



i INNOVATING for
INNOVATORS



The world is full of possibilities.
Innovation turns them into reality.

Possibilities Challenges

Possibilities, challenges. We all harbor a need to change the world, in big and small ways. To make things as they should be rather than maintaining them as they are.

Huawei innovates for the innovator in all of us. We provide the technological tools to create smarter businesses, new experiences and ultimately, a better world.

Creating Smarter Businesses

From Johannes Gutenberg, who invented the printing press, to Steve Jobs, many of the greatest innovators in history were business people.

At Huawei, we innovate for the business innovators, equipping them with the best of technology to delight their customers.

Shenzhen airport	4
Shenzhen power grid	6
5G mining	8

A smarter airport: less waiting, more traveling



“ We can handle more traffic, while improving the passenger experience ”

Zhang Lixuan
CIO, Shenzhen Airport

Fully 5G-connected, Shenzhen airport relies on AI to process millions of travelers and cargo. According to Zhang Lixuan, Head of the Airport's Digital Transformation, passengers now spend less time in queues. Usage of gates with airbridges has become more efficient.



Fast Facts

- 4 million fewer bus rides from gate to plane in first year
- 38% less waiting time with increased use of airbridges

When it comes to airport travel, most travelers think of crowds, unexpected delays, and constantly having to show their passport and boarding pass to a stranger. Queue up. Show your ID. Take out your passport. Board the bus. Wait. Queue. Repeat.

Zhang sees bringing back the fun of travel as one of his main jobs.

“The airport is the face of Shenzhen, the first thing visitors see when they come here,” he says. “We are committed to operating a digital airport offering a first-class experience to all passengers.”

Bus transfers to and from distant parking spots are one of the things travelers hate most. In Shenzhen, AI helps with gate scheduling and maximizing the use of gates with airbridges. This reduces the need for buses. And it cuts the need to work overtime for planners who were spending countless hours on gate assignments. About four million fewer passengers per year need to board buses to shuttle from the terminal.

AI also cuts queuing times. Facial recognition automates security checks and frees passengers from having to constantly get their documents.

“I believe digital transformation is the way to go for the airport sector,” Zhang says. “Passengers will demand that airports provide a pleasant experience.”

Wider maintenance coverage, less walking



“ With this equipment, 100-meter towers are now easy to reach ”

Yang Xin
Power Line Team Leader,
China Southern Power Grid

Fast Facts

- 3,900 kms of power lines covered
- Work that took 20 days now takes 2 hours

Maintenance crews at the Shenzhen Power Supply Bureau (SPSB) harness AI to analyze video to determine where inspections by humans or repairs are needed. This saves time and boosts grid reliability.

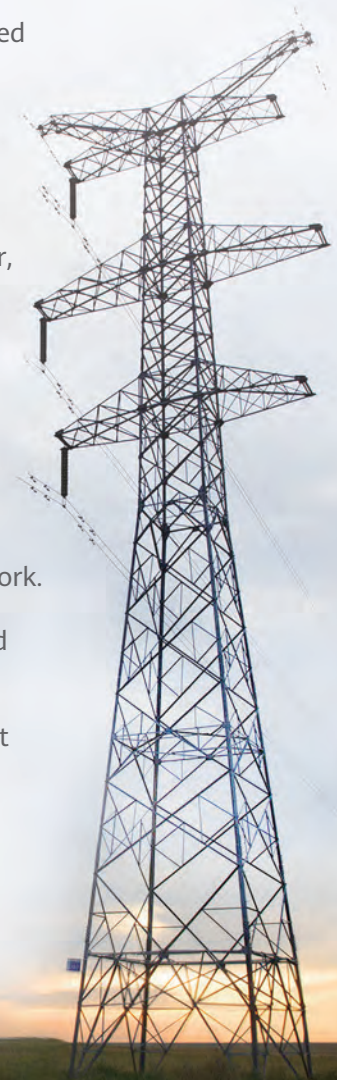
In Shenzhen, the length of power lines has doubled over the last 10 years. However, the number of technicians during the period has only increased by a third, from 60 to 80 people.

