google	USA
	Johnson & Johnson	USA
	general electric	USA
	Wells Fargo	USA
	walmart	USA
	nestle	Swiss
	chevron	USA
	Novartis	Swiss
	P&G	USA
	JP Morgan Chase	USA
	IBM	USA
	Roche	Swiss
	Pfizer	USA
	verizon	USA
	Samsung	korea
	HSBC	uk
	AT&T	USA

Japan, once ranked number one with the nickname 'Kingdom of Home Appliances', is now a thing of the past. In the 1990s, Japan's Walkman and Elephant rice cookers were sensationally popular and it seemed unlikely that they would easily take over the top spot, but now LG and Samsung are firmly maintaining their leading positions in home appliances in the U.S. market.

Domestic companies, including Samsung and LG, are more sensitive to trends and produce products that sell to customers. On the other hand, Japanese companies such as Panasonic believe that if they create what they want through thorough craftsmanship, customers will follow suit. It is possible to confirm through data which philosophy is more popular in the market. In the 1980s, Japanese companies stood tall in the electronics and semiconductor sectors among the top 20 companies in the world by market capitalization, but now, more than 30 years later, Samsung Electronics exists and Japanese companies have disappeared.

The electronics and semiconductor industries are the most rapidly changing industries. An area where technological paradigm shifts occur very strongly. As such, **there is no such thing as an absolute powerhouse that lasts forever, and there is always a risk that it could give way to an emerging powerhouse. Accordingly, the need for new growth engine items has become more urgent.**

Based on market capitalization (Source : (MSCI))



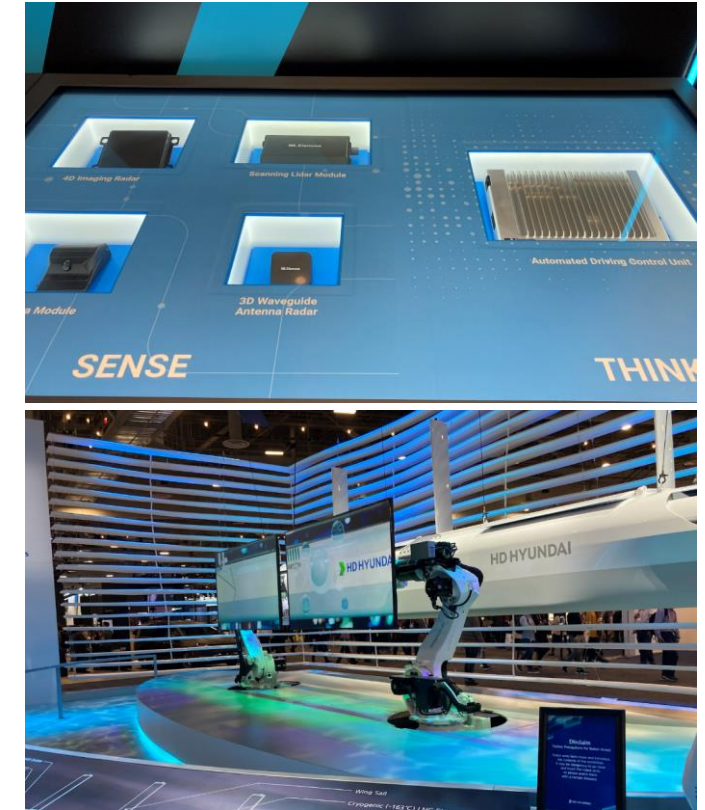
# Will mobility and AI become new growth engines in the future?

## The most noteworthy field at CES2023 is 'mobility' .

In addition to the well-known Hyundai Mobis, LG Display, HD Hyundai, and HL Mando. The performance of various companies such as HL Clemove stands out. CTA even mentioned this CES, saying, "It has become the largest and fastest-growing high-tech auto show in the world." Domestic companies are presenting a variety of competitive technologies ranging from electric vehicles, autonomous driving solutions, displays for future cars, and marine mobility technologies.

