



From inertia to impact: Innovations that make it real in 2023

Report based on CES 2023

Key insights

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With this year's CES behind us, we look at some of the best examples of technology being applied and leveraged in game changing ways.

At Qindle, we believe that truly impactful innovation comes from uncovering human insights and a clear understanding of needs, behaviours, and barriers to apply technology in a way that drives meaningful change.

“Meaningful change drives from a clear understanding of needs, behaviors, and barriers.”

From Homo sapiens to Homo cellulars, technology has enabled us to interact with the world through digital devices, extending the senses and enhancing our every-day experiences. At CES, we explored the following themes to unravel the challenges and opportunities in store for technology to create real impact.

Real-Time Health

Creating value for all stakeholders of healthcare is crucial. Beyond the users themselves, caregivers, doctors, insurance companies and the healthcare system as a whole need to be aligned to the benefits and effectiveness of smart health.

Digital Connections

Building a digital universe comes with endless possibilities - one promise of the metaverse is that it offers a chance to remedy some of the mistakes of Web 2.0: designing with inclusivity, accessibility, and diversity in mind.

Environmental Sustainability

As the expectations of technologies and their environmental impact are being closely watched by all, companies are putting the fight against climate change at the forefront of their innovations. There are numerous exciting developments that make us a little more optimistic about climate change.

Transaction Platforms

Physical money is increasingly replaced with digital currencies and infrastructures, optimized for 'next day delivery' to keep up with demand. The goods and services we buy are increasingly digital, – all aspects of commerce are fundamentally changing.

Social Impact

Beyond driving revenue through innovations or bringing competitive advantage, new technologies like artificial intelligence, machine learning and big data can support in making our world a place that is more equitable, supportive, inclusive, and sustainable.

In this report, we'll explore these key themes and topics to keep an eye on in 2023. Qindle's Strategic Consultants; David Franklin, Jemal Kurbanova, Sophie Panton, Jasper van Eck, and Lian van Meerendonk, investigate the key industries where technological advances have the ability to really drive meaningful change.




Real-Time Health

Growing demand and limited resources are putting enormous strain on healthcare systems across the world.

Is defining a Universal Open Standard for Health-Tech the solution?

By David Franklin



At CES this year, we saw many foundational technologies that start to paint a picture of this future and inspire us to imagine how we can approach the healthcare experience differently.

Growing demand and limited resources are putting enormous strain on healthcare systems across the world. While technology can certainly provide solutions to this challenge, creating value for all stakeholders is crucial. Beyond the user themselves, caregivers, doctors, insurance companies and the healthcare system as a whole need to be aligned to the benefits and effectiveness of smart health.

Putting the needs of the user first and applying technology to create connected, seamless experiences is central to achieving this. Reframing health as an ongoing, accessible, and intuitive process is an opportunity that technology can help make reality.

At CES this year, we saw many foundational technologies that start to paint a picture of this future and inspire us to imagine how we can approach the healthcare experience differently.

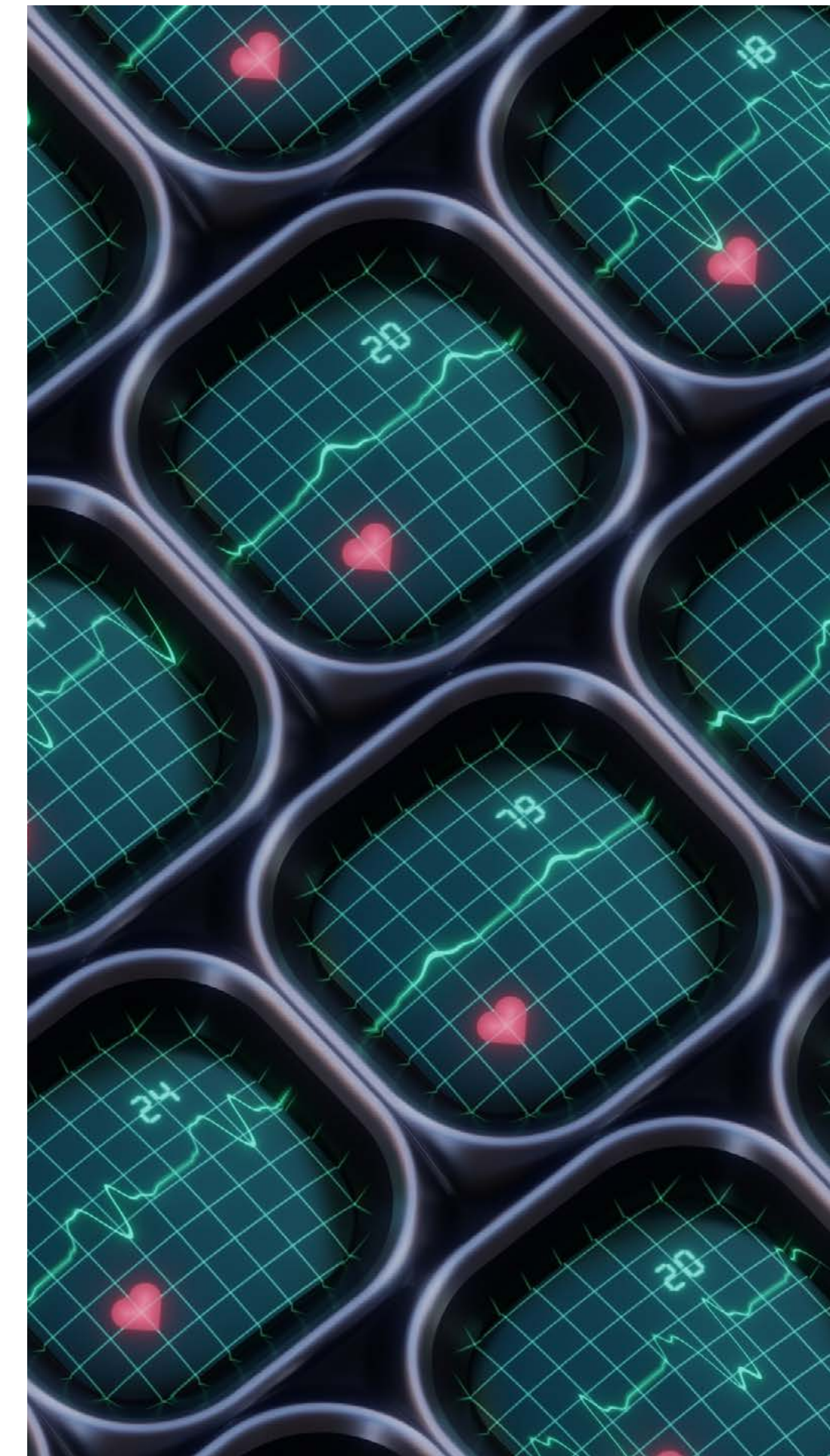
Augmented intelligence: enhancing diagnosis with ai and data