“Over a 30-year career, a power line worker can walk a distance equivalent to the world’s circumference,” says Wei Qianhu, Deputy Director, China Southern Power Grid, Shenzhen Bureau.

Technicians used to spend their entire day walking, often on hilly terrain, in the rain or strong sun. With the rapid expansion of the Shenzhen grid, they could no longer cope.

Technology changed this. Workers now inspect power lines with high-definition cameras, either fixed or drone-mounted, connected to a 5G network. The video feeds are analyzed by AI technology co-developed by Huawei and SPSB, supplemented by human judgment.

The new system lets maintenance workers inspect the grid from the comfort of a control room. Inspections that used to take 20 days can be completed in two hours.



Mining safely, at twice the speed



“ With 5G, miners in air-conditioned rooms can remotely control excavators ”

Wang Chaolei
Senior Miner, China Molybdenum

A mine in China relies on 5G technology to automate its operations and remote-control excavators. Self-driving trucks move around the mine at double their past speed.

Mining is often done in extreme conditions, in the hottest deserts or in the Arctic Circle. It's unpredictable and dangerous work. Mining companies have tried to introduce remotely-controlled vehicles. But they ran too slow and generally were more trouble than they were worth.

Partnering with China Mobile and equipment supplier Henan Yuexin Intelligent Machinery, Huawei set up a 5G network at the Henan Sandaozhuang mine of China Molybdenum in Central China. Relying on real-time video feeds from multiple angles, operators control excavators from a remote, air-conditioned location as if they were on-site. Trucks designed by Yuexin move around the mine driverless.

“Workers at mines no longer need to face the dangers, discomforts, and long-term health risks associated with the industry,” said Wang Chaolei, a senior miner at Sandaozhuang. Wang now operates his excavator remotely.

“Ensuring safety gives our families peace of mind,” Wang adds.

Fast Facts

- 100% speed increase to 30 km/h
- 30% increase in productivity

Creating New

New experiences make life worth living. They enrich us, the anticipation putting a smile on our faces. Technology enables innovators to create these new experiences.

Experiences

For documentary filmmakers, technology provides ways to share with others what has been encountered during a deep dive. For amateur athletes, technology helps devise new ways to train in various conditions, even when venues prove unavailable.

At Huawei, we innovate for those innovators.

Filming a freediving champ	12
Delighting a photo fan	14
Running without a course	16

Sharing the thrill of free diving with a smartphone



“ Filming with these phones, we too felt the freedom of the sport ”

Lin Zilu

Underwater Documentary Film Director
And Producer



Lin Zilu and her team used the Huawei Mate 30 Pro smartphone to film world freediving champion Lu Wenjie in two separate locations: Sabang International Freediving Competition 2019 in Indonesia and in the Arctic circle.

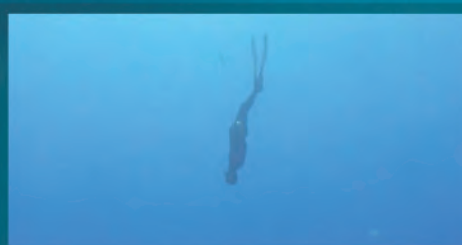
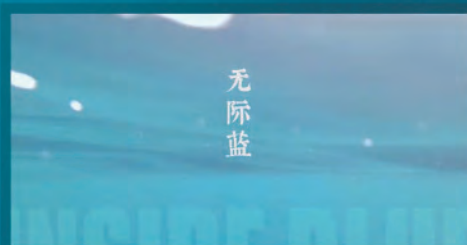
Normally, when Lin and her crew film underwater, they use bulky and complex gear. This time, they had to film athletes diving as deep as 90 meters without breathing equipment. Using Huawei Mate 30 smartphones felt liberating even though the filming crew was pushing the edge of the possible.