**Another point to note is 'Korea's AI revival' .** At last year's CES alone, Korea was weak in the AI and robot categories in the innovation award category. However, AI technology is at the core of many domestic companies that won innovation awards this year. Samsung stands out for its ability to make existing home appliances smarter through AI technology.

Hyundai Heavy Industries and SK Telecom are also introducing differentiated services in the areas of mobility and digital health through AI technology. In the future, AI technology is expected to become a key element that improves the 'quality' of existing services. Rather than creating something from nothing, we aim to increase customer satisfaction by developing existing services and products to become more intelligent and personalized. This is an area that Korea can do well in, as it has countless experiences with the needs of demanding customers and is accustomed to making efforts to provide quality services, and future growth is also highly anticipated.



HL Mando's sensor and HD modern futuristic ship mockup ( Source : The Mii

## Web3 discovers opportunities in the metaverse

Korea is globally nicknamed 'test bed' . " What works in Korea will work in the world" means that if you can capture the trend-sensitive and sensitive Korean consumer base, you will be internationally competitive . This area is especially noticeable in food and beverage , fashion / beauty , home appliances , content , and IT .

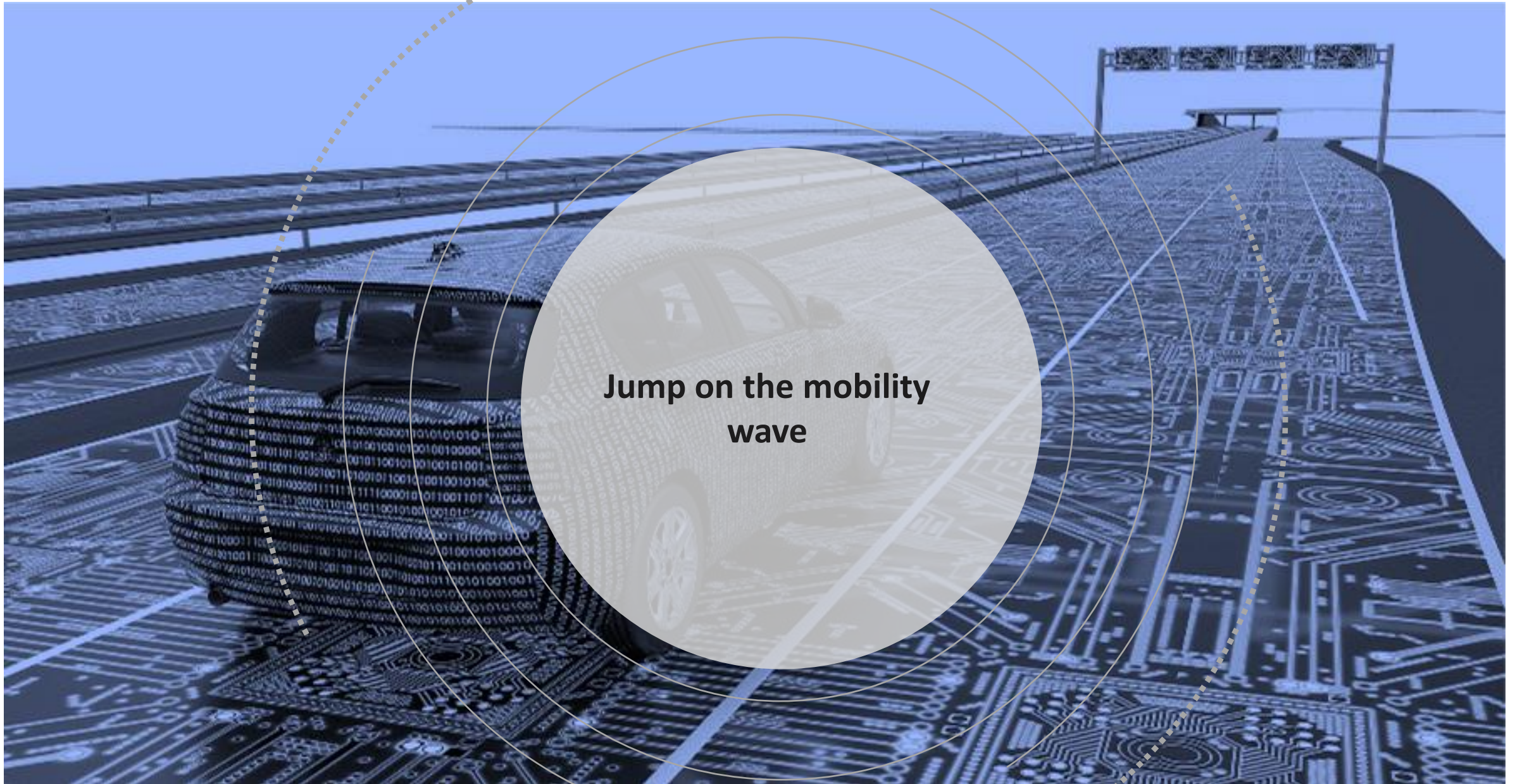
This **Korean testbed image is expected to be applied to Web 3 and Metaverse as well** . Overseas crypto companies have already recognized Korea as a good test bed and are expanding domestic investment . The proportion of Koreans who have been exposed to virtual assets is about three times higher than that of Americans . In other words , it is the best environment to test Web 3 and Metaverse's services before entering the global market because it is sensitive to new technologies and trends and has low technical barriers .