Data in healthcare is perhaps the most crucial building block of them all. For healthcare

professionals, being able to look beyond a patient's symptoms to understand the context in which they appear – living environment, medical history, lifestyle, diet, etc. – is crucial in improving accuracy of diagnosis, as well as the effectiveness of any proposed treatment.

At the same time, providing a user with a better understanding of their own health, on a more proactive basis, can have various benefits to the healthcare system as a whole. From preventative self-care to early detection and treatment, technology can play a role in both removing barriers, as well as improving effectiveness and reducing risks, on an individual level.

Yet, despite some impressive examples – from monitoring biomarkers through a connected urine scan ([Withings' U-Scan](#)), to getting a snapshot of key vital signs via an AI powered selfie ([NuraLogix's Anura app](#)) – the issue of fragmentation is compounded by a lack of interoperability and aggregation of data, leaving the user (or their doctor) to navigate a multitude of individual apps and data sets that may paint different pictures of health.





Nowatch

Mind over matter: mental health and wellbeing in the spotlight

Accelerated by the global pandemic, the importance of mental health and our overall wellbeing has been (finally) thrust into the spotlight and become the focus for tech innovation over the last few years.

In the case of [MoNoA](#), we also see a great example of the integration between tech, data and health professionals (certified MoNoA coaches) to bring a human touch to the user experience, while delivering equal value for the caregiver, through a greater understanding and real-time view of their client’s progress.

With a clearer understanding of the need for proactive and mindful self-care, integrating technology in a way which is intuitive, non-invasive, and routine will be crucial in driving this shift. [Nowatch](#) – the world’s first “awareable” – takes a screen-less approach to this idea, encouraging the user to live in the moment, while quietly collecting bio-data and curating feedback.

Similarly, [Touchpoints Digital Health wearables](#) use non-invasive micro-vibrations to relieve symptoms of stress, anxiety and sleep issues, while also proving effective in treating other neurological disorders such as epilepsy and Parkinsons.

At the other end of the spectrum, [Citizen’s 2nd-gen CZ Smartwatch](#) comes complete with your own ‘self-care advisor’ (powered by Google’s Wear OS) to help build better habits, increase self-awareness, and nudge the user into healthy routines.

The age of adoption: is age tech demand reaching critical mass?

The opportunity for technology to drive impact amongst elderly consumers is not only large, but seemingly more and more within reach, with adoption rates increasing rapidly, particularly smartphones (estimated by AARP to have risen by around 80% amongst the 70+ age group) and wearable tech.

In a category where stigma and stubbornness can create barriers to entry, design is crucial



Nowatch

in creating devices that fit seamlessly into our lives and that people actually want to use. This is particularly important for increasing adoption of health tech in younger groups, to provide a smoother transition into its applications in later life.

[Jabra's enhance plus CTO hearing aid](#) is a great example of this, combining a medical grade technology for moderate hearing loss, with the discrete, comfortable design and functionality users expect from any true wireless earbuds.