“We explored our inner capabilities instead of getting overly focused on the equipment.” With three Leica cameras, the Mate 30 has numerous advanced photo and video features, including a digital zoom magnifying up to 30 times and AI that corrects lighting.

When shooting a rapidly-moving Lu Wenjie, Lin recalls, “Sometimes, the lighting wasn’t good or clear, but when I saw the footage afterwards, I was like, wow!”

Anyone is free to create visual works of art, Lin believes. “Technology does not guarantee inspiration. But it opens more possibilities in the creative process.”

90 meters



Great inspiration from a small device



Jiang Hua
Architect, Photographer

“ We went to Japan with an SLR camera and zoom lenses, but the Huawei smartphone turned out to be enough ”

An architect for over 30 years, Huawei fan Jiang Hua shows it's never too late to enjoy new experiences. By using his phone instead of a camera to take photos of buildings, he has mastered Huawei Cloud to sync information and images from different terminals.

In his work, Jiang routinely takes photos of buildings. For this, he requires a camera with an ultra-wide lens to capture the grandeur of structures. This professional habit has helped to turn him into a serious hobby photographer.

Nowadays, Jiang rarely uses cameras, relying instead on Huawei phones. A photo of a building in Shanghai's Xuhui district taken with a Huawei Mate 20 Pro that he shared on a Huawei forum went viral. Many of his shots have since enjoyed similar online fame.

On a recent trip to the north of Japan with his family, he didn't use any of the professional photo gear he had taken with him, instead just roaming freely with a Huawei phone. To lighten the load on his phone memory, he moved many of his shots to the cloud.

Despite not having experienced them in his youth, Jiang has become an avid user of a wide range of digital technologies.



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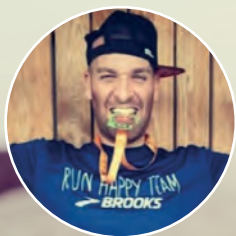
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Stuck at home but going the distance



“ I wanted to show that it’s possible to run a marathon from my balcony ”

Elisha Nochomovitz
French Marathon Runner

Fast Facts

- 7-meter long balcony
- 3,000 rounds back and forth
- 42.2 kms



The day after the president of France announced a lockdown of the country to fight the Covid-19, French marathon runner Elisha Nochomovitz ran an entire marathon on his balcony. Owing to the constant switching back-and-forth, it took him 6h 48mins, or almost double his usual time.

In mid-March 2020, as French cases of Covid-19 were rising by over 1,000 per day, President Emmanuel Macron ordered a 2-week lockdown of the country to halt the spread of the virus. Nochomovitz, 32, had trained to run the Barcelona Marathon on March 15, but the race was postponed to October. He decided to run an entire 42.2km on his 7m-long balcony.

“I saw on TV thousands of health professionals who were fighting back hard against Covid-19. Their message was ‘stay at home.’ This is why I rejected the idea of going out,” Nochomovitz recalls. The resident of Balma, France, dedicated his effort to them.

Technology played a role in his unusual race. He kept track of his progress with a smartwatch and his wife shared a video of his achievement on social media. “Equipment, music, internet... it’s the best way to stay motivated, to continue to train while still at home,” he says. He calculated that he went 3,000 times back and forth on his balcony.

“Technology will allow us to build a better future,” the runner says.

Creating A Sustainable Planet

Innovators find ways to help those left behind move forward. They understand that economic gain is meaningless if it harms the planet. Technology is progress only when its benefits are shared and sustainable.

With technology, all children can access medical resources, education can be expanded to the world's most remote places while endangered species can enjoy better protection.

At Huawei, we innovate for those who make the world a better place.