Korea's test bed environment can be an opportunity for numerous domestic Web 3 and metaverse companies . If you can understand the local Korean market and persuade domestic customers, there is ample potential for expansion as a global company . Confirming that Korea is rapidly occupying an important position in the consumer market of Web 3 and Metaverse.



3 field newly established at CES in 2023 ( Source : The Miilk )





## Jump on the mobility wave

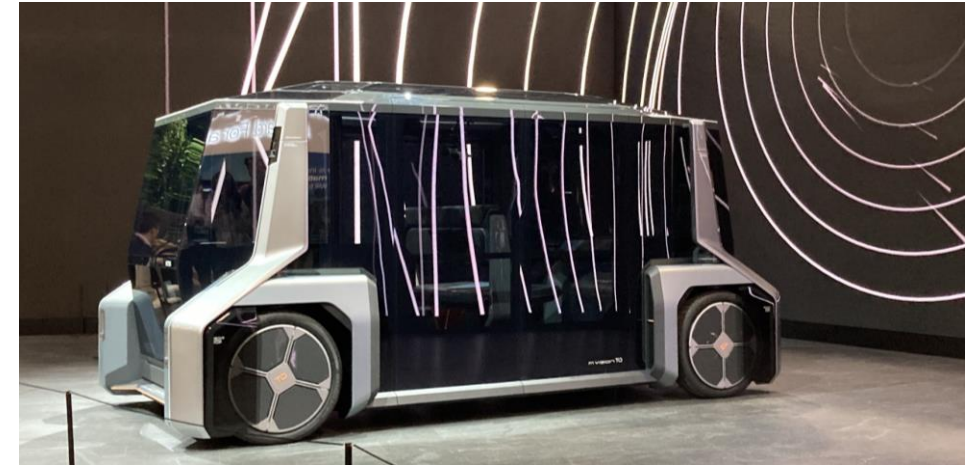


# Mobility is so strong that

One of the most notable things at this year's CES is mobility. CTA also pointed to mobility as the fastest-growing sector . Domestic companies also showcased their fierce global competitiveness at this exhibition . **This CES exhibition is attended by so many mobility companies that it is called an automobile exhibition.**

Hyundai Mobis prepared the largest exhibition space ever at this CES . At this exhibition, we ambitiously unveiled the self-driving vehicle 'M-Vision TO' and the outdoor-specific vehicle 'M-Vision HI' . The key point of this exhibition was that other domestic companies other than Hyundai Motor Company could feel the global competitiveness of mobility.