Similarly, PERS (personal emergency response system) is a huge opportunity for technology to address, with products such as [Motorola's Moto watch 100](#) blending necessary safety features with a consumer aesthetic and broader lifestyle experience.

Conclusions

Health tech shows clear signs of transforming the way we approach our physical and mental health in the future.

Many innovations showcased this year show great progress in terms of accuracy, convenience and a more intuitive approach to integrating technology into our daily routines.

Nevertheless, we seem to be lacking the collaboration and openness necessary for driving the change needed to truly unlock the potential for this category.

The ['Matter' Smart Home Protocol](#) could provide needed inspiration for the healthcare system to build on. Driving **Simplicity, Interoperability, Reliability and Security in health tech devices will be crucial in unlocking their potential.**

While this will require far more complex collaboration and alignment between healthcare providers, governments and other stakeholders, the building blocks seem to already be in place for us to imagine the integrated healthcare experience of the future.

Make it real



Jabra



Jabra



Metaverse: Challenges & Opportunities

Designing a digital realm comes with endless possibilities where accessibility, diversity, and inclusivity must be a foundational requirement, not just an afterthought.

By Jemal Kurbanova

This virtual universe, composed of shared worlds that people can access through multiple devices, changes our experience of the online domain from a two-dimensional frame into being completely immersed within it.

Human mentality profoundly changed with the arrival of the cell phone. Since then, a language has been created where behaviours have evolved into our current ability to interact with the world through information and communication technology. With reality extended into screens in the palm of our hands, the idea that the body is in one place has gone. And so, the metaverse is born.

This virtual universe, composed of shared worlds that people can access through multiple devices, changes our experience of the online domain within a two-dimensional frame into being completely immersed within it. As concerts in Fortnite and Roblox become more common and consumers spend real money on dressing their avatar in Gucci, the metaverse reveals itself to be more present than we think.

Designing a digital realm comes with endless possibilities, but the way the metaverse is built for it to be comfortable, accessible, and inclusive brings forth challenges and opportunities that the CES this year shined light upon, as businesses and creators took the floor.



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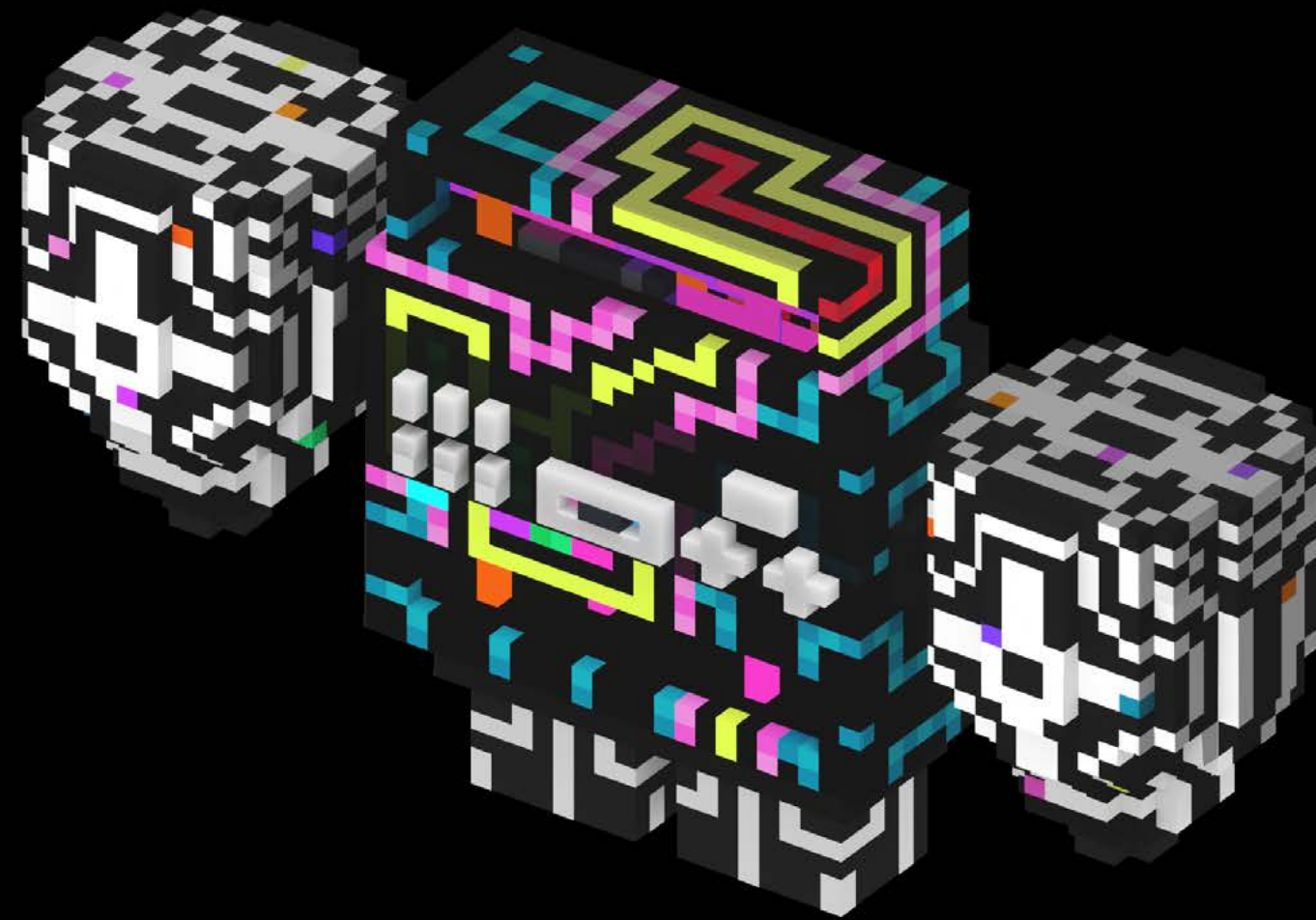