Saving the forest	20
Giving eye tests to toddlers	22
Connecting remote communities	24

Listening in to save the world's forests

“ We use old Huawei phones to listen in to the presence of illegal loggers ”

Topher White
CEO, Rainforest Connection

Illegal logging causes most of the rainforest loss worldwide every year. Rainforest Connection and Huawei designed technology alerting rangers to the presence of illegal loggers.

Rainforests are vital to the planet, says Topher White, CEO of California-based NGO Rainforest Connection (RFCx). Their rich ecosystems are not only home to threatened species like the Costa Rican spider monkey and Indonesian orangutan, they also contain plants and insects unknown to science that could be a source of life-saving medical treatments.

RFCx, working with Huawei, developed a platform that includes data collection devices, storage services and intelligent analytics. In practice, this involves fitting old mobile phones powered by solar cells up in the trees to constantly capture the cacophony of the jungle.

“We’re able to use AI to listen in and pick up the sound of chainsaws, logging trucks, gunshots, motorcycles, or anything that indicates a threat,” said White. As a bonus, the system can also collect and analyze animal sounds to help biologists to study threatened species. So far, the system has been deployed in 10 countries, covering 6,000 square kilometers of rainforest.

“The rainforest’s sounds are often too complex for humans to interpret, but technology can hear the many complex details of this symphony,” White adds.

Fast Facts

- 6,000 km² of rainforest covered
- Deployed across 10 countries

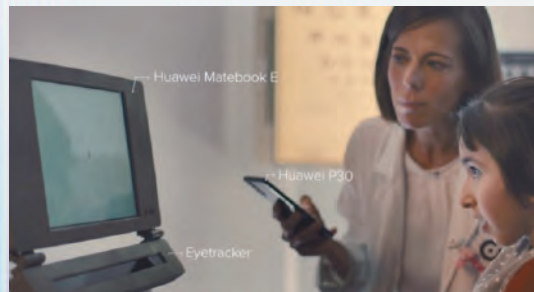
Preventing blindness in children, even before they talk



“ As researchers, we need support from technology companies. Huawei is enabling us to globalize the impact of DIVE and take the technology to every corner of the world ”

Victoria Pueyo

Pediatric ophthalmologist
Her startup DIVE developed a tool diagnosing eye problems in toddlers



The World Health Organization estimates that 19 million children are visually impaired worldwide. If caught early, as many as 80% of cases are easily treatable.

In developing countries, 60% of young children who go blind die within a year. But in many places, pediatric ophthalmologists are in short supply. Working with Huawei, a doctor in Spain has developed a technology that makes it simpler to diagnose eye problems in young children.

Traditionally, doctors diagnose vision ailments in young children by moving a finger or an object in front of the child's eyes and observing the reaction. TrackAI consists of artificial intelligence that analyzes eye movements as children watch visual stimuli on Huawei devices. Test results provided by the technology need to be checked by an ophthalmologist, but it significantly simplifies the testing of young children, especially infants who can't talk or stand still. The technology was created through a partnership between DIVE - a startup founded by Victoria Pueyo, a pediatric ophthalmologist in Zaragoza, Spain - the medical institute IIS Aragon, and Huawei.

The algorithms in the AI are still being trained by collecting gaze data from visually impaired children. But it promises to save the eyesight of millions of young children.

Fast Facts

- 19 million children suffer from visual impairment
- Up to 80% of cases curable if treated early

Rural no longer means being unconnected



“ I can now reach doctors directly for help ”

Adeshina Ajoke
Healthcare worker, Tobolo, Nigeria

Adeshina Ajoke is the only healthcare worker in Tobolo, Nigeria. With the town gaining network coverage in 2017, access to medical resources outside is easier. “Before, if I had a serious case here, I would have to physically go to a doctor in the town and ask them to come help us,” she recalls.

Huawei teamed up with South Africa-based operator MTN to provide telecom services to the west Nigeria community with a population of 1,500. Together, Huawei and MTN deployed RuralStar, a solution designed to supply wireless coverage to small, isolated communities. RuralStar has a huge impact wherever it's installed and Tobolo was no exception.