LG Display actively expressed interest in the mobility market by setting up a dedicated booth in the West Hall mobility exhibition hall . Under the theme of Advanced Mobility Lifestyle, a vehicle display optimized for future vehicles that can captivate both eyes and ears and has an ergonomic design was unveiled . In particular, cutting-edge displays applicable to self-driving cars are expected to lead the market . LG Innotek set up a booth for the first time this year to showcase new products related to electric vehicles and autonomous driving.



Hyundai Mobis' M-Vision TO and M-Vision HI ( Source : The Milk )



# All moving objects are expanding into



LG Electronics is demonstrating the redefinition of **car head units as cockpit computers**. The cockpit computer supports autonomous driving functions for future cars and includes telematics and telecommunication functions that communicate with the outside of the vehicle. Combining LG Electronics' automotive infotainment technology to provide a differentiated customer experience for both automakers and drivers

HL Mando and HL Clemov in the electric vehicle and autonomous driving sectors. HL Mando revealed various forms of electric mobility such as e-cargo (last mile mobility), patrol robot, and parking robot through video. HL Clemov presents a diverse range of autonomous driving solutions from levels 2 to 4. In particular, Level 4 is the culmination of all autonomous solutions, and the driving video of the auto shuttle will be released for the first time at



The strength of domestic companies also stands out in the field of urban air transportation (UAM), also known as flying taxis. In particular, SK Telecom introduced a life-sized UAM virtual simulator at the CES exhibition hall. Hyundai Heavy Industries also unveiled new technological marine mobility solutions such as autonomous ships. The exhibition hall provides a variety of blueprints for future ships under four themes: Ocean Mobility, Ocean Wise, Ocean Life, and Ocean Energy. If **UAM was strong at the last CES2022, this year's CES2023 features a large number of marine tech appearances.**

Source : LG Electronics & LG Display



Web 3, the metaverse is real

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## CES 2023 be the first year of Web3 ?



Web3 field newly established at CES in 2023 ( Source : The Milk )

Web3 ( Web3) and the Metaverse area were added for the first time at CES2023 . The crypto market shrank due to the FTX bankruptcy in 2022 , the Terra and Luna incidents, and the crisis of Meta, which led massive investments in the Metaverse market. Although the market atmosphere is negative, it is **expected that Web 3 and Metaverse will continue to appear as CES themes in the future, as they appeared as official themes at CES for the first time this year** . It is characterized by being designed so that you can directly feel the immersive experience as well as the related hardware . Web3 is DeFi ( DeFi) in the financial sector . decentralized finance ) , In culture, NFT ( Non-fungible token, alternative impossible token ) , In terms of governance, three waves of DAO ( decentralized autonomous organization ) are occurring strongly . Although CES is a show characterized by innovations that can be seen in the 'real world', starting this year, the focus has been on how to present virtual assets and virtual reality such as Web

CTA partners with CoinDesk to strengthen its Web 3 conference program . At the event, CoinDesk provided interviews with influential Web 3 figures through the CES Web 3 Studio . **It is true that there are still technical limitations and barriers to understanding are high before it can be popularized, but attempts to overcome such limitations are expected to continue.**