Getting everyone on board

One would say that the Metaverse was accelerated as a concept by Mark Zuckerberg's unveiling of Facebook's rebrand to Meta in an eerie virtual replica. The response was no different to the revulsion of an uncanny valley, but as Zach Bruch, Co-founder and CEO of Recur declares: "When you start something new, it will always be chaotic."

Mark Curtis, Head of Innovation at Accenture Song, notes that enterprises pick up on the metaverse concept faster than consumers, as the power to influence and persuade those in closed user groups is easier. Bridging the metaverse spaces into contexts that consumers understand to 'guide the ship' may prove to be useful in getting them on board.

Take [Jadu Jetpacks](#) as an example – Augmented Reality (AR) NFTs that give your avatars the ability to fly in the metaverse. Today, these tokens are developed to be played in spaces like TikTok and Snapchat, with the vision of consumers directly interacting with them in the metaverse. From stored file formats into



Jedu Jetpacks

Make it real

being real-time interactive tools, this product demonstrates a strategy that lubricates the consumers to disruptive concepts which would have otherwise been rejected. Betty, CEO and Co-Founder of Deadfellaz that is an Ethereum based NFT collection, finds that:

“A lot of brands do not have a fleshed-out Web3 strategy, and we can tell. They lose reputation in that space.”

Bridging fragmented technologies

With the exponential growth of digital platforms and services, we see a clashing of corresponding technologies due to the differences in their evolutionary stages. The lack of interoperability falters the metaverse's ability to deliver an effortless experience for the users. How can we ensure that independent systems layer and stack to work together?

The [Nth Floor](#) is Accenture's onboarding metaverse that enables geographically distributed workforce to meet, learn, and collaborate with one another. The ecosystem has held over 4000 events and has received a satisfaction rating of 4.7/5 from the employees. The 'bridging' of the multiple platforms integrated within the Nth Floor is the interoperability that the ecosystem delivers, having enhanced the onboarding experience for over 180,000 employees worldwide.

Diversity and inclusivity for virtual Identities

One promise of the metaverse is that it offers an opportunity to remedy some of the mistakes of Web 2.0, such as failure of social media platforms to safeguard marginalized and underrepresented people from hateful behaviour online. As we build

on the next iteration of the internet, diversity and inclusion must be a foundational requirement, not just an afterthought.

Brands are increasingly partnering with metaverse platforms to provide digital clothing, virtual spaces, and customisable avatars, tapping into what people want and offering options that aren't currently available. Take L'Oreal's partnership with [Ready Player Me](#), a metaverse avatar platform for which the makeup company introduced looks that promote authenticity, inclusivity, and creativity in self-expression. L'Oreal premiered exclusive makeup and hair styles for avatar creation that can be used on more than 4000 platforms.

Partnerships such as this one provide insight into the appetite amongst consumers for virtual beauty to elevate their means for digital self-

expression, reflecting the diversity of our world beyond the physical.

Conclusions


The metaverse is something that "is emerging gradually, then suddenly", to quote Ernest Hemingway. As we are in the early stages of building this new world that lies within another dimension, astronomical responsibilities arise for businesses and creators to ensure that the technologies are integrable, interoperable, and inclusive. With the right measures being taken, it can offer new opportunities for the way we work, play, and interact with one another. For those who choose to ignore its presence today, however, will have a hard time entering the metaverse when it finally does emerge.



Driving Sustainability Forward

There are great expectations for technology in the fight against climate change, and many companies are rightfully putting the environment at the forefront of their agenda.

By Sophie Panton



Sustainability will be a mainstay on the annual CES agenda, and for a good reason: our planet and people need sustained focus to secure our future.

Humankind is deep in the race to decarbonize our planet and end our dependence on fossil fuels. This goal has never felt more urgent: from heat waves and wildfires to floods and severe storms, 2022 left us with the bitter taste of the escalating climate crisis.

Environmental sustainability was top-of-mind at CES 2023. There are great expectations for technology in the fight against climate change, and many companies are rightfully putting the environment at the forefront of their innovation agenda.