Tobolo resident Rasheed Olaniyi Alese opened an MTN outlet that sells about 200 SIM cards per month. Connectivity brings prosperity, he believes. “I think a brighter future is coming to us here.”

Farming became much easier for one of Alese's neighbors, Oniseogun Solomon. “Instead of harvesting and having to go out of town looking for buyers, we just call them and they come pick up,” he says.

Around the world, more than 700 million people don't have access to phone or data connection, 34 million of them in Nigeria. With a simple pole instead of a telecom tower, and often powered by just a few solar panels, RuralStar is currently deployed in 20 countries.

Suitable for remote communities, on islands, or in deserts, it is the only way to call for help in emergencies. RuralStar has allowed operators to recoup their investment in less than three years.

Fast Facts

- Deployed in isolated communities in 20 countries
- 40 million rural users connected globally



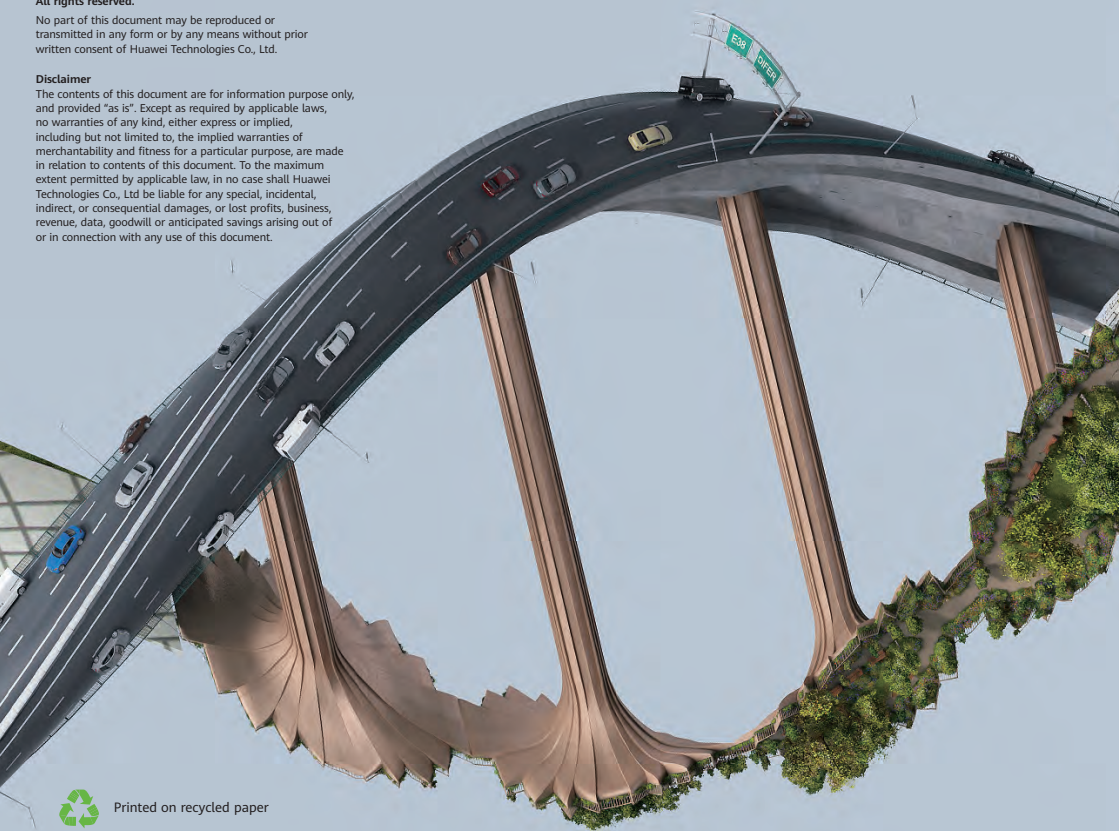
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