# Web 3 expected to grow large enough to occupy an exhibition hall in 10 years

Notable at CES2023 The point is Meantime web 3 with metaverse etc. tech's To the New World used to be called product and The service is ' online ' Beyond the perception of 'games ' this technical industrial of application possibility Boyle number Is it possible ? Whether . In fact, at CES2023 Virtual Reality (VR) Medical Education , Beauty market apply example etc. being displayed automobile manufacturing and Factory , Research in development applied web 3 with metaverse degree Introduction . Web 3, XR, and Metaverse network effect Outlook and Web 3 sector investment and Retail Department consumer in experience revolution Bringing XR-AR- Metaverse Session too prepared

web 3 \_ Participation It's the first year growth in progress It's a field because virtual assets transaction Related ( eXchangily ), distributed data process In blockchain ( Galeon ) , etc. few the company Participation . With the metaverse directly Related The company virtual reality social network Related ( Lifefesta , Inc.) etc. participated. of the metaverse In the case of AR ( augmented reality ) / VR ( virtual reality ) / XR ( complex reality ) fusion through More advanced Showing up . of the metaverse case game with the field synergy size Because at CES2022 Following More many Companies new technology Shown

**Such trend When I look at it CES2023 Silver web 3 with of the metaverse first year interest Next 3 to 5 years , 10 years After exhibition one take over to the extent big by scale grow up as experts say expectation**