Collaborations & partnerships

The world's business ecosystems are recognising that this fight won't be won alone. Cross-sector collaborations are bringing together a diverse range of perspectives, resources, and expertise.

Food waste is one of the largest contributors to our greenhouse gas emissions – about a third of all harvested produce ends up as waste. By improving cold chain logistics, [OneThird](#) is enabling growers, distributors, and retailers to work together to improve product shelf-life. Their shelf life prediction technology empowers businesses at all stages of the supply chain to make smarter decisions and directly reduce the amount of wasted produce.



Meanwhile, Patagonia and Samsung are collaborating to design a new washing machine cycle and filter that drastically reduces the number of microplastics released during the process. The combined use of the new cycle and filter is said to reduce the release of microplastics by 54% – ensuring they do not end up in our waterways. This technology has now reached the commercial stage and will be available in Europe in 2023.

Power to the consumer

Technology increasingly enables us, as consumers, to monitor our daily environmental impact. Our individual behaviour changes amount to large collective improvements in the health of our planet.

Two important dimensions of our wellbeing are our food, and our homes. [GreenSwapp](#) is an API that helps consumers to track, reduce, and communicate the climate impact of their food.

On the home front, [Neoplants](#) is building the first generation of bioengineered plants that fight air pollution indoors. Their first product, Neo P1, has been designed to capture and recycle the most dangerous compounds found in our indoor air.

Both Schneider and Samsung are unlocking ways for consumers to reduce their carbon footprint at home. [Schneider Home](#) allows you to easily monitor and control your home's energy usage at the tap of a button. Similarly, Samsung debuted its [Net Zero Home](#), where all household energy consumption is managed within a closed-loop system. By utilising SmartThings Energy, Samsung can manage the flow of energy throughout your home without waste, and leverage features such as AI Energy Mode to help optimise energy usage.

Resourceful solutions

Although we often focus on individual consumption, smart energy and water use

further up the value chain are critically important to make improvements at scale.

[Crusoe Energy](#) is capturing stranded energy and directing it to cryptocurrency mining and other energy-intensive computing activities. It's no secret that blockchain and its leading use case, cryptocurrencies, require vast amounts of computing power to function; interventions by companies like Crusoe are a step in the right direction.

[ACWA's Clean Water Pathfinder](#) is another one to watch. This robot can fit in a water pipe, without disrupting water flow. Their goal is to optimise water infrastructure, thereby saving millions of gallons of water as this precious resource becomes increasingly essential.

Conclusions

By virtue of being a consumer technology event, CES 2023 shone the spotlight on solutions that empower us to take responsibility for our own emissions and impact. However, it was heartening to see more cross-sector collaboration and industrial-scale solutions that are critical to driving real change. Sustainability will be a mainstay on the annual CES agenda, and for good reason: our planet and people need sustained focus to secure our future.





Infinite Transactions

Physical money, goods and services are becoming increasingly digital – a fundamental change to all aspects of commerce is upon us.

By Jasper van Eck

Today, we transact at an unfathomable scale. There are about 20 million credit card transactions every second of every day.

Do you sell your shirts in digital sizes?

The earliest transactions can be traced back to ancient [New Guinea](#), where obsidian and flint were traded around 17,000 BCE. The invention of the shekel about 5,000 years ago by the Mesopotamian people greatly simplified trading, resulting in flourishing markets for all types of trade: be it grain, livestock, armies and more. Trading routes emerged and society quickly grew accustomed to the reality that whatever one desires could be obtained with money.

Today, we transact at an unfathomable scale. There are about [20 million credit card transactions](#) every second of every day. Physical money is increasingly replaced with digital currencies and infrastructures, optimized for 'next day delivery' to keep up with demand. The goods and services we buy are increasingly digital – all aspects of commerce are fundamentally changing.

A 'skin' for everything

Modern humans have the complex task of maintaining both physical and (multiple)