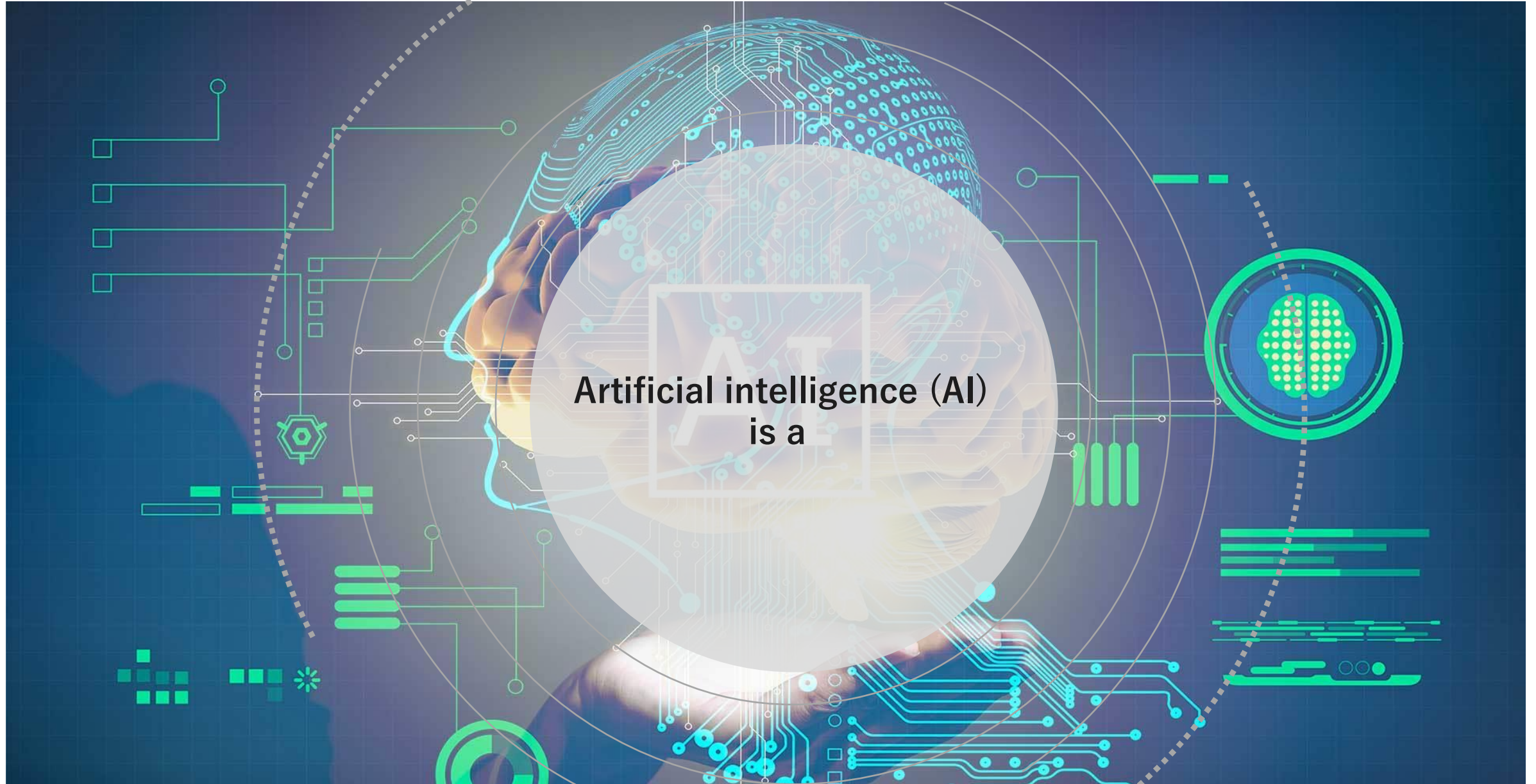


Magic Leap's AR glasses ( Source : The Miilk )



TCL 's RayNeo X2 Glass





## Numerous companies are applying AI to advance home appliances and improve user experience.

, interest in artificial intelligence has heated up once again through ChatGPT. It is evaluated as an item that can replace Google in the future as it uses quite useful sentences and shares information about questions in an instant. At CES 2023, global companies are launching products equipped with more advanced artificial intelligence.

**In the case of domestic companies, Samsung Electronics and LG Electronics are focusing on improving users' quality of life by applying AI to home appliances.** At this exhibition, Samsung Electronics introduced the 'Bespoke Refrigerator Family Hub Plus' product equipped with a large touch screen. Pay attention to the fact that the area of the existing refrigerator touch screen has been expanded to more than twice that of the existing refrigerator touch screen, reflecting the user's preference. By combining AI and IoT functions with a refrigerator, it can be used not only to store food but also for other purposes such as smartphones and tablets. In particular, the refrigerator has a built-in SmartThings hub, allowing you to control and link functions such as lights, blinds, door locks, and motion detection in the house. The refrigerator replaces the functions of Amazon Alexa.



Samsung Electronics Bespoke refrigerator ( Source : Samsung Electronics )



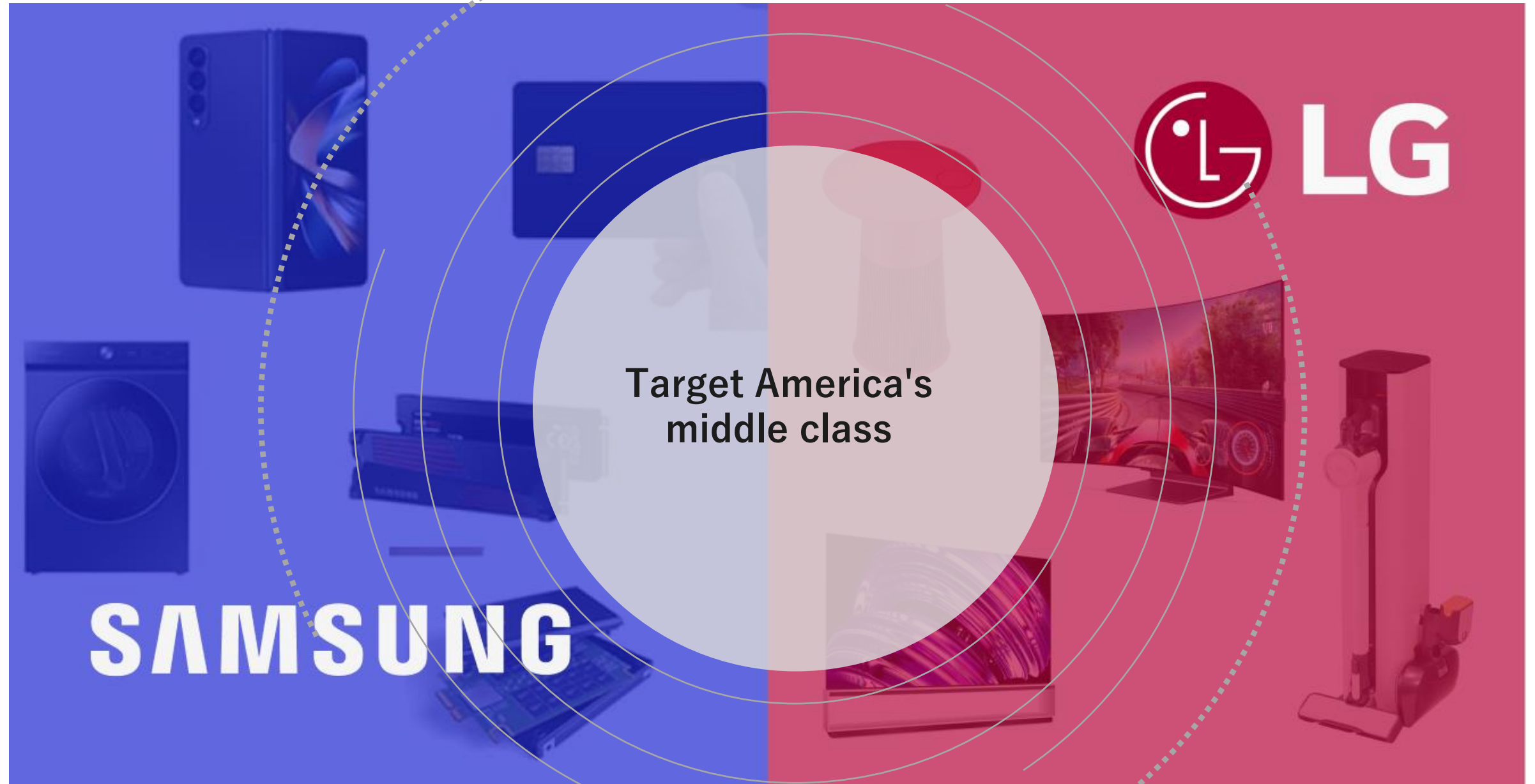
LG Signature 2nd generation ( Source : The Milk )

LG, the 2nd generation LG Signature home appliance was unveiled at this CES for the first time in 7 years . This is LG 's ultra-premium home appliance line **that features more sophisticated functions thanks to the advancement of AI . In the case of the** ' double slide-in oven' product, it analyzes food through a camera mounted inside and automatically adjusts the optimal cooking temperature and time until cooking is complete . In the case of the ' Food/Microwave Oven' product, you can check the cooking progress and energy usage in real time through Smart Instagram View.

**AI has evolved into a core technology that permeates all fields .** In the field of robotics, AI plays a key role in building intelligent robots that have evolved from hardware-based robots . self-driving cars , tractors , and trucks are implemented, the development of AI is a key contributor to advancing the level of autonomous driving . In the field of digital health, AI algorithms are used to detect individual diseases and health conditions using data measured through wearables or other sensors . For example, a service has been launched that uses AI to determine the presence of over 15 types of diseases just by taking pictures of a person 's fingernails .

**AI is invisible to the eye, it is becoming a core feature within many of the innovative products at this**







# Samsung and LG 's premium strategy cannot be reassured

Samsung and LG are representative global companies competing for first and second place in electronic products, especially TVs . CES has also been a leader in this field for over 10 years . Maintaining a leading position in the rapidly changing tech market for over 10 years can be considered a great achievement, but there is no guarantee that this dominance will continue in the next 10 years . A representative example is Japanese home appliances, which were at the top 30 years ago but have now long since lost their leading position.