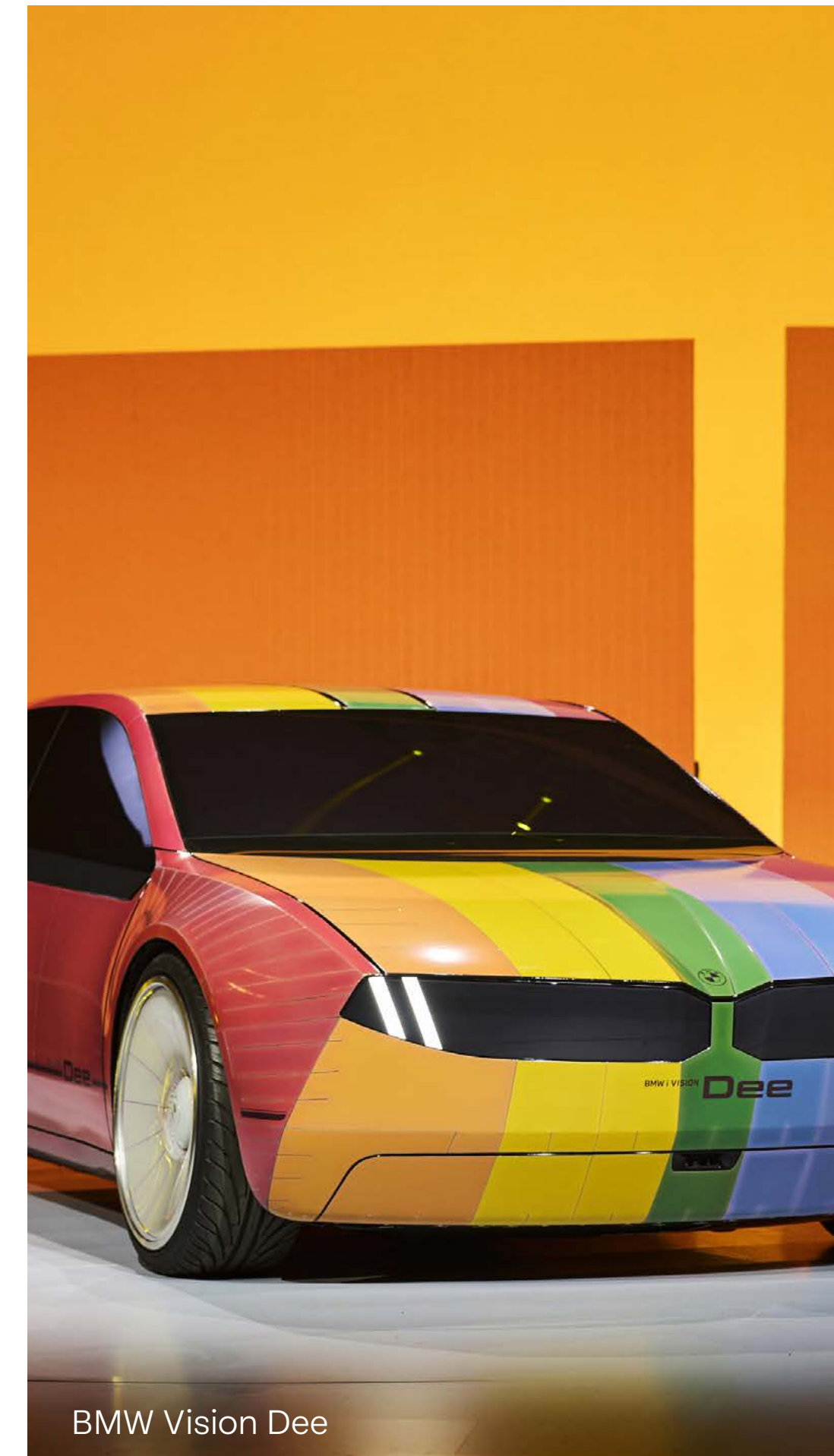
digital identities. [More](#) than one third of the world's 3 billion gamers regularly spend money on 'skins' for their in-game characters or the vehicles in which they ride.

BMW's [Vision Dee](#), a colour-changing car, points to a future where digital skins could even reach into the physical world. With individually controllable e-ink colour panels on the car, it provides a perfect platform for new skin creation and trading.

LG recently announced a technology that could bring digital skins to even more surfaces. [LG's transparent OLED](#) can be integrated into anything see-through (like glass), opening new doors for transactions like skins for your home, or dynamic advertising space on large 'glass-rich' skyscrapers.

The volatile allure of NFTs

Beyond cars and buildings, NFTs are a dynamic but volatile growth area, with their value and [awareness](#) in a constant state of flux. This has left bad impressions on many, with just 15% of consumers thinking they are a good investment.



However, some NFT brands are working hard to prove their physical and digital value. [Doodles](#), an NFT brand creating visual avatars, collaborated with Shopify on a first [token-gated retail drop](#). NFT holders could visit this pop-up shop to get a personalised in-store experience with the opportunity to buy real merchandise. The event itself drew thousands of visitors and showcased how an NFT can provide value beyond the digital realm.

Towards decentralised carbon credits

Just as we can ‘tokenize’ digital art and merchandise, we see an increased interest in tokenizing carbon credits, designed for large companies looking to offset their emissions. Still, the regenerative finance (ReFi) industry is plagued by [fraudulent practices](#), such as double counting.

CHIA, a blockchain and cryptocurrency provider, is looking to solve that. Working together with the IFC and the Climate Warehouse, CHIA offers [fully verified](#)

“Say for instance you’re Microsoft or Exxon, and you want to buy hundreds of millions of carbon credits. Right now, you have to do a bunch of due diligence to find out if these carbon credits are any good.”

– Jonmichael Hands, CHIA

[carbon](#) tokens traded on its blockchain, bringing transparency, integrity, and traceability to the ReFi market.

Micro transactions and the fight over consumer data

Payments aside, there are micro transactions happening covertly on



a much larger scale. Data transactions, where personal and behavioural data gets exchanged for consumer ‘convenience’, form the foundation of the world’s largest companies like Google, Amazon, Microsoft and others. Yet consumers are growing [increasingly concerned](#) about the data that is being collected.

Consumer concern is justified, with companies like Twitter, [Google](#), and Revolut falling victim to [data breaches](#). These breaches point to flaws in our traditional database infrastructures. Luckily, [Storj](#) is working hard to make data breaches a thing of the past. Using a decentralized approach, they can offer lightning-fast storage at a fraction of the current cost. Since every file on storj is split, encrypted and stored across the network of 16,000 community nodes, it is (virtually) impossible for data breaches to occur on this solution.

Hitting close to home

While large companies are eager to scrape data from their consumers, consumers are keen to better understand their home data. U.S. homeowners already have an average of

20 connected devices per household to do just that, representing a mass of in-home data transactions.

When you think about how the home was operated, maybe 15, 20 years ago. You were picking up the remote, you were hitting switches, being very active...sensors & signals give the ability for the home to be ahead of things.”

– Alex Capecelatro, CEO Josh.

‘Smartification’ of our homes has brought new levels of convenience into our lives, yet many smart sensors and cameras are only capable of collecting and reporting data. Acting on this data is left to the homeowner. There’s a tremendous opportunity for smart

home sensors to remove the need for human intervention, letting the sensors orchestrate a better in-home experience, energy management and security.

A big obstacle to this has been the lack of a common language between sensors. Smart home products are increasingly adopting the [Matter](#) standard, a foundational communication layer for connected things. Allowing cross-device and cross-vendor “machine” transactions will ultimately lead to smarter living.

Conclusions

What we buy will increasingly manifest in both physical and digital (‘phygital’) forms. Similarly, the transactions underpinning our evolving world of commerce will employ digital and physical representations of currency. The new forms of transactions across realities and personal boundaries require the highest level of security, reliability, and integrity. Decentralized technologies and methodologies, when executed with care, provide the right infrastructure for our future transaction landscape.



Driving Social Impact

AI, machine learning and big data can support in making our world a place that is more equitable, supportive, inclusive and sustainable.

By Lian van Meerendonk

1 in 6 people live with a disability and have the fundamental right to access global information to aid their independence.

New technologies can cultivate greater and more positive social change. Beyond driving revenue through innovations and bringing competitive advantage, new technologies like AI, machine learning and big data can support in making our world a place that is more equitable, supportive, inclusive, and sustainable.

This year's CES conference showcased the tangible ways in which industry has been actively applying technology to the most pressing challenges facing our society.

Commoditising accessibility

Technology can be used to increase the physical accessibility of products and services to the wider population. Consider the 1 in 6 people worldwide who live with a disability, who have a fundamental right to access global information and aid their independence. Digital accessibility is improving steadily, with interfaces now being accessible through voice commands, smart screens and glasses that translate speech to text, or AI-driven hearing aids that enhance speech.

A range of solutions in this space were unveiled



Dot Cell and Dot Pad

at CES: for example, [Samsung's](#) Reluminode mode, designed to help visually impaired individuals to see content on screen more clearly. Other innovations included [Dot Cell and Dot Pad](#), two tactile graphics displays that convert letters and images into a tangible output, enabling visually impaired and blind consumers to interpret all content on the internet.

Also on display were the [eSight Go](#) smart glasses, designed for people with low vision. These glasses contain a built-in, high-speed, high-definition camera and two high-resolution screens to capture all images looked at by the user. The glasses optimize and enhance the footage, and project it onto the two screens in real time.

Accessibility is also in the agenda in the beauty world. L'Oréal presented a motorized lipstick applicator called [HAPTA](#): a handheld device that enables self-expression for beauty enthusiasts with limited hand and arm mobility.

Design for inclusivity & equality

Technology also plays an important role in removing barriers within products and

services that have traditionally underserved certain communities. For example, by making education or health care more widely available or by providing more equal economic opportunities.

The health industry has long focused on innovations around remote patient monitoring or smart wearables, apps and other digital platforms that make it easier for patients to stay engaged with their healthcare providers. However, the range of signals that can be measured, along with their accuracy, are continually developing. [Nuralogix](#) has developed technology that uses AI to analyse a simple selfie, to determine heart rate, blood pressure, body mass, stress levels and more. This represents a quick and familiar way for users to transmit a rich information set to their healthcare provider.

Meanwhile, India-based [AjnaXR](#) is on a mission to bridge income inequality. The company designed a true mixed reality headset that provides an immersive experience for individuals to up-skill or re-skill for a new occupation. The firm is also debuting [AjnaVidya](#), an accompanying



platform to promote immersive learning and communication opportunities for a skills-first world with equal economic opportunities.