**The crisis can already be confirmed through data . In the first half of 2022, Samsung and LG 's global TV share is 48.9%. Although this is a great figure, note that it is a slight decrease compared to last year's performance of 50.1% . In particular , the market in which Samsung and LG stand out is the market for ultra-large and premium products . The strategy is to increase profitability by further targeting these products with high selling prices.**

**In this year's CES2023 , companies such as TCL and Hisense participated on a huge scale, showing that they are not behind**



Samsung Electronics exhibition hall emphasizing sustainability ( Source : Samsung Electronics )



260 OLED \_ The entrance to the LG Electronics exhibition hall that showcased the ' OLED Horizon ' created with signage ( Source : The Milk )

## We need low- to mid-priced and specialized companies to target the middle class in the United States.

However, **the opinion of many experts is that investments should be made in mid- to low-priced products**. In the global inflation situation, the performance of stores selling mid- to low-priced products, such as Dollar Market and Wal-Mart, also increased noticeably in the United States. Therefore In addition to high-end products, creating cost-effective mid- to low-priced products targeting this consumer group is also expected to play an important role in increasing the U.S. market share. In fact, mid- to low-priced large-sized TVs manufactured in China and Taiwan sold like hotcakes during Black Friday.


Companies specializing in mid- to low-priced products in countries such as China and Taiwan **are already continuously releasing mid- to low-priced 'innovative' products to the market**. In particular, at this year's CES, we were able to observe innovation and advancement of existing products using AI even in mid- to low-priced products. This is because AI plays a role in bringing consumers one step closer to usability and personalization. The domestic consumer market is a test bed for representative home appliances and is a very good market to evaluate the potential for smart devices to enter the global market. Through ingenious ideas and insight into customer needs, it is predicted that internationally novel yet affordable home appliances will be greatly loved by consumers.

and LG, which are already recognized as companies specializing in high-end products in the global market, it is time for new Samsung and LG that can produce innovative mid- to low-priced products to emerge.



Source : The Miilk





**Sustainability business  
is just beginning**

## giant business as an opportunity adult ' Sustainability '

climate change , food crisis , energy depletion Such as global Issue and together US and China trade war , Ukraine war , geopolitics risk etc. Sustainability is \_ the choice not Required interest giant business as an opportunity growth . **majority companies In the keynote speech new product or service Besides ' Sustainability ' \_ for corporate Activities and role emphasis**

Especially at **CES2023 exhibition and keynote speech The key is ' technological innovation' of humanity problem solving direction and Sustainability '**. This CTA\_ The side farm equipment Company ' John Dear ' \_ keynote speech on stage invitation . farm equipment of the company The first CES keynote speech stage

this The trend is that CES2023 is ' for everyone ' for human 'Human Security for All' Such as conference to the program placed and match and related technology ' Innovation Award ' for companies Also included in the award . ' All People for human Security ' is World Academy of Arts and Sciences (WAAS) & United Nations (UN) from the back introduced as a concept more better life towards Human rights \_ for Healthcare , Clean natural environment , healthy food etc. sustainability field and connection



Samsung Electronics exhibition hall emphasizing sustainability ( Source : The Milk )



## CES2023 \_ on the front presented ' Everyone for ' human security'

CES20 2 3 silver human Not seeing Slogan under sustainable growth and related person in the field energy , battery , food , cyber security , smart city of to innovation Attention . Especially IoT, robot utilized Smart home & smart city , and ransomware , cyber security related person in the field cyber security importance more What has become bigger However, according to the innovation index announced by CTA , **Korea's cybersecurity index rating is F , the lowest.**

At CES2023 electric car presented mobility Field my energy related Battery & new material in the field majority innovation OK . zone Dear hopefulness Startups energy preservation and power output promotion , food nyang solve etc. Announce ' Everyone for human In 'Human Security for All' plan to join

Considering this social atmosphere and business environment , **the sustainability field is expected to form a huge market in the future as it is a field that will inevitably grow in the long term.**



Deere , the company that received the most attention this year ( Source : The Milk )

# Thank you