Adding true value through personalisation

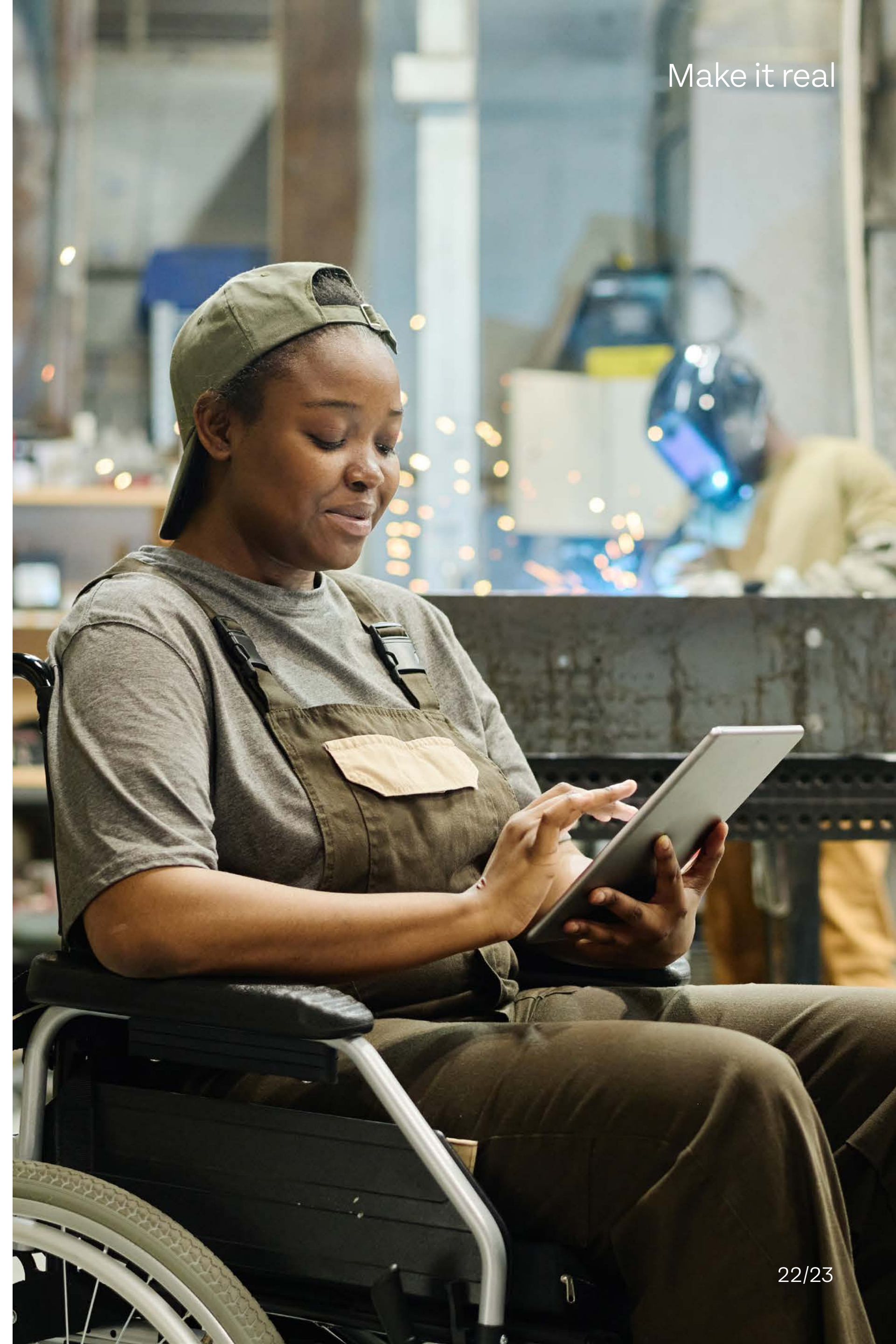
Personalization is most used to contextualise messages or create more engaging experiences, but it can also be applied to generate positive impact. An example of this is adaptive learning: using machine learning data and algorithms to adapt teaching to a user's strengths, weaknesses and learning style, providing a personalized learning experience. Valuable applications are seen in personalized [health and wellness tracking](#), as well as in the automotive industry.

At CES, [HARMAN](#) presented Ready Care, an in-car intervention product that measures a driver's eye activity, cognitive load and vital signs to determine the level of focus and attention to the road ahead. The product provides a personalized in-cab response to reduce dangerous driving situations caused by stress, anxiety, distraction and drowsiness.

Personalization can also provide added value in the home or care environment. For example, [Zoundream](#) showcased a custom developed deep-learning-based solution to interpret and translate baby cries into real meaning. The startup is aiming to be able to identify pathologies and uncommon behaviours of infants, offering more security for caretakers of newborns.

Conclusions

Increasingly, companies are being challenged to take a stand, and shed light on topics such as equality and inclusion, which matter more than ever. It is therefore no surprise to see the rise in innovations highlighted at CES that break down barriers and contribute to making this world a better, more equal place. There is a range of companies with promising early products that we hope to see back next year, showing great progress. We expect the themes of equality, access and inclusion to grow on the CES platform, and hit the big stages next year.



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